

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
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Methodological guidelines
for independent work
on the subject

“ENGLISH”

*(for 1–2-year full-time and part-time students majoring in
192 – Construction and Civil Engineering)*

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‘THE ROLE OF FOREIGN LANGUAGE IN HUMAN SOCIETY. HIGHER EDUCATION’

Text 1. Language in the Life of Man and Human Society

Match the following words and translations.

- | | |
|--|-----------------------------|
| 1. to make use of | A. краще володіти предметом |
| 2. as recent as | B. володіти практично |
| 3. human being | C. вживати, користуватися |
| 4. at the most | D. рідна мова |
| 5. the remote past | E. носій рідної мови |
| 6. spoken language | F. такий давній, як |
| 7. native speaker | G. далеке минуле |
| 8. mother tongue | H. найбільше, не менше, ніж |
| 9. to have (a practical) command (of) | I. людина |
| 10. to have a much better grasp of the subject | J. усна мова |

Human language is the most astonishing creation of man. It helps us to think, to express our thoughts and to understand each other. We make use of it in practically everything we do.

Language is a means of communication in human society. People can use other means of communication, such as red lights or flags, but these signs are interpreted into human language. So language is the normal form and the main means of communication in human society.

We cannot say anything definite about the origin of language. But we realize now language is a product of human society and it can exist only in human society.

Man is the only living being with the power of speech. The appearance of language on our planet is as recent as the appearance of man himself. Labour and language are distinctive and exclusive marks of human beings. Without them the growth and progress of human society is unthinkable.

Human speech differs greatly from the signal like actions of animals, even of those, which use the voice. Dogs, for instance, make only two or three kinds of noise – say barking, growling and whining. In human speech different sound combinations have different meanings.

Primitive people had a few hundred words at the most. Today highly cultured nations have more than seven hundred thousand words in their dictionaries. This means that now people can communicate by words much better than they did it in the remote past. The rapid growth of the vocabulary of modern languages is due to the development of science and technology.

But spoken languages were easy to forget; so people invented writing to record them. Writing is a way of recording language by means of visible marks. The first form of writing was picture writing. Symbols representing the sounds of a language appeared much later. The art of writing made it possible to fix thoughts and to store knowledge, and to pass them on from one generation to another.

Mankind speaks many languages. A group of people who use the same system

of speech signals is a speech community. Speech-communities differ greatly in size. An American Indian tribe of only a few hundred persons speaks language of its own. On the other hand, there are some speech communities that are very large.

English has several hundred million native speakers. For them English is their mother tongue. Millions of people with some other native language learn English for business, professional or political purposes. For them English is not their mother tongue but a foreign language. Ukrainian, Russian, French, German, Chinese and some other languages also have vast numbers of speakers.

There are people who know three, four, five or six languages. They are polyglots. They study languages because knowledge of languages is their speciality or hobby. For a modern engineer and research worker it is absolutely necessary to have practical command of foreign languages. A scientist who can read the literature of his field in several languages has a much better grasp of the subject.

Learning foreign languages enriches the native language, makes it clearer, more flexible and expressive.

1. Find out if the following statements are true or false according to the text.

1. There are other living beings with the power of speech.
2. Polyglots are people who know three, four, five or six languages.
3. Language is a means of communication not only for human being but and for animals.

2. Answer the question on the text.

1. Why is human language the most astonishing creation of man?
2. What is the essential difference between human language and other types of languages?
3. What can you tell about the growth of language in human society?

3. Find the correct endings for the sentences below.

- | | |
|-----------------------------------|--|
| 1. English is | A. a perfect means of expression and |
| 2. It has | communication. |
| 3. English has | B. a long and complicated history. |
| 4. Language is | C. a Germanic language. |
| | D. has a problem of using foreign scientific |
| 5. A specialist who does not know | and technical literature. |
| foreign languages | E. millions of native speakers. |

Text 2. Everyday English and Technical English

Match the following words and translations.

- | | |
|-------------------------------|-----------------------------|
| 1. to take into consideration | A. розмовна англійська мова |
| 2. the matter is that | B. стислий, короткий |
| 3. reference books | C. набути ґрунтовних знань |
| 4. embodiment | D. враховувати |

- | | |
|------------------------------------|-------------------------|
| 5. to spare no efforts | Е. справа у тому. що |
| 6. at first sight | Ф. довідкова література |
| 7. familiar pattern | Г. знайома модель |
| 8. concise | Н. на перший погляд |
| 9. to acquire a thorough knowledge | І. втілення |
| 10. everyday English | Ж. не жаліти зусиль |

At present, the contacts between people of different countries are increasing. This enhances the importance of the study of foreign languages. Sometimes we don't even know which of the world's languages we should take into consideration. The matter is that the total number of languages in the world is very large. In different reference books it varies from five to eight thousands. The numerical distribution of people speaking different languages is extremely uneven. There are not many languages in the world each of which has more than 50 million people. On the other hand, there are languages spoken by only several thousands of people.

To the first group belong such languages as English, Chinese, French, Russian, Ukrainian, etc. At the opposite extreme stand languages like Chitimacha, an American Indian language which in the late 1930's had only two speakers left.

Everyone should understand that for the linguist there are no big or small languages. For each people the language is not only a means of communication, but also an embodiment of national and cultural values. Nevertheless, when we have to decide which of the world's languages to study, we take into consideration the differences in the social and functional status of each language.

When we consider English, we cannot disregard the fact that the English language is spoken by more native speakers than any other language except, North Chinese. English is native or the first language for the most population of Great Britain, USA, Canada, Australia, New Zealand. Besides, there are many areas, former British colonies (India, Nigeria, Ghana) where English is not a native language, but a second language with official status in education and administration, and for communication between speakers of other languages. If we take into account the important factor of speakers of English as a foreign language, it is most widely spread of the world's languages.

English is one of the five official languages of the United Nations Organization (UNO) (alongside of French, Russian, Spanish and Chinese). It is the working language during the meetings of the General Assembly and Security Council of the UNO. No wonder that so many people in various countries spare no efforts to acquire English for communication.

In Ukraine, higher schools students and postgraduates are trained to have a good knowledge of English, to read and use professional literature in their practical activity. As this textbook is for technical students, let us dwell on some peculiarities of technical English.

Technical English is often said to be difficult to understand. At first sight this may seem true. There are a number of reasons why technical writing is rather difficult. It concerns first of all its vocabulary.

The scientific and technological progress has enriched the vocabulary with a great deal of new words, new meanings and new word-combinations. Who today does not know such words as computer, transistor, laser, etc? Scientists and technologists also use many ordinary, everyday words to denote new terminological meanings. For example, the words aroma, and charm with the meaning attractiveness are used to denote the physical characteristics of the quark, a fundamental physical particle.

Each branch of science and technology has its own terminology. Many of them are formed on the basis of Greek or Latin words and are often international. Some technical words, such as power, roll, stress, strain, movement, etc. borrowed from everyday English sometimes cause much greater difficulty than terminology. In addition to terms, a text on some special problem usually contains so-called learned words like approximate, compute, feasible, exclude, indicate, initial, respectively, etc.

As to the familiar grammatical patterns and models, they are the same as in everyday English. There is, certainly, a difference in the frequency with which certain grammatical forms occur.

Scientific and technical writing is usually about things, matter, natural processes, and it is impersonal in style. The Passive Voice of verb forms, the constructions Subject and Complex Object are frequently used. The first person singular is not generally used.

Simple sentences are rarely used, for isolated facts or events are seldom dealt with by the engineer. He has to show what the connection is, not only what happens, but also how it happens, when it happens, why it happens, and what is being effected.

The style of most scientific texts, besides being impersonal, is also very concise. It is because the author-scientist is writing primarily for other scientists.

In order to master technical English the learner must first acquire a thorough knowledge of everyday literary English with its grammar, vocabulary and rules of word formation. Then it will be easy for him to learn, step by step, the peculiarities of technical English. It should be born in mind, however, that understanding and translation of scientific-technical literature requires an additional training connected with knowledge of specific terminology.

1. Finish the sentences according to the text:

1. The total number of languages ...
2. The numerical distribution of people speaking different languages ...
3. For each people the language is not only ...

2. Find out if the statements below are true or false according to the text.

1. The English language is spoken by more native speakers than any other language except, Japanese.
2. English is the working language during the meetings of the General Assembly and Security Council of the UNO.
3. Each branch of science and technology has the same vocabulary.

3. Answer the following questions on the text.

1. What enhances the importance of the study of foreign language?
2. What can you say about the social and functional status of English?
3. What distinguishes technical English?

Text 3. Short Course of Academy History

Match the following words and translations.

- | | |
|---|--|
| 1) technical college | A. інженер міського господарства |
| 2) municipal engineers | B. переходити |
| 3) municipal economy | C. світло постачання та джерела світла |
| 4) sanitary engineering | D. підготовче відділення |
| 5) transfer | E. технічне обслуговування будівель |
| 6) correspondence department | F. очистка природних та стічних вод |
| 7) lightning engineering and sources of light | G. заочний факультет |
| 8) purification of natural and sewage waters | H. сантехніка |
| 9) preparatory department | I. міське господарство |
| 10) 10. technical maintenance of building | J. технікум |

All-Ukrainian technical college of municipal engineers was founded on November 12, 1922. Technical colleges were considered higher educational establishments and they trained engineers. In 1930 the technical college was reorganized into Kharkiv institute of municipal economy engineers. And that institute trained architects and economists. It was situated in Revolution Street, 12.

During war period from 1941 till 1945 institute was evacuated to the city of Adler and then to Frunze. At that time Odessa municipal institute joined our institute with its 3 departments: building, sanitary engineering and municipal roads communication.

In 1946 the Institute was transferred to the ministry of Higher Education in the former USSR.

In 1955 our institute was called Kharkiv Institute of municipal engineering with 3 departments: building, electric transport and engineer-economists.

The correspondence department was opened in 1956 and the evening department was opened in two years in 1958.

In 1960s new specialities were organized at our institute such as lightning engineering and sources of light, purification of natural and sewage waters.

From 1971 our institute has the preparatory department. New educational buildings and students hotels were put into operation during 1970s – 1980s. During that period two more specialities were added: “Architecture” and “Technical Maintenance of Building”.

In 1994 as a result of accreditation our institute started to train Bachelors and Masters of Science. On the 20th of April 1994 our institute was got the statute of the State Academy.

fulfilment of housing plans in Ukraine is a practicable realization of the industrialized building methods and the development of a large quantity of prefab ferroconcrete panels and parts. The work of a builder is no longer backbreaking and complicated.

Builders, as we know assemble a house from prefabricated units which are delivered to the construction site. A welder then welds the units to hold them in place. A great variety of materials are nowadays used by builders. Students of building institutes study the existing materials. When they become full-fledged builders they develop new building materials and building methods.

A qualified building worker must now be able to read a technical drawing, he must know the scale and the specifications. If you want to contribute to the beauty of a town or city, if you want to leave a memory of yourself in the history of that town or city, come to a construction site and learn the trade of a builder.

The building profession attracts many numbers of young men and women nowadays. It is an honourable profession.

Builders construct and reconstruct residential and industrial buildings, bridges, schools, palaces of culture, museums, theatres, kinder gardens and hospitals. They build tunnels, canals, power stations, dams and reservoirs. They also construct aqueducts to store and transport water for populated areas and to irrigate desert lands. The distribution of water in irrigated areas is based on annual plans. Very many irrigation systems have been built and are being built and modernized. Hundreds of dams, reservoirs, locks, pumping stations have been erected on the rivers of our country by our hydrotechnicians.

The person entering this honourable profession must have a scientific attitude, imagination, initiative and good judgement, obtained experience and serious work.

Civil engineers and architects have a common aim – to provide people with all modern conveniences, such as running water, gas, electricity, central heating. While a sanitary engineer protects the quality of water by treating and purifying this water when it is used for domestic purposes, an architect is a person who designs buildings. An architect must receive a great deal of scientific training connected with his profession. He must know mathematics, as well as many facts concerning materials – for example what loads different materials may safely carry – so that there will be no danger of his building falling down. Architects must need some knowledge of sculpture, painting, design, mechanical engineering, geography, city planning, etc. The structure an architect creates should give us pleasure, a sense of beauty.

1. Read the text carefully and then make up as many questions as you can. All the questions should be answered.

2. Find out if the following statements are true or false.

1. The distribution of water in irrigated areas is based on annual plans.
2. Very many irrigated systems are being built and modernized.
3. Civil engineers and architects have a common aim.

3. Read the text again and write down the correct endings of the sentences below.

1. The building profession attracts so many numbers of young men and women nowadays because
2. At present civil engineers construct and reconstruct
3. An architect must receive

‘BUILDING MATERIALS’

Text 5. The Most Important and Widely Used Building Materials (Binding Materials, Concrete and Structural Steel)

Match the following words and translations.

- | | |
|--------------------------|---------------------------------------|
| 1. lime | A. гіпс |
| 2. gypsum | B. цегляна кладка |
| 3. masonry | C. міцність на |
| 4. high alumina cement | D. розчин |
| 5. high rate of strength | E. цемент з високим вмістом глинозему |
| 6. resistance to | F. заповнювач |
| 7. crushed stone | G. висока міцність |
| 8. mortar | H. мілкий заповнювач |
| 9. aggregate | I. щебінь |
| 10. fine aggregate | J. вапно (известь) |

(1) The designer must be able to select and adapt such materials of construction that will give the most effective result by the most economical means. In this choice of materials for any construction work, the civil engineer must consider many factors. These factors include availability, cost, physical properties of materials and others.

(2) Timber, steel and concrete all vary, sometimes over considerable ranges in the properties desired by the engineer. Even steel, uniform as it appears to be, varies considerably in its microstructure. Concrete is even less uniform than other materials.

(3) Lime, gypsum and cement are the three materials widely used in building construction for the purpose of binding together masonry units, such as stone, brick and as constituents of wall plaster. Cement is furthermore the most important component of concrete.

(4) Another important class of cement is high alumina cement. High alumina cement is a material containing alumina. It has an extremely high rate of strength increase which is, owing to the violence of the chemical reaction, accompanied by a considerable evolution of heat. It is very resistant to chemical attack.

5) It therefore follows that Portland cement like other materials can to some extent be modified to suit a particular application. The scope for such purpose-made cements has led to the development of an increasing variety such as high alumina cement, blast-furnace slag and pozzuolanas. Portland blast-furnace cement has greater resistance to some forms of chemicals.

(6) The most important building materials may be considered to be structural steel and concrete. Concrete may be considered an artificial conglomerate of crushed stone, gravel or similar inert material with a mortar. A mixture of sand, screenings or similar inert particles with cement and water which has the capacity of hardening into a rocklike mass is called mortar. The fundamental object in proportioning concrete or mortar mixes is the production of a durable material of requisite strength, water

tightness and other essential properties at minimum cost. To attain this end careful attention must be given to the selection of cement, aggregate, and water.

(7) The most accurate method of measuring proportions is to weigh the required quantities of each material. It is widely used in large building construction, but in small building construction the less accurate method of measuring proportions by volumes is frequently used. The chief inaccuracies in volumetric measurement arise from the wide variation in the bulk of the fine aggregate due to small changes in its moisture content and faulty methods of filling measuring devices. Workability and strength tests are chief control tests made on concrete. To be able to undergo high compressive loads is a specific characteristic of this material.

1. Find the correct headings of the paragraphs.

1. Technology of concrete production.
2. Composition of cement.
3. Materials for binding masonry units.
4. The properties of major building materials.
5. The properties of Portland cement.

2. Read the following sentences and divide them into three groups 'The Choice of Materials for Any Work of Construction', 'The Properties of High Alumina Cement' and 'The Composition of Concrete'.

