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ЗМІСТ

ПЕРЕДМОВА

Вища освіта є фундаментом розвитку людства і кожного суспільства зокрема. Безумовно, вона також є гарантом індивідуального розвитку особистості, сприяє формуванню інтелектуального, духовного і виробничого потенціалу суспільства. Тому розвиток держави, структурні перетворення на мікро- і макроекономічному рівнях мають гармонійно поєднуватися з модернізацією освіти, щоб задовольнити потреби і прагнення людей, особливо молоді, сформувати нову систему суспільних цінностей у сфері діяльності, в громадському і приватному секторах. Підготовка здобувачів в Миколаївському національному аграрному університеті здійснюється з урахуванням вищевказаних умов та вимог сучасності за відповідними освітніми та освітньо-науковими програмами на різних рівнях вищої освіти: початковий рівень (короткий цикл); перший (бакалаврський) рівень; другий (магістерський) рівень; третій (освітньо-науковий/освітньо-творчий) рівень.

Знання іноземних мов як засобу соціального спілкування є невід'ємною частиною суспільного розвитку нашого часу. Геополітичне місце та сучасний економічний стан України, сусідство з Європейським Союзом, все тісніші політичні, економічні, культурні та інші суспільні контакти з англомовними країнами, а також процес інтеграції в Європу вимагають знання іноземних мов, зокрема англійської мови як обов'язкового компоненту у галузі вищої освіти. Даний навчальний посібник призначений для аудиторних занять та самостійної роботи здобувачів вищої освіти освітнього ступеня «Молодший бакалавр» початкового рівня (короткий цикл) спеціальності 201 «Агрономія», 073 «Менеджмент», 141 «Електроенергетика, електротехніка та електромеханіка», 242 «Туризм», 204 «Технологія виробництва і переробки продукції тваринництва», 162 «Біотехнології та біоінженерія», 181 «Харчові технології», 122 «Комп'ютерні науки», 071 «Облік і оподаткування» денної форми навчання з дисципліни «Іноземна мова за професійним спрямуванням (англійська)».

Мета даного начального посібника – розвиток навичок читання фахових текстів та навичок говоріння за різними напрямами спеціальності, активізація лексико-граматичного матеріалу фахової термінології у здобувачів вищої освіти та перевірка їх знань шляхом виконання різнорівневих вправ та тестів. Видання підготовлено згідно з трансферно-модульною системою. Навчальний посібник містить тексти фахової спрямованості, що допомагають здобувачам вищої освіти поглибити та систематизувати їхній активний словниковий запас, необхідний у майбутній професії, а також набути практичних умінь і навичок англійського мовлення. Говоріння ділиться на монологічне та діалогічне. Метою блока говоріння є навчити здобувачів вищої освіти логічно і послідовно, відповідно до навчальної ситуації робити розгорнуте повідомлення в межах тематики, визначеної програмою; передати зміст прочитаного або почутого у формі розповіді, опису; дають оцінку прочитаному або почутому; робити підготовлене повідомлення, самостійно добираючи матеріал.

Для підготовки навчального посібника використовувались матеріали із новітніх підручників, автентичних джерел та періодичних видань.

РОЗДІЛ І «МЕНЕДЖМЕНТ»

PART 1
UNIT 1. TYPES OF BUSINESS ENTITY

The word **entity** means 'something that exists independently'. A business entity is a business that exists independently of those who own the business. There are three main categories of business which will be found in all countries, although with different titles in different ones. This chapter uses the terminology common to the UK. The three main categories are: **sole trader**, **partnership** and **limited liability company**. This

list is by no means exhaustive but provides sufficient variety to allow explanation of the usefulness of most accounting practices and their application.

Text 1. Sole trader

An individual may enter into business alone, either selling goods or providing a service. Such a person is described as a **sole trader**. The business may be started because the sole trader has a good idea which appears likely to make a profit, and has some cash to buy the equipment and other resources to start the business. If cash is not available, the sole trader may borrow from a bank to enable the business to start up. Although this is the form in which many businesses have started, it is one which is difficult to expand because the sole trader will find it difficult to arrange additional finance for expansion. If the business is not successful and the sole trader is unable to meet obligations to pay money to others, then those persons may ask a court of law to authorise the sale of the personal possessions, and even the family home, of the sole trader. Being a sole trader can be a risky matter and the cost of bank borrowing may be at a relatively unfavourable rate of interest because the bank fears losing its money.

From this description it will be seen that the sole trader's business is very much intertwined with the sole trader's personal life. However, for accounting purposes, the business is regarded as a separate economic entity, of which the sole trader is the owner who takes the risk of the bad times and the benefit of the good times. Take as an example the person who decides to start working as an electrician and advertises their services in a newspaper. The electrician travels to jobs from home and has no business premises. Tools are stored in the loft at home and the business records are in a cupboard in the kitchen. Telephone calls from customers are received on the domestic phone and there are no clearly defined working hours. The work is inextricably intertwined with family life.

For accounting purposes that person is seen as the owner of a business which provides electrical services and the business is seen as being separate from the person's other interests and private life. The owner may hardly feel any great need for accounting information because they know the business very closely, but accounting information will be needed by other persons or entities, mainly the government (in the form of **HM Revenue and Customs**) for tax collecting purposes. It may also be required by a bank for the purposes of lending money to the business or by another sole trader who is intending to buy the business when the existing owner retires.

Text 2. Partnership

One method by which the business of a sole trader may expand is to enter into **partnership** with one or more people. This may permit a pooling of skills to allow more efficient working, or may allow one person with ideas to work with another who has the

money to provide the resources needed to turn the ideas into a profit. There is thus more potential for being successful. If the business is unsuccessful, then the consequences are similar to those for the sole trader. Persons to whom money is owed by the business may ask a court of law to authorise the sale of the personal property of the partners in order to meet the obligation. Even more seriously, one partner may be required to meet all the obligations of the partnership if the other partner does not have sufficient personal property, possessions and cash. This is described in law as **joint and several liability** and the risks have to be considered very carefully by those entering into partnership.

Partnership may be established as a matter of fact by two persons starting to work together with the intention of making a profit and sharing it between them. More often there is a

legal agreement, called a **partnership deed**, which sets out the rights and duties of each partner and specifies how they will share the profits. There is also **partnership law**, which governs the basic relationships between partners and which they may use to resolve their disputes in a court of law if there is no partnership deed, or if

the partnership deed has not covered some aspect of the partnership.

For accounting purposes the partnership is seen as a separate economic entity, owned by the partners. The owners may have the same intimate knowledge of the business as does the sole trader and may therefore feel that accounting information is not very important for them. On the other hand, each partner may wish to be sure that they are receiving a fair share of the partnership profits. There will also be other persons requesting accounting information, such as HM Revenue and Customs, banks who provide finance and individuals who may be invited to join the partnership so that it can expand even further.

Text 3. Limited liability company

The main risk attached to either a sole trader or a partnership is that of losing personal perty and possessions, including the family home, if the business fails. That risk would inhibit many persons from starting or expanding a business. Historically, as the UK changed from a predominantly agricultural to a predominantly industrial economy in the nineteenth century, it became apparent that owners needed the protection of **limited liability**. This meant that if the business failed, the owners might lose all the money they had put into the business but their personal wealth would be safe.

There are two forms of limited liability company. The **private limited company** has the word 'Limited' (abbreviated to 'Ltd') in its title. The **public limited company** has the abbreviation 'plc' in its title. The private limited company is prohibited by law from offering its **shares** to the public, so it is a form of limited liability appropriate to a family-controlled business. The public limited company is permitted to offer its shares to the public. In return it has to satisfy more onerous regulations. Where the shares of a public limited company are bought and sold on a **stock exchange**, the public limited company is called a **listed company** because the shares of the company are on a list of share prices.

In either type of company, the owners are called **shareholders** because they share the ownership and share the profits of the good times and the losses of the bad times (to the defined limit of liability). Once they have paid in full for their shares, the owners face no further risk of being asked to contribute to meeting any obligations of the business. Hopefully, the business will prosper and the owners may be able to receive a share of that prosperity in the form of a cash **dividend**. A cash dividend returns to the owners, on a regular basis and in the form of cash, a part of the profit created by the business.

If the company is very small, the owners may run the business themselves. If it is larger, then they may prefer to pay someone else to run the business. In either case, the persons running the business on a day-to-day basis are called the **directors**.

Because limited liability is a great privilege for the owners, the company must meet regulations set out by Parliament in the form of a **Companies Act**. At present the relevant law is the Companies Act 2006.

For accounting purposes the company is an entity with an existence separate from the owners. In the very smallest companies the owners may not feel a great need for accounting information, but in medium- or large-sized companies, accounting information will be very important for the shareholders as it forms a report on how well the directors have run the company. As with other forms of business accounting information must be supplied to HM Revenue and Customs for tax-collecting purposes. The list of other users will expand considerably because there will be a greater variety of sources of finance, the company may be seeking to attract more **investors**, employees will be concerned about the well-being of the business and even the customers and suppliers may want to know more about the financial strength of the company.

Although the law provides the protection of limited liability, this has little practical meaning for many small family-controlled companies because a bank lending money to the business will ask for personal guarantees from the shareholder directors. Those personal guarantees could involve a mortgage over the family home, or an interest in life assurance policies. The potential consequences of such personal guarantees, when a company fails, are such that the owners may suffer as much as the sole trader whose business fails.

Table 1.1

Differences between a partnership and a limited liability company

	Partnership	**Limited liability company**
Formation	Formed by two or more persons, usually with written agreement but not necessarily in writing.	Formed by a number of persons registering the company under the Companies Act, following legal formalities. In particular there must be a written **memorandum** and **articles of association** setting out the powers allowed to the company.
Running the business	All partners are entitled to share in the running of the business.	Shareholders must appoint **directors** to run the business (although shareholders may appoint themselves as directors).
Accounting information	Partnerships are not obliged to make accounting information available to the wider public.	Companies must make accounting information available to the public through the Registrary of Companies.
Meeting obligations	All members of a general partnership are jointly and severally liable for money owed by the firm.	The personal liability of the owners is limited to the amount they have agreed to pay for shares.
Powers to carry out activities	Partnerships may carry out any legal business activities agreed by the partners	The company may only carry out the activities set out in its memorandum and articles of association
Status in law	The partnership is not a separate legal entity (under English law), the partnership property being owned by the partners. (Under Scots law the partnership is a separate legal entity.)	The company is seen in law as a separate person, distinct from its members. This means that the company can own property, make contracts and take legal action or be the subject of legal action.

Table 1.2 Brief comparison of private and public companies

	Public company	Private company
Running the business	Minimum of two directors.	Minimum of one director.
	Must have a company secretary who holds a relevant qualification (responsible for ensuring the company complies with the requirements of company law).	The sole director may also act as the company secretary and is not required to have a formal qualification
Ownership	Shares may be offered to the public, inviting subscription.	Shares must not be offered to the public. May only be sold by private arrangements
	Minimum share capital £50,000.	No minimum share capital.
Accounting information	Extensive information required on transactions between directors and the company.	Less need for disclosure of transactions between directors and the company
	Information must be made public through the Registrar of Companies.	
	Provision of financial information to the public is determined by size of company, more information being required of medium- and largesized companies.	
	Accounting information must be sent to all shareholders.	

UNIT 2. USERS AND THEIR INFORMATION NEEDS

Who are the users of the information provided by these reporting entities? This section shows that there is one group, namely the **management** of an organisation, whose information needs are so specialised that a separate type of accounting has evolved called **management accounting**. However, there are other groups, each of which may believe it has a reasonable right to obtain information about an organisation, that do not enjoy unrestricted access to the business and so have to rely on management to supply suitable information. These groups include the owners, where the owners are not also the managers, but extend further to employees, lenders, suppliers, customers government and its branches and the public interest. Those in the wider interest groups are sometimes referred to as **stakeholders**.

Text 1. Management

Many would argue that the foremost users of accounting information about an organisation must be those who manage the business on a day-to-day basis. This group is referred to in broad terms as **management**, which is a collective term for all those persons who have responsibilities for making judgements and decisions within an organisation. Because they have close involvement with the business, they have access to a wide range of information (much of which may be confidential within the organisation) and will seek those aspects of the information which are most relevant to their particular judgements and decisions. Because this group of users is so broad, and because of the vast amount of information potentially available, a specialist branch of accounting has developed, called management accounting, to serve the particular needs of management.

It is management's responsibility to employ the resources of the business in an efficient way and to meet the objectives of the business. The information needed by management to carry out this responsibility ought to be of high quality and in an understandable form so far as the management is concerned. If that is the case, it would not be unreasonable to think that a similar quality (although not necessarily quantity) of information should be made available more widely to those stakeholders who do not have the access available to management.8 Such an idea would be regarded as somewhat revolutionary in nature by some of those who manage companies, but more and more are beginning to realise that sharing information with investors and other stakeholders adds to the general atmosphere of confidence in the enterprise.

Text 2. Owners as investors

Where the owners are the managers, as is the case for a sole trader or a partnership, they have no problem in gaining access to information and will select information appropriate to their own needs. They may be asked to provide information for other users, such as HM Revenue and Customs or a bank which has been approached to provide finance, but that information will be designed to meet the needs of those particular users rather than the owners.

Where the ownership is separate from the management of the business, as is the case with a limited liability company, the owners are more appropriately viewed as investors who entrust their money to the company and expect something in return, usually a **dividend** and a growth in the value of their investment as the company prospers. Providing money to fund a business is a risky act and investors are concerned with the **risk** inherent in, and **return** provided by, their investments. They need information to help them decide whether they should buy, hold or sell.9 They are also interested in information on the entity's financial performance and financial position that helps them to assess both its cash-generation abilities and the stewardship of management.

Much of the investment in shares through the Stock Exchange in the UK is carried out by **institutional investors**, such as pension funds, insurance companies, Unit trusts and investment trusts. The day-to-day business of buying and selling shares is carried out by a **fund manager** employed by the institutional investor. Private investors are in the minority as a group of investors in the UK. They will often take the advice of an **equities analyst** who investigates and reports on share investment. The fund managers and the equities analysts are also regarded as users of accounting information.

The kinds of judgements and decisions made by investors could include any or all of the following:

(a) Evaluating the performance of the entity.

(b) Assessing the effectiveness of the entity in achieving objectives (including compliance with **stewardship** obligations) established previously by its management, its members or owners.

(c) Evaluating managerial performance, efficiency and objectives, including investment and dividend distribution plans.

(d) Ascertaining the experience and background of company directors and officials including details of other directorships or official positions held.

(e) Ascertaining the economic stability and vulnerability of the reporting entity.

(f) Assessing the **liquidity** of the entity, its present or future requirements for additional **working capital**, and its ability to raise long-term and short-term finance.

(g) Assessing the capacity of the entity to make future reallocations of its resources for economic purposes.

(h) Estimating the future prospects of the entity, including its capacity to pay **dividends**, and predicting future levels of investment.

(i) Making economic comparisons, either for the given entity over a period of time or with other entities at one point in time.

(j) Estimating the value of present or prospective interests in or claims on the entity.

(k) Ascertaining the ownership and control of the entity.

That list was prepared in 1975 and, while it is a valid representation of the needs of investors, carries an undertone which implies that the investors have to do quite a lot of the work themselves in making estimates of the prospects of the entity. Today there is a stronger view that the management of a business should share more of its thinking and planning with the investors. The list may therefore be expanded by suggesting that it would be helpful for investors (and all external users) to know:

(a) the entity's actual performance for the most recent accounting period and how this compares with its previous plan for that period;

(b) management's explanations of any significant variances between the two; and

(c) management's financial plan for the current and forward accounting periods, and explanations of the major assumptions used in preparing it.

If you look through some **annual reports** of major listed companies you will see that this is more a 'wish list' than a statement of current practice, but it is indicative of the need for a more progressive approach. In the annual reports of large companies you will find a section called the Operating and financial review (or similar title). This is where the more progressive companies will include forward-looking statements which stop short of making a forecast but give help in understanding which of the trends observed in the past are likely to continue into the future.

Text 3. Employees

Employees and their representatives are interested in information about the stability and profitability of their employers. They are also interested in information that helps them to assess the ability of the entity to provide remuneration, retirement benefits and employment opportUnities. Employees continue to be interested in their employer after they have retired from work because in many cases the employer provides a pension fund.

The matters which are likely to be of interest to past, present and prospective employees include: the ability of the employer to meet wage agreements; management's intentions regarding employment levels, locations and working conditions; the pay, conditions and terms of employment of various groups of employees; job security; and the contribution made by employees in other divisions of the organisation. Much of this is quite specialised and detailed information. It may be preferable to supply this to employees by means of special purpose reports on a frequent basis rather than waiting for the annual report, which is slow to arrive and more general in nature. However, employees may look to financial statements to confirm information provided previously in other forms.

Text 4. Lenders

Lenders are interested in information that enables them to determine whether their loans, and the related interest, will be paid when due.

Loan **creditors** provide finance on a longer-term basis. They will wish to assess the economic stability and vulnerability of the borrower. They are particularly concerned with the risk of **default** and its consequences. They may impose conditions (called **loan covenants**) which require the business to keep its overall borrowing within acceptable limits. The financial statements may provide evidence that the loan covenant conditions are being met.

Some lenders will ask for special reports as well as the general financial statements. Banks in particular will ask for **cash flow projections** showing how the business plans to repay, with interest, the money borrowed.

Text 5. Suppliers and other trade creditors

Suppliers of goods and services (also called trade creditors) are interested in information that enables them to decide whether to sell to the entity and to determine whether amounts owing to them will be paid when due. Suppliers (trade creditors) are likely to be interested in an entity

over a shorter period than lenders unless they are dependent upon the continuation of the entity as a major customer. The amount due to be paid to the supplier is called a trade payable or an account payable.

Trade creditors supply goods and services to an entity and have very little protection if the entity fails because there are insufficient assets to meet all **liabilities**. They are usually classed as **unsecured creditors**, which means they are a long way down the queue for payment. So they have to exercise caution in finding out whether the business is able to pay and how much risk of non-payment exists. This information need not necessarily come from accounting statements; it could be obtained by reading the local press and trade journals, joining the Chamber of Trade, and generally listening in to the stories and gossip circulating in the geographic area or the industry. However, the financial statements of an entity may confirm the stories gained from other sources.

In recent years there has been a move for companies to work more closely with their suppliers and to establish 'partnership' arrangements where the operational and

financial plans of both may be dovetailed by specifying the amount and the timing of goods and services required. Such arrangements depend heavily on confidence, which in turn may be derived partly from the strength of financial statements.

Text 6. Customers

Customers have an interest in information about the continuance of an entity, especially when they have a long-term involvement with, or are dependent upon, its prosperity. In particular, customers need information concerning the current and future supply of goods and services offered, price and other product details, and conditions of sale. Much of this information may be obtained from sales literature or from sales staff of the enterprise, or from trade and consumer journals.

The financial statements provide useful confirmation of the reliability of the enterprise itself as a continuing source of supply, especially when the customer is making payments in advance. They also confirm the capacity of the entity in terms of **noncurrent assets** (also called **fixed assets**) and working **capital** and give some indication of the strength of the entity to meet any obligations under guarantees or warranties.

Text 7. Governments and their agencies

Governments and their agencies are interested in the allocation of resources and, therefore, in the activities of entities. They also require information in order to regulate the activities of entities, assess taxation and provide a basis for national income

and economic statistics.

Acting on behalf of the UK government's Treasury Department, HM Revenue and Customs collects taxes from businesses based on profit calculated according to commercial accounting practices (although there are some specific rules in the taxation legislation which modify the normal accounting practices). HM Revenue and Customs has the power to demand more information than appears in published financial statements, but will take these as a starting point.

Other agencies include the regulators of the various utility companies. Examples are Ofcom20 (the Office of Communications) and Ofgem21 (the Office of Gas and Electricity Markets). They use accounting information as part of the package by which they monitor the prices charged by these organisations to consumers of their services. They also demand additional information designed especially to meet their needs.

Text 8. Public interest

Enterprises affect members of the public in a variety of ways. For example, enterprises may make a substantial contribution to the local economy by providing employment and using local suppliers. Financial statements may assist the public by providing information about the trends and recent developments in the prosperity of the entity and the range of its activities.

A strong element of public interest has been aroused in recent years by environmental issues and the impact of companies on the environment. There are costs imposed on others when a company pollutes a river or discharges harmful gases into the air. It may be perceived that a company is cutting corners to prune its own reported costs at the expense of other people. Furthermore, there are activities of companies today which will impose costs in the future. Where an oil company has installed a drilling rig in the North Sea, it will be expected one day to remove and destroy the rig safely. There is a question as to whether the company will be able to meet that cost. These costs and future liabilities may be difficult to identify and quantify, but that does not mean that companies should not attempt to do so. More companies are now including descriptions of environmental policy in their annual reports, but regular accounting procedures for including environmental costs and obligations in the financial statements have not yet been developed.

PART 2. EXERCISES AND TESTS

Exercise 1. Put the correct word in each space.

1. In the USA, "quarters" (25 cents) and "dimes" (10 cents) are types of _____.
2. In the United Kingdom, "a tenner" means a ten pound _____.
3. The US dollar, the Yen and the Euro are types of _____.
4. Hundred dollar bills and twenty pound notes are _____.
5. 2,000,000 Swiss francs is a large _____ of money.
6. I need to _____ some Euros into Australian dollars.
7. My friend _____ a hundred pounds from me.
8. I _____ a hundred pounds to my friend. When she can, she'll pay me _____
9. I buy a lottery ticket every week, but I never _____ anything.
10. Most dentists _____ at least J30,000 a year.
11. _____ are paid to employees weekly. _____ are paid to employees monthly.
12. In business, you have to _____ money to make money.
13. A: Do you have a bank _____?
    B: Yes. I bank with the Bank of Scotland.
14. In my opinion, eating in expensive restaurants is a _____ of money.

account • back • banknotes • borrowed
change • coin • currency • earn
lent • note • salary • spend
sum • wages • waste • win

Exercise 2. ***Match the words on the left with the words on the right.***

1.	a small	a.	a profit
2.	an income	b.	amount of money
3.	donate	c.	cash
4.	high	d.	cost of living
5.	make	e.	credit card
6.	pay by	f.	losers
7.	pay in	g.	money to charity
8.	winners and	h.	of J25,000 a year

Exercise 3. ***Find the opposites of these words in the grid.***

1. spender / _____
2. borrower / _____
3. winnings / _____
4. losses / _____
5. high prices /_____ prices
6. sellers / _____

A	**R**	**P**	**P**	**U**	**F**	**O**	**L**	**O**	**E**
S	**A**	**V**	**E**	**R**	**E**	**U**	**O**	**N**	**N**
S	**H**	**A**	**C**	**B**	**D**	**Y**	**S**	**F**	**M**
T	**G**	**S**	**R**	**L**	**G**	**C**	**S**	**L**	**B**
R	**D**	**E**	**V**	**E**	**Q**	**X**	**E**	**E**	**U**
L	**O**	**W**	**Q**	**N**	**V**	**T**	**S**	**T**	**Y**
H	**X**	**Z**	**W**	**D**	**E**	**I**	**S**	**K**	**E**
N	**J**	**O**	**J**	**E**	**D**	**W**	**L**	**I**	**R**
K	**E**	**E**	**P**	**R**	**O**	**F**	**I**	**T**	**S**
I	**A**	**Y**	**A**	**C**	**I**	**B**	**Z**	**U**	**O**

Exercise 4. ***Choose the correct words***

Grimleys Bank

Open an account today!

Open an account with Grimleys Bank, and start benefiting from our great *rates / levels* of interest and *small / low* charges. With over 3,000 *branches / outlets*, you'll never be far from us, and unlike many other *high street / town centre* banks, we're open all day on Saturdays.

Grimleys customers can *take money / make withdrawals* from more than a million *cash dispensers / money machines* worldwide, and of course you'll receive a *cheque book / book of cheques* and a *paying card / debit card* within a few days of opening your account.

Computer-users may be interested in our e-account - all the benefits of a regular Grimley's *current / day-to-day* account, with the added convenience of being able to view your *lists / statements* and *make / do* payments online. Whether you're opening your first current account, *switching / changing* from another bank or simply want to take advantage of our *range / variety* of savings accounts, you'll be glad you chose Grimleys – the bank that always *makes / puts* the customer first.

Exercise 5. ***Match the method of payment with the definition.***

1. Credit card	a. A piece of paper which transfers money from your account to somebody else's account.
2. Debit card	b. Similar to a credit card, but usually operated by a chain of shops or other retailer.
3. Charge card	c. The money is deducted from your bank account almost immediately.
4. Cheque	d. These can be exchanged for foreign currency, or in some cases used instead of cash.
5. Traveller's cheque	e. You owe the card provider money. You can pay it back in one instalment, or over a longer period if you wish.
6. Charge account	f. You owe the retailer money.

Exercise 6. ***Match the formal phrases on the left with the informal phrases on the right.***

1. I deposited some money.	a. The money's been sent.
2. I withdrew some money.	b. I paid in some money.
3. The funds have been transferred.	c. It goes out of my account every month.
4. My account is overdrawn.	d. I went to cashpoint.
5. It's paid by standing order.	e. I took out some money.
6. My account was debited.	f. I'm in the red.
7. My account was credited.	g. I checked my balance.
8. I used an ATM.	h. It went into my account.
9. I made a balance enquiry.	i. It went out of my account.

Exercise 7. ***Match the word with the definition.***

1. solicitor a. (British English) a person qualified to act as a legal advocate,especially in higher courts
2. barrister b. a law firm
3. advocate c. (British English) a person qualified to draw up wills, deal with conveyancing etc, and to represent clients in lower courts
4. attorney d. somebody who represents somebody else in court
5. lawyer e. a person appointed by the deceased to carry out the terms of a will
6. legal practice f. the process of proving a will is genuine
7. executor g. (American English) a barrister
8. beneficiary h. drawing up contracts for the buying and selling of houses
9. probate i. a person who benefits from a will
10. conveyancing j. a solicitor, barrister or attorney

Exercise 8. ***Use the verbs below to complete the sentences.***

act • be • comply • defend
draw up • exchange • grant • hear
prosecute • sue • take

1. In the UK, it takes several weeks for the authorities to _____ probate.
2. I'll get a lawyer to _____ a contract.
3. We're going to _____ contracts on Tuesday, and then we can move into our new house.
4. We going to _____ them for a million pounds in damages.
5. If you don't _____ you will _____ in breach of contract.
6. They are going to _____ legal proceedings against us.
7. The court will _____ the case next Monday.
8. My solicitor will _____ for me in this matter.
9. The police are going to _____ him for fraud.
10. He's hired a very good barrister to _____ him against the charges.

Exercise 9. ***Put words into the spaces.***

a year • by • good money • hourly
for • makes • on the staff • package • on
salary • staff member • wage
well paid • well

Set 1:
1. She's _____ 40k a year.
2. She's on forty thousand _____.
3. Her monthly _____ is about £3,300.
4. She _____ forty thousand pounds a year.
5. Parker Publishing offer an excellent remuneration _____ to executives.

Set 2:
6. He works _____ Parker Publishing.
7. He's employed _____ Parker Publishing.
8. He's _____ of Parker Publishing.
9. He's on the _____ of Parker Publishing.
10. He's a Parker Publishing _____.

Set 3:
11. Parker Publishing pay their delivery drivers a good _____ rate.
12. Parker Publishing pay their delivery drivers _____.
13. Parker Publishing delivery drivers are on _____.
14. Parker Publishing delivery drivers are _____.
15. Parker Publishing delivery drivers get a good weekly _____.

Exercise 10. ***Which two of these sentences are not possible?***
1. I think you should ask for a pay rise.
2. I think you should ask for a pay increase.
3. I think you should ask for more pay.
4. I think you should ask for higher money.
5. I think you should ask for a salary increase.
6. I think you should ask for bigger money

TESTS

Test 1. ***Choose the correct word.***
1. Spain now uses the euro. Pesetas are no longer _____.
a. good money **b.** legal money **c.** legal tender
2. I bought a TV which doesn't work. I'll take it back to the shop to get _____.
a. my money returned **b.** a refund **c.** a repayment
3. In a shop, to get a refund, you usually have to show the _____.
a. receipt **b.** Recipe **c.** payment ticket
4. I'm paying for my new car in 36 monthly _____.
a. instalments **b.** pieces **c.** parts
5. I earn a lot of money, but I have a lot of _____.
a. payouts **b.** expenses **c.** paying
6. Famous paintings are usually sold by _____.
a. bid **b.** highest price **c.** auction
7. In an auction, the item is sold to the person who makes the highest _____.
a. bid **b.** price **c.** offer
8. In Japan, the US dollar is _____ .

a. foreign money **b.** strange money **c.** a foreign currency
9. In Britain, it's not usual to discuss your personal _____
a. money **b.** finances **c.** money arrangements
10. You can _____ a house and _____ a car.
a. hire / rent **b.** hire / hire **c.** rent / rent or hire
11. Here's the fifty dollars I _____.
a. owe you **b.** pay you back **c.** must return
12. The best things in life are _____.
a. free **b.** not for sale **c.** not bought and sold

Test 2. Terms and conditions
1. Regular bank statements will be sent to you by post, listing recent _____.
a. payments **b.** events **c.** transactions
2. New current account customers can borrow up to J200 in the form of a low-interest _____.
a. overdraft **b.** overtake **c.** overspend
3. The current rate of interest for _____ overdrafts is 6.7% APR.
a. permitted **b.** allowed **c.** authorised
4. While your account is _____ credit, there are no charges.
a. under **b.** in **c.** with
5. If your account is overdrawn, charges may _____.
a. happen **b.** apply **c.** occur
6. When you acknowledge _____ of your new debit card…
a. receipt **b.** the receiving **c.** reception
7. …you will be sent a PIN (Personal _____ Number)
a. identifying **b.** identifier **c.** identification
8. You will need to _____ your PIN each time you use the card.
a. put in **b.** type **c.** enter
9. Two or more customers may apply for a _____.
a. two-person account **b.** joint account **c.** together account
10. Current account _____ may apply for a Grimleys Credit Card.
a. holders **b.** owners **c.** users
11. Credit cards will be issued _____.
a. if you're rich enough **b.** if you have money **c.** subject to status
12. You may _____ your account at any time.
a. close **b.** finish **c.** End

Test 3. ***Choose the words to complete the sentences.***
1. After they have been paid in, cheques usually take three working days to _____.
a. pass **b.** credit **c.** clear
2. When I write out a cheque, I keep a record by filling in the _____.
a. receipt **b.** invoice **c.** counterfoil
3. If you don't have a cheque book, you can pay by getting a _____ from a branch of your bank.
a. banker's draft **b.** bank paper **c.** bank ticket
4. Unlike a personal cheque, a banker's draft can't _____.
a. be rejected **b.** bounce **c.** crash
5. A banker's draft is also known as a bank draft or a _____.
a. banker's cheque **b.** banker's note **c.** banker's ticket
6. If you need to borrow money, you can apply to your bank for an _____.
a. overdraft possibility **b.** overdraft facility **c.** overdraft opportUnity

7. If you need to borrow more money from your bank, you can ask them to increase your _____.

a. overdraft limit **b.** overdraft level **c.** overdraft supply

8. If you want to borrow money from a third party*, you may have to supply a _____.

a. banker's support **b.** banker's promise **c.** banker's reference

9. A banker's reference proves to a third party that you are _____.

a. moneyed **b.** creditworthy **c.** rich enough

10. Regular automatic payments of the same amount (e.g. to a charity) are called _____.

a. standing orders **b.** direct debits **c.**direct orders

11. Regular automatic payments of varying amounts (e.g. electricity bills) are called _____.

a. standing orders **b.** direct debits **c.** direct orders

12. With my savings account, I have to _____ 30 days notice if I want to _____ a withdrawal.

a. say / do **b.** give / make **c.** ask for / take

13. Many employees receive their salaries directly into their accounts by _____.

a. BACS payment **b.** BATS payment **c.** BAPS payment

14. BACS stands for Bankers Automated _____.

a. cheque system **b.** cost system **c.**clearing system

Test 4. ***Choose the best words to go into the spaces.***

1. Tony doesn't pay tax. He gets paid _____.

a. cash in pocket **b.** cash in hand **c.** cash in fingers.

2. Anna is a _____ illustrator. She works for many different _____.

a. freelance / customers **b.** free / clients **c.** freelance / clients

3. Anna is _____.

a. self-employed **b.** self-working **c.** self-paid

4. Steve works for BurgerPlanet. He only earns about £6 _____.

a. for an hour **b.** an hour **c.** the hour

5. Working in a fast-food restaurants is usually a _____ occupation.

a. bad-pay **b.** short-pay **c.** low-pay

6. Many company executives receive a performance-related _____.

a. bonus **b.** gift **c.** extra

7. Extra benefits from employers such as free health insurance, free cars and free mobile phones are called_____.

a. presents **b.** extras **c.** perks

8. Factory workers who get paid for each item they make are _____.

a. in pieces **b.** on piecework **c.** on pieces

Test 5. ***Choose the best response for each one***

1. I _____ our profits for the previous accounting period.

- (•) called
- ( ) gathered
- ( ) calculated

2. Your job will be to _____ and maintain financial records.

- ( ) promise
- ( ) prepare

- make

3. An accounting period is a period of time over which _____ are calculated.

- prophets
- profits
- profiteering

4. Accounts _____ refers to the money that is owed to the company by its clients/customers.

- receivable
- receptive
- respected

5. To accrue means to accumulate or _____.

- decrease
- regret
- increase

6. My house has _____ (= increased in value) by 10% in the past 9 months.

- appreciated
- depreciated
- approximated

7. I indicated all the accrued expenses on your balance _____.

- sheet
- paper
- note

8. These expenses are typically _____. (= they occur regularly)

- pragmatic
- prodigal
- periodic

9. Another word for accounting is _____.

- finance
- bookkeeping
- money counting

10. A good accountant will help you keep _____of your business's finances.

- track
- trace
- score

11. I have a lot of experience in collecting financial information necessary for _ _____ various tax returns.

- filing

- calculating
- forming

12. I find it really hard to keep track of my _____. (= the money I spend)

- expense
- expenses
- expertise

13. You have nothing to worry about. Your (financial) _____ accurately reflect your business's income and expenses.

- profits
- profiteering
- records

14. The IRS is a government organization responsible for _____ taxes in the USA.

- collecting
- receiving
- gathering

15. If the IRS _____ you, they will want to inspect your financial records in detail.

- accepts
- edits
- audits

16. You should always keep _____ (= proof of payments) or other acceptable records of every payment to your business and every expenditure by your business.

- records
- receipts
- recipes

17. An expenditure is basically a _____.

- payment
- bill
- tax form

18. What do you do with forms?

- you fill them up
- you fill them out
- you fill them

19. One of your duties will be to summarize the company's income and expenditure records on a monthly _____.

- base
- basis
- time

20. I can help you determine how much your business is worth at a specific _____.

- time point
- timeframe
- point in time

21. In economics, a transfer _____ is a non-compensatory government payment to individuals (such as welfare or social security benefits).

- pay
- payment
- paycheck

22. Things of value owned by a business are known as its _____.

- assertions
- assessment
- assets

23. What's the opposite of an asset?

- Cash
- A liability
- A liaison

24. Some think that the _____ of many companies are overstated due to deceptive accounting practices.

- earnings
- money
- earning

25. Every company should have a clear record of their _____ assets.

- fixed
- fix
- fixture

26. Is "book _____" the same as "net worth"?

- evaluation
- validation
- value

27. Not only has the company _____ a lot of capital, but it has done so efficiently.

- invested
- invest
- to invest

28. The breakeven point in sales dollars can be calculated by _____ a company's fixed expenses by the company's contribution margin ratio.

- dividing
- devising
- demising

29. Our company's _____ (= not fixed) expenses are approximately $45,000 per

month.

- various
- variable
- veritable

30. By forming a corporation, you can _____ to only those assets owned by your corporation.

- check your liability
- stop your liability
- limit your liability

31. In economics, a transfer _____ is a non-compensatory government payment to individuals (such as welfare or social security benefits).

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40. By forming a corporation, you can _____ to only those assets owned by your corporation.

- check your liability
- stop your liability
- limit your liability

41. A statement of _____ helps you keep track of your business's finances.

- cash flow
- cash flowing
- money flow

42. Customers usually come here looking for _____ advice.

- financial
- finances
- finance

UNIT 3 COMPUTING BASICS

1. Read and translate the text.

The first computers were used primarily for numerical calculations. However, as any information can be numerically encoded, people soon realized that computers are capable of general-purpose information processing. Their capacity to handle large amounts of data has extended the range and accuracy of weather forecasting. Their speed has allowed them to make decisions about routing telephone connections through a network and to control mechanical systems such as automobiles, nuclear reactors, and robotic surgical tools. They are also cheap enough to be embedded in everyday appliances and to make clothes dryers and rice cookers "smart." Computers have allowed us to pose and answer questions that could not be pursued before. These questions might be about DNA sequences in genes, patterns of activity in a consumer market, or all the uses of a word in texts that have been stored in a database. Increasingly, computers can also learn and adapt as they operate.

Computers also have limitations, some of which are theoretical. For example, there are undecidable propositions whose truth cannot be determined within a given set of rules, such as the logical structure of a computer. Because no universal algorithmic method can exist to identify such propositions, a computer asked to obtain the truth of such a proposition will (unless forcibly interrupted) continues indefinitely – a condition known as the "halting problem." Other limitations reflect current technology. Human minds are skilled at recognizing spatial patterns – easily distinguishing among human faces, for instance – but this is a difficult task for computers, which must process information sequentially, rather than grasping details overall at a glance.

Another problematic area for computers involves natural language interactions. Because so much common knowledge and contextual information is assumed in ordinary human communication, researchers have yet to solve the problem of providing relevant information to general-purpose natural language programs (from https://www.britannica.com/technology/computer).

2. Use the correct form of the verb "to be" in the following sentences:

1) An application *is/are* a program designed to fulfil a particular purpose.

2) A program *are/is* a series of coded software instructions to control the operation of a computer or other machine.

3) A cursor *am/is* a movable indicator on a computer screen.

4) A keyboard *is/are* a panel of keys that operate a computer or typewriter.

5) A mouse pad *are/is* a piece of rigid material on which a computer mouse is moved.

6) Files *are/is* collections of data, programs, etc., stored in a computer's memory or on a storage device under a single identifying name.

3. Read and translate the text.

What is a computer?

The word computer comes from a Latin word which means to count.

Nearly one hundred and fifty years ago there were no such things as computers. Knotted ropes, marks in clay, the abacus are all methods of keeping track of numbers. *What is a computer?* Computer, device for processing, storing, and displaying information. *Computer* once meant a person who did computations, but now the term almost universally refers to automated electronic machinery.

Most computers rely on a binary system that uses two variables, 0 and 1, to complete tasks such as storing data, calculating algorithms, and displaying information. Computers come in many different shapes and sizes, from handheld smartphones to supercomputers weighing more than 300 tons.

Who invented the computer? Many people throughout history are credited with developing early prototypes that led to the modern computer. During World War II, physicist John Mauchly, engineer J. Presper Eckert, Jr., and their colleagues at the University of Pennsylvania designed the first programmable digital computer, the Electronic Numerical Integrator and Computer (EINAC).

*What is the most powerful computer in the world?*As of June 2020 the most powerful computer in the world is the Japanese supercomputer Fugaku, developed by Riken and Fujitsu. It has been used to model COVID-19 simulations.

How do programming languages work? Popular modern programming languages, such as JavaScript and Python, work through multiple forms of programming paradigms. Functional programming, which uses mathematical functions to give outputs based on data input, is one of the more common ways code is used to provide instructions for a computer.

What can computers do? The most powerful computers can perform extremely complex tasks, such as simulating nuclear weapon experiments and predicting the development of climate change. The development of quantum computers, machines that can handle a large number of calculations through quantum parallelism (derived from superposition), would be able to do even more complex tasks.

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calculations through quantum parallelism (derived from superposition), would be able to do even more complex tasks (from https://www.britannica.com/technology/computer).

4. Match words a-d to words 1-4. Use a dictionary if necessary.

1)	to evolve	a) to help
2)	to aid	b) to calculate
3)	to compute	c) to make possible
4)	to enable	d) to develop

5.Read the text and fill in the blanks with the appropriate phrase a-d.

a) which enables them to perform a vast number of calculations or computations in less than no time.

b) which were invented in the last century, and have evolved into modern computers we use today.

c) where input, output and processing are simply the act of moving the beads into new positions, seeing the changed positions, and counting.

d) which aids humans in performing various kinds of computations or calculations.

6. Fill in the gaps with suitable words:

In its most basic form a computer is any device 1)____. The earliest computer was the abacus, used to perform basic arithmetic operations. Every computer supports some form of input, processing, and output. This is less obvious on a primitive device such as the abacus 2)____. Nevertheless, this is what computing is all about. We input information; the computer processes it according to its basic logic or the program currently running, and outputs the results. Modern computers do this electronically 3) _____the fact that we currently use computers to process images, sound, text and other non- numerical forms of data, all of it depends on nothing more than basic numerical calculations. Graphics, sound, etc. are abstractions of the numbers. Every image, every sound, and every word have a corresponding binary code. While abacus may have technically been the first computer most people today associate the word “computer” with electronic computers 4) _____.

7. Define sentences as True (T) and False (F).

a) The abacus was the first type of the computer. _____

b) The use of the computer depends on basic numerical calculations.

c) Binary codes belong to images, sounds, and words.

8. Give the English equivalents to the following word-combinations:

Рахівниця, пристрій, тим не менш, в цьому суть процесу комп'ютерних обчислень, дозволяти / давати можливість, вводити дані, видавати результат, обробляти.

9.Answer the questions.

- Does the computer aid humans in performing various kinds of computations or calculations?
- What does every computer support?
- What depends on basic numerical calculations?
- What do most people today associate the word “computer” with?

UNIT 4 FROM THE HISTORY OF COMPUTERS

1. Read and translate the text.

The very first calculating device used was the ten fingers of a man's hands. This, in fact, is why today we count in tens and multiply of tens. Then the abacus was invented, a bead frame in which the beads are moved from left to right. People went on using some form of abacus well into the 16th century; it is being used in some parts of the world because it can be understood without knowing how to read.

During the 17th and 18th centuries many people tried to find easy ways of calculating. J.Napier, a Scotsman, devised a mechanical way of multiplying and dividing, which is how the modern slide rule works. Henry Briggs used Napier's ideas to produce logarithm which all mathematicians used today.

Calculus, another branch of mathematics, was independently invented by Sir Isaac Newton, an Englishman, and Leibnitz, a German mathematician. The first real calculating machine appeared in 1820 as the result of several people's experiments. This type of machine, which saves a great deal of time and reduces the possibility of making mistakes, depends on ten-toothed gear wheels.

In 1830 Charles Babbage, an Englishman, designed a machine that was called 'The Analytical Engine'. This machine, which Babbage showed at the Paris Exhibition in 1855, was an attempt to cut out the human being altogether, expert for providing the machine with the necessary facts the problem to be sowed. He never finished this work, but many of his ideas were the basis for building today's computers.

In 1930, the first analog computer was built by American named Vannevar Bush. The device was used in World War II to help aim guns. Mark I, the name given to the first digital computer, was completed in 1944. The men responsible for this invention were Professor Howard Aiken and some people from IBM. This was the first machine that could figure out long of mathematical problems all at a very fast speed.

In 1946 two engineers at the University of Pennsylvania, J.Eckert and J.Mayshly, built the first digital computer using parts called vacuum tubes. They named their new invention UNIAC. The first generation of computers, which used vacuum tubes, came out in 1950. UNIAC I was an example of these computers which could perform thousand of calculations per second.

In 1960, the second generation of computers was developed and could perform work ten times faster than their predecessors. The reason for this extra speed was the use of transistors instead of vacuum tubes. Second- generation computers were smaller, faster and more dependable than firstgeneration computers.