1. Another important class of cement is high alumina cement.
2. Such a material may be considered an artificial conglomerate of crushed stone or gravel with a mortar.
3. The civil engineer must consider many factors when selecting the material for construction.
4. This kind of cement is very resistant to chemical attack.
5. The principal object in proportioning concrete is the production of a durable material of adequate strength and water tightness.
6. The factors that condition the selection of materials for construction include availability, cost and physical properties.
7. This material has an extremely high rate of strength increase.
8. Timber, steel and concrete vary over considerable ranges in the properties desired by the engineer and the latter should take them into consideration in selecting the materials.
9. The most accurate method of measuring proportions for concrete is to weigh the required quantities of each material.

3. Read the following sentences and divide them into two groups 'Cement' and 'Concrete'.

1. This material is most widely used for the purpose of binding together masonry units such as stone and brick.
2. This material is also known to be the most important component of concrete.
3. This kind of material may be considered an artificial conglomerate of crushed stone, gravel or similar inert material with a mortar.

4. The material which contains alumina has an extremely high rate of strength increase.
5. The fundamental object in proportioning this material is the production of a durable material of requisite strength, water tightness and essential properties.
6. The most accurate method of measuring proportions is to weigh the required quantities of each material.

4. Choose the one best answer A, B, C to the questions.

1. What influences the choice of building materials?
 - a) The choice of building materials is governed by the type and the function of a building.
 - b) Availability, cost and physical properties are the main considerations for an engineer in selecting materials for construction.
 - c) The techniques and methods of construction are the main factors influencing the choice of building materials.

2. What are lime, gypsum and cement most widely used for?
 - a) These three materials are not widely used for the purpose of binding together masonry units.
 - b) They are used as components to produce concrete.
 - c) With the large-scale construction, lime, gypsum and cement may be considered to be the most important binding materials.

Text 6. The Choice of Material

Match the following words and translations.

- | | |
|------------------------------------|----------------------------------|
| 1. mass production | A. широке використання |
| 2. prefabricated concrete elements | B. масове виробництво |
| 3. reinforced concrete elements | C. стискаюче навантаження |
| 4. tensile stress | D. теплопровідник |
| 5. volume weight | E. жорсткий |
| 6. thermal conductivity | F. залізобетонні елементи |
| 7. rigid | G. вигинаюче навантаження |
| 8. resin | H. смола |
| 9. bending loads | I. збірні залізобетонні елементи |
| 10. wide application | J. об'ємна вага |

(1) Which material can be used to the best advantage for a particular part of the building, depends on the kind of load to which it is subjected and on the shape of the part. That the development of the metallurgical and machine-building industry made possible mass production of prefabricated large-size concrete and reinforced concrete structural elements is a well-known factor to influence the choice of materials.

(2) Reinforced concrete is a building material in which the joint functions of concrete and steel are advantageously utilized. Being brittle, concrete cannot withstand tensile stresses and it cannot therefore be used in structures subjected to

tensile stresses under load. But if steel is introduced-into concrete-it changes the property of the monolith.

3) There are two kinds of reinforced concrete: with ordinary reinforcement and concrete with prestressed reinforcement. To reinforce ordinary concrete structures is to introduce steel rods in stretched zones of concrete elements. Reinforced concrete structures and elements are used both for residential houses and industrial buildings.

(4) In many cases bricks too are very satisfactory for use in the construction. Bricks generally present a pleasing appearance and can be obtained with various qualities, colures, and textures. Being of a high volume weight and high thermal conductivity, ordinary brick is not always satisfactory in building practice. There are other kinds of bricks which are more effective; they are light-weight building bricks, hollow or porous bricks. Light-weight building bricks differ from ordinary clay bricks in a lower volume weight and lower thermal conductivity, and are therefore more economical than ordinary bricks.

(5) One of the most significant facts about both industry and building has been research on synthetics and plastics. Plastics have appeared comparatively recently but, owing to their inherent valuable and diverse properties, have found a wide application in many industrial fields (machine-building, textile industry, etc.).

(6) In respect to physical and mechanical properties at a normal temperature of 20°C all plastics are divided into rigid, semi-rigid, soft and plastic. In respect to the number of constituents plastics may be classified as simple and complex.

(7) Plastics consisting of one polymer are referred to as simple. Thus, organic glass consists of one synthetic resin. But in the building field we usually deal with complex plastics, e.g. plastics consisting of a polymer and other components.

1. Find the correct headings of the paragraphs.

1. The main characteristics of concrete.
2. The chief principles of plastics classification.
3. Factors that influence mass production of prefabricated large-size concrete and reinforced-concrete structural elements.
4. New tendencies in the choice of building materials.
5. The advantages of reinforced concrete.

2. Read the text again and answer the following questions.

1. For what types of construction are reinforced concrete structures and elements used?
2. What new materials have come into use both in industry and building?
3. In what industrial fields are plastics used?

3. Read the following sentences and divide them into three groups 'Concrete', 'Brick' and 'Plastics'.

1. There are some kinds of structural materials that have appeared comparatively recently, sometimes they consist of one polymer. But in building industry some complex materials consisting of a polymer and other components are used.
2. In many cases bricks too are very satisfactory for use in the construction.

3. There are some kinds of materials which are brittle and cannot withstand tensile stress.
4. If steel is introduced into some kind of material it changes its property.
5. Some building materials offer a good resistance to compressive loads.
6. In respect of physical and mechanical properties these materials are divided into rigid, semi-rigid and soft.

4. Choose the one best answer A, B, C to the statements.

1. Using prefabricated or precast elements ...
 - a) depends only on the kind of load to which it is subjected.
 - b) builders perform a considerable amount of building work not in site but at a factory.
 - c) made possible mass production of large-size structural elements.
2. Reinforced concrete is a building material in which ...
 - a) such properties as small volume weight and high thermal conductivity are combined.
 - b) physical and mechanical properties at a normal temperature of 20°C make it semi-rigid and soft.
 - c) the joint functions of concrete and steel are advantageously utilized.
3. Bricks generally present a pleasing appearance and ...
 - a) they are light-weight building materials.
 - b) cannot be used in structures subjected to tensile stresses.
 - c) can be obtained with various qualities, colors and textures.

Text 7. Advanced Composite Materials

Match the following words and translations.

- | | |
|--------------------------------------|----------------------------|
| 1. composite material | A. звичайний матеріал |
| 2. potentiality | B. фанерна плита |
| 3. plywood panel | C. легкі пористі структури |
| 4. light-weight honeycomb structures | D. потенційна можливість |
| 5. consumption | E. витрати |
| 6. emergence | F. поява |
| 7. to outperform | G. виключення |
| 8. conventional material | H. перевершувати |
| 9. sparingly | I. композитний матеріал |
| 10. exception | J. з розрахунком |

Composite materials are among the oldest and newest of structural materials. Men discovered early that when two or more materials are used together as one, the combination often behaves better than each of the materials alone. Following this principle they combined clay and straw to make bricks. Then with some notable exceptions, the further potentialities of composite materials remained virtually

untapped for centuries while monolithic materials, such as iron and copper, served the major needs of an advancing technology. Even in the more recent times with the coming of reinforced concrete, linoleum, plasterboard and plywood panels were somewhat out of mainstream of materials development and technology.

During the 1930's and 1940's, however, light-weight honeycomb structures, machine parts made from compressed metal powders and plastic reinforced with glass fibers became commercial realities. These developments marked the beginning of the modern era of composite engineering materials. The use of composite materials has been steadily growing. The consumption of the fiber reinforced plastics, for example, has been increasing at the phenomenal rate of 25 per cent annually. Nevertheless, the emergence of a strict discipline and technology of composite materials is barely 20 years old.

There are two major reasons for the current interest in composite materials. The first is simply the demand for materials that will outperform the traditional monolithic materials. The second, and the more important in the long run, is that composites offer engineers the opportunity to design totally new materials with the precise combination of properties needed for a specific task. Although the new composites are usually more costly than conventional materials, they can be used more sparingly, because of their superior qualities.

1. Answer the questions.

1. What is characteristic of composite materials?
2. What is the present tendency in the use of composite materials?
3. What are the main reasons for the interest in composite materials?
4. Why do engineers insist on using composite materials despite their high cost?

2. Complete the table.

Modern Materials	Characteristics	Where Is It Used?

3. Match the words in A with the corresponding definition in B.

- | A | B |
|-------------|--|
| 1. brick | A. a floor covering made from strong shiny material |
| 2. panel | B. a transparent solid substance used for making windows, bottles etc. |
| 3. plywood | C. a material made of several thin layers of wood that are stuck together to form a strong board |
| 4. linoleum | D. a flat piece of wood, glass etc with straight sides, which forms part of a door, wall, fence |
| 5. glass | E. a hard block of baked clay used for building walls, houses |

Text 8. Concrete

Match the following words and translations.

- | | |
|-----------------------------|--|
| 1) rotating drum | A. сталний дрот |
| 2) to stir | B. створювати попереднє
натягування |
| 3) lingering pocket of air | C. перемішувати |
| 4) to prestress | D. натягування арматури на бетон |
| 5) steel wires | E. бути закріпленим |
| 6) to be anchored | F. залізобетонна балка |
| 7) to be prefabricated | G. давні повітряні пробки |
| 8) post-tensioning | H. барабан, що обертається |
| 9) reinforced concrete beam | I. політелені труби |
| 10) 10. polythene tubes | J. виготовлений заздалегідь |

These days, a building's framework is as likely to be of reinforced concrete as of structural steel. Concrete is made by mixing together small stones, sand, cement, and water in rotating drums. The mixture is tipped or piped into forms of the shape required. The coarse stones used in the mix give the concrete its strength; the sand is needed to fill the gaps between the stones; and the cement covers the surfaces of all solids and binds the entire mixture into a single mass.

The less water that is used in mixing the concrete, the denser and stronger it is when it has set. The difficulty here is that a dryish mix is not so easy to stir as one that is fairly wet and sloppy. So where a really strong concrete is essential, it is mixed with the necessary minimum of water, placed in the forms, and then vibrated, before it sets, by slowly 'combing' it with electrically vibrated bars. This both drives out any lingering pockets of air and ensures that the mix is thoroughly even.

To make the concrete resistant to bending, engineers reinforce it. They do this by putting bars of steel or miniature steel frameworks into the forms – before the concrete mixture is poured – in just those places where the stress will be greatest. Hence the name 'reinforced concrete'. With such material an infinite variety of constructional shapes can be produced, including 'shells' and roofs in the shape of hyperbolic paraboloids. For these very modern structural items reinforced concrete is used in thin sheets.

In an ordinary reinforced concrete beam, much of the concrete does little more than hold the steel in place. It can be used more effectively if, before the external load comes on, stresses are put into it. For instance, suppose that a reinforced beam could be bent out of the straight by an inch, either upward or downward, before it developed serious cracks. Then, if we tighten up the reinforcement before any load comes on so as to bend the beam an inch upward, it would take twice as much load as before to bend it an inch downward. In other words, we can, by prestressing it in reverse, prepare the concrete in advance to withstand the pressures and pulls that the external load will cause.

Concrete can be prestressed in two ways. In the first method, the concrete is cast around stretched steel wires. When the concrete has set, the wires are released

and compress the concrete as they contract. Such a method of prestressing produces pretensioned concrete.

The other method is called post-tensioning. In the case of a beam, the concrete is cast around polythene tubes through which, after the concrete has set, steel cables are drawn. These cables are anchored at one end of the beam, stretched by jacks, and then fixed at the other end of the beam. In their stretched position they give a built – in stress to the beam; and this too will be cancelled out when a load is applied.

In constructing a building, it is possible to cast the floors and walls as well as the framework directly on the spot where they are to stand. The building then forms a monolith – one large artificial stone composed entirely of concrete that has been shaped within wooden molds that fit together perfectly. Thus, no sections have to be joined together later on. To cast all the parts in place, the builder has, of course, to use a great many forms; these are removed as soon as the concrete has set. And the concrete of each story must be given plenty of time to harden before work on the next story can begin.

In order to save time, the builder may prefer to use a number of standardized concrete units. These can then be made in advance – that is, either the individual members can be precast or whole sections of the building can be prefabricated.

Precasting and prefabrication have made possible the speedy erection of buildings designed to use a great many standardized parts (such as window frames).

1. Match words what has the same meanings.

Column A	Column B
1. to mix	A. prefabrication
2. precasting	B. form
3. way	C. to stir
4. shape	D. building
5. construction	E. method

2. Answer the following questions.

1. Of what elements does concrete consist and what is each element needed for?
2. If we want to make the concrete stronger, should we use little or much water in mixing it?
3. What is done to make the concrete resistant to bending?
4. What do we achieve by prestressing the concrete?
5. In what way is prestressed concrete produced?
6. In what case is post-tensioning used and how is it done?
7. What made it possible to erect the buildings quickly?

3. Read the text again and write down the correct endings of the following sentences.

1. The article is entitled
2. It is about
3. The author starts by telling the reader
4. He informs of
5. In conclusion

4. Write a short composition 'Concrete' (70 words).

‘PARTS OF BUILDING’

Text 9. Foundations of Pisa Leaning Tower

Match the following words and translations.

- | | |
|------------------------|----------------------------------|
| 1. to lean | A. нерівно |
| 2. extent | B. шурф обстежування |
| 3. unevenly | C. інженер з фундаментобудування |
| 4. perpendicular | D. збірний залізобетон |
| 5. trial pit | E. нестійкий, плавучий |
| 6. foundation engineer | F. обсяг |
| 7. precast concrete | G. великий |
| 8. floating | H. перпендикуляр, висок |
| 9. vast | I. залізна руда |
| 10. ironstone | J. нахилитися |

Why does the Leaning Tower of Pisa lean? The answer is that its foundations were not soundly laid. From earliest times, architects and engineers have been aware of the problems involved in laying a building's foundations; but they have not always realized to what extent the earth can be pressed down by the weight of a building. Too little allowance has sometimes been made for the possibility of a heavy structure's sinking unevenly. (Though the Leaning Tower is 14ft out of the perpendicular, it has never toppled. As the building began to lean over, the builders altered the design of the upper stories to balance it. At the same time as one side of it sank into the ground, the earth beneath was compressed until it became dense enough to prevent further movement).

If the earth is stable, laying the foundations of small buildings possess few problems. But in a tall modern structure the load may be very heavy indeed; and the foundation engineer has an extremely important job to do. To begin with, he must have a thorough understanding of soil mechanics, which entails a scientific study of the ground to see what load it can bear without dangerous movement.

Trial pits are dug, or holes are bored, in order to collect undisturbed samples of earth from various depths. By examining these, the engineer can forecast the probable shifts in the earth during and after building, according to the sort of foundation he designs. Thus he comes to the most important decision of all in the building's construction: He decides whether the earth is of the type that can best support each column on a separate solid block, or whether he must aim at lightness and, as it were, 'float' the building on hollow foundations.

If firm ground has been found only at great depth, the foundation engineer may use piles. These are solid shafts made either by driving reinforced, precast concrete deep into the ground, or by boring holes in the earth and pouring in the concrete. Each pile supports its load in one, or both, of two ways. It may serve as a column with its foot driven into solid earth or rock or it may stand firm because friction along its sides 'grips' the column and prevents it from sinking.

But when it is a question of floating a building, the foundations take the form of a vast, hollow concrete box. It is divided into chambers that will house heating and ventilating plants as well as provide garage and storage space for the building.

Luckiest of all are those foundation engineers whose buildings stand on hard rock like granite or ironstone. For them neither piles nor flotation need be used.

1. Answer the following questions.

1. What has been done to prevent the Leaning Tower of Pisa from toppling down?
2. What is most important for the foundation engineer to know?
3. What must engineer learn before deciding what type of foundation is necessary for that soil?
4. What types of foundations are mentioned in the article?

2. Write down some sentences about the article 'Foundations of Pisa Leaning Tower' beginning the phrases below.

- The headline of the article is
- It deals with
- The article widely covers the problem of
- It carries information on
- The paper describes
- In conclusion

Text 10. The Plastic House for Tomorrow

Match the following words and translations.

- | | |
|-----------------------------|--|
| 1) plastic bubbles | A. обводити, обрамлювати |
| 2) rigid plastic | B. правдоподібність, респектабельність |
| 3) insulation | C. спіраль магнію |
| 4) to embody | D. пластиковий пазир |
| 5) speciousness | E. твердий пластик |
| 6) coil of magnesium | F. втілювати |
| 7) vapour barrier | G. напилений покрив бетону |
| 8) sprayed coat of concrete | H. великі розміри |
| 9) to brace | I. пароізоляція |
| 10) 10. opulent dimensions | J. ізоляція |

Young architects from the architectural department of the Rhode Island School of Design are dreaming up tomorrow's houses today.

One such house was designed with the help of research material by a graduate of this school. The system is based on cast plastic bubbles linked together, and it permits the creation of almost any size and shape of house. The walls will be giant curved sandwiches, with rigid plastic as outside surfaces and foamed plastic between to act as insulation.

This house will embody the features that are associating more and more with modern living; one-floor living, and a long, low line that makes it blend with its

surroundings. The huge glass areas will admit lots of light, and will also tend to add outdoor space to the indoors and increase the feeling of spaciousness.

Another house is a beautiful example of what engineers like to call ‘blue sky thinking’. Its skeleton is a coil of magnesium alloy covered by a vapour barrier and a sprayed coat of concrete, and the floor is concrete. If glass were desired, it could be set between the coils of the frame. The entire structure would rest on pieces of curved precast masonry.

Wild thinking? On the contrary. According to its designer, the spiral framework would be compressed, just like a spring, for shipment to the site. Once there it is expanded, braced with welded pieces between coils, and the skin is applied. Thus would be solved the problem of manufacturing large pieces of house that are still transportable.

Other ideas come to mind. If a family has become larger and wishes to enlarge the house it might hire a pair of bulldozers and stretch their house out to more opulent dimensions.

1. Answer the following questions.

1. What permits the house of the first design to take any size and shape?
2. What makes the house blend with its surroundings?
3. What is the skeleton of the house of the second design made of?
4. What are the advantages of the spiral framework according to the designer of the house?

2. Complete the table.

Types of Tomorrow's Houses	Building Materials	Structure Forms

3. What is your opinion about types of tomorrow's houses described in this article?

Make up some sentences using the following phrases.

- | | |
|--|-----------------------------------|
| 1. It is known as a fact that ... | 10. It should be noted that ... |
| 2. There can be no doubt that ... | 11. It must be mentioned that ... |
| 3. It may be assumed that ... | 12. In my opinion ... |
| 4. It is generally believed that ... | 13. To my mind ... |
| 5. It is clear that ... | 14. To sum it up ... |
| 6. It goes without saying ... | 15. In summary ... |
| 7. We shouldn't forget that ... | 16. On the whole ... |
| 8. Having analyzed the information it is possible to say ... | |
| 9. All things considered we can come to the conclusion ... | |

'BUILDING TOOLS'

Text 11. Tools and their uses

Match the following words and translations.

- | | |
|------------------------|-------------------------------|
| 1) a string | A. зв'язувати |
| 2) a tie | B. клей |
| 3) a glue | C. цвях |
| 4) to stick | D. молоток/ забивати молотком |
| 5) a nail | E. приклеювати |
| 6) a hammer/ to hammer | F. гвинт/ загвинчувати |
| 7) a screw/ to screw | G. пилка/ пиляти |
| 8) to drill | H. викрутка |
| 9) a screw-driver | I. свердлити |
| 10) 10. a saw/ to saw | J. мотузка |

Imagine that you have two pieces of wood and some tools in your hands. How many different ways of joining them together can you think of? Before you read any further, spend a few moments trying to answer this question. There are, in fact, many possible ways. Here are six.

Way 1. The simplest method of all is probably to take some string and tie one piece of wood to the other. This method will probably not keep the two pieces together for very long.

Way 2. Another simple way is to take some wood glue and put it on both pieces of wood. You will have to press the two pieces together very hard if you are lucky your two pieces will stick together.

Way 3. Another way is to use nails. You'll need a hammer. Then band the nails into the wood. The nails must not be too big or they will crack the wood. And they must not be too small or the wood will not stay together.

Way 4. If you want to use screws to put two pieces of wood together, you first have to drill a hole through one of the pieces. You also have to start a hole in the second piece of wood. Then put the screw through the first hole and use the screwdriver to screw it in until it is tightly in the second piece of wood. Using screws is usually a very strong way of joining two pieces of wood.

Way 5. Instead of using screws you could use a nut and bolt. This time you have to drill a hole through both pieces of wood. Then you push the bolt through the holes and tighten a nut onto the end of the bolt using a spanner.

Way 6. The most complicated way of joining two pieces of wood together is to make a joint. To do this you need a saw. There are many different types of joints, but the basic idea is to cut a shape in one piece of wood and to saw out a matching piece in the other piece of wood. Then you fit the two pieces together and stick them with the glue.

1. Divide the following words from the box into two groups: tools and things that are used with tools.

screw	hammer	nail	glue	spanner	saw	bolt	screwdriver
-------	--------	------	------	---------	-----	------	-------------

Tools

Things used with tools

2. Complete the first half of the sentence on the left with the best phrase from the right.

- | | |
|------------------|---|
| 1. She drilled | a) the place of wood in two/ |
| 2. She sawed | b) the pieces of wood together with string. |
| 3. She tightened | c) a nail. |
| 4. She stuck | d) a hole in the piece of wood. |
| 5. She tied | e) the pieces of wood together with glue. |
| 6. She banged in | f) the screw with a screwdriver. |

3. Think and answer the questions below.

1. Have you ever made anything with tools?
2. What did you make?
3. What tools did you use?
4. What are the basic tools that should be in every home?
5. What advice would you give someone on how to use a hammer, a saw and a screwdriver?
6. Do schools teach both boys and girls how to use tools in our country?

‘BUILDING MASHINES’

Text 12. Earth-Moving Machinery

Match the following words and translations.

- | | |
|------------------|--------------------------|
| 1) a plant | A. приводити у дію |
| 2) a levelling | B. знімати шар чогось |
| 3) a site | C. ківш |
| 4) an excavation | D. земляні роботи |
| 5) to plane off | E. будівельний майданчик |
| 6) a bucket | F. колесо, ротор |
| 7) a trenching | G. роботи з планування |
| 8) a wheel | H. парк машин |
| 9) a blade | I. відвал, ніж |
| 10) 10. to power | J. виривання траншей |

The annual amount of mechanized earth digging operations comes up to thousands of millions, of cubic meters. It requires the employment of a great plant of powerful earth-moving machines, the excavators being the most important of them.

It is not possible to start on a construction job without a good deal of preliminary leveling the site. To carry out this work one must employ the earth-moving equipment.

Site preparation and excavation are the most fully mechanized of all the operations in building construction. Most excavating machinery is heavy and slow-moving and must be carried from site to site on special transporters. It is clear that the use of expensive mechanical plant requires careful planning and efficient site organization if full advantage is to be taken of its high rate of production.

Plant for site preparation and excavation can be divided into four classes. First, machines which plane off a thin layer of soil and push it in front of them. Second, machines which plane off a thin layer of soil, at the same time picking it up and carrying it where required. Third, machines which dig out soil by some form of a bucket, and load it for transportation into separate vehicles. Fourth, machines designed specially for trenching by means of a number of buckets mounted either on a continuous chain or on a wheel.

In the first class are bulldozers of different types. A bulldozer represents by itself an earth-moving machine which carries out its work with the aid of a blade mounted on a tractor of either crawler or wheel type.

A scraper, which belongs to the second class of earth-moving machines, is simply a large box with an open mouth, dragged along the surface of the ground until it is full. It has a cutting edge that digs. There is a considerable variety of the scrapers, from small units to huge ones made to accommodate 30 cubic yards of soil and to absorb the power of two tractors while at work.

Revolving shovels, which belong to the third-class of earth-moving machines, made their first appearance in 1835 in the form of a part-swing shovel mounted on railroad tracks. It was powered by steam, it was slow and clumsy, but it did the work. Into Great Britain they were introduced from America in 1887 to work on the Manchester Ship Canal. They were a source of wonderment to the people of that part of the country and trips were organized to provide a view of the 'American Devils' as they were popularly called.

1. Read the text and decide if the statements below are true (T) or false (F).

1. On large construction sites where a considerable volume of concrete is required a central mixing plant is generally used. ()
2. A bulldozer is an earth-moving machine which planes off a thin layer of soil, picks it up, and carries it where required. ()
3. The tower cranes are employed for lifting materials and structural elements onto the buildings being erected. ()
4. The first revolving shovels were mounted on railway tracks and powered by steam. ()
5. Site preparation and excavation are operations which are usually carried out with manpower. ()

6. A scraper is simply a large box fitted with a cutting edge that digs ().

7. Since excavators are heavy and slow-moving machines, they are carried from site to site on special transporters. ()

2. Read the short text below and answer the question:

Are the excavators fast-moving machines?

Site preparation and excavation are labour-consuming operations. At present they are the most fully mechanized of all the operations carried out in building construction. But earth-moving machines are heavy and slow-moving units; therefore they must be carried from site to site on special trailers. It is clear that such expensive mechanical plant as excavators must be made to carry out various classes of work.

3. Find the necessary ending to the following sentence.

- | | |
|---|---|
| 1. The best economy is achieved when an all-purpose earth-moving machine is designed... | A. ...with out a good deal of preliminary leveling the site. |
| 2. A scraper is simply a box made of sheet steel with an open mouth... | B. ...the most fully mechanized of all the operations in building construction. |
| 3. Site preparation and leveling are... | C. ...carefull planning and efficient site organization. |
| 4. It is not possible to start on a construction job... | D. ...capable of being converted to suit any class of work. |
| 5. The use of expensive mechanical plant requires... | E. ...which is dragged along the surface of the ground until it is full. |

4. Choose one of the best beginning (A, B, C) to the following endings.

1. _____ one must use earth-moving equipment.
 - a) As the years went on...
 - b) To carry out this work...
 - c) During the last fifty years...

2. _____ can be divided into four classes.
 - a) Machines, which plane off a thin layer of soil...
 - b) The annual amount of digging operations...
 - c) Plant for site preparation and excavation...

3. _____ an earth-moving machine, which carries out its work with the aid of a blade mounted on a tractor.
 - a) A scraper, which belongs to the second class of earth-moving machines, is...
 - b) A bulldozer is...
 - c) A revolving shovel, which belongs to the third class, is...

Text 13. Excavators

Match the following words and translations.

- | | |
|---------------------------|----------------------|
| 1. a earth-moving machine | A. пряма лопата |
| 2. attachments | B. драглайн |
| 3. a shovel | C. землерийна машина |
| 4. a dragline | D. грейфер |
| 5. a backacter, backhoe | E. зворотня лопата |
| 6. grab, clamshell | F. аутригери |
| 7. outrigger arm | G. змінне обладнання |

The universal excavator is an earth-moving machine that can be equipped with different attachments known under the following names: 1. shovel; 2. dragline; 3. backacter or backhoe; 4. grab or clamshell; 5. crane.

Conversion from one type to another is a comparatively easy operation.

Some decades ago only rope-controlled excavators were in use. Now there exists a tendency to replace the latter by more progressive hydraulically operated excavators. Especially widely used are now hydraulic backhoes.

In hydraulically operated backhoes hydraulic rams are used in place of ropes and winches to operate the boom and the dipper arm. The hydraulic system makes it possible to pivot the bucket on the dipper arm. This movement provided by an additional ram on the dipper arm gives the operator a means for selecting the proper angle of cutting for the bucket both at the start of the digging stroke and during the stroke to obtain optimum digging performance.

With the wheeled excavator, which is considerably lighter than the crawler mounted one, means to provide additional stability are incorporated. Before starting digging operation outrigger arms are operated hydraulically. Independent movement of the outrigger arms provides for leveling the machine on sloping ground, so that trenches with vertical sides can be cut perpendicular to the direction of the slope. In some models the revolving superstructure of the machine can be moved transversely in special guides, so that a trench can be dug parallel and close to a wall or some other obstruction, this movement being carried out hydraulically too.

A recent model incorporates a telescopic dipper arm: when extended it can dig deeper and has a greater discharge height and when retracted it produces its greatest digging force at the bucket.

At present excavators are available in which all the digging motions as well as slewing are operated hydraulically. The crawler-mounted excavator has two other advantages over its rope-operated counterpart: with separate hydraulic motors for each track it is possible to put one track in reverse while the other is driven forward, so that the machine can be turned within its own length, and the boom can be of the adjustable radius type, so that the reach, digging depth and discharge height can be quickly varied to suit the job.

1. Answer the following questions.

1. What attachments can be used to equip the universal excavator?

2. Why are the backacters with telescopic booms very widely used now?
3. Can hydraulically operated excavators dig trenches with vertical sides on sloping ground?
4. Why is it profitable to change the angle of cutting in the process of digging?
5. Are hydraulically operated excavators more progressive than the rope-operated ones?

2. Find the necessary ending to the following sentence.

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. In some hydraulically operated excavators the revolving superstructure... 2. With extended telescopic boom... 3. With separate hydraulic motors for each track... | <ol style="list-style-type: none"> A. ...the machine can turn within its own length. B. ...can be moved perpendicularly to the longitudinal axis of the machine in special guides. C. ...the excavator can dig deeper trenches and discharge the spoil at greater heights. |
|--|---|

3. Write down terms matching words from columns A and B. Choose three word combinations and make up sentences with them.

- | A | B |
|--------------------|-------------------|
| 1. rope-controlled | A. of cutting |
| 2. hydraulic | B. mounted |
| 3. angle | C. superstructure |
| 4. crawler | D. ram |
| 5. revolving | E. excavator |
| 6. telescopic | F. arm |
| 7. dipper | G. boom |

‘TYPES OF DWELLING’

Text 14. Residential and Industrial Buildings

Match the following words and translations.

- | | |
|---------------------------------------|---|
| 1) a building industry | A. керуючий апарат |
| 2) a managerial staff | B. технічний прогрес |
| 3) an industrial construction | C. збірні конструкції |
| 4) a housing | D. будівельна промисловість |
| 5) a technological advance | E. роботу з планування на будівельному майданчику |
| 6) an off-site prefabrication | F. житлове будівництво |
| 7) a site planning | G. сучасне проектування |
| 8) a prefabricated structures | H. виготовлення на фабриці |
| 9) a present-day design | I. промислове будівництво |
| 10) 10. kitchen and sanitary fittings | J. санітарне обладнання |

(1) In technically developed countries the building industry, comprising skilled and unskilled workers in many trades, building engineers and architects, managerial staff and designers, employs a considerable proportion of the available labor force.

(2) Building industry including residential, public and industrial constructions holds a considerable place in the National Economy and is being carried on a large scale. It is the largest single industry in the country. The problems of construction have grown into major, political issues in most countries.

(3) Housing is prominent among the factors affecting the level of living. The improvement of the housing represents a concrete and visible rise in the general level of living. In many countries residential construction has constituted at least 12 per cent and frequently more than 25 per cent of all capital formation. Since home building industry is the concern of the state the research and development in housing technology is carried out on a national scale and is being paid much attention to.

(4) The ever growing housing demands have brought to life new methods of construction with great emphasis upon standardization, new levels of technological advance utilizing such techniques as off-site prefabrication, precasting, use of reinforced concrete panels and large-scale site planning. At present, prefabricated structures and precast elements may be classified into two principal groups – for residential houses and industrial buildings.