The third-generation computers appeared on the market in 1965. These computers could do a million calculations a second, which is 1000 times faster than the first generation computers. Unlike second-generation computers, these are controlled by tiny integrated circuits and are consequently smaller and more dependable.

Fourth-generation computers have now arrived, and the integrated circuits that are being developed have been greatly reduced in size. This is due to microminiturization, which means that the circuits are much smaller than before; as many as 1000 tiny circuits now fit onto a single chip. A chip is a square or rectangular piece of silicon, usually from 1/10 to 1/4 inch, upon which several layers of an integrated circuit are attached or imprinted, after which the circuit is encapsulated in plastic metal. Fourth- generation computers are 50 times faster than third- generation computers and can complete approximately

1.000.000 instructions per second.

2. Give the Ukrainian equivalents to the following word- combinations:

to calculate, ten-toothed gear wheels, to aim guns, responsible, to devise, a chip, rectangular, to encapsulate, dependable, a slide rule, an abacus, a bead frame, to reduce, to figure out, a generation, a predecessor, a layer, attached

3. Fill in the gaps with the suitable words from the list:

Machine, chip, speed, figure out, calculating, vacuum tubes, dependable, reduces, analog, abacus, tiny, logarithm, devised, microminiturization

1. The very first ..... device used was 10 fingers of a man's hand.
2. Then, the .....was invented.
3. J.Napier ..... a mechanical way of multiplying and dividing.
4. Henry Briggs used J.Napier's ideas to produce ..... .
5. The first real calculating .....appeared in 1820.
6. This type of machine ..... the possibility of making mistakes.
7. In 1930 the first computer was built.
8. In 1946 was built the first digital computer using parts called .... .
9. The reason for this extra ..... was the use of transistors instead of vacuum tubes.
10. The second generation computers were smaller, faster and more than first-generation computers.
11. The third-generation computers are controlled by ..... integrated circuits.
12. This is due to ....., which means that the circuits are much smaller than before.
13. A ..... is a square or rectangular piece of silicon, usually from 1/10 to 1/4 inch.

4. Give the English equivalents for the following words and word combinations:

Винаходити рахівницю; вдосконалення комп'ютерів; математичні задачі; важливе досягнення; застарілий, цифрові комп'ютери; запам'ятовуючий пристрій; значний внесок; двійковий код; висока напруга; низька напруга; електричні імпульси; тисячна частка секунди; відбуватися; завершувати; продовжувати використовувати; механічний спосіб множення і ділення; зменшувати ймовірність помилок; обчислювати довгі списки математичних задач; попередник; більш надійний; прямокутний шматочок кремнію; технічні електронні трубки; вдосконалення; відповідальний за винахід; обчислювати; зберігати команди всередині комп'ютера; запам'ятовувати інформацію; запам'ятовувати команди; сприяти; використовувати одиницю і нуль; спрощувати дизайн; посилювати сигнали; виконувати обчислення.

5. Arrange the items of the plan in a logical order according to the text:

1. J.Napier devised a mechanical way of multiplying and dividing.
2. The very first calculating device was the ten fingers of a man's hands.
3. Babbage showed his analytical engine at Paris Exhibition.

6. Look through the text and decide if the sentences are true (T) or false (F). Change the false sentences to make them true:

1. The slide rule was invented hundreds of years ago.
2. During the early 1880s, many people worked on inventing a mechanical calculating machine.
3. Charles Babbage, an Englishman, can well be called the father of computers.
4. The first computer was invented and built in the USA.
5. Instructions used by computers have always been kept inside the computer's memory.
6. Using transistors instead of vacuum tubes did nothing to increase the speed at which calculations were done.
7. As computers evolved, their size decreased and their dependability increased.
8. Today's computers have more circuits than previous computers.
9. Computer technology has developed to a point from which new developments in the field will take a long time to come.

UNIT 5
THE COMPUTER-BASED INFORMATION SYSTEM

1. Read and translate the text.

A computer-based information system involves collecting data (input), processing it into information, and storing the information for future reference and output. The system, as you remember, has five basic components – hardware, software, people, procedures, and data/information

– and four major phases of activity – input, processing, output, and storage. People are most directly involved during the input and output phases. Each organization has different processing requirements, depending on the nature of its business and activities and how quickly the data needs to be processed. To accommodate these differing needs, the computer-based information system can be designed to use one or both of two basic types of processing approaches: batch and on-line. These approaches differ in terms of the methods for collecting the data for input, the amount of time that passes between data input and actual processing, and the speed with which the output is produced. In the batch approach, data recorded manually on source documents is gathered together in batches and input all at one time. In the on-line approach, data is input immediately, on a case-by- case basis, and is processed immediately. On-line processing used for immediate decision making is often called real-time processing. In many organizations, we can see a direct relationship between computer-related functions and management's organizational philosophy. As a result, organizations set up their computer facilities differently, using either a centralized, decentralized, or distributed computer facility. A centralized computer facility has all its equipment in one location. This equipment serves all the company's departments. A decentralized facility has separate computer equipment for each department in the company. A distributed facility combines aspects of both the centralized and the decentralized facilities: users have microcomputers with communication programs so that they may switch to the main computer from time to time. They have the choice of working independently or with the central computer. (from https://en.wikipedia.org/wiki/Information_system).

2. Match words with their definitions:

financial, Internet, electronic, print, design, microchips

1) tiny pieces of silicon containing complex electronic circuits;
2) to make or draw plans for something;
3) relating to money or how money is managed;
4) involving the use of electric current in devices such as TV sets;
5) the large system of connected computers around the world;
6) to produce text and pictures using a printer.

3. Choose the most suitable answer:

1. . … is the product of data processing.
a. data
b. information
c. software
d. a computer
e. none of the above
2. The most common input device used today is the… .
a. motherboard
b. central processing unit
c. keyboard
d. system unit
e. semiconductor

3. Software instructions intended to satisfy a user's specific processing needs are called … .

a. systems software
b. a microcomputer
c. documentation
d. applications software
e. all of the above

4. Read and translate the text.

Central processing unit

The CPU provides the circuits that implement the computer's instruction set—its machine language. It is composed of an arithmetic-logic unit (ALU) and control circuits. The ALU carries out basic arithmetic and logic operations, and the control section determines the sequence of operations, including branch instructions that transfer control from one part of a program to another. Although the main memory was once considered part of the CPU, today it is regarded as separate. The boundaries shift, however, and CPU chips now also contain some high-speed cache memory where data and instructions are temporarily stored for fast access.

The ALU has circuits that add, subtract, multiply, and divide two arithmetic values, as well as circuits for logic operations such as AND and OR (where a 1 is interpreted as true and a 0 as false, so that, for instance, 1 AND 0 = 0; *see* Boolean algebra). The ALU has several to more than a hundred registers that temporarily hold results of its computations for further arithmetic operations or for transfer to main memory.

The circuits in the CPU control section provide branch instructions, which make elementary decisions about what instruction to execute next. For example, a branch instruction might be "If the result of the last ALU operation is negative, jump to location A in the program; otherwise, continue with the following instruction." Such instructions allow "if-then-else" decisions in a program and execution of a sequence of instructions, such as a "while-loop" that repeatedly does some set of instructions while some condition is met. A related instruction is the subroutine call, which transfers execution to a subprogram and then, after the subprogram finishes, returns to the main program where it left off.

In a stored-program computer, programs and data in memory are indistinguishable. Both are bit patterns – strings of 0s and 1s – that may be interpreted either as data or as program instructions, and both are fetched from memory by the CPU. The CPU has a program counter that holds the memory address (location) of the next instruction to be executed.

At the end of these steps the cycle is ready to repeat, and it continues until a special halt instruction stops execution.

Steps of this cycle and all internal CPU operations are regulated by a clock that oscillates at a high frequency (now typically measured in gigahertz, or billions of cycles per second). Another factor that affects performance is the "word" size – the number of bits that are fetched at once from memory and on which CPU instructions operate. Digital words now consist of 32 or 64 bits, though sizes from 8 to 128 bits are seen.

Processing instructions one at a time, or serially, often creates a bottleneck because many program instructions may be ready and waiting for execution. Since the early 1980s, CPU design has followed a style originally called reduced- instruction-set computing (RISC). This design minimizes the transfer of data between memory and CPU (all ALU operations are done only on data in CPU registers) and calls for simple instructions that can execute very quickly. As the number of transistors on a chip has grown, the RISC design requires a relatively small portion of the CPU chip to be devoted to the basic instruction set. The remainder of the chip can then be used to speed CPU operations by providing circuits that let several instructions execute simultaneously, or in parallel.

There are two major kinds of instruction-level parallelism (ILP) in the CPU, both first used in early supercomputers. One is the pipeline, which allows the fetch- decode-execute cycle

to have several instructions under way at once. While one instruction is being executed, another can obtain its operands, a third can be decoded, and a fourth can be fetched from memory. If each of these operations requires the same time, a new instruction can enter the pipeline at each phase and (for example) five instructions can be completed in the time that it would take to complete one without a pipeline. The other sort of ILP is to have multiple execution units in the CPU – duplicate arithmetic circuits, in particular, as well as specialized circuits for graphics instructions or for floating-point calculations (arithmetic operations involving noninteger numbers, such as 3.27). With this "superscalar" design, several instructions can execute at once.

Both forms of ILP face complications. A branch instruction might render preloaded instructions in the pipeline useless if they entered it before the branch jumped to a new part of the program. Also, superscalar execution must determine whether an arithmetic operation depends on the result of another operation, since they cannot be executed simultaneously. CPUs now have additional circuits to predict whether a branch will be taken and to analyze instructional dependencies. These have become highly sophisticated and can frequently rearrange instructions to execute more of them in parallel.

(from https://www.britannica.com/technology/computer/).

5.Answer the questions:

1. What is the main function of a computers processor?
2. What unit of frequency is used to measure processor speed?
3. What are the main parts of the CPU?
4. What does ALU stand for? What does it do?
5. What is the function of the system clock?
6. What is a bus, backside bus, front-side bus?
7. What do you know about multiple processors?

6.Read and translate the text.

Peripherals

Computer peripherals are devices used to input information and instructions into a computer for storage or processing and to output the processed data. In addition, devices that enable the transmission and reception of data between computers are often classified as peripherals.

Input devices

A plethora of devices falls into the category of input peripheral. Typical examples include keyboards, mice, trackballs, pointing sticks, joysticks, digital tablets, touch pads, and scanners.

Keyboards contain mechanical or electromechanical switches that change the flow of current through the keyboard when depressed. A microprocessor embedded in the keyboard interprets these changes and sends a signal to the computer. In addition to letter and number keys, most keyboards also include "function" and "control" keys that modify input or send special commands to the computer.

Mechanical mice and trackballs operate alike, using a rubber or rubber-coated ball that turns two shafts connected to a pair of encoders that measure the horizontal and vertical components of a user's movement, which are then translated into cursor movement on a computer monitor. Optical mice employ a light beam and camera lens to translate motion of the mouse into cursor movement.

Pointing sticks, which are popular on many laptop systems, employ a technique that uses a pressure-sensitive resistor. As a user applies pressure to the stick, the resistor increases the flow of electricity, thereby signaling that movement has taken place. Most joysticks operate in a similar manner.

Digital tablets and touch pads are similar in purpose and functionality. In both cases, input is taken from a flat pad that contains electrical sensors that detect the presence of either a special tablet pen or a user's finger, respectively.

A scanner is somewhat akin to a photocopier. A light source illuminates the object to be scanned, and the varying amounts of reflected light are captured and measured by an analog-to-digital converter attached to light-sensitive diodes. The diodes generate a pattern of binary digits that are stored in the computer as a graphical image (from https://www.britannica.com/technology/computer/).

Agree or disagree with the statements using phrases of agreement and disagreement. If you disagree, give the correct variant.

- System software is one of the kinds of application software.
- The operating system interacts between the application software and the computer.
- System software may be packaged or custom-made.
- Packaged software is programs written for a specific purpose and for a specific organization.
- One of the general-purpose programs is a browser to navigate, explore, and find information in the Internet.
- Microcomputer hardware consists of input devices, the system unit, secondary storage, output devices and communications devices.
- The processor is often referred to as CPU.
- The keyboard and the mouse are output devices.
- Memory is a permanent storage.
- Hard disk is a secondary storage device.
- The capacity of floppy disks is far greater than CD's.
- The monitor is an input device with the help of which you enter information into the computer.
- A modem converts the electronic signals that can travel over a telephone line.

UNIT 6 FUNCTIONS OF A COMPUTER

1. Read and translate the text.

The four functions of a computer actually explain the core reasons why it was built. They include:

– Data input.
– Data processing.
– Information output.
– Data and information storage.

Data Input

Every computer is designed with data input as a first function, an activity which is accomplished via input devices. Data entry is done manually, automatically or both.

Manual input is done via add-on peripherals like the keyboard, mouse and stylus. Input can also be accomplished via vocal dictation applica-tions and body gestures peripherals like Kinect and biometric de-vices.

Data may be entered into a database, spreadsheet or other forms of a computerized work area.

Data Processing

Data processing is the core function of a computer. Processing involves manipulation of raw data into before converting it into meaningful information. Usually, data is in raw form, and will thus undergo processing before dissemination for user consumption.

The "brain" of the computer where data is processed is re-ferred to as the microprocessor. It is also commonly known as the central processing unit (CPU) or accelerated processing unit (APU).

Information Output

When raw data has been manipulated by the microprocessor, the outcome is meant to be disseminated for useful purposes. The output is thus referred to as information and is beneficial to the computer user.

Processed data or information can be:

– viewed as alphanumeric, images and video via a display hardware;
– listened to as audio files by use of a speaker;
– printed as hard copy output onto paper;
– printed as 3D models.

Data and Information Storage

The fourth and equally very important function of a computer is data and information storage. After sleepless nights of video and animation creation and editing, the user wants to have the finished product stored for future dissemination and additional editing.

A computer can store information internally and externally. The hard disk drive (HDD) and/or solid-state disk drive (SSD) are internal storage devices and serve to protect and house all data and information on a computer. In bigger systems, the RAID system is used. Multiple disk drives operate simultaneously to ensure data and information integrity.

External storage is achieved through accessories that attach externally to the computer. They include external drives and optical disks (from https://turbofuture.com/computers/ The-Four-Functions-Of-A-Computer).

2. Remember the four functions of a computer and com-plete the following sentences:

1. Computer … is the visible or audible result of data pro- cessing – information that can be read, printed or heard by the us- er.
2. The CPU will process data as instructed by the programmes you're running. … includes functions like calculating, sorting, ed-iting, drawing and searching.
3. DVDs were expected to replace CDs as … devices twenty years ago.
4. As a scanner the Sigma-100 can be used to … photographs as well as documents into the computer.

3. Answer the questions:

1. What are the four functions of a computer?
2. Describe the first function of a computer.
3. What is a core function of a computer?
4. What are the ways of information output?
5. How can information be stored?

4. Complete the gaps with appropriate words:

A computer like any other machine is used because 1 ____ . It can receive more information and process it faster than any human. The speed at which a computer works means it can replace weeks or even months of pencil-and- paper work. Therefore computers are used when the time saved offsets their cost which is one of the many reasons 2) ____.

Modern accounting firms use spreadsheet software to do complicated calculations. They can provide their clients with an up-to-date report 3)_____. This software has many functions and can be integrated with other software. The spreadsheet's basic component is a cell. This may contain a formula 4_____. It could also contain a label or data. The former describes the information on the worksheet. The latter is the information itself.

The worksheet is the basic work area of a spreadsheet program. It is made up of cells arranged in rows and columns. The number of these varies depending on the software you are using.

You can change the width and formatof cells. Such parameters are usually quite easy 5) _____.

5. Put in right order.

- the computer, is, why, used, widely?
- speed, what, the computer, does, mean?
- do, what modern, use, account firms?
- the worksheet, what, is?

6. Translate the sentences.

1) Комп'ютери обробляють дані швидше і ефективніше, ніж людина.

2) Комп'ютери використовують в промисловості, якщо виграш за часом перевищує грошові витрати на їх обслуговування.

3) Швидкість роботи комп'ютера дозволяє виконати за годину тижневий обсяг паперової роботи.

4) Основним елементом великоформатної електронної таблиці є комірка.

UNIT 7
CLASSES AND TYPES OF COMPUTERS

1. Read the text and answer the question: Types of computers

Supercomputer

Supercomputer is the fastest type of computer. Supercomputers are very expensive and are employed for specialized applications that require immense amounts of mathematical calculations. Weather forecasting, animated graphics, fluid dynamic calculations, nuclear energy research, and petroleum exploration require a supercomputer.

Mainframe

Mainframe is a very large and expensive computer capable of supporting hundreds, or even thousands, of connected users simultaneously. In some ways, mainframes are more powerful than supercomputers because they support more simultaneous programs. But supercomputers can execute a single program faster than a mainframe.

Minicomputer

Minicomputer is a midsized computer. In size and power, minicomputers lie between workstations and mainframes. But in general, a minicomputer is a multiprocessing system capable of supporting from 4 to about 200 users simultaneously.

Microcomputer

The term microcomputer is generally synonymous with personal computer (PC), or a computer that depends on a microprocessor. Microcomputers are designed to be used by individuals, whether in the form of PCs, workstations or notebook computers. A microcomputer contains a central processing unit (CPU) on a microchip (the microprocessor), a memory system (typically read-only memory (ROM) and random access memory (RAM)), a bus system and I/O ports, typically housed in a motherboard.

Workstation

Workstation is a computer intended for individual use that is faster and more capable than a personal computer. It's intended for business or professional use (rather than home or recreational use). Workstations and applications designed for them are used by small engineering companies, architects, graphic designers, and any organization, department, or individual that requires a faster microprocessor, a large amount of random access memory, and special features such as high-speed graphics adapters.

PDA

PDA is short for personal digital assistant, is a handheld device that combines computing, telephone/fax, Internet and networking features. A typical PDA can function as a cellular phone, fax sender, Web browser and personal or- ganizer. PDAs may also be referred to as a palmtop, hand- held computer or pocket computer.

Unlike portable computers, most PDAs began as pen- based, using a stylus rather than a keyboard for input. This means that they also incorporated handwriting recognition features. Some PDAs can also react to voice input by using voice recognition technologies. PDAs are available in either a stylus or keyboard version.

Apple Computer, which introduced the Newton MessagePad in 1993, was one of the first companies to offer PDAs. As technology changed the world of mobile devices, the PDA has become obsolete as devices like touch-screen smartphones and tablets grow in popularity.

2. Find the answers to the questions in the text: Which of the devices ...

1) is capable of supporting 300-3000 users simultaneously?
2) is intended for business or professional use?
3) can function as a cellular phone?
4) is used for animated graphics?
5) incorporates handwriting recognition features?
6) is used by small engineering companies?
7) is capable of supporting 15-150 users simultaneously?
8) is employed for specialized applications that require immense amounts of mathematical calculations?
9) has come out of use because of new technologies?
10) reacts to voice input by using voice recognition technologies?
11) is referred to as hand-held computer?
12) is used by graphic designers?
13) is used for nuclear energy research?
14) is used by architects?
15) is the fastest type of computers?

3. Match words with similar meaning and their translation:

1.	need	a.capable
2.	erform	b. direct
3.	huge	c. require
4.	concurrent	d. obsolete
5.	channel	e. vague
6.	able	f. immense
7.	outmoded	g. simultaneous
8.	blurred	h. execute

4. Translate sentences and phrases using the vocabulary of the text.

1. Універсальна ЕОМ; робоча станція / дисплейний термінал; персональний цифровий асистент; кишеньковий / ручний комп'ютер; комп'ютер з пір'яним введенням даних

2. За останні роки стерлася відмінність між великим мінікомп'ютером і невеликою універсальною ЕОМ.

3. Персональний комп'ютер призначений для роботи і відпочинку.

4. В кишеньковий комп'ютер закладена функція розпізнавання рукописного тексту і голосових повідомлень.

5. Put the words in the brackets in correct forms

1) Supercomputer is the (fast) and (expensive) type of computer.
2) Mainframes are (expensive) than supercomputers.

3) Supercomputers are (good) at executing a few programs as fast as possible, whereas mainframes are (good) at executing many programs concurrently.

4) In some ways, mainframes are (powerful) than supercomputers because they support (many) simultaneous programs.

5) Minicomputers are (powerful) than workstations but (powerful) than mainframes.

6) Minicomputers are (small) than mainframes but (big) than workstations.

7) Large minicomputers are as powerful (as/ than) small mainframes.

8) A workstation has a (fast) microprocessor, a (large) amount of RAM than a PC.

9) PDA is (small) of the devices mentioned in the text.

6. Fill in the gaps with the suitable words from the list:

theoretical calculations, research, forecasts, graphic processors, supercomputer, perform, chips, store, weigh, replaced

Scientists in China have built the world's fastest computer. The Tianhe-1A can 1) over 2.5 thousand trillion operations a second. With this new computer China has overtaken America in this section of technology. The Chinese 2)___ is 30% faster than the fastest American computer. The Tianhe-1A has over 7,000 3)___ processors and 14,000 Intel 4)___. The processors 5 _____over 150 tons. The computer can 6)___information equal to about a hundred million books. The new computer will be used for biomedical 7)_____, processing satellite data, weather 8)_____, development of new materials and 9)_____ in science. The Chinese have even more plans in computing technology. In the future American Intel chips are to be 10)_____ by Chinese home-made ones. The race for the world's fastest computer is a prestigious one. Before America got the title, Japan had the world's fastest computer. Seven of the world's top computers are in the USA, two are in China and one is in Germany (from https://www.english- online.at/news-articles/technology/china-builds-worlds- fastest-computer.htm).

7. Compose questions for the following answers

1. The Tianhe-1A
2. Over 2.5 thousand trillion operations a second
3. For processing satellite data, weather
4. Because it is prestigious 5. 7,000
6. Forecasts
7. Over 150 tons
8. Yes, it can 9. 14,000
10. 30 %
11. Japan did

9. Read and translate the text.

Types of computers

There are different types of computer of varying size and power, including the following:

Supercomputer is the most powerful type of mainframe.

Mainframe is large, very powerful, multi-user i.e. can be used by many people at the same time, multi-tasking i.e. can run many programs and process different sets of data at the same time. Main-frames are used for large-scale computing purposes in banks, big companies and universities.

Minicomputer is smaller than a mainframe, powerful, multi-user, multi-tasking.

Personal computer (PC) is designed for a single user.

Desktop computer has a suitable size for sitting on an office desk.

Workstation is the most powerful type of desktop computers, used for graphic design, etc.

Portable computer can be carried around, can operate with batteries.

Laptop is large portable, can be rested on user's lap. A laptop (also called a notebook PC which has a size of a sheet of notebook paper) is a lightweight computer that you can transport easily. It can work as fast as a desktop PC, with similar processor, memory, capacity and disk drives, but it is portable and has a smaller screen. Modern notebooks have a TFT (Thin Film Transistor) screen that produces very sharp images.

Instead of a mouse, they have a touchpad built into the key-board – a sensitive pad that you can touch to move the pointer on the screen. They offer a lot of connectivity options: USB (Univer-sal Serial Bus) ports for connecting peripherals, slots for memory cards, etc.

They come with battery packs, which let you use the computer when there are no electrical outlets available.

A tablet PC looks like a book with an LCD-screen on which you can write using a special digital pen. You can fold and rotate the screen 180 degrees. Your handwriting can be recognized and converted into editable text. You can also type at the detached keyboard or use voice recognition. It's mobile and versatile.

Pen-based which main input device is an electronic pen.

A personal digital assistant or PDA is a tiny computer which can be held in one hand. The term PDA refers to a wide variety of hand-held devices, palmtops and pocket PCs.

For input, you type at a small keyboard or use a stylus – a spe-cial pen used with a touch screen to select items, draw pictures, etc. Some models incorporate handwriting recognition, which ena-bles a PDA to recognize characters written by hand. Some PDAs recognize spoken words by using voice recognition software.

They can be used as mobile phones or as personal organizers for storing notes, reminders and addresses. They also let you ac-cess the Internet via wireless technology. Without cables.

Note that the term PC usually refers to an IBM compatible personal computer i.e. an Apple Mac personal computer is not re- ferred to as a PC. A computer that provides a service on a network

e.g. storing files, sharing a printer, is known as a server computer. Server computers usually have a UPS (uninterruptible power sup- ply) attached to them. This is a battery that automatically provides an electricity supply to allow the server to shut itself down proper- ly if the main supply fails.

10. Which type of computer do these descriptions refer to?

1) a hand-held computer which can be used as a telephone, a web explorer and a personal organizer;
2) a typical computer found in many businesses and popular for home use;
3) a large computer used for intensive data processing and of-ten linked to many terminals;
4) a small computer that fits into items of clothing;
5) a portable computer that can be closed up like a briefcase, but it can be as powerful as a desktop PC;
6) a full-function PC, though it only weighs 1.1 kg – you can go to a meeting and write your notes on it, like a paper notepad; its screen mode can be changed from portrait to landscape.

11. Complete these sentences:

1. A computer … hardware and software.
2. Peripherals … three types: input, output and storage devices.
3. A word processing program … which lets the user create and edit text.
4. … of network architecture: peer-to-peer, where all compu-ters have the same capabilities, and client-server (e.g. the Internet), where servers store and distribute data, and clients access this data.
5. Digital computers can … into five main types: mainframes, desktop PCs,

laptops, tablet PCs and handheld PDAs.

12. Read the text and answer the question:

What is the difference between a laptop and a notebook? A notebook is an extremely light weight personal computer. Notebook **computers** typically weigh less than six pounds and are small enough to fit easily in a briefcase. Notebook computers use a variety of techniques, known as flat-panel **technologies**, to produce a lightweight and non- bulky display screen. In terms of computing power, modern notebook computers are nearly equivalent to personal computers. They have the same CPUs, memory capacity and disk drives. However, all this power in a small package is expensive.

Notebook computers come with battery packs that enable you to run them without plugging them in. However, the batteries need to be recharged every few hours.

A laptop is a small, portable computer — small enough that it can sit on your lap. Nowadays, laptop computers are more frequently called notebook computers, though technically laptops are somewhat larger in size than notebooks, in both thickness and weight.

The laptop was originally designed to be similar to a desktop, but be small and light enough to be used sitting in your lap. For this reason, years ago, you would find that a laptop had more features than notebooks did, but the trade- off was being larger and heavier than a notebook. This is because the notebook style of portable computers was for *mobility*, not *portability*. To be a more mobile device, the notebook was a thinner design and it weighed less than the laptop, simply because it didn't come packed with features and multiple devices and drives.

Years ago, notebook computers would have a smaller display than a laptop, fewer internal drives (hard drive or CD/DVD-ROM – depending on the year manufactured), and the sound, modem, and such would be integrated – not separate upgradable hardware devices. Laptops were considered to be desktop replacements; portable computers with features, functions, and options comparable to your desktop computer.

So while there technically is a difference between the two – and that is the size and weight of the device (which in turn impacts the system's features) – today there is even less of a difference between the two since technology advancements means that most common computer devices and peripherals are much smaller now.

Today, technology allows devices to be slimmer, smaller and better for mobile computing by design, so the size of portable computers (both in thickness and weight) is decreasing. For this reason, options that once defined the difference between a laptop and notebook computer are separated by a small, almost invisible fine line today.

When we first compiled information for this article in 2008 there was still a difference between laptop and notebook computers. By 2012, however, we could see the term laptop used less frequently because a portable "comparable to desktop" system could easily lead to heat discomfort and possible injury if left in your lap for extended periods of time. By calling a laptop a notebook, it basically removes the association that device is well-suited to being used only on your lap.(from https://www.webopedia.com/insights/laptop-notebook/).

13. Answer the questions:

1) What kind of PC is a notebook?

2) Notebooks are very popular among children because they weigh less than six pounds, aren't they?

3) What techniques are used to produce a lightweight display screen?

4) Is it possible to run a notebook computerwithout plugging it in for 24 hours?

5) In what terms can modern notebook computers be equivalent to personal computers?

6) Batteries for notebook computers are expensive, aren't they?

14. Match words with definitions.

a) a desktop
b) hardware
c) peripherals
d) consumers
e) manufacturers
f) a portable computer

1. A device that is easily carriedor moved, especially because it is of alighter and smaller version than usual
2. A type of computer that is smallenough to fit on the top of a desk
3. Tools, machinery, and other du-rable equipment
4. Devices that are able to be at-tached to and used with a computer,though not an integral part of it.
5. People who purchase goods andservices for personal use
6. A person or company that makes goods for sale.

15. Ask questions to the sentences

1) Years ago notebook computers had a smaller display than a laptop.
2) A laptop is a small, portable computer, small enough to sit on your lap.
3) Today technology allows devices to be slimmer, smaller and better for mobile computing by design, so the size of portable computers (both in thickness and weight) is decreasing.
4) To be a more mobile device, the notebook was a thinner design and it weighed less than the laptop, simply because it didn't come packed with features and multiple devices and drives.
5) Many mobile computing manufacturers have actually dropped the term laptop completely from their product lineup in favor of the term notebook.

16. Fill in the gaps using the words from the list

maintenance, notebook, convertible, tower model, slate, desktop model, specs, ultrabooks, chassis, slots

1. Every computer system requires at least one _____ to house the circuit boards and wiring.
2. The case also contains _____for expansion boards.
3. _____is a computer designed to fit comfortably on top of a desk, typically with the monitor sitting on top of the computer.
4. Desktop model computers are broad and low, whereas _____computers are narrow and tall.
5. _are laptops that are extremely thin (less than 20 millimeters), and lightweight along with long battery life, near instant-on and instant-resume capabilities, and fast storage, typically via SSDs, all in a sub $1,000 package.
6. _____computers cost about twice as much as equivalent regular-sized computers.

17. Fill in the gaps using the words from the list

Compressed, configured, devices, compatible, download, errors, mail, modem, packets, password, ports, printer, sysop, throughput, logged, protocol.

1. The *modem* connects to one of the serial, or COM, *ports* in your computer.
2. _____If the system is not correctly it may halt, or you may find there are data ___
3. Hayes is recognized as the industry standard, and most

_____are Hayes _____ .

4. Data is split into _____ before it is sent down the line using a specific such as Zmodem.

5. When you are _____ to the system you will need to give a name and a_____ to enter.

6. Once you are _____on to a BBS you can chat with other users or send and receive __and data.

7. If you have a modem with a low data e.g. 14400bps, it can take several hours to _moderately large files.

8. The (the person who runs the BBS) will generally store files in a format.

18. Find the corresponding sentences in English in the text.

- Ми постійно знаходимося в напрузі, що і викликає у нас емоції.
- Недоліки очевидні.
- Я снідаю, слухаючи музику на Спотіфай.
- Безсумнівно, бути на зв'язку весь час має позитивні і от¬ріцательние боку.
- Постійне використання телефону - хвороба століття, особливо в раз¬вітих країнах.
- Смартфони і Інтернет є якби джерелом щастя, який знаходиться в нашій кишені.
- ... обмеження вторгнення мобільних телефонів, планшетів та інших пристроїв зв'язку в наше повсякденне життя.
- Програми можуть бути представлені в різній формі і мета кожної програми звернути увагу і енергію на продуктивну і приємну діяльність, і знову знайти задоволення в реальному житті.

UNIT 8
INPUT AND OUTPUT DEVICES

1. Read and translate the text.

Input devices

In computing, an input device is a piece of equipment used to provide data and control signals to an information processing system such as a computer or information appliance. Examples of input devices include keyboards, mouse, scanners, cameras, joysticks, and microphones.

Input devices can be categorized based on:

- modality of input (e.g. mechanical motion, audio, visual, etc.)
- whether the input is discrete (e.g. pressing of key) or continuous (e.g. a mouse's position, though digitized into a discrete quantity, is fast enough to be considered continuous)
- the number of degrees of freedom involved (e.g. two-dimensional traditional mice, or three-dimensional navigators designed for CAD applications)

Keyboard

A 'keyboard' is a human interface device which is represented as a layout of buttons. Each button, or key, can be used to either input a linguistic character to a computer, or to call upon a particular function of the computer. It acts as the main text entry interface for most users. Traditional keyboards use spring-based buttons, though newer variations employ virtual keys, or even projected keyboards. It is typewriter like device composed of a matrix of switches. There also happens to be another keyboard that is like an input device for musical instrument which helps to produce sound.

Computer Mouse

Pointing devices are the most commonly used input devices today. A pointing device is any human interface device that allows a user to input spatial data to a computer. In the case of mouse and touchpads, this is usually achieved by detecting movement across a physical surface. Analog devices, such as 3D mice, joysticks, or pointing sticks, function by reporting their angle of deflection. Movements of the pointing device are echoed on the screen by movements of the pointer, creating a simple, intuitive way to navigate a computer's graphical user interface (GUI).

Pointing devices, which are input devices used to specify a position in space, can further be classified according to:

- Whether the input is direct or indirect. With direct input, the input space coincides with the display space, i.e. pointing is done in the space where visual feedback or the pointer appears. Touchscreens and light pens involve direct input. Examples involving indirect input include the mouse and trackball.
- Whether the positional information is absolute (e.g. on a touch screen) or relative (e.g. with a mouse that can be lifted and repositioned)

For pointing devices, direct input is almost necessarily absolute, but indirect input may be either absolute or relative. For example, digitizing graphics tablets that do not have an embedded screen involve indirect input and sense absolute positions and are often run in an absolute input mode, but they may also be set up to simulate a relative input mode like that of a touchpad, where the stylus or puck can be lifted and repositioned. Embedded LCD tablets which are also referred to as graphics tablet monitors are the extension of digitizing graphics tablets. They enable users to see the real-time positions via the screen while using.

High-degree of freedom input devices

Some devices allow many continuous degrees of freedom as input. These can be used as pointing devices, but are generally used in ways that don't involve pointing to a location in space, such as the control of a camera angle while in 3D applications. These kinds of devices are typically used in virtual reality systems (CAVEs), where input that registers six degrees of freedom is required.

Composite devices

Input devices, such as buttons and joysticks, can be combined on a single physical device that could be thought of as a composite device. Many gaming devices have controllers like this. Technically mice are composite devices, as they both track movement and provide buttons for clicking, but composite devices are generally considered to have more than two different forms of input.

Video input devices

Video input devices are used to digitize images or video from the outside world into the computer. The information can be stored in a multitude of formats depending on the user's requirement.

Voice input devices

Voice input devices are used to capture sound. In some cases, an audio output device can be used as an input device, in order to capture produced sound. Audio input devices allow a user to send audio info to a computer for processing, recording, or carrying out commands. Devices such as microphones allow users to speak to the computer in order to record a voice message or navigate software. Aside from recording, audio input devices are also used with speech recognition software (from https://en.wikipedia.org/wiki/Input_device).

2. Which input device (keyboard, mouse, light pen, scanner, trackball, joystick, graphics tablet, touch screen, barcode reader, touchpad, game controller, microphone, digital camera, webcam) would you use for these tasks?

1) to select text and click on links on web pages;
2) to draw pictures or select menu options directly on the screen;
3) to enter drawings and sketches into a computer;
4) to take and store pictures and then download them to a computer;

5) to play computer games;
6) to input voice commands and dictate text;
7) to read price labels in a shop;
8) to copy images from paper into computer.

3. Answer the questions:

1. What is an input device? What input devices do you know?
2. What groups of keys does a standard PC keyboard have?
3. What are the functions of dedicated keys?
4. What is a mouse?
5. What are mouse actions?

4. Give the definitions to the following:

1. A long key at the bottom of the key-board. Each time it is pressed, it produces a blank space.
2. It moves the cursor to the beginning of a new line. It is also used to confirm commands.
3. It works in combination with other keys. For example, you press this key and C to copy the selected text.
4. It removes the character to the left of the cursor or any selected text.
5. It produces upper case characters.
6. It produces upper case letters, but it does not affect numbers and symbols.
7. It moves the cursor horizontally to the right for a fixed number of spaces (in tabulations and data fields).
8. They are used to move the cursor, as an alternative to the mouse.

5. Decide if these sentences are True or False. If they are false, correct them.

1. The images shown on monitor are not generated by the video card.
2. All visible colours can be made from mixing the three primary colours of red, yellow and blue.
3. Typical CRT-based displays occupy less space than LCD displays.
4. Active-matrix LCDs do not use a technology called thin film transistor or TFT.
5. The size of the screen is measured horizontally.
6. Display Resolution, also known as dots per inch (DPI), this determines the number of pixels per linear inch.
7. CRTs are more expensive than LCDs, but they are heavy, can flicker and emit radiation.
8. LCDs offer better quality and take up less space, so they are replacing CRTs.

6. Answer the questions:

1. What do CRT and LCD stand for?
2. How is the screen size measured?
3. What technology is used by active-matrix LCDs?
4. Which unit of frequency is used to measure the brightness of a display?
5. What is Aspect Ratio? Which is the most common aspect ratio of computer displays?
6. What part inside the computer processes images and sends signals to the monitor?
7. What substance produces light and colour when hit by electrons in a CRT monitor?
8. What are the three advantages of OLED displays?

7. Read and translate the text.

Output Devices

Printers are a common example of output devices. New multifunction peripherals that integrate printing, scanning, and copying into a single device are also popular. Computer monitors are sometimes treated as peripherals. High-fidelity sound systems are another example of output devices often classified as computer peripherals. Manufacturers have announced devices that provide tactile feedback to the user – "force feedback" joysticks, for example. This highlights the complexity of classifying peripherals – a joystick with force feedback is truly both an input and an output peripheral.

Early printers often used a process known as impact printing, in which a small number of pins were driven into a desired pattern by an electromagnetic printhead. As each pin was driven forward, it struck an inked ribbon and transferred a single dot the size of the pinhead to the paper. Multiple dots combined into a matrix to form characters and graphics, hence the name *dot matrix*. Another early print technology, daisy-wheel printers, made impressions of whole characters with a single blow of an electromagnetic printhead, similar to an electric typewriter. Laser printers have replaced such printers in most commercial settings. Laser printers employ a focused beam of light to etch patterns of positively charged particles on the surface of a cylindrical drum made of negatively charged organic, photosensitive material. As the drum rotates, negatively charged toner particles adhere to the patterns etched by the laser and are transferred to the paper. Another, less expensive printing technology developed for the home and small businesses is inkjet printing. The majority of inkjet printers operate by ejecting extremely tiny droplets of ink to form characters in a matrix of dots –much like dot matrix printers.

Computer display devices have been in use almost as long as computers themselves. Early computer displays employed the same cathode-ray tubes (CRTs) used in television and radar systems. The fundamental principle behind CRT displays is the emission of a controlled stream of electrons that strike light-emitting phosphors coating the inside of the screen. The screen itself is divided into multiple scan lines, each of which contains a number of pixels – the rough equivalent of dots in a dot matrix printer. The resolution of a monitor is determined by its pixel size. More recent liquid crystal displays (LCDs) rely on liquid crystal cells that realign incoming polarized light. The realigned beams pass through a filter that permits only those beams with a particular alignment to pass. By controlling the liquid crystal cells with electrical charges, various colours or shades are made to appear on the screen.

Communication devices

The most familiar example of a communication device is the common telephone modem (from modulator/demodulator). Modems modulate, or transform, a computer's digital message into an analog signal for transmission over standard telephone networks, and they demodulate the analog signal back into a digital message on reception. In practice, telephone network components limit analog data transmission to about 48 kilobits per second. Standard cable modems operate in a similar manner over cable television networks, which have a total transmission capacity of 30 to 40 megabits per second over each local neighbourhood "loop." (Like Ethernet cards, cable modems are actually local area network devices, rather than true modems, and transmission performance deteriorates as more users share the loop.) Asymmetric digital subscriber line (ADSL) modems can be used for transmitting digital signals over a local dedicated telephone line, provided there is a telephone office nearby – in theory, within 5,500 metres (18,000 feet) but in practice about a third of that distance. ADSL is asymmetric because transmission rates differ to and from the subscriber: 8 megabits per second "downstream" to the subscriber and 1.5 megabits per second "upstream" from the subscriber to the service provider. In addition to devices for transmitting over telephone and cable wires, wireless communication devices exist for transmitting infrared, radiowave, and microwave signals (from https://www.britannica.com/technology/computer/Output- devices).

8. Fill in the gaps with suitable words:

1. The differences in … are noticeable: the more dots per inch, the clearer the image.
2. A print resolution of between 600 … and 2,400 … ensured that even text as small as 2 pt. was legible.
3. Passengers with an electronic ticket will need a … of ticket confirmation or a boarding pass to be admitted to secured gate areas.
4. The key advance of recent years is printing speed: the latest generation of ink-jets prints black-and-white text at 15

… … … (…).

5. With appropriate software, you can view the images on a computer, manipulated them, or send them to a … and produce excellent quality colour copies.
6. A … … is a dedicated computer that connects a printer to a network. It enables users to share printing resources.
7. A … … is a utility that organizes and arranges any documents waiting to be printed.
8. In computers, a … … is a program installed to control a particular type of printer.

9. Give the definitions to the following:

1) designs and images used in magazines, books, etc.;
2) output quality, measured in dots per inch;
3) a particular colour within the colour spectrum;
4) an ink powder used in laser printers and copiers;
5) set of characters that can be resized (enlarged or reduced) without introducing distortion;
6) a rectangular pattern of black lines of magnetic ink printed on an object so that its details can be read by a computer system;
7) surface that carries a reproduction of the image, from which the pages are printed;
8) in-between; middle;
9) a container that holds the ink in an ink-jet printer;
10) small needles that press on the inked ribbon to make the character on paper;
11) printer technology that produces text and pictures by hammering pins against a ribbon and the paper;
12) a language that tells a printer how to print a document;
13) a peripheral which combines a printer, a fax machine and photocopying and scanning capability into one device;
14) they use a wax-based ink while producing colour images;
15) printer technology when images output directly to the printing plates, without requiring film as an intermediate step.

10. Answer the questions:

1. What device is called “a printer”?
2. What are the functions of a printer spooler?
3. What are dot-matrix printers and its main disadvantages?
4. Describe impact printing technology
5. How do inkjet printers generate image?
6. What are the advantages / disadvantages of inkjet printers?
7. What is a laser printer?
8. Why are laser printers preferred by experts?
9. What technology do thermal transfer printers use?
10. What is an imagesetter?
11. What technology is called computer to plate and why?
12. Where are used plotters and why?

11. Give the Ukrainian equivalents to the following word- combinations:

дозволити змінити порядок документів у черзі і скасувати певні завдання на друк; перетворювати дані в форму, зрозумілу вашому комп'ютеру; відносно низький розширення; комп'ютер, на якому зберігаються файли, які очікують друку; порівняно з більшістю принтерів; якість на виході або розширення; програма на вашому комп'ютері, названа драйвером принтера; відрізнятися за вартістю, швидкістю, якістю друку; швидкість вимірюється в сторінках у хвилину.

UNIT 9 WINDOWS

1. Read and translate the text.

Microsoft Windows, also called **Windows** and **Windows OS**, computer operating system (OS) developed by Microsoft Corporation to run personal computers (PCs). Featuring the first graphical user interface (GUI) for IBM- compatible PCs, the Windows OS soon dominated the PC market. Approximately 90 percent of PCs run some version of Windows. The first version of Windows, released in 1985, was simply a GUI offered as an extension of Microsoft's existing disk operating system, or MS-DOS. Based in part on licensed concepts that Apple Inc. had used for its Macintosh System Software, Windows for the first time allowed DOS users to visually navigate a virtual desktop, opening graphical "windows" displaying the contents of electronic folders and files with the click of a mouse button, rather than typing commands and directory paths at a text prompt.