(5) Present-day designs for residential construction envisage all modern amenities for a dwelling, they advocate larger, better built and better equipped flats and houses. There is a marked improvement in the heating and ventilating systems as well as in hot-water supply, kitchen and sanitary fittings. Many tenants now can afford better furnishings, refrigerators, washing machines, etc. A house which is a physical environment where a family develops is acquiring a new and modern look.

(6) Industrial buildings comprise another significant type of construction. This type of construction involves factories, laboratories, food-processing plants, mines, office buildings, stores, garages, hangars and storage facilities, exhibition halls, etc.

(7) Each of these functions demands its own structural solution and techniques. But in general they may be divided into two classes according to whether the plan must give greater attention to the size and movement of machinery or of persons. The building techniques (by techniques we mean building materials and methods) depend upon the types of buildings.

(8) Modern industrial buildings have demonstrated the advantages of reinforced concrete arches, metal frames, glass walls and prefabricated standardized mass produced parts. Steel was gradually substituted for iron and permitted wider rooms and larger windows. Windows can be enlarged to the extent that they constitute a large fraction of the wall area.

1. Read the following sentences and decide what sentence expresses the main idea of the text.

1. Home building industry is the concern of the state.
2. The building industry comprises skilled and unskilled workers in many trades.

3. Building industry which includes residential, public and industrial construction is being carried out on a large scale and it has brought into being new methods and techniques.
4. There is a marked improvement in the heating and ventilating systems as well as in hot-water supply.

2. Find the correct headings of the paragraphs.

1. The functions of industrial buildings.
2. New methods of housing.
3. Present-day design for residential construction.
4. The advantages of reinforced concrete for modern industrial buildings.
5. Building industry and national economy.

3. Read the following sentences and divide them into two groups 'Residential Buildings' and 'Industrial Buildings'.

1. In many countries residential construction has constituted at least 12 per cent of all capital formation.
2. The problem of housing has grown into a major, political issue in most countries.
3. Industrial buildings comprise another significant type of construction.
4. Modern buildings have demonstrated the advantages of reinforced concrete arches, metal frames, and glass walls.
5. The differing functions of industrial buildings require their own structural solutions and techniques.
6. Present-day designs for housing envisage all modern conveniences and sanitary fittings.
7. Buildings may be divided into two classes according to whether the plan must give greater attention to the size and movement of machinery or of persons.
8. Windows can be enlarged to the extent that they constitute a large fraction of the wall area.
9. A house which is a physical environment where a family develops is acquiring a new and modern look.

Residential Buildings	Industrial Buildings

4. Choose the one best answer A, B, C to the statements.

1. Modern industrial buildings have demonstrated the advantages of...
 - a) hot-water supply and panel heating.
 - b) reinforced concrete arches, metal frames, glass walls and prefabricated parts;
 - c) all modern conveniences for a dwelling.
2. Industrial type of construction involves...
 - a) better built and better equipped flats and houses.

- b) theatres, cinemas, museums, libraries, etc.
- c) factories, food-processing plants, mines, office buildings, stores, etc.

3. Present-day designs for residential construction envisage...
- a) movement of machinery and persons.
 - b) application of metal frames and glass walls.
 - c) all modern conveniences including hot-water supply and panel heating.

5. Find the correct endings to the following statements according to the text.

1. Housing construction has grown into a political issue because
2. The research and development in housing technology is carried out on a national scale since
3. A house is acquiring a new and modern look for
4. The building techniques depend upon the types of buildings because

Text 15. Types of Buildings

Match the following words and translations.

- | | |
|-------------------------------|-----------------------------------|
| 1. a residential construction | A. технічний прогрес |
| 2. technological changes | B. сучасний |
| 3. mechanized operations | C. забезпечувати |
| 4. a site | D. теплоізоляція |
| 5. reinforced concrete blocks | E. методи будівництва |
| 6. construction methods | F. залізобетонні блоки |
| 7. a thermal insulation | G. житлове будівництво |
| 8. to provide | H. механізовані матеріали |
| 9. contemporary | I. будівельний майданчик |
| 10. technological advance | J. зміни у технологічному процесі |

(1) Types of buildings depend upon social functions and may be classified according to the role in the community. The types of buildings may be domestic, educational, office, industrial, recreational, etc. The common and necessary conditions are:

- (a) its suitability to use by human beings in general and its adaptability to particular human activities;
- (b) the stability and permanence of its construction.

(2) Speaking of residential construction we must say that the apartment houses are mostly built to suit urban conditions. Group housing provides home for many families and is at once public and private. The techniques of construction or the methods by which structures are formed from particular materials are influenced not only by the availability and character of: materials but also by the total technological development of society.

(3) The techniques evolution is conditioned by two factors; one is economic – the search for a maximum of building stability and durability with a minimum of

materials, labour and time; the other is expressive – the desire to produce meaningful form.

(4) Large housing programmers have tended to stimulate technological change in the building industry. Modular design (design in which the elements are dimensioned in combinations of a fixed unit) has led to standardization of elements, interchangeability of parts and increased possibilities for mass production, with resultant economies. Entire apartment assemblages are available and are being used to an increasing extent. These techniques aim at a higher output of better structures at lower cost.

(5) The high degree of mechanization and standardization is successfully achieved by reinforced concrete blocks and units. Reinforced concrete homes are produced by a variety of construction methods. Various methods of constructing reinforced concrete houses involve extensive use of large sections manufactured in heavily mechanized factories and erected at the site.

(6) The built-in space of an apartment should be thought of as well. There is a considerable trend toward built-in furniture. Rooms should be both efficient and visually satisfying. The extent of built-in cabinets must be determined. Drawers and shelves can often be concealed behind walls, freeing valuable floor space.

1. Find the correct headings of the paragraphs.

1. The total technological development of society influences the techniques of residential construction.
2. The interior of a modern residential building.
3. Technological changes and new techniques in the building industry.

2. Read the following sentences and decide what sentence expresses the main idea of the text.

1. Great technological advances in plumbing and ventilating systems.
2. The types of walls of concrete structures.
3. The types of exterior concrete surface.
4. Classification of buildings according to their functions, building techniques and factors affecting the latter.

3. Find the correct endings to the following statements according to the text.

1. Types of buildings depend upon social factors because
2. Large housing programmers have tended to stimulate technological change in the building industry because
3. Entire apartment, assemblages are used to an increasing extent since
4. There is a considerable trend toward built-in furniture because

4. Choose the one best answer A, B, C to the statements.

1. Various methods of constructing reinforced concrete houses involve...
 - a) craft operations at the building site.
 - b) building materials, labour and time.

c) extensive use of large sections manufactured in heavily mechanized factories.

2. Types of buildings depend upon...

- a) the availability and character of materials.
- b) increased possibilities for mass production.
- c) social functions in the society.

3. The high degree of mechanization and standardization is achieved by...

- a) reinforced concrete blocks and units.
- b) technological change in the building industry.
- c) craft operations at the building site.

Text 16. Wooden Structures in Ukraine

The rich Ukrainian black soil, the moderate climate and abundant rainfalls favored profuse vegetation which yielded a mass of timber of various kinds. For this reason the Art of wood building has always flourished in Ukraine. The Ukrainians were known as expert wood workers and engravers. This skill in wood-building dates back to pre-Christian times and has attained its special perfection in religious buildings. In these we see a reflection of changes of the historic styles, which took place in architecture. One can also discover a perceptible influence of the ideas in wood-building on architecture. The Ukrainian wood-building is characterized by harmony, by logical and exact form, and by absence of superfluous elaborate ornamentation. As to church building, these principles produced an integrity in a way that the outer appearance of the building corresponds entirely with the inner contents.

Still, one definite and pronounced Ukrainian style is common to all wooden-constructed churches which is strictly different from the styles of other peoples. The majority of Ukrainian churches consist of three parts (srubni) with either one or three cupolas.

The oldest type of church prevails in the Carpathians with a pyramid-like roofing of all three parts. Such churches once existed throughout Ukraine and occasionally can be found in the various parts of the country. The oldest of these date back to the 15th – 16th century. Churches in Volhynia and Podolia constitute a separate group; most of them have one or three cupolas and are often surrounded by beautiful colonnades or galleries. Excellent architectural structures of churches with live cupolas were, until just recently, found in Podolia and provinces of Kiev, Poltava and Kharkiv, in addition to those found in Hutsulshchyna. The masterpiece of old Ukrainian-skill, during the Baroque Epoch, is the famous cathedral in Zaporoshie. It has nine cupolas and is extremely large, having merited admiration, from a technical and artistic standpoint by the greatest critics. This cathedral was erected in 1773 – 1779 by J. Pohrebniak, an architect of Sloboshanshchina.

In this connection, the belfry towers deserve a special mention. Standing always apart from the church, their forms and construction are the outcome of old traditions that take us to the architecture of fortified castles.

In the past, many original wooden buildings were also found in towns. They were mostly adorned with elaborate and ingeniously designed facades, balconies, galleries and similar ornamentation. Excellent samples of these were found in Hutsulshchyna, Podolia and Volhynia. At present there are only a few in existence.

1. Answer the following questions.

1. Why has wooden structures flourished in Ukraine?
2. What are the main features of Ukrainian wood-building?
3. Where were wooden churches being built in Ukraine?

2. Read the text and decide if the statements after it are true (T) or false (F).

1. The Ukrainians were well-known as skilled woodworkers and engravers. ()
2. The idea in wood-building influenced on architecture perceptibly. ()
3. The most of Ukrainian churches consist of six parts with either one or three cupolas. ()
4. The newest type of church prevails in the Carpathians with a pyramid-like roofing of all three parts. ()
5. The famous cathedral in Zaporoshie erected in 1773 – 1779 by J. Pohrebniak is a masterpiece of the Baroque Epoch. ()

3. Make up a list of Wooden structures in Ukraine.

Text 17. Farmhouses

The Ukrainian farmhouses were, at first, chiefly built of wood. In recent times wood was occasionally replaced by other materials, such as, clay, bricks and stones – particularly in Southern Ukraine.

The so-called ‘Osidok’ in Hutsulshchyna may be considered the oldest and original type of building on the Ukrainian countryside. ‘Osidok’ is a group of buildings, constituting a farmyard, surrounded by a fence. These peasant-houses are characterized by great originality of design and skillful wood-carving, in general, the farmhouse presents a similar picture throughout Ukraine: a neatly whitewashed little house, under slaw-thatched roof, towers out of gardens and flower-beds. The beauty of a farmhouse is accentuated by a gaily painted foundation, known as the ‘prysba’ and by paintings around windows and under the eaves.

Less uniform is the inner arrangement and furnishing of the rooms. The farmhouse of an average farmer consists of a large entrance hall with rooms on both sides. The arrangement of the living rooms is usually such: A large fire-place, of interesting design, stands in one corner; shelves for kitchenware are

Fitted into another corner: in the third corner a large bed is placed, while the fourth corner, 'pokuttia', is reserved for holy pictures, a dining table, benches and chairs.

The furniture of the farmhouse is generally plain and made according to the size of the room. The shelves for dishes are often adorned with beautiful carving. In every farmhouse there is a huge 'treasure chest' used for clothing, expensive materials, carpets, linens and valuables. Such a chest is always beautifully-carved and painted.

1. Answer the following questions.

1. What building materials were used by the Ukrainians to erect farmhouses?
2. What is the oldest and the most original farmhouse on Ukrainian countryside?
3. What are the national features of Ukrainian farmhouse?

2. Read the text and decide if the statements after it are true (T) or false (F).

1. 'Osidok' is a group of buildings on a farmyard, surrounded by a fence. ()
2. The farmhouses ('Osidok') are characterized by great originality of design and skillful wood-carving, but the peasant house does not present a similar picture throughout Ukraine. ()
3. The fourth corner, 'pokuttia' is a place of holy pictures. ()
4. The furniture of the farmhouse is often adorned with beautiful carving and painted. ()

3. Write down the main features of Ukrainian farmhouse.

'WORLD WONDERS'

Text 18. A Roman Theatre

Roman towns are famous for their places of entertainment, which were often decorated as lavishly as the forum and the temples.

The Roman loved chariot races, and larger towns had tracks, often outside the walls. The Romans also adopted the idea of building theatres in stone from the Greeks. These great D shaped buildings were surpassed in size only by amphitheatres, the huge oval arenas where gladiators and animals fought in bloody combats.

This splendid Roman theatre is of the type seen in Italy and many of the Mediterranean provinces. It could hold several thousand people. Its deep, semicircular shape and the sloping roof above the stage meant that even those high up at the back could hear the actors clearly – provided the crowd kept quiet! The stage often had an elaborate backdrop (the *scenae frons*) decorated with marble columns, statues and mosaics. It represented three house-fronts, and the actors entered and exited through the doors. Actors could perform on the stage and in an area in front

called orchestra. The seating for the audience was supported on elaborately-constructed concrete vaults and arches.

1. Answer the following questions:

1. What was the form of Roman theatre?
2. Had the Romans the own idea to build theatre?
3. What was the aim deep, semicircular shape and the sloping roof above the stage in Roman theatre?
4. How was the scene decorated?

2. Make up a short story about theatre in your own city. Tell about its form, shape, roof, scene decoration.

Text 19. St. Paul's Cathedral

Everybody coming to London for the first time wants to see St. Paul's Cathedral. This is the third cathedral with this name which London has had. The two others were burnt down, the first in 1086 and the second in 1666.

Christopher Wren was an architect who had already built many buildings. Now, in 1675, he started on his greatest work. For 35 years the building of St. Paul's Cathedral went on, and Wren was an old man before it was finished.

From far away you can see the huge dome with a golden ball and cross on the top. The inside of the cathedral is very beautiful. After looking around, you can climb 263 steps to the Whispering Gallery, above the library, which runs round the dome. It is called this because if someone whispers close to the wall on one side, a person with an ear close to the wall on the other side can hear what is said. Then, if you climb another 118 steps, you will be able to stand outside the dome and look over London.

But not only can you climb up, you can also go down underneath the cathedral, into the crypt. Here are buried many great men, including Christopher Wren himself, Nelson and others.

1. Answer the following questions:

1. What is Christopher Wren?
2. How long did it take to build St. Paul's Cathedral?
3. What is the height of the building?
4. What kind of a gallery does this cathedral contain?
5. What is the acoustic phenomenon of the gallery?

2. Write down the endings of the following sentences.

1. The Whispering Gallery is
2. The crypt is a place where
3. 1666 is the year when.....

3. Make up a summary of the article 'St. Paul's Cathedral'.

Text 20. Wren, Sir Christopher

Wren, Sir Christopher (1632 – 1723) is the greatest English architect. His father was Dean of Windsor and his uncle Bishop of Ely, both pillars of the High Church. He was educated at Westminster School and at fifteen became a demonstrator in anatomy at the College of Surgeons; then he went up to Oxford. Experimental science was just then coming to the fore, and he found himself in company with a group of brilliant young men who were later to found the Royal Society. He was entirely engrossed in scientific studies. Evelyn called him ‘that miracle of a youth’ and Newton thought him one of the best geometrician of the day. In 1657 he was made Professor of Astronomy in London, in 1661 in Oxford; but two years later his career took a different turn with his appointment to the commission for the restoration of St Paul’s. After the Great Fire of London he was appointed one of the Surveyors under the Rebuilding Act (1667) and in 1669 became Surveyor General of the King’s Works. Then he resigned his Oxford professorship and was knighted (1673) He was twice MP (1685 – 1687 and 1701 – 1702) and, despite his Tory connections, survived the Whig revolution of 1688, but on the accession of George I in 1714 he lost his office. He was twice married, first to a daughter of Sir John Coghill, and secondly to a daughter of Lord Fitzwilliam of Lifford. He died aged ninety-one having, as he wrote, ‘worn out (by God’s Mercy) a long life in the Royal Service and having made some figure in the world.’