Subsequent versions introduced greater functionality, including native Windows File Manager, Program Manager, and Print Manager programs, and a more dynamic interface. Microsoft also developed specialized Windows packages, including the networkable Windows for Workgroups and the high-powered Windows NT, aimed at businesses. The 1995 consumer release Windows 95 fully integrated Windows and DOS and offered built-in Internet support, including the World Wide Web browser Internet Explorer.

With the 2001 release of Windows XP, Microsoft united its various Windows packages under a single banner, offering multiple editions for consumers, businesses, multimedia developers, and others. Windows XP abandoned the long-used Windows 95 kernel (core software code) for a more powerful code base and offered a more practical interface and improved application and memory management. The highly successful XP standard was succeeded in late 2006 by Windows Vista, which experienced a troubled rollout and met with considerable marketplace resistance, quickly acquiring a reputation for being a large, slow, and resource-consuming system. Responding to Vista's disappointing adoption rate, Microsoft in 2009 released Windows 7, an OS whose interface was similar to that of Vista but was met with enthusiasm for its noticeable speed improvement and its modest system requirements.

Windows 8 in 2012 offered a start screen with applications appearing as tiles on a grid and the ability to synchronize settings so users could log on to another Windows 8 machine and use their preferred settings. In 2015 Microsoft released Windows 10, which came with Cortana, a digital personal assistant like Apple's Siri, and the Web browser Microsoft Edge, which replaced Internet Explorer. Microsoft also announced that Windows 10 would be the last version of Windows, meaning that users would receive regular updates to the OS but that no more large-scale revisions would be done.

2. Answer the questions to the text:

1. What program is called Windows?
2. Why is it called Windows?
3. What is another feature of Windows?
4. What are the advantages of Windows?
5. What operating system do you use and why?

6. What is a utility program?
7. Why will it be easier for anyone to learn how to use new programs?
8. What versions of Windows are there nowadays? Which of them are the best?

3. Agree or disagree with the statements using phrases of agreement and disagreement.

If you disagree, give the correct variant.

1. The word interface refers to the way you output information.
2. You interact with the computer by responding to what's on the screen.
3. Many people consider Windows awkward and intimidating as a user interface.
4. DOS commands can be confusing and difficult to remember.
5. With Windows it is difficult to enter and move data around.
6. Windows runs each program or a document in its own separate circle.
7. You can have many windows on the screen at a time.
8. If you want to switch between programs in Windows you have to close one down and open the next.
9. Clipboard is a facility that lets you copy material between similar document types.
10. All applications that run in Windows use similar commands and procedures.
11. Windows comes supplied with handy programs.
12. Paint is a word-processing program.

4. Read and translate the text.

Websites

Most webpages die after a couple of months. The average lifespan is something like 100 days. That's longer than it used to be. In the late 1990s, the typical webpage lasted for around 44 days.

According to statistics, in 1994 there were fewer than websites online. By 2014, there were more than 1 billion. That represents a 33 million percent increase in 20 years. That's nuts!

Various estimates say about three-quarters of web- sites are live but inactive. The web's ephemerality also means the precise number of websites at any given time fluctuates quite a bit. For instance, according to the site Internet Live Stats, there are now 935,950,654 websites as of this writing. (Now 935,950,713. Wait, 935,950,801. You get the idea.) «This is due to the monthly fluctuations in the count of inactive websites», according to the site. «We do expect, however, to exceed 1 billion websites again sometime in 2016». The weird thing is most of these sites exist without being seen. The average person doesn't venture very far across the web, only visiting 96 separate domains per month, according to a Nielsen estimate in 2013.

In August 1999, Google was fielding 3 million search queries per day. A year later, that number had leaped to 18 million search queries per day. In 2016 Google was serving more than 3.5 billion searches per day - equivalent to searches every second.

Even as most websites flicker in and out of existence at a rapid clip, you can still find some real antiques out there. There still exist some ancient websites like CNN's 1996 year in review, the old Bob Dole presidential-campaign website, and the search engine IFindIt.com, which you can see but it doesn't seem to actually work.

When I started writing this morning, Internet Live Stats told me there were 935,939,044 websites online. Now there are 935,951,027 - almost 12,000 more websites! I have no idea how many disappeared in this time. Which brings me back to a truth about the Internet that's often acknowledged but still hard to grasp: It's always changing. I mean, always, ALWAYS. And though the web is never what it used to be, you can still find little traces of its previous iterations, if you know where to look. (from https://www.theatlantic .com/technology/ archive/2015/09/how -many-websites-are-there/408151/).

5. True or False. Correct false.

1) In the late 1990s, the typical webpage lasted for around 100 days.
2) The number of websites increased by 33 hundred percent from 1994 to 2014.
3) It's rather difficult to give the precise number of websites.
4) The average person visits about 96 separate domains per year.
5) In 2000 Google was fielding 3 million search queries per day.
6) The search engine IFindIt.com is still live and active.
7) The Internet is always changing.

6. Compare the English and Ukrainian equivalents and translate the sentences with the highlighted words into Ukrainian.

A. 1) average	a) тривалість життя
2) lifespan	b) мінливість, швидкоплинність
3) antique	c) сліди
4) traces	d) дивний, незрозумілий
5) iterations	e) середній
6) ephemerality	f) антикваріат
7) weird	g) версії, варіанти
B. 1) to last (for)	a) визнавати
2) to fluctuate	b) перевищувати
3) to exceed	c) тривати, існувати
4) to venture	d) відповідати
5) to field	e) різко змінюватися
6) to leap	f) коливатися, змінюватися
7) to acknowledge	g) наважитися

СЛОВНИК-МІНІМУМ ЛЕКСИКИ З ФАХУ

1. analog computer - аналоговий комп'ютер
2. account [ə'kaunt] - обліковий запис / обліковий запис
3. antivirus software / antivirus software - антивірус / антивірусне програмне забезпечення / антивірусна програма
4. application / app - додаток / програма
5. artificial intelligence (AI) - штучний інтелект (ШІ)
6. assembler [ə ' semblə] - асемблер (мова програмування низького рівня)
7. at sign (= @) - а комерційне / комерційне at / знак "собака"
8. backup ['bækʌp] - резервна копія
9. BASIC (Beginner's All-purpose Symbolic Instruction Code) - бейсик (універсальная код символічних інструкцій для початківців)
10. BD / BRD (= Blu-ray Disc) - диск
11. binary numeral system / base-2 number system - двійкова система обчислення (що використовує тільки нулі і одиниці)
12. bit / binary digit - біт (найменша одиниця зберігання і обробки цифрової інформації)
13. boot disk - завантажувальний диск (диск (як правило, жорсткий диск), з якого відбувається завантаження і настройка ПО для комп'ютера)
14. broadband Internet - широкосмуговий інтернет / широкосмуговий доступ в інтернет browser ['brausə] / web browser / internet browser - веб-оглядач, браузер
15. bug - помилка / "баг" (помилка в програмі, що порушує правильну роботу)
16. cable - кабель
17. cache [kæʃ] - кеш / кешування (вид швидкої пам'яті, використовуваної для тимчасового зберігання даних)
18. cell phone - стільниковий телефон
19. central processing unit (CPU) - центральний процесор (ЦП), центральний процесорний пристрій (ЦПУ)
20. character ['kærəktə] - символ (будь-символьне позначення - цифра, буква, і т.п.)
21. click - клік
22. clipboard - буфер обміну (тимчасове сховище даних в пам'яті комп-ютера, призначене для перенесення і копіювання між додатки-ми)

23. COBOL ['kəubəl] (Common Business-Oriented Language) - Кобол (мова програмування, призначений, в першу чергу, для розробки бізнес-додатків)

24. compact disc (= CD) - компакт диск

25. compiler - компілятор (програма, яка переводить текст програми на мові високого рівня в еквівалентну програму на машинній мові)

26. computer case / computer chassis / system unit / case - системний блок

27. computer cooling - система охолодження комп'ютера

28. cookies - куки (дані, що містять інформацію про час і дату відвідування вебсайтів)

29. crash - збій / поломка

30. cursor ['kɜ:sə] - курсор

31. cyberspace [' saibə¸speis] - кіберпростір

32. data ['deitə] - дані (інформація, що зберігається на комп'ютері, в будь-якому вигляді - текстовому, графічному, аудіо, відео, і т.д .)

33. database - база даних

34. debugging - налагодження (програми)

35. desktop computer - настільний комп'ютер, стаціонарний комп'ютер

36. digital computer - цифровий комп'ютер

37. DOS (Disk Operating System) - ДОС (дискова операційна система)

38. dot [dɔt] - точка (використовується в адресі сайту))

39. downloading and uploading - скачування і закачування (терміни, примі-няющих щодо даних, що передаються між двома обчислювач-ними системами)

40. driver - драйвер (спеціальне програмне забезпечення, що дозволяє комп'ютеру працювати з будь-яким пристроєм (наприклад, з принте-ром))

41. DVD (= Digital Versatile Disc / Digital Video Disc) - диск DVD (цифровий багатоцільовий диск / цифровий відеодиск)

42. earpieces / earbuds / earphones - навушники (вставляються в вухо)

43. ebook ['i: buk] - електронна книга (текст , який можна завантажити і прочитати на комп'ютері або іншому пристрої)

44. electronic mail / email / email - електронна пошта

45. email address - адреса електронної пошти FAQ (Frequently Asked Questions)

46. firewall - брандмауер / мережевий екран

47. flash drive / USB flash drive - флеш карта / USB-флеш- накопичувач

48. folder / directory [di'rektəri] - папка / директорія

49. font - шрифт format ['fɔ: mæt] - формат

50. Fortran / FORTRAN (Mathematical Formula Translating System) - Фортран (перша мова програмування високого рівня)

51. hard disk drive (HDD) / hard disk / hard drive - жорсткий диск, накопичувач на жорстких магнітних дисках (НЖМД)

52. hardware ['hɑ: dwɛə] - апаратне забезпечення

53. HD (High Definition) - висока якість

54. headphones - навушники

55. hertz (Hz) - Герц (Гц)

56. home page / homepage - головна сторінка / домашня сторінка / початкова сторінка

57. hotspot - точка доступу

58. hypertext ['haipə¸tekst] - гіпертекст

59. icon [' aikɔn] - іконка / значок / піктограма

60. installation [instə'leiʃn] - інсталяція / установка (програми)

61. interface [' intəfeis] - інтерфейс

62. Internet service provider (ISP) - інтернет -провайдер / провайдер /

постачальник послуг інтернету

63. IP (Internet Protocol) address - ай-пі адреса (унікальний адреса вузла (комп'ютера) в мережі)
64. keyboard [' ki: bɔ: d] - клавіатура
65. laptop / notebook - ноутбук
66. link - посилання
67. local area network (LAN) - локальна обчислювальна мережа (ЛОМ)
68. lower case / lowercase - у нижньому (малі літери)
69. mail box - поштовий ящик
70. memory - пам'ять
71. menu ['menju:] - меню
72. microphone / mic [maik] - мікрофон
73. motherboard - материнська плата
74. mouse - миша, мишка, маніпулятор "миша"
75. mouse mat (BrE) / mousepad (AmE) - килимок для миші
76. network - мережа
77. operating system (OS) - операційна система (ОС)
78. page / web page / webpage - сторінка / веб-сторінка / інтернет-сторінка
79. palmtop ['pɑ: mtɒp] - кишеньковий комп'ютер / "надолонник"
80. password - пароль
81. PDA (Personal Digital Assistant) - КПК (кишеньковий персональний комп'ютер)
82. pixel ['piksil] - піксель
83. power cable - мережевий кабель / шнур живлення / кабель електроживлення
84. processor speed / processor frequence / CPU speed / CPU frequency - швидкість процесора / частота процесора
85. program [' prəugræm] - програма
86. random-access memory (RAM) - пристрій, що запам'ятовує з довільним доступом (ЗУПД) / пристрій з довільною вибір-кой (ЗУПВ) (також часто позначає оперативну пам'ять комп'ютера, оперативний пристрій (ОЗУ))
87. Read Only Memory (ROM) - постійний запам'ятовуючий пристрій (ПЗУ)
88. resolution – роздільна здатність
89. screen - екран
90. screenshot - знімок екрана / скріншот / скрін (зображення, яке показує те, що користувач бачить на екрані)
91. search engine - пошукова система
92. server - сервер
93. shortcut - ярлик (файл, службовець покажчиком на який-небудь об'єкт, програму, команду, і т.п.)
94. slash - слеш / коса риска
95. smartphone - смартфон
96. software / computer software - програмне забезпечення
97. sound card / audio card - звукова плата / звукова карта / аудіокарта
98. space - пробіл
99. space bar - клавіша "пробіл"
100. speakers - колонки
101. spreadsheet - електронна таблиця
102. tablet computer / tablet - планшетний комп'ютер / планшет
103. TFT (Thin Film Transistor) - тонкоплівковий транзистор

104. underscore - знак підкреслення
105. upper case / uppercase - великі букви (великі літери)
106. USB (Universal Serial Bus) - універсальна послідовна шина
107. USB flash drive - USB-накопичувач / флеш-накопичувач
108. username - ім'я користувача / логін
109. video card / video adapter / graphics-accelerator card / display adapter / graphics card - відеокарта / графічна плата / графічний прискорювач / графічна карта / відеоадаптер
110. virus ['vaiərəs] - вірус
111. web hosting - веб-хостинг / хостинг
112. webmaster - веб-майстер / вебмастер
113. website / web site - вебсайт / сайт
114. wireless internet (= WiFi) - бездротовий інтернет / бездротовий доступ в інтернет
115. wireless router - бездротовий маршрутизатор
116. word processor - текстовий процесор / текстовий редактор

World Wide Web (WWW) / the Web - Всесвітня павутина / веб

РОЗДІЛ ІІ «АГРОНОМІЯ»
СЛОВНИК ФАХОВИХ ТЕРМІНІВ (KEY VOCABULARY)

Baler/ baling machine (n.)= an agricultural machine for making bales of hay

Crop (n.)= cultivated plants or agricultural produce like vegetables, fruit,

Cereals

Cultivator (n.) = an implement/machine for loosening the soil and destroying weeds around growing plants

Harrow(n.) = agricultural implement used to level the ground, stir the soil, destroy weeds

To harrow(v.) = to draw a harrow over land

Harvest(n.) = the process of harvesting a crop

To harvest (v.) = to gather a crop

Herbicide(n.) = a chemical substance that destroys plants especially one used to control weeds

Plow/ plough (n.) =a farm implement consisting of a strong blade at the end of a beam usually used for breaking up soil in preparation for sowing

To plow/ plowed/plowing/ plows

To plough /ploughed/ploughing/ ploughs = to break and turn over earth with a plow

Reaper (n.) =an implement/machine used in agriculture for harvesting grain/ crop

To reap (v.) = to cut grain for harvest with a sickle or reaper

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ЧИТАННЯ (READING)
ТЕКСТ 1.
CULTIVATION

Preparation of crops requires several stages and practices.The first stage refers to the preparation of thesoil.This includes:

•soil acidity can be improved with the help of lime, sulphur, phosphorous;

•nutrient-deficient soil needs fertilizers;

•some fields require treatment with herbicide;

During the seeding stage the farmer has to take into account the following aspects: seeding rate, plant density.

Before cultivation it is very important to prepare the topsoil. If the soil is nutrient-deficient, farmers must add fertilizer. Once the soil temperature is right, planting can begin. The planting of seeds will vary by crop. Agricultural sites have different growing seasons based on elevation, growing degree days, last frost dates. When the crop matures the farmers need to harvest it. Harvesting, the gathering of a ripened crop is the most important stage of the cultivation process. Farmers need the appropriate equipment for planting and cultivating the crop. The machines and implement farmers use for planting and for preparing the field include:

•broadcastseeder which spreads seeds and fertilizer;

•the rototiller used for turning the soil perfect;

•seed drill for planting;

•chisel plow/cultipacker used for preparing fields

•tractors which are used to harrow fields and to plow;

•harrow, a traditional farm / agricultural equipment consisting of a heavy frame with sharp teeth or up right disks; Harrows are suitable for topsoil, they were used traditionally for cleaning away stable of plants before tillage.

•cultivators, designed to destroy weeds with shallow roots and to break up surface soil neatplants for aeration.

•ploughs are used in farming for initial cultivation of soil in preparation for sowing seed or planting.

Harvesting equipment saves time and reduces the quantity of waste. The mechanization of agriculture reduces the overall cost of production and increases the total agricultural yield. Harvesting equipment consists of a reaping part and a baler part. Therefore, the rear several types of harvesting machines which are generally classified by crops:

•reapers are used for cutting cereal grains.

•threshers for separating the seed from the plant.

Harvesting equipment includes:

•combine harvester, a farming machine that harvests crops of grain

•gleaner, harvestmachine that is not powered by gas or fuel

TEKCT 2.
TRACTORS

Tractor is useful when it supplies power to machines. Power can be supplied by the tractor in various forms. The tractor can pull or push machines, it can supply power to machines from the power-take-off shaft and it can drive machines by means of a belt from a belt pulley.The tractor power is produced by the engine and is measured by horsepowers (hp) or kilowatts. There are tractors with engine power from 3 to 300 hp. Tractors are classified according to the maximum power that their engine can produce. The crawlers or tracklaying tractors are large; they are used for heavy operations, such as road making or dam building.

Large tracks increase the grip of the tractor on the ground, and the crawlers are able to push or pull heavy loads and machines.

TEKCT 3.
COMBINE HARVESTERS

Combine harvesters are used to harvest various crops. The combine cuts the crop, threshes it, separates the grain from the straw and chaff. The mechanism of a combine harvester can be divided into three sections. They are cutting, threshing and finally separating the grain from the straw and chaff. To cut the crop a reciprocating type cutter bar is used. There is a divider at each side of the cutter bar. It separates the crop to be cut from that which will be left for the next round. The crop is cut while held against the cutter bar by the reel. After the crop is cut, the reel directs it to the cutter bar platform. The reel is one of the main parts of a combine. It has tines which can be angled to provide better cutting of the crops. A large auger moves the crop to the centre of the platform. By means of tines the auger directs the crop to the main elevator which lifts the crop to the threshing mechanism. The threshing mechanism consists of front beater, a heavy rotating drum, a concave and a rear beater.

TEKCT 4.
TILLAGE MACHINES

Tillage Machines. Research has demonstrated that normally the mold-board plow is the most efficient machine for pulverizing the soil and covering the trash to provide **a** satisfactory seed-bed. Extra tillage can be obtained during the plowing and planting operations so that no additional trips over the field are necessary. Other tillage machines have been studied, however, and deserve mention. On soils that are easy to pulverize, a seed-bed can be prepared with a field cultivator without using a plow. Narrow chisels on the machine make it possible to till deeper with less power. These chisels tend to leave the soil open, which is an advantage in the fall

because rain and snow can enter the open soil easily. If chisels are used in the spring, however, moisture may be lost from the open soil, so it is desirable to pull a harrow behind the cultivator to level the soil.

ТЕКСТ 5.
PLOUGHS

The plough has been used in its different forms for many centuries. It has become the main implement used for the preparation of seedbeds. A plough is an implement with one or more mould boards which cut and turn the soil. Modern ploughs are commonly fully mounted on the tractor hydraulic system. Some are semi-mounted with the front supported by the tractor hydraulic linkage and the rear by one or more wheels. A semi-mounted plough is not lifted off the ground. The number of mouldboards on a plough will depend on the type of soil and the tractor size. Ploughs with up to six mouldboards are in common use. There are three main types of ploughs: 1) Conventional ploughs with right-handed mouldboadrs. They are usually fully mounted but some semimounted and trailed models are also in use. 2) Reversible ploughs having left- and right-handed mouldboards, we can plough up and down in the same furrow Most of them are mounted, but some of the larger models are semi-mounted. Reversible ploughs produce a very level finish. 3) Disc ploughs are rarely used in Great Britain. In place of the mou1dboards they have large rotating discs which cut and turn the soil slice.

ЛЕКСИКО-ГРАМАТИЧНІ ТЕСТИ

ТЕСТ 1

1. Farmers will develop fertile …….. by rotating crops and using compost.
a. soil;
b. crop;
c. nutrients;
2. If farmers use zero tillage methods, they will leave …… residues in place.
a. fertilizers;
b. crop;
c. harvesting;
3……. equipment consists of a reaping part and a baler part.
a. harvesting;
b. crop;
c. gathering;
4. ……are used in farming for initial cultivation of soil in preparation for sowing seed or planting.
a. ploughs;
b. tractors;
c. cultivators;
5.Reapers are used for cutting cereal grains.
a. harrows;
b. tractors;
c. reapers;
6.Cultivators are designed to destroy ……..with shallow roots and to break up surface soil neat plants for aeration.
a. plants;
b. weeds;
c. seeds

ТЕСТ 2

1. February is the _____ month of the year.
a) third
b) fifth
c) second
2. November is the _____ month of the year.
a) tenth
b) eleventh
c) twelfth
3. Wednesday is the _____ day of the week.
a) third
b) fourth
c) first
4. May is the _____ month of the year.
a) fifth
b) fourth
c) first
5. December is the _____ month of the year.
a) eighth
b) eleventh
c) twelfth
6. We live in the _____ century.
a) nineteenth
b) twenty-one
c) twenty-first
7. Saturday is the _____ day of the week.
a) sixth
b) third
c) seventh
8. There are four children in the family. Paul is the youngest. He is the _____ child in the family.
a) fifth
b) fourth
c) first
9. September is the _____ month of the year.
a) ninth
b) nine
c) tenth
10. The year begins on the _____ of January.
a) first
b) one
c) thirty-first

ТЕСТ 3

1. Cinderella had two cruel _____.
a. step-sisters
b. steps-sisters
c. step-mother
2. There were ten _____ in the choir.
a. woman-singers
b. women-singers
c. womens-singer

3. _____ are so beautiful.
a. Forget-me-nots
b. Forget-mes-nots
c. Forgets-me-nots
4. There is nothing like _____ for me.
a. lilies-of the-valley
b. lilies-of-the-valleys
c. lilyes-of-the-valleys
5. She had two _____.
a. brothers-in-law
b. brother-in-laws
c. brothers-in-laws
6. Both his grannies are _____.
a. housewifes
b. housewives
c. housewife
7. Letters, newspapers and magazines are delivered by _____.
a. postmen
b. postman
c. postmans
8. There had been no _____ till the second half of the 19th century.
a. women-doctor
b. women-doctors
c. womans-doctor
9. There were some thrilling _____ in the park.
a. merry-goes-rounds
b. merry-go-rounds
c. merrys-goes-rounds
10. All the _____ smiled at the scene.
a. passer-byes
b. passers-by
c. passers-byes

ТЕСТ 4

1. I… she … you.
a) think, likes
b) am thinking, is liking
c) think, is liking
2. What … ?
a) does she want
b) does she wants
c) she wants
3. Grandmother is in the kitchen. She … a cake now.
a) is making
b) makes
c) make
4. We … a holiday last year.
a) did not have
b) have not had
c) had not have
5. Dad … on Saturdays.
a) is usually work

b) usually works
c) are usually working
6. – Where is Jane? – She …the shops. She will be back soon.
a) went
b) has gone to
c) goes
7. I … glad to see you. How … you?
a) is, are
b) am, are
c) are, is
8. Mag and her sister … live in Rome.
a) are not
b) does not
c) do not
9. …it raining yet?
a) Did it stop
b) Is it stopped
c) Has it stopped
10. Where is John? He … in the garden.
a) is working
b) works
c) does work

ТЕСТ 5

1. Boris _____ hard.
a. study
b. studies
c. studi
2. We _____ in Berlin.
a. live
b. lives
c. life
3. Mike and Bob _____ good friends.
a. is
b. are
c. does
4. The teacher _____ tasks on the blackboard.
a. write
b. writes
c. writed
5. Mother _____ a lot of work about the house.
a. do
b. does
c. is
6. The children _____ in the yard.
a. play
b. plays
c. plaing
7. She _____ to watch TV.
a. like

b. likes
c. liking
8. Mary _____ roses.
a. picks up
b. pick ups
c. pick up
9. Boris _____ early in the morning.
a. gets up
b. get ups
c. get up
10. Mother _____ the dishes after every meal.
a. washes up
b. wash ups
c. wash up

ТЕСТ 6

1. There had been no _____ till the second half of the 19th century.
a. women-doctor
b. women-doctors
c. womans-doctor
2. There were some thrilling _____ in the park.
a. merry-goes-rounds
b. merry-go-rounds
c. merrys-goes-rounds
3. All the _____ smiled at the scene.
a. passer-byes
b. passers-by
c. passers-byes
4. Boris _____ hard.
a. study
b. studies
c. studi
5. We _____ in Mykolayiv.
a. live
b. lives
c. life
6. Mike and Bob _____ good friends.
a. is
b. are
c. does
7. The teacher _____ tasks on the blackboard.
a. write
b. writes
c. writed
8. Mother _____ a lot of work about the house.
a. do
b. does
c. is
9. The children _____ in the yard.
a. play
b. plays
c. plaing

10. She _____ to watch TV.
a. like
b. likes
c. liking

ТЕСТ 7

1. The Hills managed to arrive exactly in time because they … a taxi.
a. took
b. had taken
c. taked
2. The sun …, it … dark, and we went home.
a. set, got
b. had set, got
c. had got, set
3. What …? –She is a secretary at our college.
a. is she doing
b. she does
c. does she do
4. I think I …it tomorrow.
a. does
b. do
c. shall do
5. Who …the window?
a. open
b. opened
c. did opened
6. I did not … he was at home.
a. to think
b. think
c. thought
7. My friend is a writer. He …6 stories.
a. has already written
b. wrote already
c. writed
8. … you like swimming?
a. Do
b. Does
c. Are
9. We _____ in London.
a. live
b. lives
c. life

ВПРАВИ (EXERCISES)

1. Fill in the blanks with the correct words and phrases:

harvest, planter, seeding, no-till, chisel plow, cultivators, harrow.

1.Farmers …….. different parts of the plants: seeds, fruit, root.

2. To get rid of weeds farmers can use ……. which break apart soil and weeds.

3. The implement that breaks soil and smoothens the ground is the …..

4. The ……is an instrument which is attached to a tractor and goes deep in earth to turn soil.

5. The …. is the implement attached behind a tractor that lays seeds down in rows.

6. ……. farming is a technique that reduces soil erosion. 7. Many farmers work hard to raise a crop from ….. to harvest.

2. Match the words with their definitions:

1. broadcast seeder.
2. rototiller.
3. cultipacker
4. seed drill
5. tractor.
6. stone picker

a. a device that flattens soil
b. a device that spreads seeds and fertilizer over a field
c. a device that puts seeds into the ground
d. a device that turns over soil
e. a device that separates stones from soil
f. a vehicle that pulls farm equipment

3. Translate:

1. Let's talk about signs of summer. What can we see and where can we go in summer?
2. Can we go to the garden/ to the dacha? Yes we can.
3. What usually grows in the garden? Vegetables and fruits!
4. What kinds of vegetables grow in our garden? Tomatoes, cucumbers, carrots, cabbages, beetroot, pumpkins, eggplants and zucchinis!
5. What fruits and berries grow in our garden? Apples, cherries, strawberries, pears, apricots, plums, wild apples, current, gooseberries.
6. What greens grow there? Parsley, dill, leek, lettuce know where all these fruit and vegetables come from?
7. They all come from a seed.
8. Look, this is a seed. We take it and plant it in the ground.
9. Then it appears above the ground.
10. It grows and grows and grows finally into a big plant, flower or a tree.

ФАХОВІ ТЕКСТИ ДЛЯ САМОСТІЙНОГО ЧИТАННЯ

ТЕКСТ 1

AGRICULTURE AS ART, SCIENCE AND BUSINESS OF CROP PRODUCTION

Agriculture is defined as the art, the science and the business of producing crops and the livestock for economic purposes.

As an art, it embraces knowledge of the way to perform the operations of the farm in a skillful manner. The skill is categorized as; Physical skill: It involves the ability and capacity to carry out the operation in an efficient way for e.g., handling of farm implements, animals etc., sowing of seeds, fertilizer and pesticides application etc. Mental skill: The farmer is able to take a decision based on experience, such as (i) time and method of ploughing, (ii) selection of crop and cropping system to suit soil and climate, (iii) adopting improved farm practices etc.

As a science : It utilizes all modern technologies developed on scientific principles such as crop improvement/breeding, crop production, crop protection, economics etc., to maximize the yield and profit. For example, new crops and varieties developed by hybridization, transgenic crop varieties resistant to pests and diseases, hybrids in each crop, high fertilizer responsive

varieties, water management, herbicides to control weeds, use of bio-control agents to combat pest and diseases etc.

As the business : As long as agriculture is the way of life of the rural population, production is ultimately bound to consumption. But agriculture as a business aims at maximum net return through the management of land, labour, water and capital, employing the knowledge of various sciences for production of food, feed, fibre and fuel. In recent years, agriculture is commercialized to run as a business through mechanization.

TEKCT 2
BRANCHES OF AGRICULTURE

Agriculture has 3 main spheres viz., Geoponic (Cultivation in earth-soil), Aeroponic (cultivation in air) and Hydroponic (cultivation in water). Agriculture is the branch of science encompassing the applied aspects of basic sciences. The applied aspects of agricultural science consists of study of field crops and their management (Arviculture) including soil management.

Crop production - It deals with the production of various crops, which includes food crops, fodder crops, fibre crops, sugar, oil seeds, etc. It includes agronomy, soil science, entomology, pathology, microbiology, etc. The aim is to have better food production and how to control the diseases.

Horticulture - Branch of agriculture deals with the production of flowers, fruits, vegetables, ornamental plants, spices, condiments (includes narcotic crops-opium, etc., which has medicinal value) and beverages.

Agricultural Engineering - It is an important component for crop production and horticulture particularly to provide tools and implements. It is aiming to produce modified tools to facilitate proper animal husbandry and crop production tools, implements and machinery in animal production.

Forestry - It deals with production of large scale cultivation of perennial trees for supplying wood, timber, rubber, etc. and also raw materials for industries.

Animal Husbandry - The animals being produced, maintained, etc. Maintenance of various types of livestock for direct energy (work energy). Husbandry is common for both crop and animals. The objective is to get maximum output by feeding, rearing, etc. The arrangement of crops is done to get minimum requirement of light or air. This arrangement is called geometry. Husbandry is for direct and indirect energy.

Fishery Science - It is for marine fish and inland fishes including shrimps and prawns.

Home Science - Application and utilization of agricultural produces in a better manner. When utilization is enhanced production is also enhanced. e.g., a crop once in use in south was found that it had many uses now.

On integration, all the seven branches, first three is grouped as for crop production group and next two for animal management and last two as allied agriculture branches. Broadly in practice, agriculture is grouped in four major categories as,

A. Crop Improvement (i) Plant breeding and genetics
(ii) Bio-technology
B. Crop Management (i) Agronomy
(ii) Soil Science and Agricultural Chemistry
(iii) Seed technology
(iv) Agricultural Microbiology
(v) Crop-Physiology
(vi) Agricultural Engineering
(vii) Environmental Sciences
(viii) Agricultural Meteorology
C. Crop Protection (i) Agricultural Entomology
(ii) Plant Pathology
(iii) Nematology

D. Social Sciences (i) Agricultural Extension
(ii) Agricultural Economics
Allied disciplines (i) Agricultural Statistics
(ii) English and Tamil
(iii) Mathematics
(iv) Bio-Chemistry etc.

TEKCT 3
IMPORTANCE OF IRRIGATION MANAGEMENT

Plants and any form of living organisms cannot live without water, since water is the most important constituent of about 80-90% of most plant cell. Water is essential not only to meet agricultural needs but also for industrial purposes, power generation, live stock maintenance, rural and domestic needs etc. But the resource is limited and cannot be created as we require.

Irrigation is the artificial application of water made for supplementing the moisture in the soil that is deficient and does not meet the full requirements of growing crops. Irrigation is essentially a practice of supplementing the natural precipitation for increasing production of agricultural and horticultural crops.

(**a) Effective irrigation** - It is the controlled and uniform application of water to cropland in required amount at the required time, to produce optimum yields. The cost of irrigation must be kept minimum and irrigation should be done without any wastage of water, which may cause adverse effect on the soil in the form of soil salinity and water logging problems. Almost all major crops are grown under irrigated condition. The most important one is rice in Tamil Nadu, which constitutes 67.5% of the total area under irrigation. The crops irrigated with flow irrigation from rivers and tanks are mostly rice and sugarcane and to a smaller extent banana and turmeric.

(b) Irrigation management - Regulating the activities based on the various resources for its efficient use and better out put i.e., allocation of all the resources for maximum benefit and to achieve the objectives, without eroding the environment is called management. Otherwise, it can be stated as planning, executing, monitoring, evaluating and re-organizing the whole activities to achieve the target.

Management of water based on the soil and crop environment to obtain better yield by efficient use of IRRIGATION AND WATER MANAGEMENT water without any damage to the environment. Management of water, soil, plants, irrigation structure, irrigation reservoirs, environment, social set up and it's inter liked relationship are studied in the irrigation management. Knowledge on the following aspects is necessary to device proper irrigation management.

- The soil physical and chemical properties,
- Biology of crop plants,
- Quantity of water available,
- Time of application of water,
- Method of application of water,
- Climatological or meteorological influence on irrigation, and
- Environment and its changes due to irrigation.

Management of all the above said factors constitute Irrigation Agronomy: Management of irrigation structures, conveyances, reservoirs constitute Irrigation Engineering; and social set up, activities, standard of living, irrigation policies, irrigation association and farmer's participation, cost of irrigation etc., constitute Socio-economic study. Irrigation management is a complex process of art and science involving application of water from source to crop field. The source may be a river or a well or a canal or a tank or a lake or a pond.

Maintaining the irrigation channels without leakage and weed infestation, applying water to field by putting some local check structure like field inlet and boundaries for the area to be

irrigated etc., need some skill. These practices are the art involving practices in irrigation management. Time of irrigation and quantity of water to be applied (when to irrigate? and how much to irrigate?) based on soil types, climatic parameters, crop, varieties, growth stages, season, quality of water, uptake pattern of water by plants, etc., and method of application (How best to irrigate) includes conveyance of water without seepage and percolation losses and water movement in soil, are the process involving scientific irrigation management. Simply, it is a systematic approach of art and science involved in soil, plant and watery proper management of the resources (soil, plant and water) to achieve the goal of crop production.

(c) Importance - Irrigation management is very important

• To the development of nation through proper management of water resources for the purpose of

crop production and other activities such as industrialization, power generation etc., which in

turn provides employment opportunities and good living condition of the people.

• To store and regulate the water resources for further use or non-season use.

• To allocate the water with proper proportion based on area and crop under cultivation. (Balanced equity in distribution).

• To convey the water without much loss through percolation and seepage (Efficiency in use).

• To apply sufficient quantity to field crops (Optimization of use).

• To utilize the water considering cost-benefit (Economically viable management).

• To distribute the available water without any social problem (Judicial distribution).

• To meet the future requirement of agricultural and other sections (Resource conservation).

• To protect the environment from over use or misuse of water (Environment safe use).

TEKCT 3
ORGANIC MANURES

Organic manures include plant and animal by-products such as oil cakes fish manures and dried blood from slaughter houses. Before their organic nitrogen used by the crops it is converted through bacterial action into readily usable ammonical N and nitrate N. These manures are therefore, relatively slow acting, but they supply available N for a longer period.

Advantages - Organic manures supply plant nutrients including micronutrients. Organic manures improve physical properties of the soil, water holding capacity, hydraulic conductivity, infiltration capacity of the soil. CO2 released during decomposition combines with water and forms carbonic acid and act as CO2 fertilizer. Organic manures supply energy (food) for microbes and increase availability of nutrients and improve soil fertility. Green manures have the additional advantage of fixing atmospheric nitrogen leading to nitrogen economy in crop production and green manures draw nutrients from lower layers and concentrate them in the surface soil for the use of succeeding crop.

TEKCT 4
FERTILIZERS

Fertilizers are synthetic (commercially manufactured) or naturally occurring chemical compounds either dry solid or liquid that added to the soil to supply one or more plant nutrients for crop growth.

Classification

The fertilizers are classified based on whether the fertilizer supplies a single or more than one nutrient, their chemical nature and commercial mode of supply as straight, compound, complex and mixedStraight Fertilizers

When a fertilizer contains and is used for supplying a single nutrient, it is called a straight fertilizer. This is further classified as nitrogenous, phosphatic and potassic fertilizers depending on the specific macro nutrient present in the fertilizer.

Nitrogenous fertilizers

N fertilizers are those fertilizers containing N as major nutrient. It may be either a nitrate or ammonium or amide fertilizer depending on the form of nitrogen present.

Phosphatic fertilizers

They are classified into three groups, based on the solubility of phosphate contained in the fertilizer.

Compound Fertilizers

Compound fertilizers are the commercial fertilizers in which two or more primary nutrients are chemically combined. For example: DAP. DAP contains 18% N and 46% P_2O_5.

Mixed Fertilizers/Fertilizers Mixtures

They are physical mixtures of two or more straight fertilizers. Sometimes a complex fertilizer is also used as one of the ingredients. The mixing is done mechanically. The fertilizer mixtures are usually in powder form but techniques have been developed for granulation of mixtures so that each grain will contain all the nutrients mixed in the mixture.

BIO FERTILIZERS

Bio fertilizers are the living organisms capable of fixing atmospheric nitrogen or making native soil nutrients available to crops. Atmospheric nitrogen is fixed effectively by the microorganisms either in symbiotic association with plant system (Rhizobium, Azolla) or in associative symbiosis (Azospirillum) or in free living system (Azotobactor, phosphobacterium, blue green algae) or in micorhizal symbiosis (VAM fungi).

TEKCT 5
DRAINAGE

For optimum growth and yield of field crops, proper balance between soil air and soil moisture is quite essential. Except rice many of the cultivated plants cannot withstand excess water in the soil. The ideal condition is that moisture and air occupy the pore spaces in equal proportions. When soil contains excess water than that can be accommodated in the pore spaces, it is said the field is water logged.

In general, soil is defined as the more or less loose and crumby part of the outer earth crust. It is a natural dynamic body of mineral and organic constituents, differentiated into horizons, which differs among themselves as well as from the underlying parent material in morphology, physical make-up, chemical composition and biological characteristics. It is made up of small particles of different sizes.

A. Causes of Water Logging

• Excessive use of water when the water is available in abundance or cheaply due to the belief that

more water contributes better yield.

• Improper selection of irrigation methods.

• Percolation and seepage from lands, canals and reservoir located at nearby elevated places.

• Improper lay out, lack of outlets.

• Presence of impervious layer with profile impeding percolation.

• Upward rise of water from shallow ground water table or aquifer.

B. Effects of Water Logging

(i) Direct effects - Replacement of soil air, which is the main source of oxygen for the roots as well as soil microbes. Due to high amount of CO_2 in soil air, high CO_2 concentration under waterlogged conditions will kill plant roots. Sometimes superficial root system or air space in root system

will develop. Due to poor aeration, intake of water and nutrient will be reduced.

(ii) Indirect effects - Nutrients are made unavailable due to leaching. Toxic elements will be formed under anaerobic conditions. Decomposition of organic matter under anaerobic condition results in production of organic acids like butyric acid, which is toxic to plants.

- Reduce the availability of N, Mn, Fe, Cu, Zn, Mo
- Reduces soil temperature
- Reduces the activity of beneficial microbes
- Destruct soil structure
- Difficult for cultural operation, and
- Incidence of pest, disease and weeds.

TEKCT 6
SOIL

Soil is a three-dimensional body, which supports plant establishment and growth and it is a natural and dynamic medium. For a farmer, soil refers to the cultivated top layer (surface soil) only, that is, up to 15–18 cm of the plough depth. Soils widely vary in their characteristics and properties. Understanding the properties of soils is important (1) for optimum use they can be put to and (2) for best management requirements for their efficient and productive use.

Functions of soil

- It provides place and anchorage for plant growth and development.
- It serves as a medium for air and water circulation.
- It acts as a reservoir for water and nutrients.
- It provides space for beneficial microorganisms.

Pedology - The origin of the soil, its classification and its description are involved in pedology.

Pedologist considers soil as a natural body and does not focus primarily on the soil's immediate practical utilization. Pedologist studies, examines and classifies soil as they occur in their natural environment.

Edaphology - It is the study of soils from the standpoint of higher plants. It considers various properties of soil as they relate to plant production. The edaphologist is practical, having the production of food and fibre as an ultimate goal. Simultaneously, the edaphologist must be a scientist to determine the reasons for variations in the soil productivity, and to find means of conserving and improving soil productivity.

TEKCT 7
SOIL PHASES

Soil is a complex system, made of solid, liquid and gaseous materials. Soil is a three phase or polyphasic system comprising of (a) solid phase, (b) liquid phase, and (c) gaseous phase in some proportions.

Normally the proportion is 50:25:25, but this may vary from soil to soil. In some occasions, liquid or gaseous phase may be absent. For e.g., in water logged soil, air is not present; similarly in desert dry sandy soils, water is not present.

Components of Soil

Soil consists of four major components. They are: (i) Mineral matter, (ii) Organic matter, (iii) water, and (iv) air. Physically, soil consists of stones, large pebbles, dead plant twigs, roots, leaves and other parts of the plant, fine sand, silt, clay and humus derived from the decomposition of organic matter. In the organic matter portion of the soil, about half of the organic matter comprised of the dead remains of the soil life in all stages of decomposition and the remaining half of the organic matter in the soil is alive.

The living part of the organic matter consists of plant roots, bacteria, earthworms, algae, fungi, nematodes actinomycetes and many other living organisms.

Soil contains about 50% solid space and 50% pore space. Mineral matter and organic matter

occupy the total solid space of the soil by about 45% and 5% respectively. The total pore space of the soil is occupied and shared by air and water on roughly equal basis. The proportion of air and water will vary depending upon the weather and environmental factors.

(a) **Soil mineral matter (SMM**) - Size and composition of mineral matter in soils are variable due to nature of parent rock from which it has been derived. The rock fragments are disintegrated and broken portion of the massive rocks, from which regolith through weathering, the soil has been formed.

These materials are usually very coarse and the minerals are extremely variable in size. The primary minerals viz., quartz, biotite, muscovite (dominates coarse fractions of the soil) and the secondary minerals viz., silicate clays and hydrous oxides clays of iron and aluminium (as very fine fraction) are present.

(b) Soil organic matter (SOM) - Soil organic matter exists as partly decayed and partially

resynthesized plant and animal residues. These are continuously being broken down as a result of microbial activity in soil. Due to constant change, it must be replenished to maintain soil productivity.

The organic matter content in a soil is very small and varies from only about 3–5% by weight in topsoil.

In addition to partly decayed plant and animal residues, soil organic matter contains living and dead microbial cells, microbiologically synthesized compounds and derivatives.

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• It is a main source of N, 5-6% of P, and 80% of S. It also supplies different trace elements like boron, molybdenum etc.

• It acts as a chelate, due to chelate formation between organic matter and various metals; theavailability of these metallic elements will be increased.

• It contributes to cation exchange capacity in soils.

• It reduces soil erosion; shades the soil and keeps the soil cooler.

(c) Soil water - Soil water plays a very significant role in soil-plant growth relationship. Water is held within the soil pores with varying degree of forces depending upon the amount of water present.

With the increasing amount of water in soil, the forces of retention of water by the soil will be low and vice-versa. The movement and retention of water in the soil is primarily influenced by the characteristics of the soil viz., texture, nature of inorganic and organic colloids, type and amount of exchangeable cations, size and total amount of pore spaces etc. Water held by soil with high force of attraction is not available to the plants. Soil water along with dissolved salts makes up the soil solution. These soil solution acts as an important medium for supplying different nutrient elements through exchange phenomena between soil solid surface and soil solution and the plant roots.