If Wren had died at thirty he would have been remembered only as a figure in the history of English science. His first buildings, the Sheldonian Theatre, Oxford (1664 – 1669), and Pembroke College Chapel, Cambridge (1663 – 1665), are the work of a brilliant amateur though the trussed roof of the Sheldonian already displays his structural ingenuity. In 1665 – 1666 he spent eight or nine studying French architecture, mainly in Paris, and may well have visited Flanders and Holland as well. He met Bernini in Paris, but learnt more from Mansart and Le Vau, whom he probably knew and whose works he certainly studied. French and Dutch architectures were to provide the main influence on his own style. The Fire of London in 1666 gave him his great opportunity. Though his utopian city plan was rejected, every facet of his empirical genius found scope for expression in the rebuilding of St Paul’s and the fifty-one city churches. The latter especially revealed his freshness of mind, his bounding invention, and his adventurous empiricism. There were, of course, no precedents in England for classical churches except in the work of Inigo Jones. Wren’s city churches were built between 1670 and 1686, nearly thirty, being under construction in the peak year of 1677. Plans are extremely varied and often daringly original, e.g. St Stephen, Walbrook (1672 – 1679), which foreshadows St Paul’s, and St Peter’s, Cornhill (1675 – 1681), in which his two-storeyed gallery church with vaulted nave and aisles was first adumbrated. This type was later perfected at St. Clement Danes (begun 1680) and St. James’s Piccadilly (1676 – 1684). But his originality and fertility of invention are best seen in the steeples, which range from the neo-Gothic of St. Dunstan in the East to the Borrominesque fantasy of St. Vedast and St. Bride.

More scholarly and refined in detail than his sometimes rather hastily conceived and crudely executed city churches is his masterpiece, St. Paul's Cathedral. Nothing like it had ever before been seen in England. It was a triumph of intellectual self – reliance, and the dome is one of the most majestic and reposeful in the world, purely classical in style. Baroque influences are evident elsewhere in the building, notably in the towers, the main façade, and such illusionist features as the sharm-perspective window niches and the false upper storey in the side elevations to conceal the nave buttresses.

The interior is ostensibly classical, but contains many Baroque gestures. It was begun in 1675, and Wren lived to see it finished in 1709.

1. Answer the following questions:

1. Why do people say, 'If Wren had died at thirty he would have been remembered only as a figure in the history of English science'?
2. Where did Wren study to be an architect?
3. What masterpieces were erected by Wren?

2. Make up a summary of the article 'Wren, Sir Christopher'.

'CITIES AND TOWNS'

Text 21. Types of Modern Cities

1. Match words with their Ukrainian equivalents. Read the text.

- | | |
|--------------------------------|---|
| 1) overlapping functions | a. відновлення |
| 2) one-industry towns | b. історичний континуум |
| 3) agricultural trading center | c. передумова |
| 4) dawn of urban history | d. світанок історії містобудування |
| 5) immediate hinterland | e. скупчення, нагромадження |
| 6) religious worship | f. схильні рухатися (в) |
| 7) secular homage | g. почесі світського характеру |
| 8) recuperation | h. функції, що частково збігаються |
| 9) prerequisite | i. центр торгівлі сільгосппродуктами |
| 10) historical continuum | j. міста однотипної промисловості |
| 11) are prone to move (into) | k. релігійне поклоніння |
| 12) 12. agglomeration | l. місцевість, що прилягає безпосередньо до міста |

Any classification of cities is somewhat arbitrary. The criteria of classification are a matter of choice. We classify cities according to functions, but we recognize that most cities are dedicated to a plurality of functions. The type is derived from the predominating function. Some cities, of course, are distinct types, such as college towns, one-industry towns, or agricultural trading centers. But such clear distinction

is the exception rather than the rule. To establish a system of classification, we arrange function according to the manner in which it occurred in urban history. There are cities that function as seats of institutions, trading centers, industrial centers, metropolitan centers, and resort towns.

The first mentioned city type, characterized as the seat of one or several institutions, reaches back into the dawn of urban history when city life was centered around the temple or the palace of the ruler. There were economic reasons, of course, that made the foundation and growth of such cities possible. They were dependent upon an agricultural surplus in the immediate hinterland. Yet the economic function of these early cities was subsidiary to religious worship or secular homage.

In the contemporary environment, the college town, the country seat, the seat of the state government, the agricultural experiment station and towns devoted to a variety of such purposes, containing schools, governmental institutions, churches, and libraries fall into this same category.

The city as a center exclusively for trade and commerce was prominent at another phase of urban development. Such singleness of purpose is usual for the large city in the contemporary scene. The cities at the shore of the Mediterranean Sea in antiquity, however, could be considered primarily centers of trade and commerce. Upon these cities the products of a vast rural hinterland converged. Between these cities, products of the hinterland were exchanged. From the urban centers, these products were distributed to the country population in the region.

In the Middle Age, urban commerce developed before urban industry. Trade gave a livelihood to merchants and to those engaged in transportation before it stimulated the development of crafts and industries, which were later to replace the commercial activities in importance. In the contemporary scene, we have to look to our agricultural trading centers for a similar type of town.

The industrial city reaches its full development during the industrialization process itself. It is dependent, in both location and growth, upon the availability of raw materials within a favorable range of transportation. It is dependent upon a labour supply, and not unconcerned with the distance at which the product can be marketed.

In the metropolitan center, the process of urbanization reaches its climax. The metropolitan center is characterized by a multiplicity of functions. It contains industry as well as commerce, educational as well as governmental institutions. The metropolitan center feeds on the cumulative processes of urban growth.

The metropolis may start its development from any of the above mentioned types. Let us assume a trading center favorably located near existing means of transportation. Large masses of consumers will be attracted by commercial activities and provide a sufficient market for the development of consumer goods industries. Nearby sources of raw materials may give further impulse to industrial development. The labour supply so collected induces an ever widening range of diversified industrial enterprise to locate within the metropolitan area. Educational and governmental institutions are prone to move into the already established large urban settlement where they will be close to the people they intend to serve.

The process may proceed along different lines. The metropolis may start as a center of industry, which – at a certain point of development – begins to attract banks, warehouses and other establishments to promote commerce in either raw materials or finished products. The metropolis may have its origin in a seat of government or an educational center. The beginning, however, is not very important once the metropolis has come into its own.

In its full bloom, the metropolitan center becomes an end in itself, gaining increasing advantage as an agglomeration of a large resident population. It fulfills regional as well as national and worldwide services in the pursuit of governmental, educational, commercial, and industrial activities.

We place the resort town at the very end of our historical continuum. The resort town appears as the outgrowth of a metropolitan way of life that requires specialized services for purposes of human recuperation. We need not elaborate upon its function. Suffice it to say that the resort town is economically dependent upon the existence of large urban settlements at a reasonable distance.

The resort is frequently tied to small urban settlements, which function simultaneously as agricultural trading centers. Accessibility to metropolitan travelers and a site which appeals through natural features such as lakes and meadows and mountain are important prerequisites. Such conditions establish for the indigenous population the opportunity of additional income through boarding houses, hotels, cabins, and artificial recreational facilities.

2. Comprehension question:

1. What is the type of the city derived from?
2. When did the cities as seats of institutions appear?
3. What type of the city do the college towns belong to?
4. Did the cities as trading centres exist in antiquity?
5. What is the industrial city dependent upon?
6. What kind of a city expresses the idea of urbanization?
7. Where is the resort towns located?

3. Discussion questions:

1. What groups are the cities classified into according to their functions?
2. What were the reasons for building cities as seats of institutions?
3. What kinds of cities as seats of institutions are there now?
4. Where were cities as centre of trade situated in ancient times?
5. Why are the industrial centres dependent upon transport and supply of labour?
6. What is the multiplicity of functions of the modern metropolitan centre?
7. What are the opportunities of additional income for the people in the resort towns?

Text 22. Growth of Cities (Principle of City Location)

Cities, that is, large and dense population settlements, **tend to be located at breaks of transportation lines**¹. The crowding of urban developments is undoubtedly due to **the need for unloading facilities**² for ocean-going freighters. In addition to docks and piers, and to ware-houses for temporary storage, there must be facilities for **inland transportation**³. Thus, cities are located where the inland waterways connect with the open sea, or where highways and, later, railroad lines terminate the edge of the continent, providing **coast-to-coast distribution**⁴ all incoming goods.

It takes both personnel and equipment to transfer goods⁵ from one means of transport to another. There are opportunities for work as well as commercial gain where the boats come in. Harbour facilities must be provided, and the final distribution of incoming goods must be decided upon. Manpower is needed for the operation of physical as well as commercial processes in demand at such locations. Thus a sufficient population is attracted and retained to provide for the first foundation and further growth of an urban settlement.

The seacoast shipping centers furnish only the most obvious example of a principle of city location that has much wider application. There are urban settlements at river crossings **which in earlier days necessitated reloading activities**⁶. There are urban settlements along the inland waterways where goods were transferred from barges to wagon trains, railroads, or trucks. There are urban settlements **at the edges of mountain ranges**⁷ that formerly made necessary the shifting from one means of transportation to another.

Wherever railroad construction came temporarily to an end, urban settlements developed to accommodate the transfer of goods from freight train to some other means. Today, the break of transportation which caused original city location has many instances been replaced by further extensions of the **rail system**⁸. Railroad construction was continued with devastating effect upon inland trading centers. Bridges were thrown over rivers to eliminate **the need for reloading to and from ferries**⁹. In this process, many **urban communities came to outlive their usefulness**¹⁰. The location of new communities and their development changed continuously with the improvement of our means of transportation.

In addition to the reason for city location, there are many other reasons for city growth. The functions of the city as a trading center are emphasized by the theory that points exclusively to location at breaks of transportation lines.

In the early Middle Age, city location was determined primarily by the needs of defense. We find remnants of these ancient cities on almost inaccessible hillsides, on the estuaries of rivers, or perched on peninsulas. With the development of trade and commerce, many of these cities lost importance, ceased to grow, and **drifted into stagnation**¹¹. Nor is urban growth entirely explainable anymore by location to transportation facilities. Most modern cities have developed from centers of commerce and trade to centers of industry. Under the circumstances, new economic considerations have to be added to the explanation of urban growth and development.

Modern industry needs bulky raw materials. The distance there raw materials have to travel from their place of origin (for example, from the mines) to the place of industrial transformation **enters heavily into industrial cost calculations**¹². Quite often several raw materials are required in the process of production.

Location of industry and location of urban settlements are attracted to the place where raw materials are extracted. On top of the mines, obviously, **the cost of cross-country transportation is reduced to nothing**¹³.

Coal proves to be more effective in¹⁴ attracting the steel industry than iron. More coal than in iron ore – in weight and bulk – is used and lost in the production of any given amount of steel. For this reason, the steel industries of Western Europe are located in the Ruhr valley where coal is found, rather than in France where the iron ore is mined.

The relationships of industrial and urban location to coal and iron ore is, of course, only a striking example of a more general principle. Location is determined by the attempt to reduce the total cost for transportation to the lowest possible level. The pottery industry moves to deposits of suitable clay; oil refineries hover over the most productive wells; and paper mills cluster around our resources of timber. Urban settlements provide the necessary manpower for industrial and commercial activities in such locations.

Vocabulary notes:

¹ **tend to be located at breaks of transportation lines** – мають тенденцію до розміщення в розривах транспортних ліній

² **the need for unloading facilities** – потреба у створенні можливостей для розвантаження

³ **inland transportation** – внутрішні перевезення

⁴ **coast-to-coast distribution** – розподіл, що простягається від берега до берега (від Атлантичного до Тихого океану)

⁵ **it takes both personnel and equipment to transfer goods** – існує потреба як у людях, так і в обладнанні для транспортування товарів

⁶ **which in earlier days necessitated reloading activities** – які в період виникнення потребували можливостей для перевантаження

⁷ **at the edges of mountain ranges** – на краях гірських пасм

⁸ **rail system=railway ranges** – система залізничних доріг

⁹ **the need for reloading to and from ferries** – необхідність перевантаження на пороми (туди й назад)

¹⁰ **urban communities came to outlive their usefulness** – міські поселення почали відживати, втрачати свою корисність)

¹¹ **drifted into stagnation** – занепали

¹² **enters heavily into industrial cost calculations** – становить значну частину при підрахунках промислових видатків

¹³ **the cost of cross-country transportation is reduced to nothing** – вартість транспортування через усю країну зменшується до мінімуму

¹⁴ **coal proves to be more effective in** – вугілля, виявляється, має певну перевагу

1. Comprehension question:

1. What is a city and what is a town?
2. Where do cities tend to be located?
3. Why were urban settlements located along the inland waterways or at breaks of transportation lines?
4. What determined city location in the early middle Ages?
5. What factors determine modern city location?
6. Why are urban settlements attracted to the places where raw materials are available?
7. What factors determine city location nowadays?
8. Do you know the history of the appearance of your city?

2. Find the Ukrainian equivalent of the words and expressions given and then fill in the gaps in the sentences.

- | | |
|----------------------------------|---|
| 1. highways | a. зростання міст |
| 2. inland trading centers | b. океанське вантажне судно |
| 3. the seacoast shipping centers | c. тракт, магістраль |
| 4. urban developments | d. морський торговельний центр |
| 5. ocean-going freighters | e. торговельний центр віддалений від моря |
| 6. bulky raw materials | f. залишки |
| 7. the pottery industry | g. недосяжний бік гори |
| 8. remnants | h. гирло ріки |
| 9. inaccessible hillsides | i. великі об'єми сировинних матеріалів |
| 10. estuaries of rivers | j. гончарне виробництво |

1. We find _____ of these ancient cities on almost _____, on the _____, or perched on peninsulas.
2. Modern industry needs _____.
3. _____ moves to deposits of suitable clay; oil refineries hover over the most productive wells; and paper mills cluster around our resources of timber.
4. The crowding of _____ is undoubtedly due to the need for unloading facilities for _____.
5. Railroad construction was continued with devastating effect upon _____.
6. _____ furnishes only the most obvious example of a principle of city location that has much wider application.
7. Cities are located where the inland waterways connect with the open sea, or where _____ and, later, railroad lines terminate the edge of the continent.

Text 23. Modern Urban Planning (A Multifunctional Center)

1. Make sure you know the meaning of the following words. Match them with the Ukrainian equivalents. Read the text.

- | | |
|--|-------------------------------------|
| 1. human settlements | a. відповідно до |
| 2. realm of life | b. організація міста |
| 3. to acknowledge | c. брати на себе роль |
| 4. urban organization | d. вантажний елеватор |
| 5. inventiveness | e. поселення людей |
| 6. for reasons of | f. межа |
| 7. boundary | g. привабливі для туристів місця |
| 8. to assume the role | h. ділянка життя |
| 9. tourist attractions | i. визнавати |
| 10. their very existence is threatened | j. винахідливість |
| 11. the city core | k. через |
| 12. in accordance with | l. загроза самому їхньому існуванню |
| 13. freight elevator | m. середина міста |

The multifunctional center represents a new building type, which will **attain a world-wide significance**¹. The concert of the multifunctional center does not come out of a vacuum. It represents, in fact, **the natural and organic organization pattern**² which has existed since the founding of human settlements and has expressed itself everywhere as **the nomadic hunter turned to the pursuit of agriculture**³, the activities of craftsmanship and of trade.

Thus, in every realm of life, we have to acknowledge the old saying that “nothing is really new in this world”. Having acknowledged this undeniable fact, **we should not be hesitant about**⁴ studying and learning from the experiences of urban organization as expressed in the past.

For reason of changing sociological conditions and because of the impact of scientific and technological inventiveness, many of the old, organically grown multifunctional centers have assumed the role of tourist attractions because they satisfy a strong underlying human desire for certain old ways of life. In other cases, their very existence is threatened, because they do not respond to certain real – and a few imagined – needs of twentieth-century man. In spite of these difficulties, **multifunctionality remains operative**⁵ in central areas of many settlements: in villages and town squares and in centers of cities.