(d) Soil air - Pore spaces in soil consist of that portion of the soil volume not occupied by soil solids, either mineral or organic. Under field condition, pore spaces are occupied by air and water; the more the water the less the room for air and vice-versa. The relative amounts of air and water in the pore space fluctuate continuously. During rainy season, water replaces air from the soil pore spaces, but as soon as water leaves by downward movement, surface evaporation, and transpiration etc., air gradually replaces the water, as it is lost form the pore spaces. Soil air contains various gases like CO2, very small amounts of O2 and N etc. Generally, soil air contains much more CO2 and small amount of O2 than that of atmospheric air due to microbial respiration when large amounts of CO2 releases into the air and O2 is taken up by soil microorganisms. Well-aggregated soil having large pore spaces offers less mechanical impedance to root developments and shoot emergence and do not form crusts easily. Good aeration occurs in well-drained soils, which have sufficient proportion of their volume occupied by pores. Cultural practices affect soil aeration and plant growth through modification of

different soil physical properties like bulk density, porosity, aggregation etc. Soil air also influences beneficial microorganisms in soil.

ТЕКСТ 9
SEED TREATMENT

Seed treatment is usages of specific products and specific techniques to improve the growth environment for the seed, seedlings and young plants. It ranges from a basic dressing to coating and pelleting.

Seed dressing: This is the most common method of seed treatment. The seed is dressed with either a dry formulation or wet treated with a slurry or liquid formulation. Dressings can be applied at both, the farm and industries. Low cost earthen pots can be used for mixing pesticides with seed or seed can be spread on a polythene sheet. The required quantity of chemical can be sprinkled on the seed lot and mixed mechanically by the farmers.

Seed coating: A special binder is used with a formulation to enhance adherence to the seed.

Seed pelleting: The most sophisticated Seed Treatment Technology changes the physical shape of a seed to enhance pelletability and handling. Pelleting requires specialized application machinery and techniques and is the most expensive application.

The farmer must take care of the following while buying the seeds

• When purchasing the seed farmer should obtain a bill/cash memo wherein the lot number

and seed tag number is mentioned.

• After purchasing the seed, empty bag/packet (pouches) and receipt should be kept safely.

• Out of purchased seed, 100 seeds are taken from each purchased variety to test them for germination before sowing in the field. Knowing the germination percentage, the farmer can decide the seed rate when sowing in the field.

ТЕКСТ 10
AGRICULTURE OF UKRAINE

Ukraine is an independent state. The total geographic area of Ukraine is about 603,700 square km. Ukraine is an agrarian country. Its agriculture is a basis of the national economy. Ukraine's land fund amounts 60.4 million hectars, including 41.9 million hectares for agriculture. The territory of the farmers' lands is 21,576 hectares with 38,428 farms. The top soils are mainly black. They are the biggest treasure of Ukraine. 25 % of the world's rich black soils are in Ukraine. Ukraine's climate is moderately continental. The sediments are 300-600 millimetres a year. There are favourable conditions for the development of agriculture. Ukraine's farmers grow wheat, fruit, sunflowers, cereals, beetroots, potatoes, tomatoes, onions, carrots, cabbages and others for sale and their own use. They occupy an important place in Ukrainian diet and are grown everywhere.

Ukraine consists largely of a flat, fertile plain with no natural boundaries except the Carpathian Mountains in the southwest and the Black Sea in the south. Great areas are occupied by steppes and forest-steppe regions.

Lowlands occupy a considerable part of the country. In the north lies the Polissia Lowland. On the Left Bank, the Dnieper Lowland runs along the Dnieper River; The Black Sea Lowland skirts the Black Sea and the Sea of Azov. Between the Southern Buh and the middle reaches of the Dnieper lies the Dnieper Plateau. At its highest point it is 321 m. The Volhynia Plateau is 200-300 m in elevation. The Podillia Plateau lies between the Dnieper and Southern Buh. Its surface, is cut by valleys of 150-200 m. In the southeast of the country lies the Donets Ridge and the Azov Plateau.

Within the borders of Ukraine we find the Carpathian Mountains with the highest peak Hoverla (2061 m) which is located in the Chornohora massif.

Nowadays Ukraine is in the process of structural disintegration, what is characterized by a long-term decrease of production efficiency expressed in lowering of labor productivity and surplus of material production. The reforms initiated during the last years in Agro-Industrial complex (AIC) not only have helped to overcome the crisis but have also resulted in misbalance of interrelation between the AIC's spheres and branches of national economy. The main chains of production mechanisms have not been coordinated with each other. As a result the enterprises cannot fulfill their activities efficiently.

ТЕКСТ 11
AMERICAN FARMS

American farmers are famous all over the world for gathering big crops. On the one hand it is explained by the generosity of the nature. Little rainfalls are observed just in particular regions of the United States – especially in the West, where there are even deserts. On the rest of the territory there are big rainfalls, and rivers and underground waters perfectly water the soil. In the Middle West a considerable part of the most fertile soils of the world is situated. On the other hand the success of American farmers is caused by the considerable investments in the agriculture and the rise of workers' qualification. Due to the constant selective-breeding, the increase of productiveness and stableness of cereals was achieved.

It is necessary to organize the production of self-propelled windrow harvesters and at the same time to expand the production of combined soil cultivating and sowing machines.

In the nearest future the agricultural machine building industry is to arrange the manufacture of new machines for application of hard and liquid fertilizers and chemical plant protection means. In the interests of successful realization of the food programme it is highly important to continue the retooling of agriculture on the basis of new technology, to complete the comprehensive mechanization of the production of sugar beet, raw cotton and fibre flax and of the application of organic and mineral fertilizers and crop protection agents, to raise the level of mechanization of the production of vegetables, including potatoes, fruit, fodder, and livestock products.

ТЕКСТ 12
GARDENING

The grass grows very quickly at this time of year, especially if we have a lot of rain. And we have had a lot of rain recently so I need to cut it at least once per week. This task takes about half a day.

As spring rushes towards summer, trees and shrubs come into flower. The pink and white blossom of the Japanese cherry trees is always eagerly awaited. However it is gone very quickly, removed by strong winds and heavy rain. The same goes for the blossom on the pear, plum, apple and cherry trees. Fortunately the blossom wasn't blown away before it was pollinated, so tiny fruits can be seen growing on the trees. Something to look forward to in the late summer and autumn. We supplement the flowering shrubs and perennials with a variety of annuals. Annuals are plants that grow, flower and die all in one season. We sowed seeds in trays of compost several weeks ago. They have been growing in the greenhouse and now that the risk of frost has passed we put them outside to harden off (to get used to being outside). They are now at the stage when they need to be planted into the flower beds. There are a lot of them. Earlier this week my wife and I planted 400 dahlias, 200 lavetera, 40 sunflowers, 200 French marigolds and many more. There still a lot more awaiting their turn.

We try to arrange our bedding plants (the general term for plants grown inside and then planted outside) so that the different heights and colours compliment each other. For instance we are filling the large bed nearest the conservatory with plants that will produce mainly white flowers but with a few lilac or lavender coloured specimens as well. We will see if this plan has

worked in about 6 weeks.We also grow vegetables.Some like carrots, beetroot, spinach and parsnips are sown directly into the ground. The white net over the carrots is there to try and prevent the carrot root fly laying its eggs on the carrots. If they do then the hatched larvae tunnel into the carrot and can make the carrot inedible.

Other vegetables are sown inside the greenhouse and then planted out after the risk of frost has passed.We have so far planted runner beans, broad beans, cauliflower, sprouts, corn, onions and leeks outside. The net over the cauliflower is there to try and prevent the cabbage white butterfly laying eggs on them. Their eggs hatch and caterpillars eat and destroy the plants.

Some vegetables are not really suited to growing outside in England. So the greenhouse is gradually filling up with tomato plants. The Polytunnel now has cucumbers and butternut squash plants as well as some early potatoes.

The majority of the potatoes are planted directly into the soil, but as they sprout, the tops have to be covered up with soil to keep them safe from frost.

ГОВОРІННЯ (SPEAKING)

Factors influencing decisions on the selection of crops and cropping system

Climatic factors

Is the crop/cropping system suitable for local weather parameters such as temperature, rainfall, sun shine hours, relative humidity, wind velocity, wind direction, seasons and agro-ecological situations?

Soil conditions

Is the crop/cropping system suitable for local soil type, pH and soil fertility?

Water

- Do you have adequate water source like a tanks, wells, dams, etc.?
- Do you receive adequate rainfall?
- Is the distribution of rainfall suitable to grow identified crops?
- Is the water quality suitable?
- Is electricity available for lifting the water?
- Do you have pump sets, micro irrigation systems?

Cropping system options

- Do you have the opportunity to go for intercropping, mixed cropping, multi-storeyed cropping, relay cropping, crop rotation, etc.?
- Do you have the knowledge on cropping systems management?

Past and present experiences of farmers

- What were your previous experiences with regard to the crop/cropping systems that you are planning to choose?
- What is the opinion of your friends, relatives and neighbours on proposed crop/cropping systems?

Expected profit and risk

- How much profit are you expecting from the proposed crop/cropping system?
- Whether this profit is better than the existing crop/cropping system?
- What are the risks you are anticipating in the proposed crop/cropping system?
- Do you have the solution? Can you manage the risks?
- Is it worth to take the risks for anticipated profits?

Economic conditions of farmers including land holding

- Are the proposed crop/cropping systems suitable for your size of land holding?
- Are your financial resources adequate to manage the proposed crop/cropping system?
- If not, can you mobilize financial resources through alternative routes?

Labour availability and mechanization potential

- Can you manage the proposed crop/cropping system through your family labour?

• If not, do you have adequate labours to manage the same?
• Is family/hired labour equipped to handle the proposed crop/cropping system?
• Are there any mechanization options to substitute the labour?
• Is machinery available? Affordable? Cost effective?
• Is family/hired labour equipped to handle the machinery?

Technology availability and suitability

• Is the proposed crop/cropping system suitable?
• Do you have technologies for the proposed crop/cropping system?
• Do you have extension access to get the technologies?
• Are technologies economically feasible and technically viable?
• Are technologies complex or user-friendly?

Market demand and availability of market infrastructure

• Are the crops proposed in market demand?
• Do you have market infrastructure to sell your produce?
• Do you have organized marketing system to reduce the intermediaries?

General conditions for cultivation of crops farmer's handbook on basic agriculture

where to sell? When to sell? Whom to sell to? What form to sell in? What price to sell for?

• Do you get real time market information and market intelligence on proposed crops?

Policies and schemes

• Do Government policies favour your crops?
• Is there any existing scheme which incentivises your crop?
• Are you eligible to avail those benefits?

Availability of required agricultural inputs including agricultural credit

• Do you get adequate agricultural inputs such as seeds, fertilizers, pesticides, and implements in time?
• Do you have access to institutional credit?

Post harvest storage and processing technologies

• Do you have your own storage facility?
• If not, do you have access to such facility?
• Do you have access to primary processing facility?
• Do you know technologies for value addition of your crop?
• Do you have market linkage for value added products?
• Are you aware about required quality standards of value added products of proposed crops?

РОЗДІЛ ІІІ «ЕЛЕКТРОЕНЕРГЕТИКА, ЕЛЕКТРОТЕХНІКА ТА ЕЛЕКТРОМЕХАНІКА»

UNIT 1 ELECTRICAL CIRCUIT

1. Read and translate the following text.

Electric circuit" The electric circuit is the subject to be dealt with in the present article. But what does the above term really mean? We know the circuit to be a complete path which carries the current from the source of supply to the load and. then carries it again from the load back to the source. The purpose of the electrical source is to produce the necessary electromotive force required for the flow of current through the circuit. The path along which the electrons travel must be complete otherwise no electric power can be supplied from the source to the load. Thus we close the circuit when we switch on our electric lamp. If the circuit is broken or, as we generally say "opened" anywhere, the current is known to stop everywhere. Hence, we break the circuit when we switch off our electrical devices. Generally speaking, the current may pass through solid conductors, liquids, gases, vacuum, or any combination of these. It may flow in turn over transmission lines from the power-stations through transformers, cables and switches, through lamps, heaters, motors and so on. There are various kinds of electric circuits such as: open circuits, closed circuits, series circuits, parallel circuits and short circuits.

2. Fill in the blanks with the words and phrases:

Complete, fuse, open circuit, supplied, transmission line, fault, closed circuit, conductor, load, switch, safety device, short circuit, carry, cables.

1. The current does not flow if there is an ……
2. A fuse is a ……
3. Our laboratory is …… with electrical materials.
4. A new high voltage …… was put into operation in Siberia.
5. We tested the new …… in the high voltage laboratory.
6. The current flows when there is a ……
7. Copper is the best …… of electricity.
8. The …… of the electrical system was caused by lightning.
9. The ability to …… electrical charges is known as conduction.
10. This circuit consists of some …… paths.
11. A …… placed in an electrical circuit serves as a means of protection.
12. The …… of the power-stations often varies.
13. A …… is dangerous as it sometimes causes.
14. A …… is used to break the circuit.

3. Connect the word combinations:

Electric - path
various - device
single - kinds
safety - circuit
carrying - capacity

4. Find the end of the sentences:

1. The circuit is …
2. The purpose of the electric circuit is…
3. When we switch off our electric devices, …
4. The current may pass through …
5. There are various kinds of electric circuits, such as…

6. The lamps in your room and your house are generally connected…

7. The short circuit is produced…

8.The fuse …

a.open circuits, closed circuits, series circuits, parallel circuits and short circuits.

b.must be placed in every circuit, where there is a danger of overloading the line.

c.complete path which carries the current from the source of supply to the load and then carries it again from the load back to the source.

d.we break the circuit.

e.when the current is allowed to return to the source of supply without control and without doing the work that we want it to do.

f.solid conductors, liquids, gases, vacuum.

g.in parallel.

h.to produce the necessary electromotive force.

5. Translate into Ukrainian.

Electric circuit" The electric circuit is the subject to be dealt with in the present article. But what does the above term really mean? We know the circuit to be a complete path which carries the current from the source of supply to the load and then carries it again from the load back to the source. The purpose of the electrical source is to produce the necessary electromotive force required for the flow of current through the circuit. The path along which the electrons travel must be complete otherwise no electric power can be supplied from the source to the load.

6. Compete the following sentences.

A: Current flows, such conditions, circuit is considered, parallel circuit.

1. When electrical devices are connected so that the … from one device to another, they are said to be connected in series.

2. Under … the current flow is the same in all parts of the circuit, as there is only a single path along which it may flow.

3. The electrical bell … to be typical example of a series circuit.

4. The… provides two or more paths for the passage of current.

B: 1. Now we shall turn our attention to the short _____ called "the short".

2. The short circuit is produced when the _____ to return to the source of supply without control and without doing the work that we want it to do.

3. The short circuit often _____ fault or wire fault.

4. Under certain _____, the short may cause.

7. Learn by heart heard the following words and phrases.

electric circuit - електрична схема

current - струм

purpose of the electrical source - призначення електричний джерело

electrical source - електричний джерело

the parallel circuit - в паралельної ланцюга

the electrical bell circuit - електрична схема дзвінка

the short circuit - коротке замикання

certain conditions - певні умови

8. Fill in the blanks with the words and phrases:

electric circuit, really mean, the current from, purpose of the electrical source, electrons travel.

1. Electric circuit" The … is the subject to be dealt with in the present article.

2. But what does the above term …?

3. We know the circuit to be a complete path which carries the source … of supply to the load and. then carries it again from the load back to the source.

4. The … is to produce the necessary electromotive force required for the flow of current through the circuit.

5. The path along which the … must be complete otherwise no electric power can be supplied from the source to the load.

9. Зробіть заперечні та запитальні речення.

1. Peter can make a shelf.
2. Ann could go there yesterday.
3. His friends will be able to help him on Sunday.
4. Our pupils can read and speak English.
5. The tourists will be able to reach the village before dark.
6. I can show you the way to the park.
7. He could buy the ticket before-hand.
8. You will be able to catch the train.

10. Дайте відповідь на запитання за зразком.

Зразок: Ask your classmate if he can sing. – Can you sing?

Ask your classmate:

1. if he can speak French;
2. if he could play the piano last year;
3. if he can run 100 meters in 13 seconds;
4. if he will be able to come to your place tomorrow;
5. if he can go to Kiev by plane;
6. if his friends can play ice-hockey;
7. if he can repair a radio set.

11. Перефразуйте речення в минулий та майбутній часи.

Зразок: I may keep this magazine till Monday. – I shall be allowed to keep this magazine till Monday. – I was allowed to keep this magazine till Monday.

1. We may occupy this room.
2. He may stay away from school.
3. The tourists may spend the night in the camp.
4. You may see their documents.
5. She may work in the laboratory.
6. The pupils may go home.
7. I may be present at the meeting.

UNIT 2 PROPERTIES OF ELECTRIC CURRENT AND ELECTRIC CIRCUIT

1. Read and translate the following text.

The flow of electrons through a circuit is called electric current. The strength of the current depends on the rate at which electrons move in the conductor. But we cannot see the effect produced by the electric current apart from[1] the conductor through which it flows. If a magnet is suspended near a conductor carrying current, the magnet will deflect. Any piece of iron put near a conductor will become magnetized. A body carrying electric current becomes magnetized. Thus, to deflect a magnet, to magnetize iron and to heat the body are properties of electric current.

The properties influencing the flow of electricity in the circuit are resistance, inductance and capacitance.

2. Study the following vocabulary and do the tasks that follow.

apart from – вне
first of all – перш за все

3. Translate into Ukrainian.

Resistance is a property of a circuit to oppose the flow of electricity through it. The resistance of a conductor to the flow of electric current depends on a number of factors. First of all, that is the material of the conductor. Different materials offer different resistance to the flow of current. Metals generally have resistance and are good conductors. Materials, which offer a very high resistance, are used as insulators. Resistance is also affected by the length of the conductor.

4. Complete the following sentences.

1. The flow of electrons through a circuit is called _____.
2. The strength of the current depends on the rate at which _____ move in the conductor.
3. But we cannot see the effect produced by the electric _____ the conductor through which it flows.
4. If a magnet is suspended near a conductor carrying _____, the magnet will deflect.
5. Any piece of iron put near a conductor will become _____.

5. Define the terms:

electric current
move in the conductor
properties influencing
different materials

6. Translate into English.

Індуктивність показує здатність електричного струму для створення магнітного поля. Якщо змінний струм, магнітне поле, утворене цим струмом створює в контурі струм самоіндукції, який тече в напрямку, протилежному струму в електричної ланцюга. Індуктивність залежить від властивостей ядра і структури котушки. Одиницею індуктивності є Генрі.

7. Перефразуйте речення використовуючи дієслово may.

Зразок: I nearly lost my way. – I might have lost my way.

1. I nearly forgot about it.
2. It nearly killed him.
3. He nearly broke the window.
4. She nearly fell asleep.
5. I nearly caught cold.

8. Зробить слідуючи речення запитальними.

1. You must air the room twice a day.
2. Children must sleep nine hours a day.
3. The pupils must clean their classrooms.
4. She must help her mother about the house.

5. We must read English book every day.
6. Everybody must go for sports.
7. All children must go to school.
8. You must come to school in time.

9. Перефразуйте речення в минулий та майбутній часи.

Зразок: I must go there at once. – I had to go there at once. – I shall have to go there at once.

1. I must catch up with my class.
2. The man must sell his house.
3. She must turn off the radio.
4. You must be there at nine.
5. The girl must water flowers.
6. They must get up at six.
7. His sister must go shopping.
8. We must work in the reading-hall.
9. They must stay at home.
10. You must pay for it.

UNIT 3 ELEMENTS OF ELECTRIC AND RADIO CIRCUITS

1. Read and translate the following text.

An electric circuit is a path along which electricity can flow. An electric circuit consists of a source of energy or power source, a receiver of energy and two conductors connecting the receiver and the power source terminals. The electric source produces the necessary electromotive force (e.m.f.) required for the flow of current through the circuit. The circuit should be complete; otherwise no electric current can flow through it. If the circuit is broken or "opened", the

Fundamentally, two types of circuits are possible, according to the way in which the circuit elements are joined. To understand the difference between the circuit connections is not difficult. When electrical devices are connected one after another so that the current flows successively through each element, we say they are connected in series. Under such conditions the current flow is the same in all parts of the circuit, as there is only a single path along which it may flow. The electric bell circuit is a typical example of a series circuit.

2. Study the following vocabulary and do the tasks that follow.

side by side – рядом
in such a way - таким чином

3. Define the terms:

a path along which electricity
The circuit should be complete
electric current
Radio differs

4. Translate into Ukrainian.

The parallel circuit provides two or more paths for electric current. The parallel circuit elements are connected side by side[1] in such a way[2] that the total current flowing through the circuit is the sum of currents flowing through each circuit element individually.

5 Complete the following sentences.

1. The parallel circuit provides two or more paths for _____.

2. The parallel circuit elements are connected _____ in such a way that the total current flowing through the circuit is the sum of currents flowing through each circuit element individually.

3. The lamps in your room are generally connected in_____.

6. Зробить питальні та заперечні речення.

1. Her father has to wear spectacles.
2. The woman has to go to the post-office.
3. You had to return home.
4. The girl had to catch up with her class.
5. They have to live in one room.
6. The boy had to write with a pencil.
7. They had to work at night.
8. I had to wait for them.

7. Перефразуйте речення використовуючи дієслово to have.

Зразок: It is necessary for me to go there. – I have to go there. I am obliged to tell you the truth. - I have to tell you the truth.

A. 1. It is necessary for him to get up at half past six.
2. It was necessary for them to build a bridge across the river.
3. It was necessary for her to read many books in order to prepare a good report.
4. It will be necessary for me to stay at home on Saturday.
5. It will be necessary for him to see a doctor.

B. 1. The driver was obliged to stop the car.
2. The teacher was obliged to give him a “two”.
3. I shall be obliged to expel you from the circle.
4. The woman was obliged to lock the door.
5. I was obliged to repeat my question.

8. Перефразуйте речення використовуючи дієслово to be.

A. 1. We agreed to meet near the theatre.
2. They agreed to discuss the film after classes.
3. The pupils agreed to go to the forest on Sunday.
4. We agreed to spend the summer in the country.
5. We agreed to come to school at five.

B. 1. It was arranged that I should meet them at the bus stop.
2. It was arranged that I should go there by plane.
3. It was planned that you should be given this task.
4. It was arranged that you should join us in Poltava.

UNIT4 RESISTORS

1. Read and translate the following text.

A resistor is one of the most common elements of any circuit. Resistors are used:

to reduce the value of current in the circuit; to produce IR voltage, drop and in this way to change the value of the voltage.

When current is passing through a resistor its temperature rises high. The higher the value of current the higher is the temperature of a resistor. Each resistor has a maximum temperature to which it may be heated without a trouble. If the temperature rises higher the resistor gets open and opens the circuit.

Resistors are rated in watts. The watt is the rate at which electric energy is supplied when a current of one ampere is passing at a potential difference of one volt. A resistor is rated as a 1-W resistor if its resistance equals 1,000,000 ohms and its current-carrying capacity equals 1/1,000,000 amp, since $P = E \times I = IR \times I = I^2R$ where P - power is given in watts, R - resistance is given in ohms and I - current is given in amperes.

If a resistor has a resistance of only 2 ohms but its current-carrying capacity equals 2,000 amp, it is rated as a 8,000,000-W resistor. Some resistors have a constant value - these are fixed resistors, the value of other resistors may be varied - these are variable resistors.

2. Study the following vocabulary and do the tasks that follow.

Rectifier - випрямляч
h.f.a.c. carrier - високочастотна несуча хвиля змінного струму
audio portion - низькочастотна частина
r.f. portion - високочастотна частина
amplifier - підсилювач
semiconductor - r напівпровідник
crystal substance - кристалічна речовина
silicon - кремній
crystal lattice - кристалічна решітка
и-type germanium - t-германий
p-type germanium - p-германий
valence electron - валентний электрон
hole - дірка
hole current - дірковий струм
junction transistor - площинний транзистор
point-contact transistor - точковий напівпровідниковий транзистор
n-p-n transistor - n-p-n транзистор
emitter - емітер
base - база напівпровідникового транзистора
collector - колектор
biased positive - з позитивним зміщенням
base-to-collector junction - перехід база-колектор
emitter-to-base junction - переход эмітер-база
rugged construction - міцна конструкція

3. Translate into Ukrainian.

A resistor is one of the most common elements of any circuit. Resistors are used:

to reduce the value of current in the circuit; to produce IR voltage drop and in this way to change the value of the voltage.

When current is passing through a resistor its temperature rises high. The higher the value of current the higher is the temperature of a resistor. Each resistor has a maximum temperature to which it may be heated without a trouble. If the temperature rises higher the resistor gets open and opens the circuit.

4. Complete the following sentences.

to produce IR voltage drop and in this _____ the value of the voltage.

When current is passing through a resistor its _____ high. The higher the value of current the _____ of a resistor. Each resistor has a maximum temperature to which it may be heated without a trouble.

5. Define the terms:

biased positive

collector
hole
amplifier
valence electron

6. Translate into English.

Коли струм проходить через резистор його температура піднімається висока. Чим вище значення струму, тим вище температура резистора. Кожен резистор має максимальну температуру, до якої може бути нагріта без проблем. Якщо температура піднімається вище резистора отримує відкритий і розмикає ланцюг.

7. Combine the two sentences as in the models.

Models: I teach English here. I am glad of it. - I am glad to teach English here.

We helped him. We are happy about it. - We are happy to have helped him.

I was examined yesterday. I am glad of it. - I am glad to have been examined yesterday.

A. 1. I work at the factory. I am happy about it. 2. I see you. I am glad of it. 3. I study French. I am glad of it. 4. I live in this town. I am happy about it. 5. I know this man. I am happy about it.

B. 1. I am going to Paris. I am happy about it. 2. I am spending my holidays in the Crimea. I am happy about it. 3. I am listening to the symphony. I am glad of it. 4. I am reading his letter. I am glad of it. 5. I am playing chess with you. I am glad of it.

C. 1. I spent my holidays in the Caucasus. I am happy about it. 2. He played chess with the world champion. He is happy about it. 3. I bathed in the river. I am glad of it. 4. I learned English at school. I am glad of it. 5. I passed my examination yesterday. I am glad of it.

D. 1. I don't understand this rule. I am sorry about it. 2. I am not working there now. I am sorry about it. 3. I have not seen this film. I am sorry about it. 4. She has not been working all these years. She is sorry about it. 5. Peter didn't see her. He is sorry about it.

E. 1. She was not invited to the evening party. She is sorry about it. 2. We are taught English. We are glad of it. 3. I was waked early this morning. I am glad of it. 4. I was not informed of it. I am sorry about it. 5. I am not allowed to go there. I am sorry about it.

8. Complete the following sentences.

1. A resistor is one of the most common _____.
2. Resistors are used:
a. to reduce the value of current in the circuit;
b. to produce IR voltage drop and in this way to change the value _____.
3. When current is passing through a _____ rises high.
4. The higher the value of current the higher is the temperature of a_____.
5. Each resistor has a _____ to which it may be heated without a trouble.
6. If the temperature rises higher the resistor gets open and opens the _____.

9. Define the terms:

to change the value of the voltage.
the watt is the rate
which electric energy
supplied when a current
one ampere is passing

a potential difference of one volt

10. Translate into Ukrainian.

When current is passing through a resistor its temperature rises high. The higher the value of current the higher is the temperature of a resistor. Each resistor has a maximum temperature to which it may be heated without a trouble. If the temperature rises higher the resistor gets open and opens the circuit.

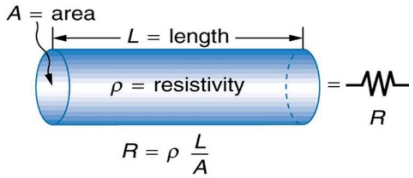
11. State the function of the infinitive in the sentences. Translate them.

1. Everyone had a wish to say something. (Gaskell) 2. He decided to go alone. (Gordon) 3. We must work hard to live. (Abrahams) 4. The question must be answered. (Heym) 5. It was difficult to believe (Dinckens) 6. She was going to my rooms to see my aunt. (Dickens) She had no desire to open her heart to her aunt. (Gaskell) 8. The great thing is to make a good breakfast. (Jerome) 9. I am ready to go with Annie. (Dickens) 10. Nothing could be done before morning. (Gaskell) 11. It wasn't safe to cross the bridge at night. (Greene) 12. To earn a living he became a salesman. (Carter) 13. The man was the first to speak. (Gaskell) 14. I am too old to be given a hiding. (Shaw) 15. This is my bench, and you have no right to take it away from me. (Albee)

UNIT 5 RESISTANCE AND RESISTIVITY

1. Read and translate the following text.

Resistance is the electric property that impedes a current. A current flowing through a wire (or resistor) is like water flowing through a pipe, and the voltage drop across the wire is like the pressure drop which pushes water through the pipe. Resistance is proportional to how much pressure is required to achieve a given flow, while conductance is proportional to how much flow occurs for a given pressure. Conductance and resistance are reciprocals. The resistance of an object depends on its shape and the material of which it is composed. The cylindrical resistor is easy to analyze, and by so doing we can gain insight into the resistance of more complicated shapes. As you might expect, the cylinder's electric resistance R is directly proportional to its length L, similar to the resistance of a pipe to fluid flow. The longer the cylinder, the more collisions charges will make with its atoms. The greater the diameter of the cylinder, the more current it can carry (again, similar to the flow of fluid through a pipe). In fact, R is inversely proportional to the cylinder's cross-sectional area A.



2. Read and translate the following text again and discuss in groups.

3. Answer the following text.

1. What is a typical axial-lead resistor?
2. What are Resistance and Resistivity?
3. What is a conductance?
4. What is a resistance is reciprocals?
5. What is a Typical Resistor?

4. Learn by heart words and phrases.

Typical Resistor - типовий резистор
resistance - опір

a typical axial-lead resistor- типовий осьової провід резистора.

a more sophisticated circuit analysis - складніший аналіз ланцюга

practical application of these relationships - практичне застосування цих відносин

a number of standard values in series or parallel - ряд стандартних значень в послідовно або паралельно

5. How you translate into Ukrainian the following part of text and understood. The work for groups.

A: A typical axial-lead resistor.

What determines resistivity? The resistivity of different materials varies by an enormous amount. For example, the conductivity of teflon is about 1030 times lower than the conductivity of copper. Why is there such a difference? Loosely speaking, a metal has large numbers of "delocalized" electrons that are not stuck in any one place, but free to move across large distances, whereas in an insulator (like teflon), each electron is tightly bound to a single atom, and a great force is required to pull it away. Likewise, resistors range over many orders of magnitude.

B: Cylindrical Resistor

A uniform cylinder of length L and cross-sectional area A. Its resistance to the flow of current is similar to the resistance posed by a pipe to fluid flow. The longer the cylinder, the greater its resistance. The larger its cross-sectional area A, the smaller its resistance.

6. Complete the following sentences.

resistance depends, different resistance, resistivity, intrinsic property, extrinsic property.

As mentioned, for a given shape, the _____(1) on the material of which the object is composed. Different materials offer _____(2) to the flow of charge. We define the _____(3) ρ of a substance so that the resistance R of an object is directly proportional to ρ. Resistivity ρ is an _____(4) of a material, independent of its shape or size. In contrast, the resistance R is an _____(5) that does depend on the size a shape of the resistor.

7. Translate into English using the infinitive.

А. 1. Я радий, що працюю разом з ним. 2. Я радий, що працював разом з ним. 3. Вона щаслива, що вчиться в цьому інституті. 4. Вона щаслива, що вчилась у цьому інституті. 5. Мені незручно, що я турбую вас. 6. Мені незручно що я потурбував вас. 7. Він буде радий поїхати туди. 8. Він буде радий, що поїхав туди.

Б. 1. Я радий, запросити вас на вечір. 2. Я радий, що мене запрошують на вечір. 3. Я радий, що запросив їх на вечір. 4. Я радий, що мене запросили на вечір. 5. Я радий послати вам цю книжку. 6. Я радий, що послав їй цю книжку. 7. Я радий, що мене посилають на цю конференцію. 8. Я радий, що мене послали на цю конференцію.

В. 1. Я хочу послати їй телеграму. Я хочу, щоб мене послали на конференцію. 3. Моя сестра хоче побачити їх там. 4. Вона не хоче, щоб її там побачили. 5. Дівчинка любить, щоб їй розповідали казки. 6. Дівчинка любить розповідати казки.

UNIT 6 CONDUCTOR

1. Read and translate the following text.

Conductors are materials having a low resistance so that current easily passes through them. The lower the resistance of the material, the more current can pass through it.

The most common conductors are metals. Silver and copper are the best of them. The advantage of copper is that it is much cheaper than silver. Thus copper is widely used to produce wire conductors. One of the common functions of wire conductors is to connect a voltage source to a load resistance. Since copper wire conductors have a very low resistance a minimum voltage drop is produced in them. Thus, all of the applied voltage can produce current in the load resistance.

It should be taken into consideration that most materials change the value of resistance when their temperature changes.

Metals increase their resistance when the temperature increases while carbon decreases its resistance when the temperature increases. Thus metals have a positive temperature coefficient of resistance while carbon has a negative temperature coefficient. The smaller is the temperature coefficient or the less the change of resistance with the change of temperature, the more perfect is the resistance material.

2. Find answers to these questions in the text above:

1. What materials are called conductors?
2. What is the advantage of copper compared with silver?
3. What is the most common function of wire conductors?
4. Why is a minimum voltage drop produced in copper conductors?
5. What is the relation between the value of resistance and the temperature in carbon?
6. What materials are called insulators?
7. What are the most common insulators?
8. What are the two main functions of insulators?

3. Complete the sentences using the correct variant:

1. Insulators are materials having
a) low resistance.
b) high resistance.
2. Current passes through conductors
a) easily.
b) with great difficulty.
3. Copper and silver are
a) common conductors.
b) common insulators.
4. Air, paper and plastics are
a) common insulators.
b) common conductors.
5. In case a high voltage is applied to.
a) it does not conduct current an insulator
b) it conducts current.
6. Insulators are used
a) to store electric charge.
b) to reduce voltage.
c) to prevent a short between conducting wires
8. Carbon decreases its resistance
a) when the temperature increases.
b) when the temperature decreases.
9. Metals have
a) a positive temperature coefficient of resistance
b) a negative temperature coefficient of resistance

4. Learn by heart words and phrases.

Conductors - провідники
low resistance - низький опір
silver and copper - срібло і мідь
advantage - перевага
cheaper - дешевше
temperature changes - зміни температури
carbon has a negative temperature coefficient - вуглець має негативний температурний коефіцієнт
store electric charge - зберігати електричний заряд
a positive temperature coefficient - позитивний температурний коефіцієнт
smaller is the temperature coefficient - менше температурний коефіцієнт

5. Complete the following sentences.

1. Metals increase their resistance when the temperature increases while carbon decreases its resistance when the _____.
2. Thus metals have a _____of resistance while carbon has a negative temperature coefficient.
3. The smaller is _____ or the less the change of resistance with the change of temperature, the more perfect is the resistance material.

6. Translate into Ukrainian:

1. The most common insulators are air, paper, rubber, plastics.
2. Any insulator can conduct current when a high enough voltage is applied to it.
3. Currents of great value must be applied to insulators in order to make them conduct.
4. The higher the resistance of an insulator, the greater the applied voltage must be.

7. Translate into English using the infinitive.

Г. 1. Забути цей день було неможливо. 2. Переправлятися через річку вночі було небезпечно. 3. Вчитися наполегливо- завдання кожного учня. 4. Допомогти йому тепер- значить врятувати його. 5. Її мета- стати лікарем. 6. Ваше завдання - написати твір про свої літні канікули. 7. Наше завдання полягало в тому, щоб закінчити роботу до 5 грудня.

Д. 1. Він перший допоміг нам. 2. Вона написала твір першою. 3. Вона першою розповіла мені про це. 4. Директор говорив на зборах останнім. 5. Він перший поздоровив нас. 6. Я пішов додому останнім.

Е. 1. Ми взяли таксі, щоб щоб прибути на станцію вчасно. 2. Вона пішла на пошту, щоб одержати посилку. 3. Я ввімкнув телевізор, щоб подивитися футбольний матч. 4. Вони приїхали в Київ для участі в спортивних змаганнях. 5. Завтра ми підемо в ліс збирати гриби. 6. Щоб вивчати мову, ви повинні якомога більше читати.

Є. 1. Погода була надто хороша, щоб залишитися вдома. 2. Завдання було надто складним, щоб зробити його за годину. 3. Він досить досвідчений, щоб виконати це завдання. 4. Сьогодні надто холодно, щоб іти на річку. 5. В цьому тексті надто багато нових слів, щоб зрозуміти його без словника.

UNIT 7 CONDUCTORS AND INSULATORS

1. Read and translate the following text.

All substances have some ability of conducting the electric current, however, they differ greatly in the ease with which the current can pass through them. Metals, for example, conduct

electricity with ease while rubber does not allow it to flow freely. Thus, we have conductors and insulators.

What do the terms "conductors" and "insulators" mean? Substances through which electricity is easily transmitted are called conductors. Any material that strongly resists the electric current flow is known as an insulator.

Let us first turn our attention to conductance, that is the conductor's ability of passing electric charges. The four factors conductance depends on are: the size of the wire used, its length and temperature as well as the kind of material to be employed.

2. Give the Ukrainian equivalents for the words and word combinations below:

1) conductors; 2) insulators; 3) transmit; 4) resistance; 5) passage of current; 6) socket; 7) to connect to; 8) cord; 9) high voltage transmission line; 10) leak off.

3. Find in the text the sentences with the following related words and translate them:

conducting – conductor – conductivity – conductance

4. Guess what it is?

1.used to cover desk lamp cords
2. one of the most important insulators of all
3. the most widely used conductor
4. a better conductor than copper 5. not so good conductor as copper
6. the insulator usually used on the city street poles and high voltage transmission lines

5. State questions to the underlined words:

1) Solid metals conduct electricity with ease.
2) Conductance depends on the four factors.
3) There are many kinds of insulation used to cover the wires.
4) Insulators keep electricity from leaking off the conductor.
5) Conductors play an important role in electrical engineering.

6. Say whether these sentences are true or false:

1) Electrical conductivity of a body depends upon its atomic constitution.
2) There is no difference in the conducting ability of various substances.
3) The longer the wire is the weaker its opposition is.
4) The kind of the insulating material depends upon the purpose it is meant for.
5) Conductors are substances through which electricity is easily transmitted.
6) Insulators do not allow the electric current to flow freely.

7. Talk on the conducting ability of various substances and their appliance in electrical engineering. Use the table in Task IV.

Test: Conductors and insulators.

8. Fill in the blanks with the words and phrases:

A bare wire, poles, electrical engineering, insulation, opposition, to resist, similar, turned off, air, cord, covers, glasses, leak off, rubber, socket, is transmitted.

1. A …… is a small insulated cable.
2. We need …… for a chemical experiment.
3. When the temperature rises …… to the passing current increases.
4. …… is a perfect insulator.
5. If the switch is …… the current does not flow.
6. …… is a poor conductor electricity.

7. …… is a wire not covered with insulated material.
8. We study … .
9. If a wire is covered with … it is called an insulated wire.
10. Any magnet has two … .
11. Some liquids have … properties.
12. Electricity … by wires.
13. The train … a great distance from Lviv to Sevastopol.
14. If there is no insulation the current can … the conductor.
15. We shall consider the ability of insulators … the current flow.
16. Copper wires connect electrical devices to the … .

9. Arrange the following words in pairs of
a) Synonyms: b) Antonyms:
substance different ease dissimilar
to allow of course conductor to close
easily to use difficult to turn off
to resist instrument large long
to employ readily short thick
certainly to permit thin small
various to oppose to turn on insulator
device matter like difficulty
to break easy

10. Find the correct variant:
1. Insulators are materials having
a) low resistance. b) high resistance.
2. Current passes through conductors
a) easily. b) with great difficulty.
3. Copper and silver are
a) common conductors. b) common insulators.
4. Air, paper and plastics are
a) common conductors. b) common insulators.
5. Insulators are used
a) to store electric current. b) to prevent a short between conducting wires.
6. Metals increase their resistance
a) when the temperature decreases. b) when the temperature increases.
7. In case a high voltage is applied to an insulator
a) it does not conduct current. b) it conducts current.

11. Make up five sentences from each table.

	I	saw	him		enter the house.
	He/	heard	her		leave the room.
She		watched	them		play the piano.
	You	noticed	you		sing.
	We		the girl		approach the river.
	They				
	I	made	him	(to)	learn the poem by heart.
	He/	let	them		do the exercise again.
She		caused	you		go home.
	You	forced	me		buy it.
	We				read it aloud.
	They				

I	want(s)	her	to become an agronomist.
He/	wanted	them	to work here.
She	like(s)	you	to speak English.
You	should	me	to sing this song.
We	like	they	to stay here.
They	would	boys	
	like		

UNIT 8 DIODES

1. Read and translate the following text.

In electronics, a diode is a two-terminal electronic component that conducts primarily in one direction (asymmetric conductance); it has low (ideally zero) resistance to the current in one direction, and high (ideally infinite) resistance in the other. A semiconductor diode, the most common type today, is a crystalline piece of semiconductor material with a p–n junction connected to two electrical terminals. A vacuum tube diode has two electrodes, a plate (anode) and a heated cathode. Semiconductor diodes were the first semiconductor electronic devices. The discovery of crystals' rectifying abilities was made by German physicist Ferdinand Braun in 1874. The first semiconductor diodes, called cat's whisker diodes, developed around 1906, were made of mineral crystals such as galena. Today, most diodes are made of silicon, but other semiconductors such as selenium and germanium are sometimes used.

2. Study the following vocabulary and do the tasks that follow.

a two-terminal electronic component - два термінали електронних компонентів
conducts primarily - проводить в першу чергу
direction (asymmetric conductance) - напрямок (асиметрична провідність)
low (ideally zero) - низькою (в ідеалі нульовий)
the current in one direction - струму в одному напрямку
semiconductor diode - напівпровідниковий діод
vacuum tube - вакуумна трубка
a plate (anode) - пластина (анод)
electronic version of a check valve - електронна версія зворотний клапан
rectification - випрямлення
convert alternating current - перетворити змінний струм
direct current - постійного струму
threshold voltage - порогове напруга
regulate voltage - регулювати напругу
Gunn diodes - діоди Ганна
tunnel diodes - тунельні діоди
shot-noise generators - постріл-шум генераторів

3. Complete the following sentences.

Semiconductor, tailored by selecting, special-purpose, regulate voltage, electronically tune, Gunn diodes, negative resistance, switching circuits.

A … diode's current–voltage characteristic can be… the semiconductor materials and the doping impurities introduced into the materials during manufacture. These techniques are used to create … diodes that perform many different functions. For example, diodes are used to … (Zener diodes), to protect circuits from high voltage surges (avalanche diodes), … to radio and

TV receivers (varactor diodes), to generate radio-frequency oscillations (tunnel diodes, …, IMPATT diodes), and to produce light (light-emitting diodes). Tunnel, Gunn and IMPATT diodes exhibit, …which is useful in microwave and ….

4. Fill in the blanks with appropriate words:

In electronics, a diode is a two-terminal electronic component that conducts primarily in one direction (asymmetric conductance); it has low (ideally zero) resistance to the current in …, and high (ideally infinite) resistance in the other.	Ferdinand Braun
… diodes were the first semiconductor electronic devices.	electronic devices
A …–voltage characteristic can be tailored by selecting the semiconductor materials and the doping impurities introduced into the materials during manufacture.	vacuum tube
… begin conducting electricity only if a certain threshold voltage or cut-in voltage is present in the forward direction (a state in which the diode is said to be forward-biased).	semiconductor material
A semiconductor diode, the most common type today, is a crystalline piece of … with a p–n junction connected to two electrical terminals.	Semiconductor diodes
A … diode has two electrodes, a plate (anode) and a heated cathode.	semiconductor diode's current
Semiconductor diodes were the first semiconductor ….	Semiconductor
The discovery of crystals' rectifying abilities was made by German physicist … in 1874.	one direction

5. Define the terms:

semiconductor diode
rectification
Gunn diodes
semiconductor diode
conducts primarily
electronic devices

6. Translate the following sentences.

1. A semiconductor diode's current–voltage characteristic can be tailored by selecting the semiconductor materials and the doping impurities introduced into the materials during manufacture.
2. Semiconductor diodes begin conducting electricity only if a certain threshold voltage or cut-in voltage is present in the forward direction (a state in which the diode is said to be forward-biased).
3. A semiconductor diode, the most common type today, is a crystalline piece of semiconductor material with a p–n junction connected to two electrical terminals.
4. Diodes, both vacuum and semiconductor, can be used as shot-noise generators.
5. The voltage drop across a forward-biased diode varies only a little with the current, and is a function of temperature; this effect can be used as a temperature sensor or as a voltage reference.

7. B. Find the answers in the text to the following questions:

1. What is a diode?
2. What's the main function of a diode?
3. How can one create a diode?

4. What are the uses of a diode?
5. What types of diodes can be distinguished according to the direction of the voltage?
6. Why is it important to choose the diodes?

8. Read the following text and answer question.

Diodes

A diode is a semiconductor device which allows current to flow through it in only one direction. So, what does a diode consist of that lets it operate by this general principle that the current is allowed to flow in one direction but not the other? Let's consider the process of creating a typical P-N junction diode. When you put N-type and P-type silicon together as shown in this diagram, you get a very interesting phenomenon that gives a diode its unique properties.

Even though N-type silicon by itself is a conductor, and P-type silicon by itself is also a conductor, the combination shown in the diagram doesn't conduct any electricity. The negative electrons in the N-type silicon are attracts to the positive terminal of the battery. The positive holes in the P-type silicon are attracted to the negative terminal of the battery. No current flows across the junction because the holes and the electrons one each moving in the wrong direction.

9. Combine the given two sentences into one using the Objective Infinitive Complex.

Model: Mary opened the window. I saw it. - I saw Mary open the window.

1. Peter took my pen. I saw it. 2. He ran to the river. I saw it. 3. The girl smiled. I noticed it. 4. The children shouted in the next room. I heard it. 5. She played the violin. My brother heard it. 6. The man tried to open the door. We saw it. 7. They got into a taxi. He saw it. 8. Somebody knocked at the door. We heard it.

10. Transform the sentences using the Subjective Infinitive Complex instead of the Objective Infinitive Complex.

Model: I saw her read the letter. - She was seen to read the letter.

1. We heard her sing a folk song. 2. I saw him put his coat on. 3. They heard the clock strike nine. 4. We saw the rider disappear in the distance. 5. We saw the plane take off. 6. They expected him to return in a fortnight. 7. We know her to be a talented actress. 8. Everybody supposed him to be a foreigner. 9. Everybody considered him to be a great man. 10. I expect the telegram to be sent tomorrow.

UNIT 9 PARAMETRIC AND TUNNEL DIODES

1. Read and translate the following text.

The history of the semiconductor diode is held to have begun in the early days of radio when "crystals" were used as signal detectors. However, the operating mechanism of the semiconductor diode remained obscure until the introduction of modern transistor physics. Furthermore, semicon¬ductor diodes were not used as active devices until a p-n junction diode was discovered to be an attractive element for parametric amplifiers. Such a diode, characterized by a variable capacitance, is known to be called a parametric diode. It has a voltage-dependent junction capacitance. In some commercial forms it is also known as a „varactor" diode.

Immediately after the introduction of parametric diodes, another semiconductor diode known as the tunnel diode was developed. The tunnel diode is a semiconductor p-n junction somewhat similar to the parametric diode, although its physical principles of operation are entirely different. The operation of the tunnel diode is based on quantum-mechanical tunneling. Parametric diodes and tunnel diodes may be compared as follows:

2. Study the following vocabulary and do the tasks that follow.

semiconductor diode - напівпровідниковий діод
modern transistor physics - сучасна фізика транзистора
operation is entirely different – операція - це зовсім інше
negative-resistance devices - від'ємного опору пристрої
both two-terminal - обидва два-термінали
while in tunnel-diode amplifiers - у той час як в тунелі-діода підсилювачі
associated idler circuit - пов'язані з ланцюгом холостого ходу

3. Define the terms:
a reactive nature
parametric diode
a parametric amplifier originates essentially
the tunnel diode

4. Translate into Ukrainian.

The history of the semiconductor diode is held to have begun in the early days of radio when "crystals" were used as signal detectors. However, the operating mechanism of the semiconductor diode remained obscure until the introduction of modern transistor physics. Furthermore, semi-conductor diodes were not used as active devices until a p-n junction diode was discovered to be an attractive element for parametric amplifiers.

5. Complete the following sentences.

1. The tunnel diode is a _____ p-n junction somewhat similar to the parametric diode, although its physical principles of operation are entirely different.
2. The operation of the tunnel _____ is based on quantum-mechanical tunneling.
3. Parametric diodes and tunnel diodes may be compared as follows:

a) They are both _____. Physically, they can be manufactured in much the same manner.

4) The operation of parametric diode depends on its _____, controlled by the applied voltage, while the operation of a tunnel diode depends on its negative resistance, made possible by the tunneling current.

6. Transform the sentences according to the models.

Models: It is (im) probable that he will come tomorrow. - He is (un) likely to come tomorrow.

He will certainly come. - He is sure to come.

He will probably come. - He is likely to come.

A. 1. It is probably that it will rain before evening. 2. It is improbably that she will forget her promise. 3 It is probable that the winter will be very cold this year. 4. It is probable that they will be late. 5. It is improbable that this medicine will help him.

B. 1. They will certainly like this film. 2. The doctor will certainly do his best. 3. He will probably forget the address. 4. She will probably catch cold. 5. He will certainly do his duty. 6. The weather will probably change.

7. Transform the following complex sentences into simple ones using the Prepositional Infinitive Complex.

1. It is necessary that we should start early in the morning. 2. It is necessary that she should come here in time. 3. It is important that he should work systematically. 4. It is necessary that you should air the room twice a day. 5. It is necessary that you should go in for sports.

UNIT 10 THE VARIETIES OF WAVES

1. Read and translate the following text.

In physics, electromagnetic radiation (EM radiation or EMR) refers to the waves (or their quanta, photons) of the electromagnetic field, propagating (radiating) through space carrying electromagnetic radiant energy. It includes radio waves, microwaves, infrared, (visible) light, ultraviolet, X-, and gamma radiation.

Classically, electromagnetic radiation consists of electromagnetic waves, which are synchronized oscillations of electric and magnetic fields that propagate at the speed of light through a vacuum. The oscillations of the two fields are perpendicular to each other and perpendicular to the direction of energy and wave propagation, forming a transverse wave. The wavefront of electromagnetic waves emitted from a point source (such as a lightbulb) is a sphere. The position of an electromagnetic wave within the electromagnetic spectrum can be characterized by either its frequency of oscillation or its wavelength. The electromagnetic spectrum includes, in order of increasing frequency and decreasing wavelength: radio waves, microwaves, infrared radiation, visible light, ultraviolet radiation, X-rays and gamma rays.

2. Study the following vocabulary and do the tasks that follow.

electromagnetic radiation електромагнітне випромінювання

to the waves (or their quanta, photons) of the electromagnetic field - хвилі (або кванти, фотони) електромагнітного поля

electromagnetic radiation consists - електромагнітне випромінювання складається

electromagnetic waves - електромагнітні хвилі

oscillations - коливання

magnetic fields - магнітні поля

electromagnetic spectrum - електромагнітного спектра

decreasing wavelength - зменшенням довжини хвилі

whose energy - чия енергія

equivalent total (relativistic) mass - еквівалент повної (релятивістської) маси

quantum theory of electromagnetism - квантова теорія електромагнетизму

Quantum effects provide additional sources of EMR - квантові ефекти забезпечують додатковими джерелами ЭМР

biological organisms depend both upon the radiation's power and its frequency - біологічних організмів залежать як від потужність випромінювання і його частота

chemical reactions - хімічні реакції

3. Define the terms:

magnetic fields

quantum theory of electromagnetism

to the waves (or their quanta, photons) of the electromagnetic field

whose energy

electromagnetic waves

4. Translate into Ukrainian.

Electromagnetic radiation is associated with those EM waves that are free to propagate themselves ("radiate") without the continuing influence of the moving charges that produced them, because they have achieved sufficient distance from those charges. Thus, EMR is sometimes referred to as the far field. In this language, the near field refers to EM fields near the charges and current that directly produced them, specifically, electromagnetic induction and electrostatic induction phenomena.

5. Complete the following sentences.

1. _____ are produced whenever charged particles are accelerated, and these waves can subsequently interact with other charged particles.

2. EM waves carry energy, momentum and angular momentum away from their source particle and can impart those_____ to matter with which they interact.

3. Quanta of EM waves are called photons, whose rest mass is zero, but whose energy, or equivalent total (relativistic) mass, is not zero so they are still _____.

UNIT 11 THE VARIETIES OF WAVES. PROPERTIES

1. Read and translate, discuss how you understood the following text.

Electromagnetic waves can be imagined as a self-propagating transverse oscillating wave of electric and magnetic fields. This 3D animation shows a plane linearly polarized wave propagating from left to right. Note that the electric and magnetic fields in such a wave are in-phase with each other, reaching minima and maxima together An alternate view of the wave shown above.

Electrodynamics is the physics of electromagnetic radiation, and electromagnetism is the physical phenomenon associated with the theory of electrodynamics. Electric and magnetic fields obey the properties of superposition. Thus, a field due to any particular particle or time-varying electric or magnetic field contributes to the fields present in the same space due to other causes. Further, as they are vector fields, all magnetic and electric field vectors add together according to vector addition. For example, in optics two or more coherent lightwaves may interact and by constructive or destructive interference yield a resultant irradiance deviating from the sum of the component irradiances of the individual lightwaves.

2. Study the following vocabulary and do the tasks that follow.

Electromagnetic waves - електромагнітні хвилі
oscillating wave - осцилограми
Electromagnetic radiation - електромагнітне випромінювання
alternate view - альтернативний вид
the physical phenomenon associated - фізичні явища, пов'язані
time-varying electric or magnetic field contributes - змінюється в часі електричного або магнітного - поля сприяє
electrodynamics - електродинаміка
Kerr effect - ефект Керра
important aspect - важливим аспектом
wave consists - хвиля складається
types of waves - типи хвиль
time function - функція часу
propagation and its polarization - поширення і поляризація
electromagnetic interference - електромагнітні перешкоди
polarization signals - поляризація сигналів

3. Translate into Ukrainian.

Maxwell's electromagnetic wave equation. Two main classes of solutions are known, namely plane waves and spherical waves. The plane waves may be viewed as the limiting case of spherical waves at a very large (ideally infinite) distance from the source. Both types of waves can have a waveform which is an arbitrary time function (so long as it is sufficiently differentiable to conform to the wave equation).

4. Define the terms:

time-varying electric or magnetic field contributes

important aspect
types of waves
time function
Electromagnetic waves

5. Complete the following sentences.

A: A quantum theory of the interaction between _____ and matter such as electrons is described by the theory of quantum electrodynamics. _____ can be polarized, reflected, refracted, diffracted or interfere with each other.

B: _____ is a transverse wave, meaning that its oscillations are perpendicular to the direction of energy transfer and travel. The _____ and magnetic parts of the field stand in a fixed ratio of strengths in order to satisfy the two _____ that specify how one is produced from the other.

6. Read the following text again. Fill in the blanks with appropriate words:

Maxwell's … wave equation.	Electromagnetic waves
As with any time function, this can be decomposed by means of Fourier analysis into its frequency spectrum, or individual sinusoidal components, each of which contains a single frequency, ….	sinusoidal functions
A … of successive troughs and crests, and the distance between two adjacent crests or troughs is called the wavelength.	monochromatic electromagnetic
Some … both the wave and particle natures of electromagnetic waves, such as the self-interference of a single photon.	Interference
… is the superposition of two or more waves resulting in a new wave pattern.	experiments display
A … wave can be characterized by its frequency or wavelength, its peak amplitude, its phase relative to some reference phase, its direction of propagation and its polarization.	wave consists
A common misconception is that the E and B fields in electromagnetic radiation are out of phase because a change in one produces the other, and this would produce a phase difference between them as … (as indeed happens in electromagnetic induction, and in the near-field close to antennas).	amplitude and phase
… can be imagined as a self-propagating transverse oscillating wave of electric and magnetic fields.	electromagnetic

UNIT 12 RADIO WAVES

1.Thermal radiation and electromagnetic radiation as a form of heat

Main articles: Thermal radiation and Planck's law

The basic structure of matter involves charged particles bound together. When electromagnetic radiation impinges on matter, it causes the charged particles to oscillate and gain energy. The ultimate fate of this energy depends on the context. It could be immediately re-radiated and appear as scattered, reflected, or transmitted radiation. It may get dissipated into other microscopic motions within the matter, coming to thermal equilibrium and manifesting itself as thermal energy in the material. With a few exceptions related to high-energy photons (such as fluorescence, harmonic generation, photochemical reactions, the photovoltaic effect for

ionizing radiations at far ultraviolet, X-ray and gamma radiation), absorbed electromagnetic radiation simply deposits its energy by heating the material. This happens for infrared, microwave and radio wave radiation. Intense radio waves can thermally burn living tissue and can cook food. In addition to infrared lasers, sufficiently intense visible and ultraviolet lasers can easily set paper afire.

2. Study the following vocabulary and do the tasks that follow.

lowest frequency - низької частоти
impinge upon a conductor - посягають на провідника
electric current - електричний струм
Microwaves - мікрохвильова піч
Natural sources produce - природні джерела дають
basic structure - базова структура
ultimate fate - остаточна доля
microscopic motions - мікроскопічні руху
Infrared radiation - інфрачервоне випромінювання
Thermodynamics - термодинаміка
Radiation - випромінювання
electromagnetic energy - електромагнітної енергії
thermal energy - теплової енергії
radiated away from the matter - випромінювана від матерії
subsequently - згодом

3. Define the terms:

Microwaves
radiation
electric current
electromagnetic radiation
types of waves
polarization signals

4. Choose the correct word to complete each sentence:

1. Electromagnetic _____ are produced whenever charged particles are accelerated, and these waves can subsequently interact with other charged particles.

1. waves 2. energy

2. Electromagnetic _____ is a transverse wave, meaning that its oscillations are perpendicular to the direction of energy transfer and travel.

1. radiation 2. Waves

3. A monochromatic electromagnetic _____ can be characterized by its frequency or wavelength, its peak amplitude, its phase relative to some reference phase, its direction of propagation and its polarization.

1. wave 2. energy

5. Translate the following sentences.

A: The effects of EMR upon chemical compounds and biological organisms depend both upon the radiation's power and its frequency. EMR of visible or lower frequencies (i.e., visible light, infrared, microwaves, and radio waves) is called non-ionizing radiation, because its photons do not individually have enough energy to ionize atoms or molecules. The effects of these radiations on chemical systems and living tissue are caused primarily by heating effects from the combined energy transfer of many photons. In contrast, high ultraviolet, X-rays and gamma rays are called ionizing radiation since individual photons of such high frequency have enough energy to ionize molecules or break chemical bonds.

B: An important aspect of light's nature is its frequency. The frequency of a wave is its rate of oscillation and is measured in hertz, the SI unit of frequency, where one hertz is equal to one oscillation per second. Light usually has multiple frequencies that sum to form the resultant wave. Different frequencies undergo different angles of refraction, a phenomenon known as dispersion.

C: The basic structure of matter involves charged particles bound together. When electromagnetic radiation impinges on matter, it causes the charged particles to oscillate and gain energy. The ultimate fate of this energy depends on the context. It could be immediately re-radiated and appear as scattered, reflected, or transmitted radiation. It may get dissipated into other microscopic motions within the matter, coming to thermal equilibrium and manifesting itself as thermal energy in the material. With a few exceptions related to high-energy photons (such as fluorescence, harmonic generation, photochemical reactions, the photovoltaic effect for ionizing radiations at far ultraviolet, X-ray and gamma radiation), absorbed electromagnetic radiation simply deposits its energy by heating the material.

UNIT 13 TRANSISTORS

1. Read and translate the following text.

A transistor is an active component that can be used as an amplifier or a switch. In a Class A amplifier a small signal is applied to the base and an amplified undistorted output is produced on the collector and the emitter. The output can exhibit current and voltage gain, but what is most significant is that a transistor is capable of generating considerable power gain. The transistor circuit does not actually create power, but gets its power from a battery or DC power supply. A transformer can increase voltage at the expense of current, or it can increase current at the expense of voltage. Put the power output of a transformer in watts will always be less than input wattage. A transistor generally has three or more leads. Bipolar transistors have a Base, Emitter, and Collector. The base emitter and the base collector junctions behave like back to back diodes. This actually is a simple way to test a transistor, since transistor failures frequently consist of open or shorted PN-junctions.

2. Learn by heart the following words and phrases.

Transistor - Транзистор
an amplifier or a switch - підсилювача або перемикача
transistor circuit - транзистор схема
Field Effect transistors - польові транзистори
Junction Type Field Effect transistor - з'єднання типу польового транзистора
Insulated Gate Field Effect - ізольований Ефект Полю Гаті
the Insulated Gate Field Effect transistor - з ізольованим затвором польовий транзистор
Operational amplifiers - операційні підсилювачі
Transistor excellent - транзистор відмінно
integrated circuits - інтегральні схеми
small commission that we earn - невелика комісія, що ми заробляємо

3. Translate the text into Ukrainian.

Field Effect transistors are controlled by the Gate voltage; the Gate draws very little gate current. I will only discuss N-type channel Field Effect Transistors. In Junction Type Field Effect transistor, a P type gate is bonded to N-type channel. This results in an actual PN-junction being formed at the Gate to channel bond. Junction Field Effect Transistors are reverse biased,

and therefore no current flows through the gate. The gate voltage determines the E field in the junction area.

4. Complete the following sentences.

1. A transistor is an _____ that can be used as an amplifier or a switch.
2. In a Class A amplifier a small _____ to the base and an amplified undistorted output is produced on the collector and the emitter.
3. The output can exhibit current and _____, but what is most significant is that a transistor is capable of generating considerable power gain.
4. The _____ does not actually create power, but gets its power from a battery or DC power supply.
5. A _____ can increase voltage at the expense of current, or it can increase current at the expense of voltage.

5. Translate the text into Ukrainian.

A: Field Effect Transistors are often used in the input stage of operational amplifiers in order to give the input a very high impedance. Operational amplifiers are usually integrated circuits, and they will be discussed in the next lecture.

B: Field Effect transistors are controlled by the Gate voltage; the Gate draws very little gate current. I will only discuss N-type channel Field Effect Transistors. In Junction Type Field Effect transistor, a P type gate is bonded to N-type channel. This results in an actual PN-junction being formed at the Gate to channel bond. Junction Field Effect Transistors are reverse biased, and therefore no current flows through the gate.

C: A transistor must be biased so that both base current and collector current flow in the direction of arrow on the transistor symbol. The arrow on the transistor schematic symbol points in the direction of conventional current flow.

D: A transformer can increase voltage at the expense of current, or it can increase current at the expense of voltage. Put the power output of a transformer in watts will always be less than input wattage. A transistor generally has three or more leads. Bipolar transistors have a Base, Emitter, and Collector. The base emitter and the base collector junctions behave like back to back diodes.

6. Translate into Ukrainian. Underline Objective Infinitive Constructions.

1. I want you to listen to me and I expect you to understand me. 2. If you don't want anyone to know your business, keep your mouth shut. 3. What made you decide to enter that competition? 4. They wanted her to relax and sent the children to her aunt's. 5. Everybody knows him to be a responsible man. 6. Sunglasses always make you look mysterious. 7. The desire for success makes Martin work hard. It doesn't let him rest a minute. 8. Let me take you to the Milky Way on your holiday! 9. It takes two months to make a dream come true. 10. Don't let them fool you! 11. The boss expects you to finish the report by Monday. Would you like me to help you? 12.I don't let my children watch TV shows that are violent. Some of them will make your hair stand on end. 13. I saw you dance, and I'll never be the same again! 14. We saw Megan cross the street and enter the supermarket. 15. I have never heard anyone speak badly of him. 16. Angela felt her heart stop beating. 17. With great interest the detective watched people come in and go out of the house in the middle of the night.

7. Transform the following sentences using Objective Infinitive Constructions.

Model: I expect **that she will send** me a letter.

I expect **her to send** me a letter.

1. I would like to see **how he will say it to my face.** 2. I expect **that you will join our excursion.** 3. We had not expected **that she would reply,** but she did. 4. We knew **that he was a clever man.** 5. I don't like **that you repeat this nonsense.** 6. I hate **when people speak so cynically.** 7. We expect **that everybody will be ready by seven.** 8. They showed themselves even more narrow-minded than we had expected **they would be.** 9. I felt **that somebody touched me lightly on the shoulder.** 10. He heard **that someone called his name. 11.** We did not expect **that he would return so soon.** 12. I saw **that the telegraph boy handed the cable to the man.** 13. They heard **how the woman uttered a little exclamation.** 14. He hated **when people argued about trifles.**

UNIT 14 THYRISTORS

1. Read and translate the following text.

Thyristors also have switching problems that can be improved by snubbing networks, usually of the simple RC type. In contrast to the switching problems of bipolar transistors and power MOSFETs, it is the extremely rapid turn on of thyristors that tends to cause troubles. For example, the RFI (radio frequency interference) and EMI (electromagnetic interference) generated by thyristors originates primarily from this characteristic. Such interference might not only play havoc with communications equipment, but all too often causes false turn on of other thyristor control circuits. Another source of false turn on in thyristors emanates from the so-called *dv/dt* effect. In so many words, if the voltage across the thyristor rises too rapidly following turn off, the thyristor might be internally retriggered, thereby losing control. This retriggering occurs because of capacitive feedback from the anode to the gate and is one of the factors limiting the frequency at which proper control can be maintained. High frequency is tantamount to high *dv/dt* and there is more internal capacitive feedback to the gate. In actual applications, snubbing is very effective in preventing erratic performance of this nature. Of course, the proper thyristor must be selected for the frequency involved.

Another way of improving *dv/dt* immunity is to use a low value of gate-cathode resistance to divert much of the internal anode-gate feedback current. This is a very effective approach, but it is at the expense of increased drive power. A negative bias of about 1 V at the gate can also be used to extend immunity from the *dv/ dt* effect. Such reverse bias is more easily applied to SCR than to triac circuits.

2. Learn by heart the following words and phrases.

Thyristors - тиристори
snubbing networks - мереж гнобить
radio frequency interference - радіочастотні перешкоди
electromagnetic interference - електромагнітні перешкоди
such interference таке - втручання
the thyristor tries - тиристор намагається
the phase displacement of voltage and current - зсув фази напруги і струму
the ignition and propagation of a flame - запалювання і розповсюдження полум'я
obviously - очевидно
load circuit - ланцюги навантаження
a delay reactor - затримка реактора

3. Read and discuss the text groups.

Transistors are the tiny electronic components that changed the world: you'll find them in everything from calculators and computers to telephones, radios, and hearing aids. They're amazingly versatile, but that doesn't mean they can do everything. Although we can use them to switch tiny electrical currents on and off (that's the basic principle behind computer memory),

and transform small currents into somewhat larger ones (that's how an amplifier works), they're not very useful when it comes to handling much bigger currents. Another drawback is that they turn off altogether as soon as the switching current is removed, which means they're not so useful in devices such as alarms where you want a circuit to trigger and stay on indefinitely. For those sorts of jobs, we can turn to a somewhat similar electronic component called a **thyristor**, which has things in common with diodes, resistors, and transistors. Thryristors are reasonably easy to understand, though most of the explanations you'll find online are unnecessarily complex and often confusing beyond belief. So that's our starting point: let's see if we can take a clear and simple look at what thyristors are, how they work, and what kinds of things we can use them for!

4. Learn by heart the following words and phrases.

electronic components - електронні компоненти

from calculators and computers to telephones - від калькуляторів і комп'ютерів на телефони

the basic principle - основний принцип

the switching current - імпульсний струм

those sorts of jobs - ці види робочих місць

reasonably - розумно

unnecessarily - зайве

silicon-controlled rectifier - кремній-керований випрямляч

General Electric introduced - Дженерал Електрик представила

diacs and triacs - діністори і тріністори

alternating current - змінний струм

5. Define the terms:

electronic components

electronic components

a high current demand

silicon-controlled rectifier

bigger currents

6. Translate into Ukrainian paying attention to the Infinitive Constructions.

1. She felt her hands tremble. 2. Nobody noticed him come in and sit down. 3. Many books are known to be published in our country every year. 4. His invention is considered to be of great importance. 5. She is not likely to change her opinion. 6. The new rocket is reported to go into operation next year. 7. Clyde seemed to have been thinking of no one else but Sondra since their last meeting. 8. I don't want my papers to be looked through. 9. I felt Nick put his hand on my shoulder 10. We saw them jump with parachutes. 11. The sun is known to represent a mass of compressed gases. 12. I heard the door of the entrance hall open and close softly. 13. For a long time the atom was thought to be indivisible. 14. He was said to be one of the most promising nuclear physicists. 15. Clyde was expected to arrive at the weekend. 16. She heard somebody walk up to her door. 17. Money just doesn't happen to interest me. 18. I heard him tell the teacher about it. 19. She appeared to be an excellent actress. 20. You appear to have found in him something that I have missed. 21. This work seems to take much time. 22. His office turned out to be in one of the back streets. 23. He is sure to tell me all about this even if I don't ask him. 24. They are sure to acknowledge your talent. 25. They all gathered on the hill to watch the sun rise. 26. This new course of treatment is sure to help your grandmother. 27. Would you like your luggage to be carried upstairs.

7. Put the infinitives in brackets into the correct form. Translate the sentences.

1. They seemed (to quarrel): I could hear angry voices from behind the door. 2. They are supposed (to work) at the problem for the last two months. 3. The only sound (to hear) was the

snoring of grandfather in the bedroom. 4. Her ring was believed (to lose) until she happened (to find) it during the general cleaning. It turned out (to drop) between the sofa and the wall. 5. They seemed (to wait) for ages. 6. I hate (to bother) you, but the students are still waiting (to give) books for their work. 7. He seized every opportunity (to appear) in public: he was so anxious (to talk) about. 8. Is there anything else (to tell) her? I believe she deserves (to know) the state of her sick brother. 9. He began writing books not because he wanted (to earn) a living. He wanted (to read) and not (to forget). 10. I consider myself lucky (to be) to that famous exhibition and (to see) so many wonderful paintings. 11. He seems (to know) French very well: he is said (to spend) his youth in Paris. 12. The enemy army was reported (to overthrow) the defence lines and (to advance) towards the suburbs of the city. 13. The woman pretended (to read) and (not to hear) the bell. 14. You seem (to look) for trouble. 15. It seemed (to snow) heavily since early morning: the ground was covered with a deep layer of snow.

UNIT 15 «THYRISTORS» THREE CONNECTIONS

1. Read and translate the following text.

So what is a thyristor? It's an electronic component with three leads called the **anode** (positive terminal), **cathode** (negative terminal), and **gate**. These are somewhat analogous to the three leads on a transistor, which you'll remember are called the emitter, collector, and base (for a conventional transistor) or the source, drain, and gate (in a field-effect transistor, or FET). In a conventional transistor, one of the three leads (the base) acts as a control that regulates how much current flows between the other two leads. The same is true of a thyristor: the gate controls the current that flows between the anode and the cathode. (It's worth noting that you can get thryistors with two or four leads, as well as three-lead ones. But we're keeping things simple here, so we'll just talk about the most common variety.)

2. Learn by heart the following words and phrases.

Anode - анод
cathode - катод
gate - ворота
emitter - випромінювач
collector - колектор
base - база
conventional transistor - звичайний транзистор
small voltage - невелика напруга
smaller current stops - менший струм перестає
gate current - струм
handle real (electric) power currents - обробки реальних (електричний) потужність струмів
electric motors - електричні двигуни
solid-state electronics - твердотільна електроніка

3. Translate the following part of text into Ukrainian.

Now often that's not what we want to happen. In something like an intruder alarm circuit (where maybe an intruder steps on a pressure pad and the bells start ringing), we want the small current (activated by the pressure pad) to trip the larger current (the ringing bells) and for the larger current to keep on flowing even when the smaller current stops (so the bells still ring even if our hapless intruder realizes his mistake and steps back off the pad). In a thyristor, that's exactly what happens.

4. Read and translate the following text.

A thyristor is like two diodes

Recall that a diode is two layers of semiconductor (p-type and n-type) sandwiched together to produce a **junction** where interesting things happen. According to how you wire up a diode, current will either flow through it or not, making it the electronic equivalent of a one-way street. With a positive connection to the p-type (blue) and a negative connection to the n-type (red), a diode is **forward biased**, so electrons (black dots) and holes (white dots) move happily across the junction and a normal current flows:

In the opposite configuration, with a positive connection to the n-type and a negative to the p-type, a diode is **reverse biased**: the junction becomes a huge chasm that electrons and holes can't cross and no current flows:

In a transistor, we have three layers of semiconductor arranged alternately (either p-n-p or n-p-n), giving two junctions where interesting things can happen. (A FET is slightly different, with extra layers of metal and oxide, but still essentially an n-p-n or p-n-p sandwich.). A thyristor is simply the next step in the sequence: four layers of semiconductor, again arranged alternately to give us p-n-p-n (or n-p-n-p if you swap it around) with three junctions in between them. The anode connects to the outer p layer, the cathode to the outer n layer, and the gate to the internal p layer, like this:

5. Learn by heart the following words and phrases.

two layers of semiconductor - двох шарів напівпровідника
forward biased - вперед упередженим
reverse biased - обратнонаправленный
two junction diodes connected in series - два площинних діодів, З'єднаних послідовно
forward blocking - вперед блокування
extra gate connection - додатковий з'єднувальний воріт
the two-transistor model - два транзистора модель

6. Complete the following text:

1. Recall that a diode is two layers of _____(p-type and n-type) sandwiched together to produce a **junction** where interesting things happen.
2. According to how you wire up a diode, current will either flow through it or not, making it the _____ of a one-way street.
3. With a positive connection to the p-type (blue) and a negative connection to the n-type (red), a diode is _____, so electrons (black dots) and holes (white dots) move happily across the junction and a normal current flows.

7. Read and translate the following text.

Reverse blocking

Suppose we reverse the anode/cathode connections. Now you can probably see that both the upper and lower diodes are reverse biased, so still no current flows through the thyristor. This is called **reverse blocking** (and it's analogous to reverse bias in a simple diode).

Forward conducting

The third state is the really interesting one. We need the anode to be positive and the cathode negative. Then, when a current flows into the gate, it switches on the lower transistor, which switches on the upper one, which switches on the lower one, and so on. Each transistor activates the other. We can think of this as a kind of internal, **positive feedback** in which the two transistors keep feeding current to each other until both of them are fully activated, at which point current can flow through them both from the anode to the cathode. This state is called **forward conducting** and it's how a thyristor "latches" (stays permanently) on.

8. Learn by heart the following words and phrases.

Reverse blocking - зворотного блокування

forward conducting - вперед проведення
positive feedback - позитивні відгуки
conducting - проведення
types of thyristors - типи тиристорів
to be positive and the cathode negative - щоб бути позитивним і негативним катодом
stays permanently - залишається назавжди
latches - шпінгалети
simplified - спрощений
internal n-type layer - внутрішній N-типу шару
anode gate thyristor - анод тиристора ворота

9. Answer the following questions.

1. What are thyristors?
2. What types of thyristors do you know?
3. How do thyristors work?
4. What parts does the thyristor consist of?
5. What do thyristors similar to the transistor?

10. Transform the following complex sentences into simple ones using the Subjective Infinitive Complex:

1. It is supposed that he understands German.
2. It is reported that the cosmonauts feel well.
3. It is said that Kate is preparing for her examinations.
4. It is reported that the spaceship has reached the moon.
5. It is said that she has been teaching mathematics for thirty years.
6. It was expected that the film would be shown in May.
7. It seems that he is composing a new symphony.
8. It proved that you were right.
9. It turned out that the text was very difficult.
10. It is probable that the winter will be very cold this year.
11. It is improbable that she will forget her promise.
12. The doctor will certainly do his best.
13. He will certainly do his duty.

РОЗДІЛ IV «ОБЛІК ТА ОПОДАТКУВАННЯ»

UNIT 1 UKRAINE

I. **Answer the following questions:**

1. What are the national symbols of Ukraine?
2. What holiday do we celebrate on August 24?
3. What are the colours of the national flag of Ukraine?
4. How many administrative provinces is the country divided into?
5. What traits of character are Ukrainians believed to have?

Essential vocabulary

fertile black-earth soil	родючий чорнозем
precipitation	опади
to decrease	зменшуватися
average population density	середня густота населення
net material product	національний валовий продукт
employment	зайнятість
consequence	наслідок
competitiveness	конкурентоспроможність
animal husbandry	тваринництво
ballot	балотування, голосування
unicameral state legislature	однопалатна державна законодавча владаjustice правосуддя

II. Reading. Read the following text.

UKRAINE

Ukraine, a republic in Eastern Europe, is bounded on the north by Belarus and Russia; on the east by Russia; on the south by the Black Sea and the Sea of Azov; on the southwest by Romania and Moldova; and on the west by Hungary, Slovakia and Poland.

With a total area of about 603,700 square kilometres, Ukraine is the second largest country in Europe after Russia. Kyiv is the capital and the largest city.

Almost the entire country of Ukraine is a vast flat plain, with elevations generally below 300 metres. The Carpathian Mountains intrude at the extreme west, and on the southern coast of the Crimean Peninsula are the Crimean Mountains. The highest point in Ukraine is Mount Hoverla in the Carpathians, with an elevation of 2,061 metres. Most major rivers flow south to the Black Sea. the Dnieper courses through the country for 1,204 kilometres. Other major rivers include the Dniester, Donets, Bug, and Danube. The Danube is an important water route linking the country with many European countries. There are many lakes throughout Ukraine. Lake Svytiaz, one of the largest natural lakes, has an area of 28 square kilometres. Ukraine has extremely fertile black-earth soils in the central and southern portions, totaling nearly two-thirds of the territory.

The climate of Ukraine is temperate continental, with a long summer and a short winter. The southern shores of the Crimea have a warm Mediterranean-type climate. Precipitation generally decreases from north to south; it is greatest in the Carpathians and least in the coastal lowlands of the Black Sea.

Ukraine is the second most populous country of the former USSR; only Russia has more people. Ukraine has a population of about 45,700,000 people. Average population density is 82 people per sq km. Settlement are densest in the far eastern and western regions. Around 67 percent of population inhabits urban areas. Population growth is relatively low. Ukrainians constitute 72 per cent and Russians constitute 22 per cent. Other minorities include Belarussians, Moldovans, Hungarians, Bulgarians and Crimean Tatars.

Ukraine is richly supplied with mineral resources, with many important deposits grouped closely together. Coal is Ukraine's most abundant and heavily exploited mineral resource. Large iron ore deposits are located in the southeast, near the bituminous coal and anthracite deposits of the Donets Basin, the famous Donbas fields. The Nikopol region boasts one of the world's richest concentrations of manganese ores. There are also commercial deposits of titanium ores, bauxite, mercury ores, mineral salts and sulphur.

Ukraine's economy is highly industrialized. Industry contributes more than 40 per cent of total net material product and accounts for more than one-quarter of total employment. Industry is based largely on the republic's vast mineral resources. Ukraine is the fourth largest steel producerin the world, and has a broad and diverse industrial base. However, economic policy since the world economic and financial crisis has had serious consequences for Ukraine's competitiveness. Agriculture accounts for about 30 per cent of total net material product and one-quarter of total employment. Ukraine is a major producer and exporter of a wide variety of agricultural products, including wheat and sugar beet, being the world's largest sugar beet producer. Other crops include potatoes, vegetables, fruit, sunflowers and flax. Animal husbandry is also important.

Ukraine is an independent democratic republic, as stated in the declaration of independence issued in August 1991. The head of state is president who is elected by a national ballot. The prime minister heads the council of ministers, which serves as the cabinet. Ukraine has the unicameral state legislature, the 450-member Supreme Council. Members are freely elected for a four-year term. The highest judicial court is the Supreme Court of five judges, elected for five-year terms by the legislature. At the regional level justice is administered by popularly elected "people's courts".

III. **Reading comprehension. Answer the following questions:**

1. Where is Ukraine situated?
2. What countries does Ukraine border on?
3. What is the total area of Ukraine?
4. What is the population of the country?
5. What are the main features of Ukraine's climate?
6. What can you say about Ukrainian natural resources and economy?
7. What is the political system of Ukraine?

IV. **Vocabulary and Grammar exercises**

1. Give English equivalents to the following words:

Друга за розміром країна у Європі; велика рівнина; помірно континентальний клімат; населяти міську місцевість; приріст населення; поклади залізної руди; широка й різноманітна промислова база; найбільший у світі виробник цукрового буряка; Верховна Рада; народні суди.

2. Give the Ukrainian equivalents for:

The total area; to intrude at the extreme west; coastal lowland; settlement; minorities; to be richly supplied with; to boast; commercial deposits; steel producer; a major producer and

exporter; to be elected by a national ballot, the highest judicial court; to be represented in the legislature.

3. Fill in the gaps with the words given below:

Republic, urban, entire, continental, populous, competitiveness, ballot, elevation

1) The most territory of Ukraine is the eastern region.
2) The coastline of the Black Sea is a resort area.
3) Victor Yanukovych won in the second run of presidential .
4) A is a form of government in which the people possess the supreme power.
5) The average of Ukraine is 175 metres above sea level.
6) Most of Ukraine's population is and live in cities and towns.
7) The features of the Ukrainian climate intensify in an eastward direction.
8) One of the main tasks today is to strengthen the of the national products worldwide.

4. Fill in the gaps with the necessary prepositions:

After, at, for, from, in (3 times), inside, of, on, to, with

Lviv, the capital of Western Ukraine, is one of the best places (1) the country. It was founded as a fort (2) the mid- 13th century by Danylo Halytsky and was named (3) his son Lev, which means lion. The lion is the historic symbol (4) the city. Lviv's main street is Freedom Avenue. (5) ___ the middle of the avenue there is a monument (6) ___ Taras Shevchenko, and there are always a lot of flowers (7) its feet. Shevchenko Avenue attracts people (8) _____ its beautiful buildings and various shops. Lviv Picture Gallery has one of the largest collections of European paintings in the country, with over 1000 paintings (9) display. (10) the Town Arsenal there is the Museum of Old Arms, with a display of various arms taken (11) ___ over 30 countries. Lviv is also famous (12) ___ its churches and monasteries.

5. Speech Exercises

1. Make up dialogues, using the questions below and your own ones.
2. What is geographical position of Ukraine?
3. What is Ukraine rich in?
4. What is the relief of the country?
5. What are the largest cities in Ukraine?
6. What can you say about the climate of Ukraine?
7. What can you say about the political system of Ukraine?

UNIT 2 KYIV

Read the text

Ancient Kyiv is now the capital of Ukraine. Situated on the banks of the Dnieper River below its confluence with the Desna River, Kyiv is a major port and one of the largest and most important cities of Eastern Europe. Because of its many parks it is often called the "green city".

Kyiv has a moderately continental climate. January temperatures average -6°C. Snow covers the ground usually from mid-November to the end of March. Summers are warm, and July temperatures average 19°C.

The city's favourable location has made it a major junction of railroads, highways and air routes. Kyiv, as the capital city, has major administrative functions. It is also an important

industrial centre with a diverse economy. The principal industries are machine building and metalworking. Kyiv is also a major publishing centre.

The surviving historical and architectural monuments are most prominent in the ancient Upper Town. The Cathedral of St. Sophia, completed in 1037 and reconstructed in the 17th century, is decorated with frescoes and mosaics in its interior. Much of the Kyiv-Pechery Lavra monastery, built during the 11th century, was destroyed during World War II. Now a museum, it is also still in use as a monastery. This striking building is the most holy place in Ukraine. The caves on the property serve as burial grounds for monks. Nearby is the main thoroughfare, Khreshchatyk. Another Kyiv's oldest and most beloved streets Andrew's Descent has been the centre of city activity since ancient times. The steep and winding cobbled streets are the setting for outdoor concerts and festivals in the summer, and home to several art galleries selling traditional Ukrainian crafts. Mariyinsky Palace is a picturesque Baroque palace with a charming park around it on the hilly bank of the Dnieper River designed by Rastrelli and constructed in 1744. It is an official ceremonial residence of the President of Ukraine.

Kyiv is the cultural and academic centre of Ukraine. Research institutes, the National Scientific Library, the Central Botanical Garden and the Main Astronomical Observatory are located there. There are many government-funded museums in Kyiv. The most famous are the Natural History Museum, the Historical Museum, the National Art Museum and the Western and Eastern Art Museum. Pirogovo is an outdoor museum devoted to folk architecture and traditional village life in Ukraine.

Among many professional theatres in Kyiv the most magnificent is the National Opera House which stages world class ballets and operas. Kyiv has also been the centre of Ukrainian film and mass media. In 1928 the Dovzhenko Artistic Film Studio was founded there.

Many monuments have been erected in Kyiv's squares, parks and other public places. The oldest are the monuments to the Magdeburg law on the right bank of the Dnieper, St. Volodymyr in Volodymyr Hill Park and B. Khmelnytsky in St. Sophia Square. Most have been erected in honour

Ukrainian political and scholarly figures and the heroes and victims of the wars and the Chernobyl accident.

I. **Decide if the following statements are true or false:**

1. Kyiv is situated on the confluence of the Dnieper River and the Desna River.
2. The processing of metals is one of the main branches of industry.
3. The Cathedral of St. Sophia and the Kyiv-Pechery Lavra monastery were built in the samecentury.
4. Andrew's Descent is a main street of Kyiv.
5. The official residence of the President of Ukraine is Pirogovo.

II. **Match the endings of the sentences.**

1. Kyiv bears the name of prince Kyi, a) on both banks of the Dnieper.
2. Under the rule of Yaroslav the Wise Kyivan Rus with Kyiv as its capital b) you shouldstart your sightseeing from Khreshchatyk.
3. The city lies c) can be reached by a funicular lift.
4. If you have never been to Kyiv d) reached the height of its power.
5. The 'pleasure cruises' that depart from the river terminal e) is the usual way of getting fromplace to place by most people in Kyiv.
6. St. Michael's Golden Domed Cathedral f) who lived on the old Kyiv Hill in the sixth century.
7. The cost of the Metro is very cheap and g) offer

stunning views of Kyiv's sights.

III. **Supply the missing members of these words families. Check your answers with thedictionary.**

1) product - production, to produce, productive.
2) location
3) to develop
4) favourable
5) to complete
6) processing

IV. **Complete the following dialogue with the proper verbs in the right forms and role-play it: togo (2 times), to leave, to look, to love, to take (2 times), to walk.**

Looking at vacation pictures

Kathy : Jim, I heard you__a trip to Kyiv. Is that right?Jim : Yeah, I just got back this morning.

Kathy : That sounds really nice. What did you do there?

Jim : Well, we were only there for three days, so we didn't do too much. We_shopping to the Metrograd Shopping Complex and went out to dinner a few times. At night we_____around the city with some friends.

Kathy : Did you_____any pictures?

Jim : Yes, I have them with me. Do you want to look at them?Kathy : Sure, I_looking at photos.

Jim : This one is of my wife and me in the Hydropark, an island in the Dnieper river, and this oneis our daughter Emily standing next to my wife.

Kathy : Your daughter__like her mother. Where was this picture taken?Jim : That was taken at the Boryspil airport before we_____.