Because of historic development many of the old city cores grew not just as multifunctional centers but as omnifunctional centers. This was due to the fact that within the confines of the old cities, formerly protected by fortifications, all urban requirements had to be satisfied. This omnifunctionality is no longer necessary or attainable.

The new-type multifunctional center cannot be developed with the goal of creating omnifunctional centers. The goal should be rather to combine as many urban functions of **the center-conforming type**⁶ as possible in a concentrated and land-

conserving manner, counteracting the tendencies toward fragmentation, sterility, and waste of time and energy.

There are various reasons for the difficulties with which the planning and implementation of the multifunctional centers are beset.

One of the tasks connected with the **creating and shaping the multifunctional center**⁷ is to employ the tools, which science and technology have given to us, to the highest degree using them to eliminate the conflicts between man and his mechanical slaves.

There emerge a number of particular guidelines for the planning of multifunctional centers. We must obviously invent methods, which enable us **to place a maximum amount of enclosed space**⁸ serving human activities on a minimum of land. If we achieve this goal, we will shorten the distances between the various functions to such a degree that we will minimize the waste created by **enforced mobility**⁹. The tools of modern technology – if thoughtfully employed – can be of greatest assistance. The task of creating a multifunctional center is an infinitely more difficult and complex one than that of creating a unifunctional one.

The boundary line between the unifunctional and the multifunctional center cannot be sharply drawn. Some centers contain **accessory activities**¹⁰ which are not directly connected with the buying and selling of merchandise. We find in most of them **eating facilities**¹¹, in some entertainment or even cultural activities, certain public services, for example, post offices, and in rare cases, offices and some other functions. Even in a unifunctional office center there are usually some facilities catering to immediate shopping needs and personal services. Thus it appears that the division line must be drawn in accordance with the consideration of whether a center is, as its productive space concerned, devoted to the highest degree to only specific function or whether various functions are combined with each other in such a manner that **each is strongly represented**¹².

Multifunctionality is already established when just two different urban functions are combined (for example shopping facilities with employment facilities in offices), but the meaningfulness of multifunctionality grows when one succeeds in combining a large number of urban functions within one physical framework.

The problem, which faces **the center team**¹³, is that of inventing methods, which make possible the most intensive use of land, avoiding, however, the disadvantages and dangers commonly associated with the term high density.

If it is our aim **to create cohesive and concentrated multifunctional centers**¹⁴, then we will have to succeed in changing the relationship between productive surface and land surface considerably. In regional shopping centers, even the largest and best planned ones, the structures containing all productive functions are rarely higher than two floors above ground. In organically grown cities, on the other hand, we find that each structure is multifunctional. In basements, on the ground floors, and often on one floor above, there can be found stores, shops, and various institutions. Above them, there are additional floors, varying in number, which contain residence, offices, restaurants, terrace café, and other enterprises.

Technology has supplied us with certain tools, which have changed the design of certain types of structures from an engineering and architectural point of view.

Outstanding in this respect is the progress¹⁵ made in creating conditions of controlled light and air¹⁶ and that made in the field of vertical transportation.

Conditions of controlled air and light can be applied to a large number of utilizations of inner space. It certainly applies to large assembly rooms where natural light infill trating through even the largest window apertures can penetrate into only a small stripe around the perimeter. This category includes meeting rooms, conference rooms, cinemas (which of course have to be dark in order to operate), lecture halls, storage rooms (whether for goods or automobiles), restaurants, etc. It is thus possible **to establish a listing of urban functions¹⁷** for which conditions of controlled light and air are definitely preferable.

The full recognition of the importance of our technological ability to provide conditions of controlled light and air will assist us in utilizing land in highly intensified manner.

The second tool is the development of vertical transportation. Whereas in the field of horizontal movement, all that our “progress” has brought us is a vast increase of individual transportation by motor car, and a decrease of public transportation, **the opposite is the case in the field of vertical transportation¹⁸**. Here, technology has to a large degree replaced the individual transportation medium, the climbing of stairs, through highly efficient and speedy public transportation, by means of electronic elevators, escalators, freight elevators, inclined moving ramps, vertical conveyer belt systems, etc. These inventions have made possible the construction of multistoried department stores, multilevel shopping centers and, of course, **high-rise apartment buildings¹⁹**, office buildings, hospitals, etc. The vertical public transportation has increased a thousand fold. There is no doubt that we are on the threshold of new technological development concerning horizontal public transportation. Dozens of meaningful inventions have been made in this respect, and it is only in their application that we lag behind. In connection with the concept of the multifunctional center, both the already applied technology concerning vertical transportation and **the already available²⁰** but not yet applied technology concerning horizontal transportation will have to play a role.

Vocabulary notes:

¹ **attain a world-wide significance** – стати всесвітньо відомим

² **the natural and organic organization pattern** – зразок природної і органічної організації

³ **the nomadic hunter turned to the pursuit of agriculture** – мисливець-кочівник перейшов до заняття землеробством

⁴ **we should not be hesitant about** – ми не повинні сумніватися щодо (стосовно)

⁵ **multifunctionality remains operative** – багатофункціональність залишається дійовою

⁶ **the center-conforming type** – тип, якому властиво виявляти тяжіння до центру

⁷ **connected with the creating and shaping the multifunctional center** – що полягає у творенні й формуванні багатофункціонального центру

⁸ **to place a maximum amount of enclosed space** – розташувати максимальний обсяг замкненого простору

⁹ **enforced mobility** – зростаюча мобільність

¹⁰ **accessory activities** – додаткові послуги

¹¹ **eating facilities** – підприємства громадського харчування

¹² **each is strongly represented**- кожна з них жорстко обмежена

¹³ **the center team** – група, що працює над розробкою центру

¹⁴ **to create cohesive and concentrated multifunctional centers** – створювати компактні й концентровані багатофункціональні центри

¹⁵ **outstanding in this respect is the progress** – у цьому відношенні значне місце належить прогресу

¹⁶ **to create conditions of controlled light and air** – створювати умови для контролю за освітленням і вентиляцією

¹⁷ **to establish a listing of urban functions** – встановити перелік функцій використання в міському господарстві

¹⁸ **the opposite is the case in the field of vertical transportation** – зовсім навпаки стоїть справа, коли йдеться про вертикальне транспортування

¹⁹ **high-rise apartment buildings** – багатоповерхові житлові будинки

²⁰ **the already available (technology)** – вже наявна (техніка)

2. *Comprehension question:*

1. What does the concept the multifunctional center represent?
2. Why have many of the old multifunctional centers assumed the role of tourist attractions?
3. Due to what facts did many of the old city cores grow not just as multifunctional centers but as omnifunctional centers?
4. What is the goal of creating omnifunctional centers?
5. Is the task of creating a multifunctional center more difficult and complex than that of creating a unifunctional center?
6. When is multifunctionality established?
7. What are the urban functions of the city core?
8. What are the individual transportation means and those of public use?

3. *Choose the most suitable answer and complete the sentences.*

1. Because of _____ many of the old city cores grew not just as multifunctional centers but as omnifunctional centers.
 - a. historic achievements
 - b. civil war
 - c. historic development
 - d. industrial development.
2. One of the tasks connected with the creating and shaping the multifunctional center is _____.
 - a. to employ the tools
 - b. to raise employment
 - c. to increase productivity
 - d. to evaluate working conditions.

4. The town seemed to _____ for miles.
5. The motel was off the main _____.
6. The _____ lasted almost four months.
7. Patsy's father is a typical _____.

The cities of the middle Ages were planned cities. Present **air views** makes the ruins of medieval cities appear as random agglomerations of dwellings crowded the chicks of a hen into the **protective shelter** of walls and moat, with a minimum of rational internal organization. The original structure of the city is no longer apparent. In the later phases of the middle Ages, the city outgrew its original design. **In the course of centuries**, it filled up and, unable to sprawl beyond the limits of its fortifications, developed differently from the metropolis of the industrialization period. The main streets and thoroughfares of the medieval cities were deliberately and rationally planned. They led directly – and frequently in a straight line – from the central **market place** to the **city gates**.

At times, an element foreign to our conception of **purposeful planning** entered into the picture. The street system was occasionally determined by **symbolic references**, dividing the city area, for example, into 12 sections representing the 12 apostles of Christ. A straight north-south and east-west direction was frequently preferred to arrangements more convenient to **interurban traffic**. But plans there were although subservient to values different from ours.

Originally, the medieval cities were planned with a **generous layout**, leaving room for additional expansion. The belt of fortifications was wide enough to **encompass tillable land** for food supplies in case of prolonged siege. The garden land of the urban residents was also enclosed within the city walls.

City location was determined by defense purposes. A variety of strong defense positions were exploited. Cities were located on the tops of cliffs and mountains; we also find them on islands, and at river deltas and peninsulas. The winding course of a river offered many opportunities for well protected urban locations.

Yet what was an advantageous position in the building later often turned into embarrassing restrictions to further growth. Neither the hill-top nor the island could be extended to allow for unlimited population increase. Many urban settlements thus fell by the wayside due to geographical obstructions. They fell into a state of stagnation from which they never recovered. Others extended in suburban settlements beyond their natural borders. They continued to grow at the foot of the hill-side or overflowed the river line behind which the early settlement had sought protection.

From the 12th to the 16th century most cities extended beyond earlier ranges of fortification. As the medieval city filled up, additional populations settled in clusters outside the city walls. By the concerted efforts of these peripheral settlers, sometimes like a stockade was thrown around their dwelling units to hold the site against the enemy to permit the suburbanites to withdraw to the inner ring of fortifications.

Sooner or later, the city walls proper were extended to embrace all the outlying settlements in a widened ring of defensive constructions. Successive rings of

abandoned protective belts are still clearly visible in the street system of cities that have survived from Middle Ages.

Inside, the medieval city pattern expressed the class structure of a feudal society and that of the urban community itself. Not all, but many of the earlier cities nested at the feet of burghs. As the city spread in a circle or semicircle, it retained a **hierarchical arrangement** of residential construction according to status. Advanced status pre-empted the grounds in the center of town. Members of the nobility had their city residences close to the central market place. As the nobility declined in power and numerical importance, their place was taken by the family residences of wealthy merchants or craftsmen with seats in the city council.

Unlike our modern cities, these cities had no slums close to their centers; instead there were pretentious stone structures, palaces, and stately mansions. Here was the place also for the numerous public buildings. Many of these have since been converted to residential use, thus obscuring their original function. In addition the innermost ring of urban construction contained the **guildhalls** and the **ball houses**, the public baths, and the **wholesale markets** with indoor as well as outdoor space for commercial activities.

At the periphery of the medieval city, we find the residences of the poorer members of the community, squeezed close to the wall and crowded together in a frantic **scramble for space**. The modest dwellings of the early middle Ages, as a matter of fact, have not endured to the present times. These one-story and one-room structures were later replaced by more elaborate three-floor structures protruding over the street front to increase the amount of dwelling space.

If the main streets of the medieval city were laid out according to a uniform plan, the same cannot be said for the side streets and alleys. The winding network of side streets often leaves us with an esthetically pleasing impression.

These side streets of the Middle Ages were never laid out with a view to purposes of communication. They were spaces left over in the built-up area of the city, as farm and garden land, vineyards, barns, and stables were gradually cut up into for residential constructions. There were no premeditated plans for as much as a single city block. As a matter of fact, there were no city blocks.

Sanitary conditions in the medieval city were such as to endanger by either plague or fire its very survival. There was progress, but the growing population pressure continuously made obsolete the water system and the sewerage system, as well as the protective measures designed to forestall the devastating fires that annihilated entire cities.

City ordinance determined the distances between individual structures in order to limit the spread of possible fires. Streets were paved, restrictions were imposed upon the elimination of waste products, and public toilets were installed. The pigsties had to disappear from the street system and, in the late Middle Ages; many cities installed **plumbing systems** that piped running water into the individual dwelling units.

To permit a minimum of sunlight to penetrate into the side alleys, building ordinances restricted the custom of letting the upper floors of residential construction protrude to the point where the houses almost touched at the top-level. Street-lighting

helped to improve the citizen's safety from robbery by night, and the organization of the fire brigade was improved as these cities grew and filled up into dense clusters of humanity within the confines of the city wall.

Vocabulary notes:

air views – огляд з повітря
protective shelter – захисне укриття
in the course of centuries – протягом століть
market place – ринкова площа
city gates – міські ворота
purposeful planning – цілеспрямоване планування
symbolic reference – символічне згадування
interurban traffic – внутрішньо міський транспорт
generous lay out – щедре витрачання
to encompass tillable land – оточувати орну землю
hierarchal arrangement – ієрархічне розташування
guildhalls – зали гільдії
ball houses – будинки для балів
wholesale market – ринок оптової торгівлі
scramble for space – боротися за простір
plumbing system – система водогону

2. Comprehension question:

1. Were the cities of the Middle Ages planned?
2. What happened to the cities in the later phases of the middle Ages?
3. What was the street system occasionally determined by?
4. How were the medieval cities planned?
5. Why did the medieval cities fall into a state of stagnation?
6. How did the medieval city pattern express the class structure of that time society?
7. Who lived at the periphery of the medieval city?
8. What community conveniences did the medieval city offer?
9. How was order kept in the medieval city?
10. What helped to support the citizen's safety by night?

3. Discussion questions:

1. Why is the original structure of the medieval city no longer apparent?
2. How can you prove that the medieval cities were planned?
3. What enabled cities to fulfil the function defence?
4. What hindered the further growth of the medieval cities?
5. What can you see in the street system of cities that have survived?
6. How can you prove that the medieval city pattern expressed the class structure of society?
7. Were there city blocks in the medieval cities?
8. What can you say about sanitary conditions in the medieval city?

Text 25. The White House

The White House at 1600 Pennsylvania Avenue is the home and office of every U.S President except George Washington who laid the cornerstone in 1793. It is based on a design by James Hoban. In the White House the pressing business of government is being conducted. The White House is museum of American history.

The White House is constructed (1800) of sandstone. In 1814, the House was burnt by the British. Later the charred remains of the building were whitewashed. Since then the House has been always painted white.

The White House has 132 rooms; 54 rooms on the second and the third floors are reserved for the First Family. Five of the rooms are open to the public. They are the Blue room, East Room, Green Room, Red Room, and State Dining Room.

A million visitors go through the White House every year free of charge. Visitors are not allowed in the rooms where the President lives and works. But occasionally the President stops by to greet tourists in the public rooms.

Most visitors to the White House enter through the East Wing Lobby. They walk through the East Garden Room to the glass-enclosed colonnade that leads to the Ground Floor of the White House. The colonnade was constructed in 1902. Along the colonnade visitors have a view of the Jacqueline Kennedy Garden. A massive bronze bust of Abraham Lincoln rests in a wall niche. Beginnings in 1994 sculpture exhibitions have been held in the Garden.

Ground Floor Corridor is made of marble. There are busts of George Washington, Benjamin Franklin and other outstanding Americans. There are portraits of First Ladies.

The Library Room served as a laundry until 1902. In 1935 it was remodeled as a library. The library is furnished in the style of the Federal period. Five portraits of American Indians flank the east door. The paintings were given to the White House in 1962.

The Vermeil Room /Gold Room/ serves as a display room. There are a Turkish carpet, French mantel and portraits of Jacqueline Kennedy, Anna Roosevelt and Patricia Nixon.

The China Room was designated by Mrs. W. Wilson in 1917 to display the collection of White House china. There is the painting above the mantel "View on the Mississippi".

The Diplomatic Reception Room serves as an entrance to the White House. It is furnished as a drawing room of the Federal period /1790-1820/.

The Map Room was used by President Roosevelt as a situation room to follow the course of the Second World War. Now it serves as a private meeting room for the President or the First Lady. It was decorated in 1994 as a sitting room in the Chippendale style.

STATE FLOOR

The North Entrance includes the Entrance Hall and the Cross Hall. They are decorated with the portraits of Presidents.