Kathy : Did you have time to go to St. Sophia's Cathedral?Jim : No, not this time. We _____there last time.

Kathy : It looks like you all had a nice time.Jim : Yeah, it was a lot of fun.

UNIT 3. TRADITIONAL HOLIDAYS IN UKRAINE, GREAT BRITAIN AND THE USA

I. **Answwer the following questions:**

1. What is the most favourite holiday in your family? What do you usually do before it? Do youdecorate your house/flat? Do you cook anything special? Do you invite guests or arrange parties?

2. Do you observe all the traditional rituals on Christmas? Who cooks traditional Christmas dishesin your family and what are they? What kind of weather do you like to have on Christmas?

3. What associations do you have with Easter? Can you describe what is going on in your housebefore Easter Sunday?

4. Do you remember any funny April Fool's Day experiences? Did you like to play practical jokeson your friends? Have you ever suffered from these jokes?

II. **Reading. Read the following text**

Essential vocabulary

prosperity	розквіт, добробут
near and dear	близькі люди
gradually	поступово

Sermon проповідь
signpost вказівний стовп, покажчикto commemorate вшановувати пам’ять
Coup державний переворот
Firework фейєрверк holly and mistletoe падуб та омела
Christmas rush різдвяна метушняthe Lenten fast Великий піст
Pancake млинець

TRADITIONAL HOLIDAYS IN UKRAINE, GREAT BRITAIN AND THE USA

Like most European nations Ukraine sees the New Year in on December, 31. You can hardly find a person who doesn't hope that the Old Year with all its troubles will leave forever and the New Year will bring health, prosperity and happiness.

New Year celebrations gradually glide into one of the most important religious holidays – Christmas. Now it is an official state holiday and a day off. It is favourite with children who like to go from door to door, sing carols and get sweets from the hosts. Mothers of the family cook a traditional Ukrainian Christmas dish «kutya» which all the family eat together. Many people now like to go to church to listen to Christmas sermons.

Not long ago young people and lovers of all ages started to follow the English tradition of celebrating St. Valentine's Day on February, 14 by sending special postcards and giving lovely gifts to their sweethearts.

The next official holiday in Ukrainian calendar is Women's Day. Very few people remember now how it originated, but it is an important signpost in the women's feminist movement in the world, because it commemorates the beginning of women's struggle for their economic, political and social rights. Today, it is the day to show love and respect to women of all ages.

By Orthodox canons Easter, the day of Christ's Resurrection, is celebrated in Ukraine later than in other European countries. Only several years ago it was proclaimed an official state holiday and many people celebrate it by attending the all-night service in church and having a tasty meal at home on Red Sunday. Children enjoy painting Easter eggs and eating Easter bread.

Victory Day which is annually marked on May, 9 commemorates the victory of Soviet people over Nazi Germany in 1945. So many people died or were killed in that war that there is hardly a family in Ukraine that didn't suffer a loss.

The new Constitution of Ukraine as an independent, sovereign, democratic, social and legal state was adopted by the Verkhovna Rada on June 28, 1996 as the Fundamental Law of the country.The day of its adoption is a state holiday - the Day of the Constitution of Ukraine.

August, 24 is a new national state holiday - the Day of Independence of Ukraine, which was pro¬claimed in 1991 on the decision of the Verkhovna Rada of Ukraine after the military coup in Moscow. This day is marked with parades and fireworks.

Most Ukrainian people enjoy holidays both old and new because they are good breaks in everyday work, an opportunity to see their friends and relatives and just to have a good time.

National Days in Britain are not celebrated to the same extent as in France or America. Scotland's National Day is St. Andrew's Day (30 November). St. David's Day (1 March) is the National Day of Wales. England National Day is St. George's Day (23 April) which coincides with William Shakespeare's birthday. St. Patrick's Day is an official Bank Holiday in Northern Ireland.

For many British people (with the exception of Scotsmen), Christmas is the favourite holiday. It is celebrated much earlier than in our country, on December, 25. Preparation for the holiday begins several weeks before it with sending dozens of cards, buying presents and food, decorating the Christmas tree and the house. The cities and towns are decorated with thousands of coloured lights, and the biggest Christmas tree in Britain is put up in Trafalgar Square in London.

In the homes there is a great air of expectation. Holly and mistletoe are hanging on the wall waiting for the English traditional kissing when a girl standing under these evergreen plants can't refuse being kissed. Mothers of the family are busy in the kitchen getting ready for the next day's dinner of turkey, pudding and other tasty things. Before going to bed children may hang Christmas stockings on their beds in the hope of getting presents from Father Christmas or Santa Claus. The next day, on December 26 people get up late, have big meals, go to church and have a good rest after the Christmas rush.

New Year in Britain (with the exception of Scotland) is not celebrated as widely as in our country. Some people may even completely ignore it and go to bed at the usual time without waiting for the clock to strike twelve.

In Scotland New Year is called Hogmanay and is the most favourite holiday of the year. It begins with a thorough cleaning of the house and cooking plenty of tasty food. Though February is a winter month, many British people start feeling spring on February, 14 when they get Valentine cards and symbolic love gifts.

Pancake Day is the popular name for Shrove Tuesday, the eve of the Lenten fast. In medieval times a11 Christians made their compulsory confessions or «shifts» from which the words «Shrove Tuesday» derives. Nowadays only pancake eating has remained.

Easter in Britain is the time of giving and receiving presents which traditionally take the form of Easter eggs and hot cross buns. Nowadays eggs are usually made of chocolate with surprises in them, but the old custom is dying and painting eggs is still, kept in some country districts. Other emblems of Easter are fluffy little chicks, the Easter Bunny and spring flowers.

April Fools' Day is not an official holiday but few people are indifferent to it. Everyone whohas a sense of humor likes to play practical jokes on their friends and family neighbors.

Bank Holidays are public holidays called so because the banks as well as most offices and shops are closed. There are winter, spring and summer Bank Holidays.

Another popular holiday in Britain is Guy Fawkes Day, which commemorates the discovery of the so-called Gunpowder Plot, a conspiracy to destroy the English Houses of Parliament and King James I on November, 5 1605. It is usually marked with bonfires and dummies of Guy Fawkes.

Each of the fifty states in the USA establishes their own legal holidays. The federal government, through the President and Congress, can legally set holidays only for federal employees and for the District of Columbia. Most states however accept the federal legal holidays which are: New Year's Day, Martin Luther King's Day, Washington's Birthday, now called «President's Day» (the third Monday in February), Memorial Day (last Monday in May), Independence Day, Labor Day (first Monday in September), Columbus Day, Veterans' Day (November, 11th), Thanksgiving Day and Christmas.

There are many other traditional holidays, observed by a large number of Americans, whichare neither legal nor official. Among these are Valentine's Day, St. Patrick's Day (not just people with Irish ancestry will «wear the green» on March 17th), Mother's Day and Halloween.

Perhaps the two «most American» of the holidays are the Fourth of July- Independence Day, and Thanksgiving. The first one is like a big nationwide birthday party. Some towns and cities have parades with bands and flags, and most politicians will try to give a patriotic speech. But what makes this holiday special is the atmosphere and enjoyment of, for instance, the family picnic with hot dogs, hamburgers and volleyball, fireworks and rockets at night

Like Christmas, Thanksgiving is a day for families to come together. Traditional foods are prepared for the feast-turkey or ham, cranberry sauce, bread rolls and pumpkin pie. At the same time Thanksgiv¬ing is a solemn occasion, a day to remember the many who are less well off, in America and throughout the world.

III. Reading comprehension

Sort these holidays into the table according to the countries they are celebrated in.Ukraine
Great Britain The USA

Speak on the following:

1. What holidays celebrated in Britain and the USA are also marked in Ukraine?

Do they have the same traditions and rituals? Name at least 3 differences in celebrating Christmasand Easter.

2. Which holiday do you think is the most important for each of the three countries?
3. Which holiday in the USA and Great Britain would you like to take part in?

IV. **Vocabulary and Grammar exercises**

1. Give English equivalents to the following words:

Добробут та щастя, близькі люди, різдвяний гімн, різдвяна проповідь, важливий вказівний стовп, воскресіння Христа, падуб та омела, вічнозелені рослини, ігнорувати, в середньовічні часи, обов'язкова сповідь, змова, ірландське походження, соус із журавлини.

2. **Give the Ukrainian equivalents for:**

Like most European nations, you can hardly find, it is especially popular with, it commemorates the beginning, to show love and respect, by Orthodox canons, the Fundamental Law of the country, the military coup, great air of expectation, completely ignore, fluffy little chicks, fireworks, a solemn occasion.

3. **Put the following verbs into the right forms (use Active and Passive Voice):**

Observe, celebrate, proclaim, mark, cook, commemorate

1. The annual parade_____the soldiers who died in the two World Wars.
2. The republic's independence___by the President three years ago.
3. Most people____the tradition of going to church and having a tasty dinner.
4. This tasty Christmas dinner____by our grandma a few hours ago.
5. April Fool's day is not a national holiday, but it_____in many countries.
6. This state holiday_____with military parades and peaceful demonstrations.

UNIT 4 HIGHER EDUCATION IN UKRAINE

I. **Answer the following questions:**

1. Are there many higher educational establishments in Ukraine?
2. What education have you already received?
3. What education will you receive after finishing the university?
4. What degree will you get?
5. Which speciality will you get in future?
6. Are you going to have a post graduate course?
7. Is it difficult for young people in the city you live in to get a good job without higher education?

Essential vocabulary

to realize more fully one's human potential	повніше реалізувати людський потенціал
to enrich one's understanding of life	збагачувати розуміння життяin various fieldsв різних сферах
regardless of	незважаючи на
apart from	поряд з
a great deal of scientific work	великий обсяг наукової роботи

to provide excellent facilities	забезпечувати відмінні умовиhigher
educational establishment	вищий навчальний заклад
full-time students	студенти стаціонару
to receive state grants	одержувати державні пільги
to combine work with studies	поєднувати роботу з навчанням
to take correspondence courses	навчатися заочно
to receive a leave	отримувати відпустку
according to	відповідно до

II. Reading. Read the following text

HIGHER EDUCATION IN UKRAINE

Higher education is generally recognized as preparing individuals to realize more fully their humanpotential, enrich their understanding of life and make them more productive to society.

Future specialists in various fields of science, technology, economies and art get a fundamental general and specialized training, all students regardless of their specialty study foreign languages.

Apart from educational work and schooling Ukrainian higher schools carry out a great deal of scientific work in all branches of knowledge. They have either a students' research Society (Club) or a Technological Design Bureau which provide excellent facilities for young researches.

Our country needs specialists in all fields of science and all branches of industry and agriculture. Institutes exist not only in big cities like Kyiv, Kharkiv, Lviv, but in many towns of Ukraine like Irpin.

Higher educational establishments of our country fall into three main types. The first type includes the universities and institutes where there are only full-time students, which receive state grants. Students who do not live at home get accommodation in the hostels.

The second and third types of higher schools provide educational facilities for factory and office workers who combine work with studies. The second type of higher education in establishments includes evening faculties and evening higher schools for those who study in their spare time.

The third type covers extra-mural higher schools where students take correspondence courses. Every year extra-mural students receive from 30 to 40 days' leave to prepare for their exams.

The diplomas by the evening faculties and extra-mural higher schools have the same valueas the diplomas of all other institutes and universities.

The period of study at higher schools is from 4 to 6 years. According to the subjects studiedthere exist three groups of higher schools' universities, polytechnic and specialized institutes.

***III.* Reading comprehension Answer the following questions:**

1. Does higher education help to develop your human potential and enrich your understanding of

life? 2. What training do the future specialists get? 3. What can you say about the role of foreign languages in gaining higher education? 4. What is the role of scientific work in training future specialists? 5. What specialists does our country need? 6. Where do institutes and universities exist in our country? 7. How many types of higher educational establishments do we have in our country? 8. What higher schools does the first type include? 9. Which is the second type? 10. What schools does the third type cover? 11. What do extra-mural students receive every year? 12. Is there any difference between the diplomas by the evening faculties, extra-mural schools and full-time schools? 13. How long does the period of studies at higher schools last? 14. What groups of higher schools exist in your country?

IV. Vocabulary and Grammar exercises

1. Give English equivalents to the following words:

Одержувати державні пільги, в різних сферах, отримувати відпустку, поєднувати роботу з навчанням, вищий навчальний заклад, забезпечувати відмінні умови, великий обсяг наукової роботи, навчатися заочно.

2. Give the Ukrainian equivalents for:

Higher educational establishments, future specialists, spare time, evening faculties, students' research society, a great deal of scientific work, to provide excellent facilities, to combine work with studies , to receive state grants.

3. Fill in the blanks with the words given below:

The same value, spare, full-time students, to fall into, to carry out, general, specialized

1. Future specialists in various fields of science, technology, economies and art get a fundamental ...and ... training. 2. Ukrainian higher schools ... a great deal of scientific work in all branches of knowledge. 3. Higher educational establishments of our country ... three main types. 4. The first type includes the universities and institutes where there are only which receive state grants. 5.

Evening schools are for those who study in their ... time. 6. The diplomas by the evening faculties and extra-mural higher schools have as the diplomas of all other institutes or universities.

4. Choose the correct variant of the answer (a, b, c,)

1. The period of study at higher schools is from
a) 2-3 years
b) 1-4 years
c) 4-6 years

2. The diplomas of extra mural students have
a) the same value as all other students
b) much less value than the others have
c) no value at all
3. Higher education in our country fall into
a) many different types
b) 3 main types
c) 5 types

4. ..... Higher education is in modern life.
a) very important
b) not important at all
c) important but not to all young people

5. .....The higher school is the stage of the public educational system.
a) Middle
b) First
c) Final

5. Match the words in the left and the right columns to form word combinations.

1.	To take	a) Master's Degrees
2.	To get	b) research work
3.	To give	c) devoted to something
4.	To live in	d) knowledge
5.	To do	e) part in different activities
6.	To make	f) diploma
7.	To be	g) higher education
8.	To get	h) a choice
9.	To get	i) hostel
10.	To submit	j) appointment

TEXT 2

MY FUTURE SPECIALITY

***I.* Reading. Read the following text**

Essential vocabulary

diverse, diverse in nature різний, різноманітний, інакший; різноманітний за характеромto record записувати, реєструвати
to summarise підсумовувати, підводити підсумок
to verify перевіряти, контролювати, підтверджувати, вивіряти
significance значення
to be of great significance мати велике значення
to provide, to provide in formation надавати, забезпечувати, надавати інформацію
supply надходження, поставка
supply of data надходження даних
an enterprise підприємство
a key problem ключова (головна) проблема
meaningful значимий, значущий
prompt, promptly швидкий;швидко
inherent притаманний, природжений
vital, vital information життєвий; насущний, суттєвий;суттєва інформаціяto enable давати можливість
to contribute сприяти; (по)жертвувати; співробітничати (to - в)
to make a contribution робити внесок
to mould формувати

MY FUTURE SPECIALITY. Accountant

I am a second-year student of Mykolaiv National Agrarian University. I study at Faculty of Accounting and Auditing.

The work of the accountant is said to be diverse in nature but basically it deals with recording,summarising, analysing and verifying business transactions in books of accounts. The task of examining and analysing accounts is one of great significance because it makes it possible to provide information necessary for economic management. There is usually an unlimited supply of data available in an enterprise. The key problem facing accountants is the selection for presenting tothe management only meaningful information. And the accountant is effective if he supplies information promptly and in a clear language. Great and momentous changes are known to have taken place over recent years and the accountancy profession has gained an important status. The role of the accountant has changed and his functions have not only deepened but widened as well. The modern accountant is not like the old book-keeper - now

a legend - who was often described as a dried-up narrow-minded person ignorant of everything but tedious operations with figures. The modern accountant begins to play an increasingly important role in business activity. He is now expected to perform various duties and his tasks are wider than they were a decade or two back. He acts as an adviser to management and helps the latter in decision-making. Under modern conditions only accountants can analyse business situations and minimise the degree of uncertainty inherent in every business decision. By providing vital information to the management the accountant enables them to assess their own performance and what is more important it helps them devise ways to improve their efficiency and performance. In many countries of the world accountants are also believed to make a valuable contribution towards promoting economic growth of a country. Economic thinking is considered to be moulded by proper accounting information as well

II. **Read the text again and choose the best variant:**

1. The work of the accountant deals with …
a) buying goods for the company.
b) recording, summarizing, analyzing and verifying business transactions.
c) verifying business activities of the company.
2. The key problem facing accountants is …
a) management of the enterprise.
b) sending e-mails to business parties.
c) the selection for presenting to the management only meaningful information.
3. The modern accountant …
a) acts as an advisor to management and helps the latter in decision making.
b) acts as a director and manages the enterprise.
c) acts as a manager and is the director of the enterprise.
4. In many countries of the world accountants…
a) there are no accountants.
b) make a valuable contribution towards promoting economic growth of the country.
c) play no role in promoting economic growth of the country.

III. **Fill in the gaps using the words in the box**

management situations decision assess efficiency duties important figures book-keeper accountant

The role of the …1… has changed and his functions have not only deepened but widened as well. The modern accountant is not like the old …2… - now a legend - who was often described asa dried-up narrow-minded person ignorant of everything but tedious operations 52 with …3… The modern accountant begins to play an increasingly …4… role in business activity. He is now expected to perform various …5… and his tasks are wider than they were a decade or two back. He acts as an adviser to …6… and helps the latter in decision-making. Under modern conditions only accountants can analyse business …7… and minimise the degree of uncertainty inherent in every business …8… By providing vital information to the management the accountant enables them to

…9… their own performance and what is more important it helps them devise ways to improve their …10… and performance.

IV. **Read the text again to find out which of the following statements are correct:**

1. The work of the accountant is said to be diverse in nature but basically it deals withrecording, summarizing, analyzing and verifying business transactions in books and accounts
2. The task of examining and analyzing accounts is not important
3. The key problem facing accountants is the selection for presenting to the

managementonly meaningful information

4. No momentous changes are known to have taken place over recent years and the accountancy profession hasn't gained yet an important status

5. The role of the accountant has changed and his functions have not only deepened butwidened as well

6. The modern accountant begins to play an increasingly important role in business activity

7. The accountant acts as an adviser to management and helps the latter in decision-making

8. Under modern conditions nobody can analyze business situations and minimize the degree of uncertainty inherent in every business decision

UNIT 5 MY FUTURE CAREER.

I.Answer the following questions:

1. What working position is the best for you?
2. What qualities do you need for your future career?
3. What is meant by "professional qualification" for a job?
4. Are you accustomed to working under pressure?
5. What personal characteristics does an employer consider when choosing an employee?

II. Reading. Read the following text

Essential vocabulary

convention	звичай, умовність
to apply	звертатися
application	заява, прохання
curriculum vitae	біографія
resume	стислі анкетні данні
relevant	доречний,
personnel department	відділ кадрів
panel	комісія, група фахівців
hostile	ворожий, неприязний
employee	службовець
employer	роботодавець
trade	професія
grade	ранг, ступінь
benefit	вигода, користь, прибуток
loan	позика

MY FUTURE CAREER. APPLYING FOR A NEW POSITION

In different countries, different conventions apply to the process of job application and interviews. In most parts of the world, it's common to submit a typed or laserprinted CV (curriculum vitae – British English) or resume (American English). This contains all the unchanging information about you: your education, background and work experience. This usually accompanies a letter of application, which in some countries is expected to be handwritten, not wordprocessed. A supplementary information sheet containing information relevant to this particular job may also be required, though this is not used in some countries.

Many companies expect all your personal information to be entered on a standard application form.

Unfortunately, no two application forms are alike, and filling in each one may present unexpected difficulties.

Some personnel departments believe that the CV and application letter give a better impression of a candidate then a form.

There are different kinds of interviews: traditional one-to-one interviews, panel interviews where one or more candidate are interviewed by a panel of interviewers and even 'deep-end' interviews where applicants have to demonstrate how they can cope in actual business situations. The atmosphere of an interview may vary from the informal to the formal and interviewers may take a friendly, neutral or even hostile approach.

Different interviewers use different techniques and the only rules that applicants should be aware of may be 'Expect the unexpected' and 'Be yourself'!

Progress interviews are interviews where employees have a chance to review the work theyare doing and to set objectives for the future. Such interviews usually take place after a new employee has been working with a company for several months, and after that they may take place once or twice a year.

In different countries, and in different trades and different grades, the salary that goes witha job may be only part of the package: extra benefits like a company car or cheap housing loans, bonuses paid in a 'thirteenth month', company pension schemes, free canteen meals, long holidays or flexible working hours may all contribute to the attractiveness of a job.

III. Reading comprehension Answer the following questions:

1. What is it common to submit in most parts of the world when applying for a job?
2. What do many companies expect?
3. What kinds of interviews are there?
4. What are the only rules that applicants should be aware of?
5. What are progress interviews?

IV. **Vocabulary and Grammar exercises**

1. Give English equivalents to the following words:

Різні звичаї, процес подання заяви на роботу, біографія, стислі анкетні дані, додаткова інформація, стандартна форма заяви, відділ кадрів, інтерв'ю при комісії, неприязнестaвлення, новий працівник, різні професії, додатковий прибуток

2. **Give the Ukrainian equivalents for:**

In most parts of the world, a letter of application, particular job, unexpected difficulties, personnel department, traditional 'one-to-one' interviews, 'deep-end' interviews, may vary, hostile approach, to set objectives, the salary that goes with a job, cheap housing loans

3. **Fill in the gaps with the words given below:**

Better impression, salary, CV, atmosphere, resume, employees application forms, personalinformation

1) In most parts of the world, it's common to submit a typed or laserprinted_____(BritishEnglish) or_____(American English).

2) Many companies expect all_____to be entered on a standard applicationform.

3) Unfortunately, no two_____are alike.

4) Some personnel departments believe that the CV and application letter give a_____of a candi

5) The_____of an interview may vary from the informal to the formal.

6) Progress interviews are interviews where_____have a chance to review the work theyare doing.

7) The_____that goes with a job may be only part of the package.

***4.* Fill in the gaps with the necessary prepositions:**

Of, after, to, in, of, with, in, for, in, for, with, after

Progress interviews are interviews where employees have a chance to review the work they are doing and to set objectives____the future. Such interviews usually take place____a new employee has been working ____ a company_____ several months, and ____that they may take place once or twice a year.

___different countries, and _____ different trades and different grades, the salary that goes

_____a job may be only part___the package: extra benefits like a company car or cheap housing loans, bonuses paid a 'thirteenth month', company pension schemes, free canteen meals, long holidays or flexible working hours may all contribute_the attractiveness_a job.

V. Speech Exercises

1. Make up dialogues, using questions below and your own ones

1) What applies to the process of job application and interviews in different countries?
2) What do many companies expect your personal information to be entered on?
3) What are panel interviews?
4) How may the atmosphere of an interview vary?
5) When do progress interviews usually take place?
6) What are extra benefits of the salary that goes with a job?

2. Writing

What are the ways of applications and interviews in your country? Write in short about jobs in yourculture that might seem unusual to a person from another culture.

TEXT 2

1. Read the text about CV

CURRICULUM VITAE

The Curriculum Vitae (CV) is a summary of your personal details, achievements and experience, and should be presented – preferably on a single sheet of A4 paper – in such a way thata prospective employer can quickly and easily assess your quality and suitability. It should be typedand structured under relevant headings. You must be prepared to insert additional sections if you think they are necessary, and omit any which are not relevant to your own background and experience.

Here are some tips for preparing CVs:

- Don't include too much information. The employer must want to find out more about
- Present a positive image – emphasize things you have done and competences you havedemonstrated.
- Include information on team or group activities, situations where you have demonstrated initiative, relevant academic, vocational or professional training.
- Exclude comments on your physical appearance, politics, religion or other possiblycontentious subjects.
- Do not submit a CV which contains any errors. Make sure all spelling, punctuation andgrammar is correct, and keeps a copy of the CV.
- Keep it simple and clear – one page, two pages at most.
- Avoid pronoun "I". Use action words which vividly bring your CV to life.
- Don't sign or date the CV.
- Always send an original of your CV, don't send a copy.
- Keep copies of CVs on file for future reference. Once you have a job, update

your CVon a regular basis.

2. Read the sections of a CV and write your CV for a job of your choice

CURRICULUM VITAE
Personal details
Name:
Address: Telephone:
E-mail:
Age:
Date of birth: Personal status:
Education and qualifications Work experience
Languages Interests
Other information Referees

UNIT 6 JOBS IN ACCOUNTING AND FINANCE

***I.* Reading. Read the following text.**

Accountancy	бухгалтерський облік
Performance	результати роботи
fair	чесний, правильний
public accountant	державний бухгалтер
to practice	мати приватну практику
judgment	думка, судження
certified public accountant	дипломований державний бухгалтер
holder of a license	власник ліцензії
to be authorized	мати право, бути уповноваженим
to grant a license	надавати ліцензію
state government	державне правління
to pass an examination	здавати екзамен
to keep knowledge	підтримувати знання на сучасному рівні
integrity	висока професійна репутація
confidentiality	конфіденційність
to have much in common	мати багато спільного
auditing	аудит, ревізія
consulting services	консультаційні послуги
tax planning	планування оподаткування
cost accounting	виробничий облік
capital budgeting	складання смети капітальних витрат
budgeting for current operations	складання смети поточних витрат
financial information system	фінансова інформаційна система
professional body	професійна організація

JOBS IN ACCOUNTING

• Bookkeepers work in a company's back-office. They record everything the organization earns or spends.

- Tax Accountants help their clients fill out tax returns.
- lnternal Auditors check their employer's records for accuracy.
- External auditor is employed by an outside firm of accountants and hired by a company to inspect its accounts.
- Budget Analysts manage a company's financial plans.

• Management Accountants are business supervisors. They study business operations and help maximize profits.

• Financial Advisors help peopIe make smart investments. The highest-paying positions require a CPA license. But jobs are also available for students. Many firms hire them as trainees or file clerks.

• Back office manager is in charge of the staff responsible for giving administrative support to the Finance department.

FUNCTIONS OF ACCOUNTANTS

Accounting is an old profession. Records of business transactions have been prepared for centuries. However, only during the last half-century accounting has been accepted as a profession. Today, accountants are employed in public accounting, management and industrial accounting, and governmental or other non profit accounting. The accountants perform the following functions:

1. - Accountants observe many events and identify and measure in financial terms (dollars, for example) the evident events of economic activity. The examples of economic activities are the purchase and sale of goods and services.
2. - The economic events are recorded, classified into groups and summarized.
3. - Accountants report on business activity, preparing financial statements and special reports. Often accountants are asked to interpret these statements and reports for various groups such as management and creditors.

BECOMING AN ACCOUNTANT. CPA

The body which represents the interests of accountants in the USA is the American Institute of Certified Public Accountants (AICPA). To become a CPA, the applicant must meet the requirements of the state wher he/she wishes to practise, as established by the law of that state and administered by the state boards of accountancy. To qualify for certification, the applicant must: 1) study accountancy at a college or university; 2) pass the CPA examination, which consists of four sections:

- Business Law and Professional Responsibilities
- Auditing
- Accounting and Reporting – Taxation, Managerial, and Governmental and Non for-ProfitOrganizations
- Financial Accounting and Reporting – Business Enterprises 3) Have professional work experience in public accounting. Most states require a qualified CPA to carry out regular professional training. Chartered Accountant The major accounting body in the U.K. is the Institute of Chartered Accountants in England and Wales (ICAEW). To become a Chartered Accountant, theapplicant must: 1) have sufficient school or university education 2) apply for a training contract with a recognized company, which will give him/her three years' work experience 3) pass the ICAEW's exams on:
- Accounting
- Audit and Assurance
- Business Finance
- Business Management
- Financial Reporting
- Taxation 4) as well as prove his/her knowledge on Commercial and Company Law, andthen with further exams on:
- Business Environment
- Business life Cycle
- Advanced Case Study

II. **Discuss the questions below:**

1. What jobs do accountants do?
2. What are the educational requirements for accountants?

3. How is accounting defined by the most famous accounting authorities?
4. When is accounting used as a measurement and communication process?
5. What is accounting often confused with?

III. **Are these sentences true or false? Correct the false sentences:**

1. Unfortunately, records of business transactions have been prepared only during the last half-century.
2. Bookkeepers record everything the organization earns or spends.
3. To become a CPA, the applicant must identify and measure in financial terms.
4. To become a Chartered Accountant, the applicant must pass the ICAEW's exams on accounting.
5. The examples of economic activities are the purchase and sale of goods and services.
6. Accountants also have to observe political events (elections, for example).
7. Accounting is an old profession.
8. Management accountants are employed by an outside firm of accountants. They study businessoperations and help maximize profits.
9. Today, accountants are employed in public accounting, management and industrial accounting,and governmental or other non-profit accounting.
10. Financial advisors help people make a CPA license.

IV. **Choose the correct alternative:**

1. The economic events are recorded, classified into groups and **organized/summarized**.
2. Back office manager is in charge of the staff responsible for giving administrative **report/support** to the Finance department.
3. Most states **require/inquire** a qualified CPA to carry out regular professional training.
4. Tax Accountants help their clients fill out tax **funds/returns**.
5. Often accountants are asked to interpret these **statements/operations** and reports for variousgroups such as management and creditors.
6. The major accounting **body/employer** in the U.K. is the Institute of Chartered Accountants inEngland and Wales (ICAEW).
7. The body which represents the interests of accountants in the USA is the American Institute ofCertified **Private/Public Accountants** (AICPA).
8. Accountants stand **for/report** on business activity, preparing financial statements and specialreports.
9. Budget Analysts **manage/assess** a company's financial plans.
10. External auditor is and hired by a company to **transact/inspect** its accounts.

V. **Match the words and their definitions.**

1 analyst A an instance of doing business, e.g. a purchase in a shop or a withdrawal ofmoney from savings
2 auditor's report B to examine in detail
3 investment C an accountant who has passed the necessary professional examinationsand is a member of the Institute of Chartered Accountants
4 transaction D a document which insures the permission
5 return E a report written by a company's auditors after they have examined theaccounts of the company
6 creditor F the system of raising revenue for public funding by taxing individuals andorganisations, or the amount of revenue raised

7 taxation G person who analyses
8 charter accountantH a person or com-pany that is owed money, i.e. a company's creditors areits liabilities
9 inspect I a profit or income from money invested
10 license J the placing of money so that it will produce interest and increase in value

VI. **Match the words in the right column with the words in the left column to make wordcombinations.**

1 accountancy a profits
2 cross border b clerks
3 accounting c returns
4 maximize d finance
5 lnternal e investments
6 financial f responsibilities
7 professional g organizations 8 tax h reporting
9 file i auditors
10 business j body

UNIT 7 WHAT SHOULD A MODERN ACCOUNTANT BE LIKE?

I. **Reading. Read the following text.**

solution рішення (проблеми і. т.д.)
current поточний
urgent терміновий; настійний, наполегливий a poll to conduct a poll опитування; соціологічне дослідження;to reveal виявляти; відкривати
controller assistant controller(A.C.) контролер, головний бухгалтер – контролер; замісникголовного бухгалтера – контролера
the latter останній, інший (з двох перерахованих);
concise стислий, скорочений
favour in favour of підтримка, допомога; на користь когось, чогос

In all countries of the world the complexity of economic activity is gradually growing. And this, in its turn, leads to an increasingly im portant role of accounting as a function of economic management. At present the necessity of improving accounting through raising its opera tional utility and quality is regarded as one of the most important tasks.

The main condition for the solution of this task is improving the quality of accounting personnel. To attract able young people to the study of accounting, to raise its prestige and demonstrate its im portance is an urgent task in many countries of the world.

What do accountants think of the current state of accountinged ucation? How well are students prepared for the profession? What changes are on the horizon and will these changes produce better edu cated accountants? To answer these questions a poll was conducted in the USA.

A lot of the US professionals have been asked to share their views on these issues and to comment on the value of accountancy programmes. In all about 140 accountants have been interviewed. Their positions ranged from higher level management accountants to assistant controllers. The interviews revealed that the majority fa voured radical reconstruction of accounting education. All agreed that there should be new programmes setting the foundation for under standing all aspects of accounting. Most respondents were concerned 60 with the fact that the majority of accounting graduates lack computer skills and oral and written

communication skills. Several respondents stated that inadequate computer skills are becoming more noticeable as the demand for computer knowledge grows.

Many respondents emphasised that the lack of good communication skills is the most seri ous deficiency of graduates. Students in accounting are sure to submit short papers to develop writing skills because as future managers they must be able to write concise reports. Other respondents dealt with personality characteristics of the graduates. Many respondents indicated that graduates lack self-motivation and enthusiasm. Some stated that graduates have a lack of common sense.

Many spoke in favour of strong conceptual over a practical ap proach to learning because understanding concepts is critical to coping with the dynamic nature of accounting problems. All academics (78%) agree that there should be additional emphasis on conceptual knowledge. However accounting managers favoured a practical approach as did most low level participants.

II. **Read the text again and choose the best variant:**

1. In all countries of the world the complexity of economic ac□tivity…

a) is gradually growing.
b) is gradually declining.
c) is practically the same.

2) At present the necessity of improving accounting is regardedas…

a) one of the least important tasks.
b) the last task.
c) one of the most important tasks.

3) An urgent task in many countries of the world is…

a) to attract able young people to the study of cybernetics.
b) to attract able young people to the study of accounting.
c) to attract able young people to the study of national traditions.61

4) The interviews revealed that the majority favoured…

a) radical reconstruction of accounting education.
b) slight reconstruction of accounting education.
c) no reconstruction of accounting education.

5) Many respondents indicated that graduates lack…

a) self registering and enthusiasm.
b) sense of humor and enthusiasm.
c) self-motivation and enthusiasm.

III. Fill in the gaps. Then read and translate:

deficiency reports computer skills managers communication inadequate accounting

Most respondents were concerned with the fact that the majority of accounting graduates lack …1… and oral and written …2… skills. Several respondents stated that …3… computer skills are becoming more noticeable as the demand for computer knowledge grows. Many respondents emphasised that the lack of good communication skills is the most serious …4…of graduates. Students in …5… are sure to submit short papers to develop writing skills because as future

…6…they must be able to write concise …7… .

IV. **Read the text again to find out which of the following state ments are correct:**

1. In Eastern Europe the complexity of economic activity is gradually growing.
2. At present the necessity of improving accounting through rais ing its operational utilityand quality is regarded as one of the most important tasks.
3. The main condition for the solution of this task is improving the quality of accountingcomputer programs.

4. In all about 140 accountants have been interviewed.

5. The interviews revealed that the majority favored radical re construction of accountingeducation.

6. Most respondents were concerned with the fact that the majority of accounting graduateshave excellent computer skills and oral and written communication skills.

7. Many respondents emphasised that the lack of good commu nication skills is the mostserious deficiency of graduates.

8. Many respondents indicated that graduates are self-motivated and full of enthusiasm.

V. **Read the text again and put the sentences into a chronological order:**

1. The positions of respondents ranged from higher level man agement accountants toassistant controllers.

2. Several respondents stated that inadequate computer skills are becoming more noticeableas the demand for computer knowledge grows.

3. At present the necessity of improving accounting through raising its operational utilityand quality is regarded as one of the most important tasks.

4. A lot of the US professionals have been asked to share their views on these issues and tocomment on the value of accountancy programmes.

5. However accounting managers favoured a practical approach as did most low levelparticipants.

6. To attract able young people to the study of accounting, to raise its prestige and demonstrate its importance is an urgent task in many countries of the world.

UNIT 8 ACCOUNTING PRINCIPLES

I. **Reading. Read the following text.**

involve втягувати; включати
escape уникнути
authorities власті; органи влади
permit дозволити
judgement думка, вирок
stated in money terms виражатися, формулюватися мовою грошейprofit-seeking той, що шукає прибуток
non-profit безприбутковий
record записувати
interpret тлумачити, пояснювати
statement звіт
financial statement фінансовий звіт
audit аудит, ревізія бухг. документів і звітності
financial studies фінансові дослідження
budget бюджет; фінансовий кошторис
forecast прогноз
accounting бухгалтерський облікto a significant extent в значній мірі
capture отримання processing обробка at a profit з прибутком
to meet one's commitments виконувати обов'язки to fall due підлягати оплаті accounting equation бухгалтерська рівніс тьliabilities пасиви, зобов'язання
owner's equity власний акціонерний капітал компаніїfinancial statements фінансова звітніс ть
income statement звіт про прибутки та збитки profit and loss account рахунок прибутків та збитків

double-entry bookkeeping бухгалтерський облік по методу подвійного записуaccrual basis запис прибутків та витрат до звершення операції debit дебет
debit side ліва сторона балансу, дебет рахунку
credit side права сторона балансу, кредит рахунк

ACCOUNTING PRINCIPLES

Of all the business knowledge you have learned or will learn, the study of accounting will be the most useful. Your financial and economic decisions as a student and consumer involve accounting information. Understanding the discipline of accounting will influence many of your future professional decisions. Remember, you can't escape the effects of accounting information on your personal and professional life.

DEFINITION OF ACCOUNTING

The most prominent accounting authorities define accounting as the process of identifying, measuring, and communicating economic information in order to permit judgements and decisions by the users of the information. This information is financial and usually stated in money terms. Thus, accounting is a measurement and communication process used to report on the activity of profit-seeking business organizations and non-profit organizations. Accounting is often confused with bookkeeping. Bookkeeping is a mechanical process that records the economic activities of a business. Accounting includes bookkeeping. Accountants analyze and interpret financial information, prepare financ ial statements, conduct audits, design accounting systems, prepare special and financial studies, prepare forecasts and budgets, provide tax services.

II. **Answer the questions:**

1. How is accounting defined by the most famous accounting authorities?
2. When is accounting used as a measurement and communication process?
3. What is accounting often confused with?
4. What role does an accounting system play in an economy?
5. Into what phases is accounting broken down?
6. What is an accounting equation?
7. What is the most widely practiced principle of bookkeeping?
8. What does the balance sheet list?
9. What is shown in the income statement?

III. **Are these sentences true or false? Correct the false sentences:**

1. Your financial and economic decisions as a student and consumer involve bookkeeping information.
2. Accounting is a measurement and communication process used to report on the activity of profit- seeking business organizations and non-profit organizations.
3. Accounting is often confused with bookkeeping.
4. Accountants analyze and interpret political information, prepare executive statements.
5. The most prominent accounting authorities define accounting as the process of identifying, measuring, and communicating cultural information in order to permit judgements and decisions by the users of the information

IV. **Choose the correct alternative:**

1. This information is financial and usually **estimated/stated** in money terms.
2. Of all the **business/bookkeeping** knowledge you have learned or will learn, the study ofaccounting will be the most useful.
3. You can't **escape/hide** the effects of accounting information on your personal and professionallife.

4. Accounting includes **negotiating/bookkeeping**.

5. Understanding the discipline of accounting will **include/influence** many of your futureprofessional decisions.

6. Bookkeeping is a **mechanical/useful** process that records the economic activities of a business.

V. Fill in the blanks with appropriate words:

Separate equation statement asset transactions accounting profit annually calculation financial

1. Accounting is based on the accounting_____, which s business will be able to meet its commitments as they fall due. 3. Balance sheets are drawn up periodically: monthly, quarterly, half-yearly,__. 4. Each account should be shown on a _____ page. 5. _____extends far beyond the actual making of records. 8. The subject of accounting is the

_____of the financial results of an economic entity's business activity. 9. There is an account for every_____, every liability and capital. 10. Accounting can be divided into three phases: capture, processing and communication of _____information.

***VI.* Match the words and their definitions.**

1 consumer A the examination of the books and accounts of a company2 accounting B the answer to a problem in mathematics

3 statement C the work of keeping the financial records of a company or an organization 4 audit D a statement of the financial position of a company at a particular time, suchas the end of the financial year or the end of a quarter, showing the company's assets and liabilities

5 forecast E the work of recording money paid, received, borrowed, or owed

6 budget F money taken by the government or by an official body to pay for governmentservices

7 tax G a person or company that buys and uses goods and services 8 bookkeeping H a plan of expected spending and income for a period of time

9 calculation I a description or calculation of what will probably happen in the future 10 balance sheet J something said or written which describes or explains something clearl

UNIT 9 ACCOUNTING

***I.* Reading. Read the following text.**

crucial рушійний, ключовий
to compare порівнювати
trend тенденція, загальний напрямок
a great impact великий вплив
the boundaries межі, кордони
new dimensions нові напрямки favourable conditions сприятливі умови uniformity однаковість, єдинство
comparatively new порівняно нові accounting practices бухгалтерська діяльністьto increase зростати
to raise the quality підвищувати якістьto establish запроваджувати requirements вимоги

Accounting is the process of identifying, measuring and com municating economic information. A user of the information may make informed economic judgments and decisions based on it. Accounting plays a crucial role in the development of human society. The medium

of accounting itself is thought to have a great impact on economic thinking and economic activity in all countries of the world. The enormous growth of industry in the twentieth century has expanded the boundaries of accounting and, as a result, the needs for accountants have increased. Some accounting experts believe that this trend will continue in the 21st century as well.

New dimensions of accounting will be recognised and its comparatively new fields will be dynamically developing. The very terminology of accounting will be changed to bring forth «social accounting», «green accounting», «tax accounting», etc. In the 21st century the world will continue to move slowly towards a single economy. As trade and investment flows expand, this tendency will certainly contribute to an open global economy. As a result, there may appear more favourable conditions in the future for developing the uniformity of international accounting standards. Harmo nising accounting standards internationally will improve the comparability of accounting information throughout the world. It will bring greater international understanding of accounting practices. In turn, more comparability will improve the analysis of financial statements.

A single set of financial accounting standards will also save corporations' time and money since they will no longer have to multiple sets of financial statements. In a word, establishing international standards, accepted in many countries, is believed to raise the quality of account ing throughout the world. At present, however, there are many problems on the way of setting such international standards. One is that accountants and users of accounting information have not been able to agree on the goals of financial statements.

Another problem is certainly the differences in the way in which the accounting profession has developed in different coun tries, not to speak about differences in the laws regulating businesses, differences in the requirements of governments and other bodies. And still other differences are the ones that exist among countries in the basic economic factors affecting financial reporting, and inconsisten cies in practices recommended by the accounting professions of dif ferent countries.

II. Fill in the gaps. Then read and translate:

human impact process expanded countries terminology dimensions continue fields increased

Accounting is the …1… of identifying, measuring and com□municating economic information soa user of the information may make informed economic judgments and decisions based on it. Ac□counting plays a crucial role in the development of …2… society. The medium of accounting itself is thought to have a great …3… on eco□nomic thinking and economic activity in all …4… of the world. The enormous growth of industry in the twentieth century has …5… the boundaries of accounting and, as a result; the needs for accountants have …6… . Some accounting experts believe that this trend will …7… in the 21st century as well. New …8… of accounting will be recognised and its comparatively new …9… will be dynamically de□veloping. The very …10… of accounting will be changed to bring forth «social accounting», «green accounting», «tax accounting», etc.

III. Make up the sentences from the words:

1. and, information, accounting, is communicating, measuring of identifying, the process,economic.
2. the development, plays, human, in, a, crucial, accounting, role of society.
3. economy, the, continue, move, in, the 21st, world, will, century, to slowly, towards, a, single.
4. problems at present, however many, there, are, on, the, way, of, such, international, setting,standards.
5. certainly, tendency, as, trade, and, flows, economy, invest ment, expand, this, will, to, an, open,global, contribute.

IV. Decide whether they are true or false:

1. A user of accounting information may make informed eco nomic judgments and decisions basedon it. a) True; b) False;
2. New dimensions of accounting will not be recognised and its comparatively new fields will notbe dynamically developing. a) True; b) False;
3. In the 21st century the world will continue to move slowly towards a single economy. a) True; b)False;
4. At present, however, there no problems on the way of setting international standards. a) True; b)False;
5. Harmonising accounting standards internationally will im prove the comparability of accountinginformation throughout the world. a) True; b) False

UNIT 10 FIELDS OF ACCOUNTING

I. **Reading. Read the following text.**

major fields основні галузі
governmental урядовий
a private business enterprise приватне підприємствоTo sell продавати
white collar білі комірці
To grow рости, збільшуватись skilled accountants кваліфіковані бухгалтерijunior accountant молодший бухгалтер
chief financial officer головний фінансовий службовецьto maintain and interpret підгримувати й тлумачити payrolls платежі
faced with стикатись з
conflicting loyalties конфліктуючи з правникамиunique feature унікальна риса
paramount responsibility найвища відповідальність

There are three major fields of accounting: governmental, private, and public accounting. In simple terms this means that an accountant may be employed by a unit of government, by a private business enterprise, or by himself or a firm selling accounting to the public. Governmental units at all levels employ accountants to maintain and check the accounting records. A list of important federal agencies that utilize the services of accountants might include the Internal Revenue Service, the General Accounting Office, the Defense Contract Audit Agency, the Army Audit Agency, and the Air Force Auditor General, among others. States, counties, and municipalities have similar needs for skilled accountants.

As the government sector in the economy has grown, this area has become a more significant employer of accountants. Private accounting includes those accountants who are employed by private business enterprises. These range from the junior accountant maintaining detailed accounting records up to the controller, or chief financial officer. Accountants in industry are required to maintain and interpret all sorts of financial records, including those pertaining to payrolls, receivables, payables, operating costs and revenues, and cash. Generally, these accountants work the same regular hours as other white collar workers. They are paid directly by the party they serve. Public accountants practice either as individuals or as employees of accountingfirms. They are kept busy in much the same manner as attorneys or medical doctors by serving theirown independent clients. Public accountants have no single employer as such, but instead make their services available to the public at large.

The services rendered include auditing, tax services, and special management consultation. Public accounting does have at least one unique feature. Unlike most other professional persons, thepublic accountant is often faced with conflicting loyalties. His first and paramount responsibility is to protect the interests of the public at large; yet he must look to his

client for his fee. What may be in the public's interest may not be in the client's interest. This situation creates a triangle that sometimes poses difficulties for the public accountant.

II. **Make up the sentences from the words:**

1. Public accounting does have at least one unique feature.
2. Public accountants practice either as individuals or as employees of accounting firms.
3. This situation creates a triangle that sometimes poses difficulties for the public accountant.
4. The services rendered include auditing, tax services, and special management.
5. States, counties, and municipalities have similar needs for skilled accountants.

III. Fill in the gaps. Then read and translate:

Generally enterprises detailed employed private interpret financial payrolls revenues collar

…1… accounting includes those accountants who are …2…by private business …3… . These range from the junior accountant maintaining … 4… accounting records up to the controller, or chief financial officer. Account ants in industry are required to maintain and …5… all sorts of

…6… records, including those pertaining to …7… , receivables, payables, operating costs and

…8… , and cash. …9… , these accountants work the same regular hours as other white …10… workers. They are paid directly by the party they serve.

IV. **Read the text again and put the sentences into a chronological order:**

1. There are three major fields of accounting: governmental, private, and public accounting.
2. Governmental units at all levels employ accountants to maintain and check the accountingrecords.
3. As the government sector in the economy has grown, this area has become a more significantemployer of accountants.
4. Private accounting includes those accountants who are employed by private business enterprises.
5. Public accounting does have at least one unique feature.

V. **Read the sentences and mark the statements True or False:**

1. There are five major fields of accounting: governmental, private, and public accounting. a) True b) False
2. In simple terms this means that an accountant may be employed by a unit of government, by aprivate business enterprise, or by himself or a firm selling accounting to the public. a) True b) False
3. As the government sector in the economy has grown, this area has not become a more significant employer of accountants. a) True b) False
4. They are kept busy in much the same manner as attorneys or medical doctors by serving theirown independent clients. a) True b) False
5. Governmental units at all levels employ accountants to maintain and search the accounting records. a) True b) False

UNIT 11 FUNCTIONS OF ACCOUNTING

I. **Reading. Read the following text.**

major більш важливий, значний; основний
complexity складність; заплутаність;
to regard вважати; розглядати
solution рішення, вирішення
to attract привертати; тягнути за собою
prestige престиж
urgent терміновий, невідкладний
revenue рахунок доходів; державні доходи (public revenues)intangible assets нематеріальні активи
appropriate відповідний, підходящий; доречний
impairment погіршення, ослаблення; пошкодження, збиток

Accounting performs four major functions: recording, classifying, summarizing, and interpreting financial information. In all countries of the world the complexity of economic activity is gradually growing. And this, in its turn, leads to an increasingly important role of accounting as a function of economic management. At present the necessity of improving accounting through raising its operational utility and quality is regarded as one of the most important tasks. The main condition for the solution of this task is improving the quality of accounting personnel. To attract able young people to the study of accounting, to raise its prestige and demonstrate its importance is an urgent task in many countries of the world. Accountants measure, record and report financial information that is useful for decision making.

measure

Accountants are trained to recognize when a transaction has financial impact and how theamount is to be determined. Sometimes this is simple, as with inventory purchased with cash.

Sometimes it is more complex, as with the amortization of bond premiums, recognition ofconstruction revenue, impairment of intangible assets, and so on.

record

Accountants are trained to apply generally accepted accounting principles (GAAP) so that the appropriate accounts are affected for any given transaction. In the double-entry system, there is always at least one debit and one credit for each transaction... the question accountants face numerous times each day is which accounts and which amounts are used.

report

Recording of transactions lead to the presentation of the financial statements: the Income Statement, the Balance Sheet, the Statement of Cash Flows, and the Statement of Retained Earnings. There are rules enforced by the SEC about the format and content of these financial statements, and accountants are trained to prepare these statements.

II. Fill in the gaps. Then read and translate:

perform increasingly necessity utility regarded solutionimproving personnel complexity

Accounting …1… four major functions: recording, classifying, summarizing, and interpreting financial information. In all countries of the world the …2… of economic activity is gradually growing. And this, in its turn, leads to an …3… important role of accounting as a function of economic management. At present the …4… of improving accounting through raising its operational …5… and quality is …6… as one of the most important tasks. The main condition for the …7… of this task is …8…the quality of accounting …9…. To attract able young people to the study of accounting, to raise its prestige and demonstrate its importance is an …10… urgent task in many countries of the world.

***III.* Make up the sentences from the words:**

1. information, decision, measure, Accountants record, and report, financial, that, is,

useful, for,making.

2. quality, main, The, personnel, condition, for, the, solution, of, this, task, is improving, the, of,accounting.

3. necessity, utility, At, present, regarded, accounting, the, of, important, improving, through,raising, its, operational, and, quality, is, as, one, of , the most, tasks.

4. to, able, demonstrate, prestige, young, study, people, to, the, of accounting, to raise, its, and,its, attract, importance.

IV. **Match the word with the definition:**

1 major a consider or think of (someone or something) in a specified way 2 complexity b a means of solving a problem or dealing with a difficult situation3 to regard c you use major when you want to describe something that is moreimportant, serious

4 solution d something intricate or complex

5 to attract e widespread respect and admiration felt for someone or something

6 prestige f cause to come to a place or participate in a venture by offering something of interest or advantage

7 urgent g income, esp. when of a company or organization and of asubstantial nature

8 revenue h this may be owing to obsolescence, damage, or a fall in themarket value of such assets.

9 intangible assets i Assets of an enterprise which cannot be seen or touched.10 impairment j requiring immediate action or attention

UNIT 12 BUDGETING

I. **Reading. Read the following text.**

budgeting	складання бюджету
to motivate	спонукати
operating plan	виробничий план
to anticipate	очікувати, передбачати
primary	основний, найважливіший
framework	рамки, межа, структура
fiscal year	бюджетний рік, фінансовий рік
arbitrarily	довільно, випадково
master budget	головний бюджет
control device	контрольний засіб, стандартний план діяльності бізнесу

The preparation of a budget is an important aspect of a company's success. The preparation of it helps management to establish short-term and long-term goals and standards for the company, motivate employees to achieve company goals, provide for a systematic review of 91 performance. The success of the budgeting process depends on the cooperation of all employees. Budget (of a business) is the financial operating plan for an organization for a fixed period. The budget shows what income is anticipated and how the resources will be used during the budget period. It is a forecast used by a business to plan and control.

The primary objective of the budget is to establish a financial framework for the operations of the business. The accounting period for the budget is usually either the calendar year or the fiscal year. The fiscal year is any arbitrarily chosen twelve-month period that does not

correspond to the calendar year. The total of separate budgets from different departments within a company that shows in detail how the entire business operates is called master budget. As the business year progresses, management can use the budget as a control device that permits monitoring of the company's operations.

II. **Read the text again to find out which of the following statements are correct:**

1. The preparation of a budget is an important aspect of a company's success.
2. The success of the budgeting process depends on the cooperation of all employees.
3. The success of the budgeting process depends on the chief accountant.
4. Budget of a business is the financial report about past performance.
5. Budget of a business is the financial operating plan for an organization for a fixed period.
6. The budget shows what income was earned and how the resources were used during the last year.
7. The budget shows what income is anticipated and how the resources will be used during thebudget period.
8. The primary objective of the budget is to establish a cheering atmosphere in the company.
9. The primary objective of the budget is to establish a financial framework for the operations of thebusiness.
10. The total of separate budgets from different departments within a company that shows in detailhow the entire business operates is called master budget.

III. **Match the phrases and words with their meanings:**

1. успіх компанії a) forecast
2. довгострокові цілі b) the primary objective
3. процес складання бюджету c) income
4. встановлений строк d) company's success
5. прибуток e) the budgeting process
6. прогноз f) a fixed period
7. найважливіша задача g) long term goals

IV. **Match the phrases and words with their meanings:**

1. головний бюджет a) fiscal year
2. контрольний засіб b) the budget period
3. контролювання роботи компанії c) operating plan
4. виробничий план d) monitoring of the company's operations
5. бюджетний період e) control device
6. бюджетний рік f) master budget

V. **Match words from list A with words from list B that have a similar meaning:**

1. operate a) sum
2. goal b) allow
3. to progress c) main
4. achieve d) expect
5. systematic e) definite
6. fixed f) regular
7. anticipate g) reach
8. primary h) to develop

9. permit i) objective
10. total j) function

VI. **Match words with the correct definition:**

1. budget a) an aim or target.
2. master budget b) a statement about what one thinks will happen in the future.
3. control device c) the people who control a company.
4. forecast d) the total of separate budgets from different departments withina company.
5. the fiscal year e) the main internal workings of business.
6. management f) a standard plan for the performance of a business by which itsoperations may be measured and regulated.
7. objective g) a plan of expected income and expenditure for a particularperiod of time.
8. operations h) related to a 12-month period of business activity.

VII. Fill in the gaps with the appropriate word or phrase:

motivated budget financial year Budgeting budgetsbudget fiscal year accounting monitors total

1. The financial director is responsible for the firm's … . 2. … involves setting financial goals and standards for an enterprise. 3. Our company's … is the calendar year, January 1 to December 31. 4. The new channel will be launched with a $3 million promotional ... . 5. A desire to go to business school … her to study mathematics hard. 6. She was given a … of € 25 000 to launch the magazine.

7. In the UK, the government's ... runs from 6 April to the following 5 April. 8. Our financial manager will calculate the total profit at the end of the ... period. 9. The boss … the quality of her employees' work. 10. The … of this month's sales is up 20%.

VIII. Fill in the missing prepositions: **for for by for in of of**

Budgeting is the process …1… preparing budgets and exercising budgetary control. Budgeting encourages forward thinking …2… managers; serves to help coordinate different functions and departments …3… the firm. It defines the responsibilities …4… individual managers, provides a framework …5… delegating responsibility; and provides an instrument …6… control., and a basis

…7… modifying plans, where necessary

UNIT 13 BOOKKEEPING AS A PART OF ACCOUNTING

I. Reading. Read the following text.

bookkeeping	бухгалтерія
bookkeeper	бухгалтер
accurate	точний, правильний
receipts грошові	надходження, прибутки
record	запис, документація
record-keeping	ведення обліку, облік
statement	звіт, відомість, бюлетень
financial statements	фінансова документація

journal	бухгалтерський журнал
ledger	бухгалтерська книга
posting	перевірка, перенос до бухгалтерської книги
to post	робити перевірку, заносити до бухгалтерської книги
ledger posting	запис до головної бухгалтерської книги
to draw up	складати
trial balance	попередній бухгалтерський баланс
to draw up a balance	складати баланс
favorable balance	активний баланс, позитивний баланс unfavorable balance пасивний баланс, негативний баланссash balance касова готівка
balance in hand	грошова готівка
balance of payment	платіжний баланс
error	помилка
auditing	аудит
an auditor	аудитор
an evaluation	оцінка
confidence	довіра
presentation	уявлення
internal	внутрішній
complete	повний, закінчений
reliable	надійний
departure	відхід, відступлення
to judge	судити, суддя
fair	справедливий
to appoint	призначити
to approve	затвердити
to link	об'єднати
to entrust	довіряти

BOOKKEEPING AS A PART OF ACCOUNTING

For management of any company to be efficient, extensive and accurate information concerning receipts and payments, assets and liabilities, depreciation of assets and other data about company status are required. Such information being obtained mainly from different records, additional funds and time should be invested in bookkeeping as a part of accounting system. The task of a bookkeeper is to ensure the record-keeping aspect of accounting and therefore to provide the data to which accounting principles are applied in the preparation of financial statements. Bookkeeping provides the basic accounting data by systematical recording such day-to-day financial information as income from the sale of products or services, expenses of business operations such as the cost of goods sold and overhead expenses such as a rent, wages, salaries.

Modern accounting system is considered to be a seven step cycle. The first three steps fall under the bookkeeping function, such as: 1) the systematic recording of financial transactions; 2) transferring of the amounts from various journals to general ledger (also called "posting step"); 3) the drawing up of the trial balance. Record keeping of companies is based on a double-entry system, due to which each transaction is recorded on the basis of its dual impact on the company's financial position. To make a complete bookkeeping record of every transaction in a journal, one should consider interrelated aspects of every transaction, and entries must be made in different accounts to keep the ins (receipts) and outs (payments) balanced.

A typical account is known to have two sides: the items on the left side are called debits, while the items on the right side are credits. Thus, double-entry bookkeeping doesn't mean that the same transaction is entered twice, it means that the same amount of money is always debited

to one account and credited to another account, each record having its own effect on the whole financial structure of the company. Certain accounts are increased with debits and decreased with credits, while other accounts are increased with credits and decreased with debits. The double-entry system of bookkeeping enable every company to determine at any time the value of each item that is owned, how much of this value belongs to creditors, total profit and how much belongs to the business clear debt. Thus, one advantage of the double-entry system is that its information is complete enough to be used as a basis for making business decisions. Another advantage is that the errors are readily detected, since the system is based on equation that must always be in balance.

II. **Answer the questions:**

1. What kind of information is of great importance for proper company management? 2. What roledoes bookkeeping play in the accounting cycle? 3. What kind of data is collected by a bookkeeper?

4. What is the modern concept of the accounting system? 5. What does double-entry bookkeepingmean? 6. What are the advantages of the double-entry system?

III. **Are these sentences true or false? Correct the false sentences:**

1. Double-entry bookkeeping means that the same transaction is entered twice, i.e. the same amountof money is always debited to one account and credited to another account, each record having its own effect on the whole financial structure of the company.
2. Certain accounts are increased with debits and decreased with credits, while other accounts areincreased with credits and decreased with debits.
3. Bookkeeping provides the basic accounting data by systematical recording such day-to-day financial information as income from the sale of products or services, expenses of business operations such as the cost of goods sold and overhead expenses such as a rent, wages, salaries.
4. A typical account is known to have two sides: the items on the left side are called credits, while the items on the right side are debits.
5. One advantage of the double-entry system is that its information is complete enough to be used asa basis for making business decisions. 6. To make a complete bookkeeping record of every transaction in a journal, one should consider interrelated aspects of every transaction, and entries must be made in different accounts to keep the ins (receipts) and outs (payments) balanced.
7. Such information being obtained mainly from different records, additional funds and time should be invested in bookkeeping as a part of accounting system.
8. The task of a bookkeeper is based on a double-entry system, due to which each transaction is recorded on the basis of its dual impact on the company's financial position.
9. Modern accounting system is considered to be a seven step cycle.
10. Record keeping of companies is to ensure the record-keeping aspect of accounting and therefore to provide the data to which accounting principles are applied in the preparation of financial statements.

IV. **Choose the correct alternative:**

1. For management of any company to be **efficient/sufficient**, extensive and accurate information concerning receipts and payments, assets and liabilities, depreciation of assets and other data about company status are required.
2. The first three steps fall under the **auditing/bookkeeping** function.
3. The task of a bookkeeper is to ensure the record-keeping aspect of accounting and therefore to provide the data to which accounting principles are applied in the preparation of financial **statements/debts**.
4. **Double-entry/Financial** bookkeeping doesn't mean that the same transaction is

entered twice, it means that the same amount of money is always debited to one account and credited to another account, each record having its own effect on the whole financial structure of the company.

5. The double-entry system of bookkeeping **enables/ensures** every company to determine at any time the value of each item that is owned, how much of this value belongs to creditors, total p profitand how much belongs to the business clear debt.

6. The current Chart of Accounts consists of about 100 accounts and **60 chapters/subaccounts**
grouped into 10 main sections.

7. All accounts included in this uniform **table/chart** are called "synthetic" (main or summary)accounts.

8. Another advantage is that the errors are readily **detected/inspected**, since the system is based onequation that must always be in balance.

9. A typical account is known to have two sides: the items on the left side are called debits, whilethe items on the right side are **credits/loans**.

10. Bookkeeping provides the basic accounting data by systematical recording such **up-to-date/day-to-day** financial information as rent, wages, and salaries.

V. **Match the words and their definitions.**

1 accrue A a book in which accounts are written

2 bookkeeper B a book with the account of sales and purchases made each day3 savings account C the draft calculation of debits and credits to see if they balance

4 balance of payment D an amount of money which a company or per-son can withdraw from abank account, with the bank's permission, despite the fact that the account is empty

5 receipt E something said or written which describes or explains somethingclearly

6 overdraft F a comparison between total receipts and payments arising from acountry's international trade in goods, services and financial transactions

7 journal G a person who keeps the financial records of a company or anorganization

8 statement H to record a finan-cial transaction in accounts when it takes place, andnot when payment is made or received

9 ledger I a piece of paper showing that money has been paid or that somethinghas been received

10 trial balance J an account where you put money in regularly and which pays interest,often at a higher rate than a deposit account

VI. **Match the words in the right column with the words in the left column to make wordcombinations.**

1	financial	a bank
2	balance	b account
3	ledger	c system
4	checking	d of the amounts
5	commercial	e financial information
6	additional	f in hand
7	double-entry	g with credits
8	transferring	h statements
9	day-to-day	i funds
10	increased	j posting

Text 2

I. **Reading. Read the following text.**

AUDITING

Auditing is closely connected with Accounting. Auditing is a process in which an independent accountant-auditor examines a firm's accounting records and financial statements and offers an opinion on their accuracy and reliability. The traditional definition of auditing is a review and an evaluating of financial records by a second set of accountants. The main purpose of the audit is to give the user of the financial statements confidence that they give a true presentation of the position of the company at a certain date. Accounts audits were established as an instrument to protect third parties, the users of accounts, since the auditor's opinion helps establish credibility of financial statements. There are different types of audits: financial statement audits, income tax audits, "value for money" audits, environmental audits, administrative audits, financial managementaudits, internal and independent audits, etc.

An internal audit. It is a control by a company's own accountants. They check for the complete, exact and reliable data. Internal auditors also look for departures from the methods for recording business transactions that are established by a company. An independent audit. It is a review of financial statements and records by an accountant not belonging to the company. Such auditors have to judge if the accounts present a true and fair view of the company's financial position. Who appoints auditors? Senior executives and advisors of the company do so. Then the candidates are to be approved by the owners of the share capital at the company's meeting. Auditorswrite an audit report. They also may write a "management letter" to directors. They may underline some weak points and recommend to improve operating procedures. The auditors try to ensure that the accounts give a true picture of the position. To achieve this the auditors need to go beyond the accounting function within the company. The auditor often looks at the way in which the other partsof the business work. It is common for the auditor to discuss the activities with the members of staffworking in different departments of the company, not only in the accounting or finance departments. The understanding of the business as a whole is very important for auditing.

II. **Are these sentences true or false? Correct the false sentences:**

1. The main purpose of the audit is to give the user of the financial statements confidence that theygive a true presentation of the position of the company at a certain date.

РОЗДІЛ V «ТВППТ СБ»

UNIT 1 TECHNOLOGY OF PRODUCING AND PROCESSING OF THE LIVESTOCK PRODUCTS

1. The Queen

Read and translate the text:

She is a handsome insect and half as large again as a worker. Most of her greater size is due to her long abdomen which projects well beyond the tips of her folded wings. Her body is less hairy than those of other bees and often she is of a different and lighter color. Her legs are long and strong and she stands a little higher than the other bees. These characteristics must be clearly remembered since they help us when we are faced with the task of finding the queen among the other 40,000 inhabitants of the hive. Her job is to lay eggs and thus she is a mother to all the bees in the hive. Her egg - laying performance is amazing and at the height of her season she will lay up to 1,500 eggs (about equivalent to her own weight) per day.

Answer the following questions:

1. How large is the queen?
2. What does its size depend on?
3. Can you compare its body with the other bees' ones?
4. Why do we need to remember its characteristics clearly?
5. Can we find it among the other 40,000 inhabitants of the hive?
6. What is the queen's job?
7. How many eggs can she lay at the height of her season?

Give definitions to the following terms:

Insect, worker, abdomen, hive.

2. Dairy Cattle Management

Read and translate the text:

Since the beginning of the history the cow has been useful to man in many ways. She has not been a source of food and a beast of burden, but she has even played an important role in his religion, mythology and political economy. One hundred years ago dairying was largely a family affair. Even in towns and villages most families kept a cow for their own use; the milk was usually consumed in the raw state and the surplus was made into butter and cheese. Dairying gradually became more specialized, and people bought milk, butter and cheese from farmers farther out in the country. Today, obtaining milk from the cow is only a first step in the very complex process of producing dairy foods. With the gradual development of large centres of concentrated population, the dairy industry has become divided into three separate and distinct phases - production, processing and distribution.

Answer the following questions:

1. In what ways has the cow been useful to man?
2. What was dairying like one hundred years ago?
3. Was a cow kept in towns then?
4. How did people use its milk?
5. Did it become more specialized later?
6. What is obtaining milk nowadays?
7.What are three separate and distinct phases of dairy industry?

Give definitions to the following terms:

Source of food, beast of burden, dairying, raw state, dairy foods, production, processing, distribution.

3. The Workers. Drones

Read and translate the text:

Of the three types of bee the worker is the smallest and its abdomen only just projects - beyond the tips of the folded wings. Its tongue is long and well developed while on its hind legs it has spiny structures known as pollen baskets and when these are full of pollen the worker appears to be wearing colored trousers. The worker has rudimentary ovaries and under special circumstances can lay about a dozen eggs, which, if they hatch, produce drones since workers can never mate. The duties of a worker vary with its age and the order in which these duties are undertaken is remarkably constant. There is the life schedule of the average worker.

The drone has become a symbol of idleness but he has a function to perform, which is, if required, to mate with the virgin queen and his reward for this is death. No doubt also his activities help to keep the hive warm but he brings in no nectar or pollen and helps himself liberally to the workers hard - won stores. The drone is about the same length as the worker but much broader with a blunt ended abdomen. He is more hairy than the other bees and often darker in color. His two magnificent compound eyes are so large that they meet on the top of the head. He has no sting. A hive in summer contains several hundred drones even though only one or two will ever be required for mating; nevertheless, if attempts are made to eliminate all the surplus drones, the workers become listless, unsettled and do not work well.

Answer the following questions:

1. Can you describe the appearance of the worker?
2. What are pollen baskets and what are they used for?
3. Can the workers lay eggs?
4. What are the duties of a worker?
5. Do its duties vary with its age?
6. Has the drone become a symbol of idleness or hard working?
7. What is the drone's function?
8. Do his activities help to keep the hive warm?
9. How do the drones influence the workers?

Give definitions to the following terms:

Abdomen, folded wings, pollen baskets, rudimentary ovaries, drone, to mate, virgin queen, nectar, pollen, compound eyes, sting.

4. Horse Breeding

Read and translate the text:

There are forty-five breeds and breed groups reared in the former Soviet Union. The horse continues to be used for various work such as drawing loads, pulling carts, sledges, carrying packs; it helps in ploughing and harrowing small plots, grass moving, hay racking up in copses and ravines; the horse in light harness and under saddle is used for transportation, particularly on seasonably encountered slick roads and in winter during snow flurry and, of course, on mountainous paths far away from water ways. Various breeds of heavy-draught horses (athletes), study riding and packhorses have been developed to be most effectively used. And the sportsmen are in need of the horses on which one could win in major events at hippodromes, in cross-country races, in overtaking complex obstacles, in dressing competitions.

Answer the following questions:

1. How many horse breeds do you know?
2. What are the horses usually used for?
3. Where do sportsmen need horses?

Give definitions to the following terms:

Breed, harrowing, ploughing, racking up in copses, saddle, heavy-draught horse, athletes, packhorses, hippodrome.

5. Dairy Cattle Nutrition

Read and translate the text:

During the first lactation the cow needs sufficient feed for continued growth as well as for milk production. In succeeding lactations more feed will de needed for the normally expected increase in milk production and for body maintenance. During the last stages of pregnancy the cow requires sufficient nutrients for building up reserve body tissue, minerals and vitamins for use during the next lactation. These nutrient requirements, established through research and feeding trails, are presented in form of feeding standards. Feeds used by the dairy cow are divided into two general classes: roughages and concentrates. Roughages contain a relatively high percentage of fibber and have a comparatively low-feeding value (hays, pastures and silages). Classed as concentrates are grains and oil-bearing seeds such as cottonseed, linseed and soybean.

Answer the following questions:

1. In what period does the cow need more sufficient feed?
2. How can it succeed good lactation?
3. Is body maintenance important during lactation?
4. What does the cow need during the last stages of pregnancy?
5. What are feeding standards?
6. What classes of feeds do you know?
7. What is feeding value of roughages?
8. How much fibber does it contain?
9. What samples of roughages do you know?
10. What are samples and feeding value of concentrates?

Give definitions to the following terms:

Lactation, milk production, feed, pregnancy, nutrients, reserve body tissue, minerals, vitamins, roughages, concentrates, fibber, low-feeding value.

6. Poultry

Read and translate the text:

The domestically fowl (chickens, turkeys, ducks etc.) has been working for man more than 5,000 years. We can't know exactly who their ancestors were but they were probably wild jungle fowl, which had to roost high in trees to keep from being eaten by jungle beasts. The bird has food requirements just as we have. The foods are supplied in a balanced mixture: grains (corn, wheat, barley) for carbohydrates; soybean meal, meal and bone meal and other sources of protein; alfalfa meal, fish products, milk products and vitamin concentrates for vitamins; salt ground limestone and sources of other needed minerals. Inside every fertile egg are all the food nutrients needed to develop a baby chick. An embryo grows, develops and hatches in 21 days.

Answer the following questions:

1. How long does the man use the domestically fowl?
2. Who were the poultry's ancestors?
3. What are the bird's main food requirements?
4. How much time does it take the embryo to grow, develop and hatch?

Give definitions to the following terms:

Fowl, carbohydrate, protein, vitamin concentrates, minerals, fertile egg, food nutrients, an embryo, to hatch.

7. The Combs. The Colony

Read and translate the text:

In nature bees attach their combs to the roof and sides of the recess in which they live, but the beekeeper persuades them to build within a moveable wooden frame so that any individual comb may be removed, examined and replaced without damage. Cells are built on either side of vertical sheet (the midrib) of wax. The cells are not opposite to one another but staggered and the bases are in form of shallow three sided pyramids. The uniformity of size has been over-emphasized because there are four kinds of cell in a hive and all four may occur on the same comb. Worker cell. There are the most usual type of cell and they are about 1/2 inch deep. A queen lays eggs in these cells and the resulting larvae feed, grow and finally emerge as full-grown workers. Bees also use them for the receipt of nectar and for the storage of pollen and honey.

A hive is the house, in which the bees live. The inhabitants together with their combs are known as a colony. An average colony will contain 20,000 - 40,000 bees. Recent discoveries have shown that through certain formal movements, known as dances, bees can communicate with one another, so some of the visible activity may be put down as conversation. We must hesitate before thinking that any of their comings and goings are aimless since all activity generates muscular heat and, this is the bees' method of keeping the hive warm. A colony contains three types of bees. The queen is the perfect female. The drones are the males. There are

several hundred of these. The workers are sometimes described as neuters, though they are really females with undeveloped reproductive organs.

Answer the following questions:

1. Where can you find the bee's combs in nature?
2. What do the beekeepers build for them?
3. How do they use wooden frames?
4. What kinds of cells are there in a hive?
5. How do the bees use worker cell?
6. What is a hive?
7. What is a colony?
8. How many bees does the average colony contain?
9. How do the bees use their dances?
10. How many types of bees do you know?

Give definitions to the following terms:

Comb, midrib, hive, nectar, pollen, honey, colony, queen, drone, worker.

8. The Ayrshire Cow. Beef Cattle

Read and translate the text:

As human population expands, more cereal grains will be used as food and we may have to rely on more roughage for our dairy cows. So we will require a cow that can consume large quantities of roughage, maybe less grain, and convert it into large quantities of milk. Efficiency will become more important. We think that the cow of the future will be taller than in the past, but maybe with more emphasis on width of chest and overall strength. To make these higher yields year after year our cows must have dairy capacity and strength. The taller cow will have an udder higher off the ground and less chance for injury. She will be sharp at the shoulders but still have great width of chest. These cows may not be as deep bodies in the past, but will have more length of body. Calves and yearlings must be taller and longer but still have quality.

Scottish agriculture employs 3% of Scotland's working population. Agriculture is a modern efficient industry applying the most up-to-date technology with a high level of mechanization and a highly skilled work force. Livestock products generally account about 75 % of farm output. On this land (mainly hills and upland) years-round grazing of hardy stock is possible. Several breeds of beef cattle are native to Scotland - the Black Aberdeen Angus is noted for its early maturing and superb quality of meat. Shorthorn, prized for its robustness and beef quality is noted throughout the world for its ability of improving poorer breeds by crossing the Galloway of slower growth but great hardiness; the Luing breed, officially recognized in 1966 and particularly suitable for producing good beef in the poor wet conditions of the North-West.

Answer the following questions:

1. What will the cow of the future look like?
2. How many people does Scottish agriculture employ?
3. What is agriculture?
4. Is years-round grazing of hardy stock possible in Scotland?
5. What native Scotland breeds do you know?
6. What is the Black Aberdeen Angus noted for?

7. What is Shorthorn prized for?
8. When was Luing breed officially recognized?
9. What is this breed suitable for?

Give definitions to the following terms:

Roughage, dairy cow, chest, dairy capacity, an udder, calf, yearling, grazing, breed, beef cattle, Aberdeen Angus, Shorthorn, Galloway, Luing breed.

9. Breeds. Beef Breeding

Read and translate the text:

A breed may be defined as a group of animals related by descent and developed for a special function. Thus, dairy cattle breeds are breeds developed primarily for milk production. In the United States cattle kept primarily for milk production belong to the Ayrshire, Brown Swiss, Holstein and Jersey breeds. In addition two breeds: the Milking Shorthorn and Red Polled are kept for milk but their numbers are small in comparison with the previously mentioned dairy breeds. Cattle were kept for dairy purposes long before the modem breeds developed. For example, in Holland butter production from cow's milk became so important that specialized buildings "butter houses" were constructed for butter storage and distribution before 1288. In the eighteenth century Bakewell was one of the first men to apply modern methods to the improvement of animals.

The beef breeding herd of approximately half a million cows is largely composed of cross-bred animals derived from the five native breeds, although rapid expansion in the breeding herd since the early 1905-s has been assisted by the increasing use of dairy crossbreds as beef cows - notably the Hereford - Friesian cross. The native brown and white Ayrshire, noted for its ability to thrive and produce milk under a wide range of farming conditions, accounts for just under half of the dairy herd. Recent years have also seen an increasing interest on the part of Scottish farmers in the use of breeds of foreign origin and several breeds have now been improved. A fall in the number of milk producers and an increase in then average herd size have been occurring in the Scottish dairy industry for many years.

Answer the following questions:

1. What does the term "breed" mean?
2. What are dairy cattle breeds?
3. What dairy cattle breeds do you know?
4. What are "butter houses"?
5. Who was the first men to apply modern methods to the improvement of animals?

Give definitions to the following terms:

Dairy cattle breed, Ayrshire, Brown Swiss, Holstein, Jersey, Milking Shorthorn, Red Polled, butter house, herd, cross-bred, Hereford - Friesian cross.

10. Leghorn

Read and translate the text:

The Single Comb White Leghorn is the most important breed kept for egg production in America, as well as in most countries of Europe. The Leghorn is characterized by an active and flighty disposition, early sexual maturity, excellent laying ability and a relatively small body size. They are well adapted to the extremes in the climate of the North America. The Leghorn lays white eggs and chicks are early feathering and grow rapidly. Leghorn were first imported into America about 1855 from Italy. The relatively small size of the Leghorn is an advantage from the standpoint of early maturity and rate of egg production. Small size birds are more economically efficient egg producers because less feed is required for body maintenance. The Leghorn however is inferior as a meat bird and most the hens after completing their production year are utilized in the manufacture of chicken soup and other prepared foods.

Answer the following questions:

1. What is the most important breed kept for egg production in America?
2. What is Leghorn characterized by?
3. When were Leghorn first imported into America?
4. Is relatively small size of the Leghorn advantage or disadvantage?
5. Is this breed used for meat production?

Give definitions to the following terms:

Single Comb White Leghorn, flighty disposition, sexual maturity, laying ability, feathering, egg production, body maintenance.

UNIT 2 BIOTECHNOLOGIES AND BIOENGINEERING

1. Cytology as a Science

Read and translate the text:

Cytology means “the study of cells”. Cytology is that branch of life science, which deals with the study of cells in terms of structure, function and chemistry. Based on usage it can refer to cell biology.

Cell biology is a scientific discipline that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division and death. This is done both on a microscopic and molecular level. Cell biology research encompasses both the great diversity of single-celled organisms like bacteria, as well as the many specialized cells in multicellular organisms such as humans.

The cell is the functional basic unit of life discovered by Robert Hooke. It is the smallest unit of life that is classified as a living thing, and is often called the building block of life. Some organisms, such as most bacteria, are unicellular (consist of a single cell). Other organisms, such as humans, are multicellular. Humans have about 100 trillion cells; a typical cell size is 10 micrometers and a typical cell mass is 1 nanogram. The largest known cells are unfertilized ostrich egg cells, which weigh 3.3 pounds.

The cell theory, first developed in 1839 by Matthias Jakob Schleiden and Theodor Schwann, states that all organisms are composed of one or more cells, that all cells come from preexisting cells, that vital functions of an organism occur within cells, and that all cells contain the hereditary information necessary for regulating cell functions and for transmitting information to the next generation of cells. The word *cell* comes from the Latin *cellula*, meaning, a small room. The descriptive term for the smallest living biological structure was coined by

Robert Hooke in a book he published in 1665 when he compared the cork cells he saw through his microscope to the small rooms monks lived in.

The cell consists of different proteins. Each type of protein is usually sent to a particular part of the cell. Most proteins are synthesized by ribosomes in the rough endoplasmic reticulum. This process is known as protein biosynthesis.

Appreciating the similarities and differences between cell types is particularly important to cell and molecular biology as well as to biomedical fields such as cancer research and developmental biology. Therefore, research in cell biology is closely related to genetics, biochemistry, molecular biology, immunology and developmental biology.

Answer the following questions:

1. What does "cytology" mean?
2. What does cell biology study?
3. Who was the cell discovered by?
4. Are there any organisms consisting of only one cell?
5. How many cells does human have?
6. When was the cell theory first developed?
7. What does it state?
8. What is the origin of the word "cell"?
9. What science is cell biology closely related to?
10. What is protein biosynthesis?

Give definitions to the following terms:

Cytology, cell, cell biology, bacteria, unicellular, ribosome, protein biosynthesis, immunology.

2. What is Embryology?

Read and translate the text:

Embryology is the study of the formation of life, part of the studies with which developmental biology is concerned. Developmental biology examines how all forms of life begin, and how they develop into fully formed and functioning organisms.

Embryology looks at the very beginning of life from the one-celled organism, egg or sperm. Embryologists examine fertilization and track the development of the embryo until it bears a resemblance to its progenitors. For example, in human conception, embryologists would be interested in both sperm and egg, and the meeting of the two, and then would follow egg implantation and the growth of an embryo until it reaches the fetal stage. So in humans, the study of an embryo would last until about the second month of a pregnancy.

Aristotle was one of the first to champion the theory of epigenesis, the concept that life forms develop into complex organisms from fertilization. This was not a popular concept and was largely discarded in favor of the theory of preformation, which suggested that each human sperm was already a person in waiting. In the mid 18th century, Caspar Fredriech Wolff again set forth the concept of epigenesis. Through his study of chick embryos, Wolff realized that the body of an organism has stages of development. Through vivisection, he observed the complexity of specific organs and contended that their development could not simply have occurred spontaneously, but must have developed over time.

Later scientists followed his studies, and with the development and subsequent improvements of the microscope, Wolff's theories were found to be quite accurate. Wolff is credited as the "Father of Embryology", even though he did not first conceptualize epigenesis.

Today, the theories of embryology are easier to prove because of the accuracy with which we can examine DNA codes within a cell.

There are several practical applications of embryology in the modern world. Embryology has given doctors the tools to create fertilized eggs for in vitro implantation. Embryology can also identify risk factors for serious genetic conditions within the fertilized egg and select the most viable eggs for implantation. The study of embryology has led directly to the concept of cloning, either for a whole organism or parts of an organism.

Answer the following questions:

1. What is embryology?
2. What does developmental biology examine?
3. What do embryologists examine?
4. What is epigenesis?
5. Who was the first to champion this theory?
6. What did the theory of preformation suggest?
7. Who is called the "Father of Embryology"?
8. Why are the theories of embryology easier to prove nowadays?
9. What are the main practical applications of embryology in the modern world?
10. What concept has this study led directly to?

Give definitions to the following terms:

Embryology, developmental biology, fertilization, an embryo, epigenesis, preformation, sperm, vivisection, cloning.

3. Physiology of Plants and Animals

Read and translate the text:

Although you may place organisms without difficulty in either the plant or the animal kingdom, it is essential to know the basic differences between these two groups. That's why we can distinguish physiology of plants and animals.

Plant physiology. It is a subdiscipline of botany concerned with the functioning, or physiology of plants. Closely related fields include plant morphology (structure of plants), plant ecology (interactions with the environment), photochemistry (biochemistry of plants), cell biology, and molecular biology. The scope of plant physiology as discipline may be divided into several major areas of research. First, the study of photochemistry (plant chemistry) is included within the domain of plant physiology. To function and survive, plants produce a wide array of chemical compounds not found in other organisms. Photosynthesis requires a large array of pigments, enzymes, and other compounds to function. Secondly, plant physiology includes the study of biological and chemical processes of individual plant cells. Plant cells have a number of features that distinguish them from cells of animals, and which lead to major differences in the way that plant life behaves and responds differently from animal life. Thirdly, plant physiology deals with interactions between cells, tissues, and organs within a plant. Different cells and tissues are physically and chemically specialized to perform different functions. Fourthly, plant physiologists study the ways that plants control or regulate internal functions. Like animals, plants produce chemicals called hormones which are produced in one part of the plant to signal cells in another part of the plant to respond. Finally, plant physiology includes the study of how plants respond to conditions and variation in the environment, a field known as environmental physiology.

Animal physiology. It is the study of animal functions. Animal physiology is subdivided into the four main parts, such as general physiology, special physiology, comparative physiology and age physiology.

General physiology deals with the analysis of such universal and important processes as blood circulation, metabolism, respiration etc. Special physiology applies general physiological principles in order to investigate characteristics of a particular animal species. Comparative physiology concentrates on similarities and differences of physiological functions of various living organisms. The problem of how physiological functions change with animal age is of special interest to age physiology. The main approach in animal physiology is to study the evolutionary origins of the physiological mechanisms in order to understand the significance of these mechanisms for modern animals. Modern physiology which is based on chemical, physical and anatomical methods investigates biological organization of the animal body at different levels, that is, cells, tissues, organs.

One of the parts of special physiology is devoted to farm animal physiology. The aim of this science is not only to study physiological functions of the farm animal body, but to control them in order to increase the production of eggs, offspring, milk, meat and wool.

Other major branches of scientific study that have grown out of physiology research include biochemistry, biophysics, biomechanics, pharmacology, cytology as well as genetics which are known as the biological bases for rational animal husbandry.

Answer the following questions:

1. What is plant physiology?
2. What are its major areas of research?
3. Why does plant physiology include the study of biological and chemical processes of individual plant cells?
4. What does it deal with?
5. Does it include the study of environmental physiology?
6. What is animal physiology subdivided in?
7. What does general physiology deal with?
8. What does special physiology apply?
9. What is of special interest to age physiology?
10. What is farm animal physiology?

Give definitions to the following terms:

Plant physiology, plant morphology, plant ecology, photochemistry, cell biology, molecular biology, photosynthesis, hormones, animal physiology, general physiology, special physiology, comparative physiology, age physiology, metabolism, respiration.

4. Biological Chemistry

Read and translate the text:

Biochemistry, sometimes called biological chemistry, is the study of chemical processes in living organisms, including, but not limited to, living matter. Biochemistry governs all living organisms and living processes. By controlling information flow through biochemical signaling and the flow of chemical energy through metabolism, biochemical processes give rise to the incredible complexity of life.

Over the last 40 years biochemistry has become so successful at explaining living processes that now almost all areas of the life sciences from botany to medicine are engaged in biochemical research. Today the main focus of pure biochemistry is in understanding how

biological molecules give rise to the processes that occur within living cells which in turn relates greatly to the study and understanding of whole organisms.

Among the vast number of different biomolecules, many are complex and large molecules (called biopolymers), which are composed of similar repeating subunits (called monomers). Each class of polymeric biomolecule has a different set of subunit types. For example, a protein is a polymer whose subunits are selected from a set of 20 or more amino acids. Biochemistry studies the chemical properties of important biological molecules, like proteins, and in particular the chemistry of enzyme-catalyzed reactions.

The biochemistry of cell metabolism and the endocrine system has been extensively described. Other areas of biochemistry include the genetic code (DNA, RNA), protein synthesis, cell membrane transport, and signal transduction.

Researchers in biochemistry use specific techniques native to biochemistry, but increasingly combine these with techniques and ideas from genetics, molecular biology and biophysics. There has never been a hard-line between these disciplines in terms of content and technique. Today the terms molecular biology and biochemistry are nearly interchangeable.

Answer the following questions:

1. What is biological chemistry?
2. What does it govern?
3. What is engaged in biochemical research?
4. Where is the main focus of pure biochemistry today?
5. What is protein?
6. What does biochemistry study?
7. What techniques do researchers use in biochemistry?
8. Are genetics, molecular biology and biophysics closely connected with each other?
9. What terms are nearly interchangeable nowadays?
10. Do the areas of biochemistry include the genetic code (DNA, RNA), protein synthesis, cell membrane transport, and signal transduction?