The East Room was designated as the “Public Audience Room”. It is used for large gatherings. The grand piano with gilt American eagle supports was given to the White House in 1938. There is a full-length portrait of George Washington.

The Green Room was intended to be the ‘Common Dining Room’. On the sofa table are several historic pieces of Presidential silver. Portraits of two presidents hang above the doors.

The oval Blue Room contains furnishings in the French Empire style. There are a settee and seven gilded chairs. There is a portrait of President W. Taft sitting in the Blue Room.

The Red Room is one of the four states reception rooms. A portrait of Angelica Singleton Van Buren, Presidents Van Buren’s daughter – in-law and official hostess, hang above the mantel. The furniture in the Red Room dates from the year 1810 – 1830.

The State Dining Room seats 140 guests. Its table is surrounded by Queen Ann-style chairs. The Family Dining Room has 8 chairs of furniture from the Federal period.

The East Sitting Hall is lemon-yellow. The Clintons have personalized the room by using their own carpet. In front of the fan window stands a mahogany sofa made in 1800. Above the desk hangs “Florida Sunrise” by M. Heade (1819-1904).

The Queen’s Bedroom is named for its many royal guests including Queen Elizabeth II and Princess Ann. It is decorated in shades of rose and white. There is a four-poster bed in it.

The Lincoln Bedroom is decorated with American Victorian furnishings. It is used today as a guest room for friends of the President’s family.

The Treaty Room is now President Clinton’s second-floor office and sitting room in the Residence. The walls are covered to simulate red leather.

The Center Hall is brightened by a yellow-and-white color. It serves as a drawing room for the First Family and Presidential guests. There are octagonal pedestal writing desk, the Boston sofa table, chair back settee and four matching chairs in the Center Hall.

The Yellow Oval Room was the place of the first White House reception on New Year Day, 1801. There are a rare set of four carved armchairs and a writing table there. It serves as a formal drawing room for the President’s family. The room gives access to the Truman Balcony. The balcony offers a panorama of the Washington Monument, and the Jefferson Memorial. First Families use the balcony for dining and viewing Fourth of July fireworks.

The President’s Dining Room serves as convenient place for family meals. It is furnished in American Federal style. It includes the Sheraton pedestal dining table and side chairs with Prince of Wales plumes made in 1800. There is a coffee set with ivory handles made in Paris.

The West Sitting Hall serves as a private living room for the Clinton family. Here Mrs. Roosevelt presided over the traditional morning coffee with family. “Morning on the Seine” by Claude Monet, hangs on the north wall. It was given to the White House in 1963 by the Kennedy family in memory of President John Kennedy.

The West Wing was built in 1902. The West Wing Reception Room was created in 1969. Staff meetings and press conferences take place in the Roosevelt Room. The room contains the gold medallion presented to Theodore Roosevelt in 1906 when he received a Noble Prize. The Cabinet Room is used for meeting with the Department Secretaries and Congressional leaders.

The President’s Oval Office reflects each change of administration dramatically. Most Presidents fill it with personal mementos, such as the photographs of family and friends. The desk chosen by President Clinton was given to President R. Hayes (1877 – 1881) by Queen Victoria in 1880. There is the coat of arms in a specially woven oval carpet. Above the mantel hangs a portrait of George Washington in Continental Army uniform. There is a bronze bust of Benjamin Franklin there. On the south wall hang “The Avenue in the Rain” by Childe Hassam. It is a picture of American flags displayed along Fifth Avenue.

The Rose Garden is used by the First Lady to receive her guests. The Rosen Garden often serves as a reception area for the President. The first team of United States astronauts was received in the Rose Garden. It serves as the setting for state dinners. Roses were first planted here by Ellen Wilson in 1913. Flowers provide color from early spring until frost comes.

1. Answer the following questions:

1. What is the home and office of U.S. President?
2. How many rooms are there in the White House?
3. What is the Oval Office?
4. What rooms are in the White House?
5. What is the official address of the White House?
6. When was it built?

2. Decide if the following statements are true (T) or false (F) according to the text. Find the false sentence and correct them.

1. The White House is an apartment for all presidents. –
2. The White house is constructed of concrete. –
3. The White House is always painted white because Americans first burnt it then painted white and rebuilt. –
4. All people who want to see the White House interior must pay \$100. –
5. There are 6 rooms in the White House. –
6. In the West Wing you can find a room which contains the gold medallion presented to Theodore Roosevelt in 1906. –
7. The West Sitting Hall is lemon-yellow. –
8. When guests come to see the White House, president himself comes down and show them round. –

9. The Lincoln Bedroom is used today to accept guests. –
10. The Queen's Bedroom was designed especially for Queen Elizabeth I and has three-poster bed for her. –

3. Complete the sentences using the text.

1. The White House at 1600 Pennsylvania Avenue is the _____ of every U.S President except George Washington _____.
2. A million visitors go through the White House every year _____.
3. They walk through the East Garden Room to _____.
4. In 1935 it was _____.
5. The Green Room _____.
6. The Clintons have _____.
7. The walls are covered _____.
8. Staff meetings and press conferences _____.
9. Most Presidents fill it with _____.
10. Flowers provide color _____.

'COMPUTER AND COMPUTER EQUIPMENT'

Text 26. Computers and Their Usage

Today economy increasingly works with computers. Computers also facilitate our everyday work and study.

Modern companies analyse sales of products as well as potential sales of products, programme their whole production by electronic data processing equipment.

Computers are widely used in agriculture. Say, analysing of essential animal characteristics with the help of a computer is important for cattle breeding. In industry cars, devices, tools and instruments are often designed by computers.

The computer has entered education. In management young specialists are trained in special courses. All statistical information is put and kept in computer's memory.

In short, computers are everywhere in our modern life. Computer hardware consists of a tower, a monitor, a printer and their connections.

Computer software has various programmes.

In everyday business they use such common programmes:

- word processing;
- database management;
- accounting;
- auditing;
- communications;
- process control, etc.

The advantages of computers are evident. They solve problems rapidly. Now the computer is being more and more involved in making decisions at the senior management level.

1. Answer the following questions:

1. How do modern companies use computers in their day-to-day business?
2. Civil engineers work with computers, don't they? In what way?
3. Are computers widely used in industry and agriculture?
4. What other spheres of our life has the computer entered?
5. What is the difference between computer hardware and computer software?
6. What common programmes can you name?

2. How computer-literate are you? Divide these words into two groups.

- go on-line
- electronic e-mail
- monitor
- website
- digital message
- download
- mouse
- keyboard
- log on/off
- clip art
- printer
- surf the Net

Parts of a computer	Things you can do, send and receive on a computer
1.	1.
2.	2.
3.	3.
4.	4.
	5.
	6.
	7.
	8.

Can you explain what the words mean?

Text 27. Internet

The Internet is a network of networks. A computer network is a group of computers that have been connected so they can communicate with each other. They can send messages to each other and can share information in the form of computer files. The Internet connects more than 18,000 of these networks, and more are being added all the time. On those networks are millions of computers, computer terminals and users – about two million computers and as many as 30 million users, according to some estimates. And it's growing by around 1,000 computers a day. It's no wonder that the president of ISOC (the Internet Society) recently suggested that the Internet could reach 1 billion people in the not-too-distant future.

There's nothing astounding about computer networks. Many companies have networks that connect anywhere from two or three computers to thousands of them.

But the Internet isn't just a network. It's a network of networks. Lots of different networks have been joined to produce the world's largest group of connected computers. Some of the networks are run by government bodies, some by

universities, some by businesses, some by local community library systems, and some are even run by schools. Most are in the US, but many are overseas, in countries ranging from Australia to Zimbabwe. The Internet might make it possible for you to communicate with all these people on all these computer networks through electronic ‘mail’.

When you connect to the Internet, you have the opportunity to connect to thousands of different systems. Those computers contain government archives, university databases, local-community computing resources, library catalogs, messages about any subject you can imagine, and millions of computer files (over two million at last count) containing photographs, documents, sound clips, video, and whatever else you can put into digital form.

When you log on or log in to a computer system, you tell the system who you are, and it decides if it wants to let you use its services. A log-on (or log-in) procedure entails providing some kind of account name and a secret password.

1. Read the following statements and decide if it is true (T) or false (F).

1. The Internet system is very much like the phone system. ()
2. The Internet is becoming more and more popular here. ()
3. It is very easy and inexpensive to connect to the Internet. ()
4. The Internet makes it possible for many people to connect with each other. ()
5. People can send messages to each other. ()
6. They can't share information in the form of compute files. ()

2. A. Read the paragraph about the Internet and choose the correct form of the verb.

Surfing the Net

People who *have been grown/have grown* up with the Internet *have just begun/have just been beginning* to realise what its possibilities are. However, the idea that a relatively new method of communication also requires a new set of formal and informal rules of behaviour *has largely been being/has largely been* ignored. Take, for example, the many teenage girls who *have been discovered/have discovered* the Buckingham Palace website and *have been sent/have been sending* Prince William “very friendly” emails he *has been received/has been receiving*. He says that most of the messages he *has been sent/has sent* are asking whether he is the name of a public house!

B. Now tell a partner what you've been doing on the computer.

Text 28. Importance of the Internet to Young People

1. Match the words and phrases 1 – 3 with a – c.

- | | |
|--------------|--|
| 1 website | a. place on the Internet where you can meet people |
| 2 cyber café | b. a page on the internet |
| 3 chat room | c. place where you can access the Internet |

2. Which three internet activities do you think are the most popular with teenagers?

1. visiting a chart room
5. buying clothes

- 2. research for homework
- 3. visiting sport sites
- 4. visiting film sites
- 6. buying CDs
- 7. reading the news

Scan the text and check your answers.

3. Now read the text and choose the best option in 1-8. Write an appropriate heading for each part of the text.

1. _____

Nowadays almost every teenager (1) *has access to/can go on* the Internet. Most people surf the Internet on computers in their home. A few people go to cyber cafes. However, cyber cafes are mostly used by people who are traveling abroad. This is because it is cheaper to email family and friends to make a phone call.

2. _____

Young people use the Internet for many different reasons, and most teenagers use it everyday. A lot of young people use the Internet at school (2) *to get interesting stuff/to research information* for homework and projects. Many also use it to email friends. Nearly all teenagers have visited Internet chat rooms. Many of them use chat rooms to meet new people and (3) *exchange news and information/gossip with their friends*. Teen talk is one of the most well-known chat rooms in the UK.

Over 70% of teenagers use the Internet to visit official fan sites. Leonardo DiCaprio's official website (4) *is really popular/is one of the most popular*, along with football sites for teams such as Manchester United. A few young people actually create their own websites which they dedicate to their favorite film star or sport star.

Not many teenagers buy clothes on the Internet. At the moment, teenagers (5) *would rather buy/like getting* sportswear from sports shops. However, (6) *most people say that/it has been predicated that* Internet shopping will become more popular with young people in the future.

3. _____

(7) *I think that/This article suggests that* people are using the Internet more and more, for everything from entertainment to research. Teenagers who have Internet access use it mostly to send emails or to fan visit sites and chart rooms. In the future, the Internet will be accessible not only on computers, but also on mobile phones. Young people (8) *will continue to use it/will carry on surfing* more and more.

4. A. Look at the results of this survey about the importance of the Internet for university work.

Name and age	Computer at home	Time on Internet (per week)	How many hours used for homework?
Sally, 18	yes (Macintosh)	7	3 (projects)
John, 20	yes (PC)	8	2 (compositions)
Max, 19	yes (PC)	10	5 (projects)
Zoe, 20	yes (PC)	6	4 (projects)
Will, 17	no	3	1 (compositions)
Chloe, 21	yes (Macintosh)	7	4 (projects)

B. Now write a report based on the results in A. Your report should be about 200 words. Report on the importance for university work.

1. Number of people with their own computer
Almost all people ... Only one person ...
2. Amount of time on Internet
Most people ...
3. Amount of time spent researching university work
Over half...
4. Conclusion
This report suggests that ...

‘FAMOUS BUILDINGS OF THE WORLD’

Text 29. Buckingham Palace

It was opened to visitors for the time in 1993 to raise money for repairing fire damage to Windsor Castle. The Queen’s official London home and office is an extremely popular attraction in August and September. John Nash began converting the 18th century Buckingham House into a palace for George IV in 1826 but was taken off the job in 1830 for overspending his budget. The first monarch to occupy the palace was Queen Victoria, just after she came to the throne in 1837. The tour takes visitors up the grand staircase and through the splendor of the state rooms, but not into the royal family’s private apartments.

Picture Gallery. The valuable collection on display includes this painting by Dutch masters Johannes Vermeer.

Music Room. State guests are presented and royal babies christened in this room.

Throne Room. The Queen carries out many formal ceremonial duties here, under the richly gilded ceiling.

View over the Mall. On special occasions The Royal Family wave to crowds from the balcony.

The Changing of the Guard. Dressed in brilliant scarlet tunics and tall furry hats called bearskins, the palace guards stand in sentry boxes outside the Palace. Crowds gather in front of the railings to watch the colorful and musical military ceremony as the guards march down the Mall from St James’s Palace, parading for half an hour while the palace keys are handed by the old guards to the new.

Queen’s Gallery. The Queen’s Art Collection is one of the finest and most valuable in the world. A selection of works is displayed here in themed exhibitions that change once or twice a year. This small building at the side of Buckingham Palace was used as a conservatory until 1962: part of it is a private chapel screened from the public. A large and interesting shop sells a selection of royal merchandise.

1. Read the text and decide if the following statements are true (T) or false (F).

1. Buckingham Palace was opened to visitors for the time in 1829. ()
2. It is very attractive in August and September. ()

3. At first it was Buckingham House and John Nash began converting it into a palace for George IV. ()
4. Queen Victoria was the first monarch to occupy the palace in 1837. ()

2. Answer the following questions:

1. What is Picture Gallery?
2. What is Music Room?
3. What is Throne Room?
4. What is Queen's Gallery?
5. What is the process of the Changing of the Guard?

3. Put words and word combinations from the box into each gap.

converted into	to raise money	handed
taking off	occupied	carried out
extremely popular attraction		displayed

1. We're trying _____ to help children with cancer.
2. Egyptian pyramids are _____ all years round.
3. They _____ the spare bedroom _____ an office.
4. He was _____ the job for being late and drinking.
5. The building was purchased and _____ by its new owners last year.
6. A survey is now being _____ nationwide.
7. This form must be _____ to all employees.
8. All the exam results will be _____ on the notice board.

Text 30. The British Museum

The National Gallery is one of the most popular attractions in the capital for tourists and Londoners alike, as is the world-famous British Museum. With its Grecian-style façade, the British Museum is a temple to the arts and achievements of the world's civilizations. Antiquities from ancient Egypt, Greece and Rome, treasures from the Stone and Bronze Ages, ancient art from the Americas to Asia – the richness and variety of the museum's collections are unrivalled. The museum was founded in 1753 and was first housed in Montagu House in Bloomsbury. This was later replaced by the present building, which was financed by a lottery.

Inside, there are thousands of amazing items on display, including the Sutton Hoo treasure. This formed the contents of a seventh-century royal ship-burial excavated in Suffolk in eastern England in 1939 and is one of the richest of its kind ever to be found in Europe. It was thought to be the resting place of King Redwald of the East Angels tribe.

Until recently the museum was also home to the world-renowned British Library. The famous round reading Room, with its magnificent dome, has been restored and now forms the centerpiece of the new Great Court; a vast atrium links the museum's collections.

When the world's oldest museum, the Ashmolean in Oxford, opened its doors to the public on 24 May 1683, even the use of the term 'museum' was a novelty in English. The museum's original collection was presented to the University of Oxford by Elias Ashmole (1617 – 1692). It contained man-made and natural specimens from every corner of the known world and was already some 50 years old by this time, having been founded by John Tradescant the elder who used to display the collection at his house in Lambeth, London. Today the Ashmolean's collections range from antiquities to Western and Eastern art.