Give definitions to the following terms:

Biochemistry, living matter, metabolism, living cell, biomolecule, biopolymer, monomer, amino acid, enzyme-catalyzed reactions, endocrine system, DNA, RNA, signal transduction.

5. The Bridge Between Biology and Physics

Read and translate the text:

Biology studies life in its variety and complexity. It describes how organisms go about getting food, communicating, sensing the environment, and reproducing. On the other hand, physics looks for mathematical laws of nature and makes detailed predictions about the forces that drive idealized systems. Spanning the distance between the complexity of life and the simplicity of physical laws is the challenge of biophysics. Biophysicists study life at every level, from atoms and molecules to cells, organisms, and environments.

Biophysics discovers such questions as how atoms are arranged to work in DNA and proteins. Protein molecules perform the body's chemical reactions. They push and pull in the muscles that move your limbs. Proteins make the parts of your eyes, ears, nose, and skin that sense your environment. They turn food into energy and light into vision. They are your immunity to illness. Proteins repair what is broken inside of cells, and regulate growth. They fire the electrical signals in your brain. They read the DNA blueprints in your body and copy the

DNA for future generations. So, biophysicists discover how proteins work. Understanding these differences in people's respond to proteins opens new possibilities in drug design, diagnosis, and disease control.

Biophysics is a wellspring of innovation for our high-tech economy. The applications of biophysics depend on society's needs. In the 20th century, great progress was made in treating disease. Biophysics helped to create powerful vaccines against infectious diseases. It described and controlled diseases of metabolism, such as diabetes. And biophysics provided both the tools and the understanding for treating the diseases of growth as cancers. Today we are learning more about the biology of health and society is deeply concerned about the health of our planet.

Advanced instruments created by biophysicists provide the life-saving treatment methods of kidney dialysis, radiation therapy, cardiac defibrillators, and pacemakers. Biophysicists invented instruments for detecting, purifying, imaging, and manipulating chemicals and materials.

Nowadays society is facing physical and biological problems of global proportions. How will we continue to get sufficient energy? How can we feed the world's population? How do we remediate global warming? How do we preserve biological diversity? How do we secure clean and plentiful water? Biophysics provides the insight and technologies for meeting these challenges, based on the principles of physics and the mechanisms of biology.

Biophysics discovers how to modify microorganisms for biofuel (replacing gasoline and diesel fuel) and bioelectricity (replacing petroleum products and coal for producing electricity). Biophysics discovers the biological cycles of heat, light, water, carbon, nitrogen, oxygen, heat, and organisms throughout our planet. Biophysics harnesses microorganisms to clean our water and to produce lifesaving drugs.

Answer the following questions:

1. What does biology describe?
2. What do biophysicists study?
3. What are the body's chemical reactions performed by?
4. What possibilities were opened as a result of protein discovery?
5. What do the applications of biophysics depend on?
6. What diseases were treated due to biophysics?
7. What problems is society facing nowadays?
8. What does biophysics discover?

Give definitions to the following terms:

Biology, physical laws, metabolism, kidney dialysis, radiation therapy, cardiac defibrillators, pacemaker.

6. Three Branches of Biophysics

Read and translate the text:

Medical Biophysics studies physics to describe or affect biological process for the purpose of medical application. Like many areas of study that have emerged in recent times, it relies on broad interdisciplinary knowledge between the so-called traditional fields such as physics (i.e. medical physics, radiation physics or imaging physics) and advanced biology fields such as biochemistry, biophysics, physiology, neuroscience etc. Some important areas of research in medical biophysics include medical imaging (e.g. MRI, computed tomography, and PET), oncology and cancer diagnosis, and vasculature and circulatory system function.

Molecular biophysics is an evolving interdisciplinary area of research that combines concepts in physics, chemistry, engineering, mathematics and biology. It studies biomolecular

systems and explain biological function in terms of molecular structure, structural organization, and dynamic behavior at various levels of complexity (from single molecules to supramolecular structures, viruses and small living systems). The discipline requires specialized equipment and procedures capable of imaging and manipulating minute living structures, as well as novel experimental approaches.

Biophysical chemistry is a relatively new branch of chemistry that covers a broad spectrum of research activities involving biological systems. The most common feature of the research in this subject is to seek explanation of the various phenomena in biological systems in terms of either the molecules that make up the system or the supra-molecular structure of these systems.

Biophysical chemists employ various techniques used in physical chemistry to probe the structure of biological systems. These techniques include spectroscopic methods like nuclear magnetic resonance (NMR) and X-ray diffraction. Also biophysical chemists study protein structure and the functional structure of cell membranes. For example, enzyme action can be explained in terms of the shape of a pocket in the protein molecule that matches the shape of the substrate molecule or its modification due to binding of a metal ion. Similarly the structure and function of the biomembranes may be understood through the study of model supramolecular structures as liposomes or phospholipid vesicles of different compositions and sizes.

Answer the following questions:

1. What does medical biophysics study?
2. What does molecular biophysics study?
3. What does biophysical chemistry research?
4. What is its the most common feature?
5. What techniques does it use to probe the structure of biological systems?

Give definitions to the following terms:

Medical Biophysics, radiation physics, imaging physics, neuroscience, medical imaging, molecular biophysics, biomolecular systems, biophysical chemistry, nuclear magnetic resonance, X-ray diffraction, cell membranes, biomembranes, supramolecular structures, liposomes, phospholipid vesicles.

7. Physicochemical Methods of Analysis: What Are These?

Read and translate the text:

It seems that this term can be met only in Ukrainian. In the English language literature, they usually speak and write about instrumental methods of analysis. The name instrumental is evidently not ideal; analytical balances or titrimeters used in classical chemical methods also belong to instruments.

Physicochemical methods of analysis have wider application. Without them it is hard to control and manage production processes and research. It should be noted that physicochemical methods of analysis solve the problems of chemical control and analysis; they constitute to one of the parts of analytical chemistry. The essence of the physical and chemical methods of analysis is to study relations between structure and properties of systems. For the analysis of substances chemical reactions are widely used. They are accompanied by changes in the physical properties of the analyzed system, for example, the color intensity of fluorescence, etc. So physicochemical methods of analysis is a field of analytical chemistry that investigates analyses using scientific instruments. There are several types of instrumental analyses.

Spectroscopy measures the interaction of the molecules with electromagnetic radiation. Spectroscopy consists of many different applications such as atomic absorption spectroscopy, atomic emission spectroscopy, ultraviolet-visible spectroscopy, x-ray fluorescence spectroscopy, infrared spectroscopy, Raman spectroscopy, nuclear magnetic resonance spectroscopy, photoemission spectroscopy and so on.

Mass spectrometry measures mass-to-charge ratio of molecules using electric and magnetic fields. There are several ionization methods: electron ionization, chemical ionization, electrospray, fast atom bombardment, matrix-assisted laser desorption/ionization, and others.

Crystallography is a technique that characterizes the chemical structure of materials at the atomic level by analyzing the diffraction patterns of electromagnetic radiation or particles that have been deflected by atoms in the material. X-rays are most commonly used. From the raw data the relative placement of atoms in space may be determined.

Electroanalytical methods measure the electric potential in volts and/or the electric current in amps in an electrochemical cell containing the analyte. These methods can be categorized according to which aspects of the cell are controlled and which are measured. The three main categories are potentiometry (the difference in electrode potentials is measured), coulometry (the cell's current is measured over time), and voltammetry (the cell's current is measured while actively altering the cell's potential).

Calorimetry and thermogravimetric analysis measure the interaction of a material and heat.

Separation processes are used to decrease the complexity of material mixtures. Chromatography and electrophoresis are representative of this field.

Microscopy. The visualization of single molecules, single biological cells, biological tissues and nanomaterials is very important and attractive approach in analytical science.

Also, hybridization with other traditional analytical tools is revolutionizing analytical science. Microscopy can be categorized into three different fields: optical microscopy, electron microscopy, and scanning probe microscopy. Recently, this field is rapidly progressing because of the rapid development of the computer and camera industries. Combinations of the above techniques produce a "hybrid" or "hyphenated" technique. Several examples are in popular use today and new hybrid techniques are under development, for example, gas chromatography-mass spectrometry, gas chromatography-infrared spectroscopy, liquid chroma- tography-mass spectrometry and so on.

A general method for analysis of concentration involves the creation of a calibration curve. This allows for determination of the amount of a chemical in a material by comparing the results of unknown sample to those of a series known standards. If the concentration of element or compound in a sample is too high for the detection range of the technique, it can simply be diluted in a pure solvent. If the amount in the sample is below an instrument's range of measurement, the method of addition can be used. In this method a known quantity of the element or compound under study is added, and the difference between the concentration added, and the concentration observed is the amount actually in the sample.

Answer the following questions:

1. What application do physicochemical methods have?
2. What problems do they solve?
3. What does spectroscopy do?
4. What ionization methods do you know?
5. What does crystallography characterize?
6. When are separation processes used?
7. What is microscopy?
8. What are three different fields of microscopy?

Give definitions to the following terms:

Instrumental methods of analysis, analytical balance, titrimeter, physicochemical methods, fluorescence, spectroscopy, atomic absorption spectroscopy, atomic emission spectroscopy, ultraviolet-visible spectroscopy, x-ray fluorescence spectroscopy, infrared spectroscopy, Raman spectroscopy, nuclear magnetic resonance spectroscopy, photoemission spectroscopy, electron ionization, chemical ionization, electrospray, fast atom bombardment, matrix-assisted laser desorption/ionization, mass spectrometry, crystallography, electroanalytical methods, potentiometry.

8. A Magnificent Protector

Read and translate the text:

Inside your body there is an amazing protection mechanism called the immune system. It is designed to defend you against millions of bacteria, microbes, viruses, toxins and parasites that would love to invade your body. To understand the power of the immune system, all that you have to do is to have a look at one's death. That sounds gross, but it will show you important things about your immune system. When something dies, its immune system (along with everything else) shuts down. In a matter of hours, the body is invaded by all sorts of bacteria, microbes, parasites... None of these things are able to get in when your immune system is working, but the moment your immune system stops the door is wide open. Once you die it only takes a few weeks for these organisms to completely dismantle your body and carry it away, until all that's left is a skeleton. Obviously your immune system is doing something amazing to keep all of that dismantling from happening when you are alive.

When a virus or bacteria (also known generically as a germ) invades your body and reproduces, it normally causes problems. Generally the germ's presence produces some side effect that makes you sick. For example, the strep throat bacteria (Streptococcus) releases a toxin that causes inflammation in your throat. The poliovirus releases toxins that destroy nerve cells (often leading to paralysis). Some bacteria are benign or beneficial (for example, we all have millions of bacteria in our intestines and they help digest food), but many are harmful ones; they get into the body or the bloodstream.

The job of your immune system is to protect your body from these infections. The immune system protects you in three different ways. First and foremost, it creates a barrier that prevents bacteria and viruses from entering your body. Then, if a bacteria or virus does get into the body, the immune system tries to detect and eliminate it before it can make itself at home and reproduce. Thirdly, when the virus or bacteria is able to reproduce and start causing problems, your immune system is in charge of eliminating it.

There are many diseases that, if you catch them once, you will never catch again. Measles is a good example, as is chicken pox. What happens with these diseases is that they make it into your body and start reproducing. The immune system gears up to eliminate them. Cells recognize the virus and produce antibodies for it. This process takes time, but the disease runs it course and is eventually eliminated.

A vaccine is a weakened form of a disease. It is either a killed form of the disease, or it is a similar but less virulent strain. Once inside your body your immune system mounts the same defense, but because the disease is different or weaker you get few or no symptoms of the disease. Now, when the real disease invades your body, your body is able to eliminate it immediately.

Many diseases cannot be cured by vaccines, however. The common cold and influenza are two good examples. These diseases either mutate so quickly or have so many different strains in the wild that it is impossible to inject all of them into your body. Each time you get the flu, for

example, you are getting a different strain of the same disease. Thus, it's only our immune system which helps us to be defended.

Answer the following questions:

1. What is immune system?
2. What is its role in your life?
3. What happens when something dies?
4. What kinds of bacteria are there?
5. What are three different ways of immune system protection?
6. What is vaccine?
7. What diseases cannot be cured by vaccines?

Give definitions to the following terms:

Immune system, bacteria, microbes, viruses, toxins, parasites, germ, strep throat bacteria, poliovirus, chicken pox, influenza.

9. The Fantastic World

Read and translate the text:

Microbiology is the study of microorganisms, which are microscopic and unicellular organisms. This includes eukaryotes such as fungi and protists, and prokaryotes. Viruses, though not classed as living organisms, are also studied. Microbiology typically includes the study of the immune system, or Immunology. And immune systems obviously interact with pathogenic microbes.

Microbiology includes virology, mycology, parasitology, bacteriology and other branches. Microbiological procedures usually must be aseptic, and use a variety of tools such as light microscopes with a combination of stains and dyes, agar plates in petri dishes, biochemical test and running tests against particular growth conditions.

Microbiology is researched actively. Many microbes are responsible for beneficial processes such as industrial fermentation, antibiotic production and others. Bacteria can be used for the industrial production of amino acids. *Corynebacteriumglutamicum* is one of the most important bacterial species with an annual production of more than two million tons of amino acids.

A variety of biopolymers, such as polysaccharides, polyesters, and polyamides, are produced by microorganisms. Microorganisms are used for the biotechnological production of biopolymers with tailored properties suitable for high-value medical application such as tissue engineering and drug delivery.

Microorganisms are beneficial for microbial biodegradation of domestic, agricultural and industrial wastes. The ability of each microorganism to degrade toxic waste depends on the nature of each contaminant.

There are also various claims concerning the contributions to human and animal health by consuming probiotics (bacteria potentially beneficial to the digestive system) and/or prebiotics (substances consumed to promote the growth of probiotic microorganisms). Recent research has suggested that microorganisms could be useful in the treatment of cancer.

Answer the following questions:

1. What is microbiology?
2. What are many microbes responsible for?
3. What can microorganisms be used for?

Give definitions to the following terms:

Microbiology, microorganisms, eukaryotes, prokaryotes, immunology, pathogenic microbes, virology, mycology, parasitology, bacteriology, antibiotic, corynebacteriumglutamicum, biopolymers, polysaccharides, polyesters, polyamides, biodegradation, probiotics, prebiotics.

10. Virology and Viruses

Read and translate the text:

Virology is the study of viruses and virus-like agents: their structure, classification and evolution, their ways to infect and exploit cells for virus reproduction, the diseases they cause, the techniques to isolate and culture them, and their use in research and therapy. Virology is often considered as a part of microbiology. A major branch of virology is virus classification. Viruses can be classified according to the host cell they infect: animal viruses, plant viruses, fungal viruses, and bacteriophages (viruses infecting bacteria, which include the most complex viruses). Another classification uses the geometrical shape of their capsid (often a helix or an icosahedron) or the virus's structure (e.g. presence or absence of a lipid envelope). Viruses range in size from about 30 nm to about 450 nm, which means that most of them cannot be seen with light microscopes. The shape and structure of viruses has been studied by electron microscopy, NMR spectroscopy, and X-ray crystallography.

A virus is a small infectious agent that can replicate only inside the living cells of organisms. Viruses infect all types of organisms, from animals and plants to bacteria. Since the initial discovery of the tobacco mosaic virus in 1898, about 5,000 viruses have been described in detail, although there are millions of different types. Viruses are found in almost every ecosystem on Earth.

Virus particles (known as virions) consist of two or three parts: the genetic material made from either DNA or RNA, long molecules that carry genetic information; a protein coat that protects these genes; and in some cases an envelope of lipids that surrounds the protein coat when they are outside a cell. The average virus is about one one-hundredth the size of the average bacterium.

Viruses cause a number of diseases in eukaryotes. In humans, smallpox, the common cold, influenza, herpes, polio, rabies and AIDS are examples of viral diseases.

Viral infections in animals provoke an immune response that usually eliminates the infecting virus. Immune responses can also be produced by vaccines. However, some viruses including those causing AIDS and viral hepatitis evade these immune responses and result in chronic infections. Antibiotics have no effect on viruses, but several antiviral drugs have been developed.

The origins of viruses in the evolutionary history of life are unclear: some may have evolved from plasmids – pieces of DNA that can move between cells – while others may have evolved from bacteria.

The evolution of viruses, which often occurs in concert with the evolution of their hosts, is studied in the field of viral evolution.

While viruses reproduce and evolve, they don't engage in metabolism and depend on a host cell for reproduction. The often-debated question of whether they are alive or not is a matter of definition that does not affect the biological reality of viruses.

Answer the following questions:

1. What is virology?
2. Is virology considered as a part of microbiology?
3. How are viruses classified?
4. What is the size of virus?
5. How can we study the shape and structure of viruses?

6. How many viruses have been described?
7. Where can they be found?
8. What are the examples of viral diseases?
9. How can immune responses be produced?

Give definitions to the following terms:

Virology, virus-like agents, microbiology, bacteriophages, helix or an icosahedron, lipid envelope, NMR spectroscopy, X-ray crystallography, virions, smallpox, influenza, herpes, polio, rabies, AIDS, plasmids.

UNIT 3 FOOD TECHNOLOGIES

1. Food and its Sources

Read and translate the text:

Food is any substance, usually comprised primarily of carbohydrates, fats, vitamins, water and/or proteins, that can be eaten or drunk by animals (including humans) for nutrition and/or pleasure. Most cultures have a recognisable cuisine: a specific set of cooking traditions, preferences and practices, the study of which is known as gastronomy.

The study of food is called food science. In English, the term food is often used metaphorically or figuratively as "food for thought". The main food sources are plants and animals. Many plants or plant parts are eaten as food. There are around two thousand plant species that are cultivated for food, and many have several distinct cultivars. Plant-based foods can be classified as follows: seeds, the ripened ovules of some plants, carry a plant embryo inside them along with the nutrients necessary for the plant's initial growth. Because of this, seeds are often packed with energy, and are good sources of food for animals, including humans. In fact, the majority of all foods consumed by human beings are seeds. These include cereals (such as maize, wheat, and rice), legumes (such as beans, peas, and lentils), and nuts. Oilseeds are often pressed to produce rich oils, including sunflower, rape (including canola oil), and sesame. Fruits are the ripened ovaries of plants, including the seeds within. Fruits are made attractive to animals so that animals will eat the fruits and excrete the seeds over long distances. Fruits, therefore, make up a significant part of the diets of most cultures. Some fruits, such as pumpkin and eggplant, are eaten as vegetables. Vegetables are other plant matter which is eaten as food. These include root vegetables (such as potatoes and carrots), leaf vegetables (such as spinach and lettuce), stem vegetables (such as bamboo shoots and asparagus), and inflorescence vegetables (such as globe artichokes and broccoli). Many herbs and spices are highly-flavourful vegetables. When animal tissue is eaten as food, this is known as meat. Many different kinds of animals are eaten, but mammals make up the majority of meat. The most common mammal-based meat include beef, lamb, pork, and mutton. Poultry is meat from a bird; the most common poultries are chicken and turkey. Seafood is meat from a fish or other sea creature, such as shellfish or lobster. Some cultures eat other forms of meat, including insects, snails, reptiles, or amphibians. Often animal products are eaten as well. Mammals produce milk, which in many cultures is drunk or processed into dairy products such as cheese or butter. Birds and other animals lay eggs, which are often eaten. Many cultures eat honey, produced by bees, and some cultures eat animal blood. Some foods do not come from animal or plant sources. These include various edible fungi, including mushrooms. Fungi and ambient bacteria are used in the preparation of fermented and pickled foods such as leavened bread, wine, beer, cheese, pickles, and yoghurt. Many cultures eat seaweed or blue-green algae (cyanobacteria) such as spirulina. Additionally, salt is often eaten as a flavouring or preservative, and baking soda is used in food preparation. Both of these are inorganic substances, as is water, an important part of human diet.

Answer the following questions:

1. What is food?
2. What are the main sources of food?
3. How many species of plants are cultivated by people for food?
4. Why are seeds good sources of food?
5. What groups can vegetables be classified into?
6. What is meat?
7. What meats do people eat?
8. What other products do animals give?
9. Does all food come from plants and animals?
10. What inorganic substances are used for food preparation?

Give definitions to the following terms:

Carbohydrate, vitamin, protein, nutrition, gastronomy, food science, embryo, ovaries, leaf vegetables, stem vegetables, inflorescence vegetables, poultry, mammal, fungi, ambient bacteria, cyanobacteria.

2. There are Many Kinds of Food

Read and translate the text:

Since most of us eat their meals with a family, suppose we talk about family meals. First there are the foods rich in animal protein, like milk, meat, eggs, fish and cheese. It is rather easy to build an adequate diet for growth when we use liberal amounts of the protein foods, which come from animals. But still a large number of people in the world have to depend on plants (these include fruits, vegetables and cereals) rather than meat to give them protein because this kind of food can be produced most cheaply. It also provides vitamins and minerals for our diet. Have you ever thought of all kinds of foods which come from cereals? First think of bread, made from wheat, from rye, from oats, from corn. Then there are the so called pastas like macaroni, spaghetti, vermicelli and many others. Barley is used in delicious soups. Next let us talk about fruits and vegetables. Can you imagine how drab our meals would be if we had no gardens? We would miss most of the colour in our meals — the colour of a ripe tomato, a bright orange, the greenness of fresh peas, the rosiness of red apples. We would also miss much flavor in our meals. Yellow, orange and green are important colors when we consider nutritive value. Associated with these colors in fruit and vegetables is the important vitamin A. Vitamin C is also found in vegetables of the cabbage family, turnips, onions, white potatoes. Vitamin C does not like the heat of cooking, it is better to have one raw fruit and one raw vegetable each day. Sugars and fats furnish extra calories for our diet. Fats also have another important function in nutrition: it is the property of making us feel satisfied. Children and most adults like some extra fat, for example, butter or margarine on bread or fat used in cooking. Now sugar is another matter. We have become sugareaters. We eat ten times as much as our great-grandmothers did. But sugar is a good energy food. Also it is capable of making us feel satisfied at the end of a meal. As for milk and milk products, they form a special class of foods because in addition to the excellent protein they contain, they are also rich in calcium, which is one of the most important minerals used in building bones.

Answer the following questions:

1. Is it possible to build an adequate diet for growth without high-protein food?
2. Do many people in the world have to depend on plants to get protein because plants are tastier?
3. Does plant food provide vitamins and minerals for our diet?
4. Is bread made from pastas?
5. What is Vitamin A associated with ?
6. Is Vitamin C destroyed by heat?
7. Do fats make us feel satisfied?
8. What is milk rich in?
9. Is sugar energy food?
10. What is one of the most important minerals used in building bones?

Give definitions to the following terms:

Diet, protein, cereal, vitamin, pasta, flavor, calories, nutrition.

3. Constituents of Food

Read and translate the text:

Nutrients in food are grouped into several categories. Macronutrients means fat, protein, and carbohydrates. Micronutrients are the minerals and vitamins. Additionally food contains water and dietary fiber. Carbohydrates are the most important source of energy. From them we get most of energy which we need to act and move, perform work and live. They contain the elements Carbon, Hydrogen and Oxygen. The first part of the name "carbo-" means that they contain Carbon. The second part of the name "-hydr-" means that they contain Hydrogen. The third part of the name "-ate-" means that they contain Oxygen. In all carbohydrates the ratio of Hydrogen atoms to Oxygen atoms is 2:1 just like water. We obtain most of our carbohydrate in the form of starch. This is found in potato, rice, spaghetti, bread and cereals. Our digestive system turns all this starch into another carbohydrate called glucose. Glucose is carried around the body in the blood and is used by our tissues as a source of energy. Any glucose in our food is absorbed without the need for digestion. We also get some of our carbohydrate in the form of sucrose; this is the sugar which we put in our tea and coffee. Both sucrose and glucose are sugars, but sucrose molecules are too big to get into the blood, so the digestive system turns it into glucose. Proteins are required for growth and repair. The living tissues of plants and animals consist of protein material which is continually destroyed in the maintenance of life and must be restored. Proteins contain Carbon, Hydrogen, Oxygen, Nitrogen and sometimes Sulphur. Proteins are very large molecules, so they cannot get directly into our blood; they must be turned into amino-acids by the digestive system. There are over 20 different amino-acids. Our bodies can turn the amino-acids back into protein. When our cells do this they have to put the amino-acids together in the correct order. There are many millions of possible combinations or sequences of amino-acids; it is our DNA which contains the information about how to make proteins. Our cells get their amino-acids from the blood. Proteins can also be used as a source of energy. When excess amino-acids are removed from the body the Nitrogen is excreted as a chemical called urea. The liver makes urea and the kidney puts the urea into our urine. Fats make our meals palatable and satisfying. Like carbohydrates, fats contain the elements Carbon, Hydrogen and Oxygen. Fats are used as a source of energy: they are also stored beneath the skin helping to insulate us against the cold. Some fats and oils are important sources of vitamins A, D, E and K. They provide various amounts of fatty acids which are essential in diet. Vitamins are known to be exceedingly important in nutrition even though they are required only in small amounts. They are essential for good nutrition and health and for normal growth. Vitamin A: good for your eyes. Vitamin B: about 12 different chemicals. Vitamin C: needed for your body

to repair itself. Vitamin D: can be made in your skin, needed for absorption of calcium. Minerals are inorganic elements. Most of them can be found in the body, but only fifteen of them are known to be essential and must be taken from food. The main functions of minerals are: they are constituents of the bones and teeth; they help to control the composition of body fluids and salts; they are essential adjuncts to many enzymes, and other proteins such as haemoglobin. The major minerals are calcium, phosphorus, magnesium, sodium, chlorine, potassium, iron and sulphur. Fibre. We do not/can not digest cellulose. This is a carbohydrate used by plants to make their cell walls. It is also called roughage. If you do not eat foods materials which contain fibre you might end up with problems of the colon and rectum. The muscles of your digestive system mix food with the digestive juices and push food along the intestines by peristalsis; if there is no fibre in your diet these movements cannot work properly.

Answer the following questions:

1. What nutrients are found in food?
2. What reasons are carbohydrates important for?
3. What do carbohydrates contain?
4. What forms do we get carbohydrates in?
5. We need proteins for growth and repair, don‘t we?
6. Can proteins get directly into our blood? Why?
7. What is DNA?
8. What role do fats play?
9. Are vitamins important for good nutrition?
10. How many minerals are essential for the body?

Give definitions to the following terms:

Macronutrients, micronutrients, dietary fiber, digestive system, glucose, amino-acid, fatty acid, inorganic elements, haemoglobin, roughage.

4. Food Preparation, Cooking and Manufacture

Read and translate the text:

Food preparation. While some food can be eaten without preparation, many foods undergo some form of preparation for reasons of safety, palatability, or flavor. At the simplest level this may involve washing, cutting, trimming or adding other foods or ingredients, such as spices. It may also involve mixing, heating or cooling, pressure cooking, fermentation, or combination with other food. In a home, most food preparation takes place in a kitchen. Some preparation is done to enhance the taste or aesthetic appeal; other preparation may help to preserve the food; and others may be involved in cultural identity. A meal is made up of food which is prepared to be eaten at a specific time and place. The preparation of animal-based food will usually involve slaughter, evisceration, hanging, portioning and other operations. Cooking. The term “cooking” encompasses a vast range of methods, tools and combinations of ingredients to improve the flavor or digestibility of food. It generally requires the selection, measurement and combining of ingredients in an ordered procedure in an effort to achieve the desired result. Success greatly depends on the variability of ingredients, ambient conditions, tools and the skill of the individual cooking. The diversity of cooking worldwide is a reflection of the myriad nutritional, aesthetic, agricultural, economic, cultural and religious considerations that impact upon it. Cooking requires applying heat to a food which usually, though not always, chemically transforms it, thus changing its flavor, texture, appearance, and nutritional properties. Cooking was practiced at least since the 10th millennium BC with the introduction of pottery. There is

archaeological evidence of roasted foodstuffs at Homo erectus campsites dating from 420,000 years ago. Food manufacture. Packaged foods are manufactured outside the home for purchase. This can be as simple as a butcher preparing meat, or as complex as a modern international food industry. Early food processing techniques were limited by available food preservation, packaging and transportation. This mainly 45 involved salting, curing, curdling, drying, pickling and smoking. During the industrialisation era in the 19th century, food manufacturing arose. This development took advantage of new mass markets and emerging new technology, such as milling, preservation, packaging and labelling and transportation. It brought the advantages of pre-prepared time saving food to the bulk of ordinary people who did not employ domestic servants. Nowadays advanced technologies have come to change food manufacture. Computer-based control systems, sophisticated processing and packaging methods, and logistics and distribution advances, can enhance product quality, improve food safety, and reduce costs.

Answer the questions:

1. What processes can food preparation include?
2. What are the reasons of food preparation?
3. What does the term "cooking" mean?
4. What determines the diversity of cooking in the world?
5. Does cooking require heat?
6. What did early food processing techniques include?
7. What technologies did the industrialisation era bring?
8. What technologies are used in food processing nowadays?
9. What can enhance product quality, improve food safety, and reduce costs?
10. Did food manufacturing arise during the industrialisation era?

Give definitions to the following terms:

Flavor, fermentation, slaughter, evisceration, hanging, portioning, cooking, salting, curing, curdling, drying, pickling, smoking, food manufacturing, milling, preservation, packaging, labelling, transportation.

5. Milk and its Composition

Read and translate the text:

Man used milk and milk products long ago. It is known from the history that people who subsisted on diets with a large proportion of milk and its products were usually healthy, vigorous and well-developed. Scientists proved that milk and its products have exceptional nutritional value. No other single food in the world can compare with milk in this respect. Milk is such a complete food because it contains, in varying amounts, all the ingredients needed to keep us fit and healthy. First of all, there are the different fats which give us energy. The complex composition of milk fat includes at least 64 different fatty acids, containing from 4 to 26 carbon atoms with a relatively high proportion of short-chain, saturated fatty acids, many of which are not found in other fats. In general, the 60 fatty acids in milk fat are about 66% saturated, 30% monosaturated and 4% polyunsaturated. The second ingredient is protein, which has many forms. One of them, called casein, is found only in milk. The proteins in milk are composed of 20 amino acids, eight of which are essential for adults because they can't be made by the body and must be obtained from food. The other 12 can be made by the body so are non-essential amino acids. Casein makes up 82 percent of the protein in milk. The various proteins are vital to all living things, helping them to grow, gain strength and overcome illness or injury. One litre of milk a day will provide the average adult with more than a third of his required proteins. Milk is the only food source of the carbohydrate lactose, although it is the only significant carbohydrate

in milk; traces of others such as glucose and glucosamines are also present. Lactose, a sugar, provides half of the total solids in milk and contributes 30 percent of the food energy in whole milk. Lactose has many beneficial characteristics. It stimulates the growth of intestinal micro-organisms that synthesize the B vitamins. It produces organic acids which provide an ideal protective medium by checking the growth of undesirable bacteria in the intestine. In addition, lactose increases the absorption of calcium, phosphorus and magnesium, and favorably affects the intestinal flora. Everyone also needs a regular supply of important vitamins to keep healthy, and milk contains more of these than any other food. Vitamins A and D, found in the butterfat, help our eyesight and protect us against disease. Vitamin B2, also known as riboflavin, is an essential part of a child's diet, promoting growth and keeping the skin clear. This, together with Vitamin C, which keeps colds and flu at bay, is found in the watery part of the milk. Milk contains many minerals too. It is particularly rich in calcium, which strengthens our bones and teeth. Among the others are phosphorus (good for the brain cells), potassium (tones up the nervous system), sodium (helps us absorb calcium) and iron (keeps the blood healthy). At present milk and its products are daily requirements for the population in most parts of the world. From the Equator, where the Arabs still use camel's milk, to the far North, where the Eskimos use reindeer caribou milk, this product is the number one food item in human diet. For babies, milk from the mother's breast is the easiest, cleanest and best way to obtain the nourishment needed for the first, difficult months of life. For young children, dairy milk provides the calcium needed to strengthen growing bones and teeth. For adults, it gives energy without too much fat. And for old people it is an easily-prepared and easily-digested form of natural food.

Answer the following questions:

1. Why do people consider milk to be the most complete food in the world?
2. What is the composition of milk fat?
3. Which protein is found only in milk?
4. What is lactose? What are its functions?
5. What vitamins does milk contain?
6. What mineral is milk particularly rich in?
7. Why is milk the number one food item in human diet?

Give definitions to the following terms:

Diet, nutritional value, fat, fatty acid, protein, casein, lactose, glucosamines.

6. Milk Processing

Read and translate the text:

Processing of fluid bottled milk for sale involves removing all traces of sediment by filtration or clarification; heat treating the product by an accepted pasteurization process to destroy any possible pathogenic organisms present; cooling to temperature of 40 F or under; and packaging in the final container which may be a glass bottle, a paper or fibre container, or a can for large quantities. Milk is usually filtered at the farm. It frequently is filtered again at a receiving station, at milk plants the product being subjected to a final treatment before it is packaged. In former years, filtering had been made by a cotton or flannel filter. When properly used the method removed all visible sediment and had little effect on creaming ability. Later it was found that filtration does not remove leukocytes, large bacteria cells and extremely dirt. These materials accumulated at the bottom of the container in the form of a dirty gray sludge. Clarification which does remove the leukocytes, other large cells and dirt prevents the sludge formation in homogenized milk. To prevent curdling, a process has been developed which breaks up the fat globules in the milk. This stops them from floating to the top and forming a cream.

This is called homogenizing the milk, which really means that it is being made into a uniform mixture. To improve the keeping quality of liquid milk, various heat treatments can be used. The most widely used treatment is pasteurization. Pasteurization is the process of heating milk to about 72 C for 15 seconds to make it bacteriologically safe and to increase its keeping quality. Ultra-Pasteurization is the process of heating milk to a higher temperature than that used for pasteurization in order to extend the shelf life of this product under refrigeration. Ultra High Temperature milk is processed in a similar way to ultra-pasteurized milk, but is packaged in sterilized containers. It can be stored without refrigeration up to three months. Once opened, it should be refrigerated. Fortification involves the addition of one or more vitamins, minerals or protein. For example, vitamin D is added to 98 percent of fluid milk marketed in the U.S. and vitamin A is added to all lowfat and skim milk. By taking some of the water content out of milk, it can be made lighter and easier to transport. And, if sealed in airtight tins, it will last for several years. The two earliest methods of doing this, still widely in use today, are condensing and evaporating. Condensed milk is first of all homogenized, and cane sugar is added. This improves the keeping qualities of the milk. It is then heated and held at 80°C for a short time, before being pumped into a vacuum tank, where it is boiled until it thickens to about two-and-a-half times its original consistency. Evaporated milk is made in much the same way, except that no sugar is added, and the final product is not quite so concentrated. Such milk has many uses. In the food industries this product is used extensively in ice-cream factories, in bakeries, in the manufacture of confectionery. Most preserved milk is now made by drying, which reduces the weight considerably.

Answer the following questions:

1. What does processing of fluid bottled milk involve?
2. Where is milk usually filtered?
3. What is milk homogenizing?
4. What should we do to improve the keeping quality of liquid milk?
5. What is ultra-pasteurization?
6. What vitamins are usually added to milk?
7. How is evaporated milk made?

Give definitions to the following terms:

Pasteurization, pathogenic organisms, filtering, leukocytes, fat globules, homogenizing, Ultra-Pasteurization, condensing, evaporating, confectionery.

7. The Different Dairy Products

Read and translate the text:

Only about half of the world's milk is drunk when fresh. The other half is turned into a huge variety of foods, partly as a way of preserving the extra milk, and partly because many of the products form an important part of our diet. The simplest of these is cream. We have seen how the globules of butterfat will collect at the top of the milk because they are lighter than the water in the serum. This is the cream, which today is made by machines which speed up the process of separation. It comes in four main varieties – single (which is thin), double, sterilized (for long life) and clotted. Cream is used for decorating cakes and puddings, or for thickening soups and sauces. Although cream is thought of as a luxury, most of it is in fact used for making butter. In modern creameries, the buttermaking follows directly after the cream separation in a continuous process. It takes more than 22 litres of milk to produce 1 kilo of butter, which contains 80 per cent fat. The other major milk product is cheese, which is made in hundreds of

different varieties all over the world. The milk is made to clot, and the liquid whey is drained from the solid curd, which is then ripened to gain its tastiness. Cheese is one of the most economical ways of getting the proteins that we need. It is also very versatile and can be eaten at any meal, sweet or savoury, cooked or raw. Milk can also be preserved in many other ways. It can be dried to a powder, made thicker and more stable by evaporating or condensing it, or frozen in bulk. In this way, it can be sent to poorer countries with no dairy industry, bringing instant nourishment. Yoghurt, dairy ice cream, milk chocolate, tinned puddings and baby food are just a few of the many other uses that we make of milk.

Answer the following questions:

1. How much milk is drunk when fresh?
2. What is done to the other half of milk?
3. What is the simplest form of milk processing?
4. How is cream made?
5. What are the varieties of cream?
6. What is cream used for?
7. How many litres of milk do you need to make one kilo of butter?
8. What is the other major product of milk?
9. How is cheese made?
10. How can milk be preserved?

Give definitions to the following terms:

Globules, separation, protein, savoury, evaporating, condensing.

8. Types of Meat

Read and translate the text:

Animal tissue suitable for use as food is called meat. While meat can be obtained from nearly every species of animal, most of the meat consumed by humans comes from domesticated and aquatic animals. Meat from domesticated animals is generally subdivided into two categories: red meat and poultry. Red meat, the largest category, consists of beef, pork, veal, lamb and mutton. Poultry meat is the flesh of domesticated birds. It includes chickens, turkeys, geese, ducks and fowl. Seafood includes fish, lobsters, oysters, clams and crabs. Another type, game meat, consists of the flesh of all nondomesticated animals. In many countries humans eat the meat of horses, water buffalo, camels, goats and rabbits. The names for the various types of meat apply to the specific animals from which they are obtained. The term beef, for instance, refers to meat from cattle over 9 months old. Meat from cattle that are 3 to 9 months of age is classified as calf. Veal comes from calves ranging in age from 1 to 3 months. Pork is derived from hogs that are generally 5 months of age or older. Lamb comes from sheep less than 14 months of age and usually weighing from 90 to 140 pounds (40 to 65 kilograms). Mutton refers to meat from sheep over 14 months of age. Variety meats include liver, heart, tongue, brain, kidney, sweetbread (thymus gland), tripe (stomach of ruminant) and chitterlings (large intestine of pig). Each of these meats has a distinctive flavor and consistency when it is cooked. Long ago, primitive tribes believed that eating heart gave them strength and courage. Today, few of us bother to test that theory. It's our loss, because heart is tender and has a very delicate flavor. Kidneys are nutritious and, if properly prepared, delicious. Veal kidneys and lamb kidneys are prized for their delicate flavor and tenderness. Liver is rich in iron and Vitamin A and has an unabashed flavor that nicely complements that of its usual companion, onion. Calf's liver is considered to be the best, but lamb liver and beef liver are almost as good. Miscellaneous variety meats. This category includes brains, tongue, tripe, and sweetbreads.

Answer the following questions:

1. What is called meat?
2. What does it come from?
3. What does red meat consists of?
4. What does seafood include?
5. What animals do the terms beef, veal, pork lamb, mutton apply to?
6. What do the variety meats include?

Give definitions to the following terms:

Red meat, poultry, seafood, game meat, term beef, veal, pork, lamb, mutton, tripe, chitterlings, miscellaneous variety meats.

9. Meat Composition and Nutritional Value

Read and translate the text:

A typical cut of meat is made up primarily of skeletal muscle, connective tissue, fat, bone, and a small amount of smooth muscle such as arteries and veins. Skeletal muscle is made up of muscle fibres. Each muscle fibre consists of rodshaped myofibrils. Myofibrils and connective tissue are components of muscle. They have the greatest effect upon meat tenderness. Many of the meat-processing procedures tenderise these components. The nutritional value of meat comes from its proteins, vitamins, minerals, and fats. Although nutritionists no longer advice meat at every meal, meat is a good source of calories, proteins, fats and carbohydrates. Its major contribution to the diet, however, is a high quality and quantity of protein and a supply of fatty acids, B-complex vitamins, and minerals, including iron, potassium, phosphorus, magnesium, sodium and zinc. Meat proteins are largely those of the muscle and connective tissues. Generally, meats with more fat have less protein. In addition to its protein content, meat provides a highquality, digestible protein; at least 97 percent of the protein is digested. 100-gram of cooked meat provides about 45 to 55 percent of the recommended daily allowance of protein for humans. The nutritional value of meat is also influenced by fat content. The content depends on the animal type, how much the animal is fattened prior to slaughter, the amount of fat trimmed during processing, the amount of fat used in processed meats, and the method of cooking. Generally described as a saturated fat, meat fat is actually a mixture of both saturated and unsaturated fatty acids. Variety meats are excellent sources of vitamins. Pork, bacon and ham are in particular rich in thiamine. Liver and kidneys are also rich in vitamin A, folic acid, iron, riboflavin and B-vitamins. Tripe also contains more calcium than other meats.

Answer the following questions:

1. What does a typical cut of meat consist of?
2. What are the main structural components of muscle?
3. What has the greatest effect upon meat tenderness?
4. What is the major meat contribution to the diet?
5. Is protein of meat well-digestible?
6. What does the fat content of meat depend on?
7. What vitamins and minerals are found in meat?

Give definitions to the following terms:

Cut of meat, smooth muscle, skeletal muscle, rodshaped myofibrils, connective tissue, fatty acid, digestible protein, slaughter, saturated fat, ham, thiamine, folic acid, riboflavin.

10. Fish: a Nutritious Family Food

Read and translate the text:

The best change for any meal of the day is fish. It is a vital source of food for many people. It is man's most important single source of high-quality protein, providing 16% of the animal protein consumed by the world's population. It is a particularly important protein source in regions where livestock is relatively scarce - fish supplies less than 10% of animal protein consumed in North America and Europe, but 17% in Africa, 26% in Asia and 22% in China. About one billion people world-wide rely on fish as their primary source of animal protein. Fish and shellfish are an important part of a healthy diet. Fish and shellfish contain high-quality protein and other essential nutrients, are low in saturated fat, and contain omega-3 fatty acids. A well-balanced diet that includes a variety of fish and shellfish can contribute to heart health and children's proper growth and development. So, women and young children in particular should include fish or shellfish in their diets due to the many nutritional benefits. The amount of fat in different kinds of fish varies greatly. The flesh of white fish, such as cod, haddock, whiting contains only 1-2 per cent fat. But its amount in fatty fish (herring, mackerel, trout, salmon) varies from 10 per cent to more than 20 per cent. The vitamin content of white fish is similar to that of lean meat. The fat-soluble vitamins A and D are present in the flesh of fatty fish and in the livers of fish, such as cod. Fish flesh also contains a certain amount of minerals including iodine. If the bones are eaten, as for example in sardines and canned salmon, these are good sources of calcium, phosphorus and fluoride. The changes that occur when fish is cooked are similar to those in meat but the shrinkage is not so great. Losses of mineral salts are proportional to the loss of water. The vitamins A and D in fatty fish are both heat stable. When fish is canned or cured by smoking there is some loss of thiamin, but generally these processes have little effect on the nutrients in fish. Modern methods of freezing do not affect the nutritive value. Substituting fish for meat is one of the best dietary changes you can make for your family. Fish is a top-of-the-line nutrientdense food. It's low in fat and high in many good things.

Answer the following questions:

1. Why can we call fish the best change for any meal of the day?
2. In what parts of the world is fish particularly important for people?
3. What are the nutritional benefits of fish?
4. Does the amount of fat vary in different kinds of fish?
5. What vitamins and minerals are present in fish?
6. What effect does the process of cooking have on the nutrients in fish?

Give definitions to the following terms:

Animal protein, livestock, nutrients, saturated fat, fatty acids, white fish, fatty fish, fat-soluble vitamins, iodine, smoking, nutritive value, nutrientdense food.

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