1. Answer the following questions:

1. Where is the British museum?
2. When was it founded?
3. When was the British museum housed first?
4. How was the building of British museum erected?
5. What amazing items are in the British museum?
6. Is the British museum the oldest museum of Great Britain?

2. Choose the correct answer.

1. The National Gallery is popular among:

- | | |
|--------------|---------------------------|
| a. visitors | c. tourists |
| b. Londoners | d. Londoners and tourists |

2. The British Museum is a temple to the arts and achievements of the world's civilizations and has:

- | | |
|----------------------------|-----------------------------|
| a. Grecian - style façade | c. Roman – style façade |
| b. Egyptian – style façade | d. Byzantine – style façade |

3. The British museum in its collection has:

- | | |
|------------------------------------|--|
| a. monuments and treasures | c. antiquities and old books |
| b. golden vases and silver statues | d. antiquities, treasures and ancient arts |

4. There is _____ in the British museum too.

- | | |
|-------------------|----------------------|
| a. cinema | c. exhibition center |
| b. British museum | d. shop center |

5. The museum's original collection which was presented to the University of Oxford consisted only of:

- | | |
|-----------------------------------|--------------------------------------|
| a. man-made and natural specimens | c. man-made specimens |
| b. wooden specimens | d. natural and human-made specimens. |

3. Here is the list of numbers and dates which you can find in the text. What do they refer to?

24 May 1683 1617 – 1692 1753 50 1939

Text 31. The National Gallery

The UK's main collection of western European painting is found in the National Gallery in London.

The gallery began in 1824 when the government of the day decided that London needed a national art collection to compete with the famous European galleries, such as the Louvre in Paris. Parliament voted £60,000 to buy 38 paintings from the collection of the financier, John Julius Angerstein and these were put on show in his house in Pall Mall. The gallery moved to its present home in Trafalgar Square in 1838. The building, with its famous columned façade, was specially constructed by William Wilkins.

Today the National Gallery contains some 2,300 painting and covers every European school of painting from about 1260 to 1900. Some of its famous masterpieces include Leonardo da Vinci's *Virgin of the Rocks*, painted in about 1508, and *Self Portrait* (1669) by Rembrandt. *The Hay Wain* (1821) by John Constable is evocative of the eastern English landscape in days gone by, while Claude Monet's *The Water-Lily Pond* was painted at his garden at Giverny, north-west of Paris.

In 1991, the new Sainsbury Wing of the National Gallery was opened by Queen Elizabeth II. The wing is linked to the main building by a circular bridge and houses the Gallery's collection of Early Renaissance paintings. It contains top-lit galleries, excellent facilities for lectures and temporary exhibitions, a shop, and restaurant and computer information room.

The National Gallery's prominent position to the north of Trafalgar Square should be enhanced in years to come for there are plans to create a traffic-free piazza linking these two famous landmarks.

1. Answer the following questions:

1. Where is the National Gallery?
2. When was it founded?
3. When was the National Gallery housed first?
4. When did the National Gallery move to home in Trafalgar Square?
5. Who constructed the present building of British museum?
6. What amazing items are in the National Gallery?
7. What is the Sainsbury Wing of the National Gallery?

2. Decide and match what these numbers and dates refer to according to the text.

- | | |
|--------|--|
| 1824 | a. the year when Rembrandt painted his self portrait |
| 1669 | b. the sum of money which Parliament wanted to pay John Julius Angerstein to buy some pictures from his collection |
| 38 | c. The number of paintings which the National Gallery contains |
| 1821 | d. the year when John Constable's picture called <i>The Hay Wain</i> was painted |
| 60.000 | e. the period which covers every European school of painting |
| 1508 | f. the time when the gallery moved to its present home in Trafalgar Square |
| 2.300 | g. the beginning of the National Gallery |

- 1838 h. the year when the new Sainsbury Wing of the National Gallery was opened by Queen Elizabeth II
- 1260-1900 i. the time when the famous masterpiece *Virgin of the Rocks* by Leonardo da Vinci was painted
- 1991 j. the number of paintings which British government wanted to buy from the collection of financier John Julius Angerstein

Text 32. Angel of the North

From computer animation to the visual arts, the outstanding quality of British art and design is acknowledged around the world.

Take the amazing Angel of the North, which soars above the A1 road at Gateshead in the north-east England – the largest public sculpture ever erected in the UK. Its 54m wingspan is nearly as large as a jumbo jet's. At 20m high and weighing 200 tones, it contains enough steel to make 16 double-decker buses. Each wing alone weighs 50 tones. Every day some 90.000 vehicles drive by this incredible sight.

The sculpture is the creation of Anthony Gormley (1950-), one of the UK's most innovative artists. He has exhibited work all around the world and his major public works can be seen in Japan and Australia, Norway and the USA. Anthony Gormley is perhaps best known for having pioneered the technique of using his own body as a 'living mould' for life-sized figures in bronze and other metals.

The Angel of the North was constructed on land where the bath houses of a former coal mine once stood. It dominates the countryside for kilometers around. While coal production in the UK is not the industry it was, coal still plays a part in the meeting the country's energy needs. But it is to energy efficiency and renewable energy technologies that the UK now looks.

1. Answer the following questions:

1. What is Angel of the North?
2. Who created the sculpture?
3. What is the form of Angel of the North?
4. Why do people say that Anthony Gormley is innovative artist?
5. Can people say that Angel of the North is the symbol of coal industry?

2. Decide weather the following statements are true (T) or false (F) correct those ones which are false.

1. Angel of the North is the largest public sculpture ever erected in the UK. ()
2. Its wingspan is compared with usual airplane. ()
3. Angel of the North contains so much steel that you can make 16 double-decker buses. ()
4. No one drives near this statue because everybody is afraid of its incredible sight. ()
5. Anthony Gormley is world known and innovative artist. ()
6. Anthony Gormley is the first artist who pioneered new techniques in making life-sized figures. ()

7. He uses clay and wood to create his masterpieces. ()
8. The Angel of the North stands in the middle of the coal mine. ()
9. Coal industry is very important in the UK. ()
10. You can see Angel of the North from kilometers away. ()

3. You have the description of the words and word combinations. Find them in the text and then fill in the gaps in the sentences given below using the correct form of the words.

1. The process of making animated films, television programmes, computer games etc (paragraph 1)	
2. Art such as painting, sculpture etc that you look at, as opposed to literature or music (paragraph 1)	
3. Extremely good standard (paragraph 1)	
4. To high up above smth. and as a result look tall and impressive (paragraph 2)	
5. To construct, to raise smth. (paragraph 2)	
6. The distance from the end of one wing to the end of the other (paragraph 2)	
7. A very large plane for carrying passengers (paragraph 2)	
8. Invention (paragraph 3)	
9. To be the first person to do, invent or use something (paragraph 3)	
10. To build smth. (paragraph 4)	

1. The hut was _____ from trees that grew in the nearby forest.
2. Despite her irritating affectations, she did have a genuine flair for divining quality in both literature and the _____.
3. Police have _____ barriers across the main roads into the town.
4. The plane had a _____ of eighty feet and broke all records for altitude and range.
5. Here the cliffs _____ a hundred feet _____ the sea.
6. The dress is a stunning _____ in green, gold, and white.
7. He _____ techniques for photographing moving objects.
8. The _____ is after all one of the most potent symbols of this century.
9. They used _____ in the film.

Text 33. Enercon E-66

1. A. Make sure you know the meaning of the following words. Match the words with theirs synonyms.

- | | |
|------------------------|------------------------------------|
| 1. to supply | a. to diminish, to lower emanation |
| 2. to harness | b. to produce, to evolve |
| 3. to meet targets | c. to transcend |
| 4. to reduce emissions | d. to utilize |
| 5. to aim | e. to achieve aims |
| 6. to exceed | f. to provide |
| 7. to generate | g. to aspire, to intend |

B. Put the words into the gaps using the correct form.

1. The company _____ fish to local shops and restaurants.
2. Construction costs for the bridge could _____ \$230 million.
3. She was _____ for a promotion.
4. This power plant _____ electricity for more than 50 regions.
5. The government believes that with the help of new programme the gas emissions will _____ by 20% by 2010.
6. We can _____ the power of the wind to generate electricity.
7. The good news was that chief executive Crispin Davis insisted the company was on track to _____ for 2002.

Taller even than the Angel of the North, the 100-metre high wind-powered electricity generator, Enercon E-66 is like a beautiful sculpture with a purpose.

Developed by architects Foster and Partners with Enercon, this wind generator can supply over a thousand homes with non-polluting, renewable energy. The first UK E-66 harnesses the wind of the North Sea at Swaffham in Norfolk, on the east coast of England.

The UK government is committed to meeting targets to reduce the country's emissions of greenhouse gases. Indeed, it aims to exceed the UK's commitment to reduce emissions of these gases by 12.5 per cent below 1990 levels by 2010. A growth in the amount of electricity generated from renewable sources, such as wind power, will play an important part in meeting this target.

The UK's first off-store wind farm, off the coast of Northumberland in north-east England, began generating enough power to supply 3,000 homes in 2000. Meanwhile, the Elean power station in Cambridgeshire is the UK's first straw-fed power plant, with the potential to generate electricity for 80,000 homes. The world's first commercial wave power station has been commissioned on the coast of the Scottish island of Islay.

2. Answer the following questions:

1. What is Enercon E-66?
2. Who created the sculpture?
3. Why is Enercon E-66 very useful?
4. Where does it first harness the wind?
5. How do the Britain use wind energy?

Text 34. The windmill

Although they are not nearly so ancient as the Celtic crosses, the UK has some of the oldest and finest traditional buildings in the world – from manor houses and cottages, to farm barns and oast-houses, with their distinctive kilns for drying the hops used to make beer.

The windmill is perhaps one of the most fascinating. Many traditional windmills exist to this day, poised on hilltops to harness the power of the wind, or on the flat open land of East Anglia, in eastern England.

Windmills were first constructed in the UK from around the 11th century and were mainly used for grinding corn. They were also used for draining and pumping

water from marshes, and later, for driving machinery such as saw mills. By the 15th century, there were over 10,000 windmills in the UK, particularly in East Anglia and the southern countries of Sussex and Kent. The skills of the miller were often passed down through generations of the same family, and ‘Miller’ is common surname in England today.

The two main types of windmill built in the UK were the post mill and the tower mill, which was usually built of stone or brick. In a post mill the whole body of the mill revolves around a certain shaft to turn the sail into the wind, while in a tower mill only the top, or cap, moves, as in the windmill pictured here.

Although thousands of windmills have long since fallen into disuse, or disappeared altogether, fortunately many have been saved by conservationists and restored to working order. Some are in the hands of the National Trust, our foremost conservation organization.

1. Answer the following questions:

1. What are some of the oldest and finest traditional buildings in the world the UK?
2. Why is windmill very useful?
3. Where does it harness the wind?
4. When was the first windmill built in England?
5. How did people use the first windmills?
6. What types of the windmill were in the UK?
7. What differences are between post mill and tower mill?

2. Decide whether the following sentences are true (T) or false (F), correct those which are false.

1. Even nowadays you can find windmills in some parts of England. ()
2. People used to construct windmills in the mountains and in the plains. ()
3. We need windmills to harness the power of the wind and generate electricity. ()
4. Miller is a common surname in the UK. It means that his ancestors used to work on the windmill. ()
5. Windmills were usually built of wood and limestone. ()
6. Many windmills were saved and some of them even work now. ()

3. Read and translate the following sentences and find out more information about windmills.

1. For centuries, traditional windmills harnessed the wind to drive machinery for grinding wheat into flour.
2. However, Cauldron Barn Farm, inland on a ridge by the former windmill, survives.
3. In fact, the windmill provided too much power.
4. In some areas he could plant his land with windmills.
5. The subsidies will cover up to 40 percent of installation costs of new windmills.
6. There was only one low hill in sight, and this had an old, disused windmill on it.
7. Today, modern versions of windmills, called wind turbines, are used to create electricity.

4. Describe the way the windmill work.

Text 35. Tate and Clore

The Tate Gallery is the National Gallery of British Art. It is named after Sir Henry Tate (1819 – 99), a rich merchant. His gallery contained one of the best private collections of modern art in England. To house it he founded the National Gallery and was created a baronet in the year after the Tate Gallery had been opened. ... [1]

It was erected in a free classic style. In the centre of the facade is a handsome projecting Corinthian portico.

The Clore building is an extension to the Tate Gallery, built by James Stirling and Michael Wilford. The Clore Gallery is a kind of surrealist collage of the recent past and history. ... [2]

The Clore building consists of two arms, one joining the Tate Gallery just behind one of its lateral pavilions, the other turning at right angles from this towards the river and coming within a few yards of another existing building, the 'Lodge', formerly part of the military hospital but now a permanent part of the Tate Complex. The first and longest of these arms contains the nine Turner galleries on the main floor, with the auditorium, education department and usual offices below. ... [3] In the angle between the two wings is a landscaped garden.

Sidney Smith's Tate building of 1897 stands on a basement of rock-faced rustics. Smith has two orders: the Corinthian of the portico and a secondary order which is Ionic but suddenly turns Doric. Stirling has taken Smith's Ionic/Doric cornice and ran it continuously with a blocking course along both arms of his new building. More by chance, than by design, the Gibbsinian cornice of the red-brick Neo-Georgian Lodge strikes exactly the level of Smith's. Between the old Tate and the Lodge, nothing rises higher than the blocking course, except a brief attic storey at the Lodge, containing the curator's office.

In front of the public entrance to the Clore there is a stone-flagged terrace with a pool of water and a pergola. ... [4]

The Tate is pedimented and windowed only in its rocky base. The Clore entrance wall is of Portland ashlar. The entrance opening has the shape of a low, gabled (or pedimented) building, above it there a lunette, there are no windows. The bright green metal grid fills the opening and clasps the revolving door.

The solution of the adjacent elevations is also very interesting. Picture galleries, like prisons and mausoleum, do not ask to be windowed. The Classical masters played Classical games on blind walls: Soane's game with the Tivoli Order at the Bank, Sidney Smith solved the problem simply by blocking up Venetian windows. Stirling has found his own answer in a different mode – system of 'gridding'. A grid of Portland stone ribs wraps the whole building. ... [5] It has nothing to do with the structure (it is a reinforced concrete frame, unseen). In the gallery block all the panels are filled with buff stucco, in the other block partly by red brick to match the Lodge.

There are nine rooms in all. First a big room, then a long 'spinal' room, four smaller rooms lead off this and on one of them is a Stirlingesque version of what the Elizabethans called a carrel window, i.e. a bay projecting into a peaked oriel, its metal bars, painted green, appear in the centre bay of the outside elevation. Another big

room connects with the old Tate. A separate room, adjoining the first big room, darker and differently decorated, is reserved for watercolors. ... [6] That officer can look over a balustrade into the room, or outside to the terrace (through a small peaked oriel) or inwards to the staircase hall (through an open triangle) with scarcely a movement from his or her desk.

The lighting combines natural and artificial light and adjusts itself automatically to the conditions of the external world.

1. Answer the following questions:

1. Why the gallery is named Tate Gallery?
2. When was the building of the Tate Gallery built?
3. What buildings has the Gallery?
4. Why is the new building of the Tate Gallery magnificent?
5. What amazing items are in the Tate Gallery?

2. Each of sentences a-f fits into a gap in the article. Decide where each sentence fits best.

- a. The grid contains square panels filled either with buff stucco or with red brick.
- b. The second contains the entrance hall and main staircase, followed by the 'social room' with, above, various technical, administrative and study rooms.
- c. The new gallery was built on the site of Mill-bank Prison by Sidney Smith in 1897.
- d. There is an auditorium to seat 200 and a 'social room' for occasional use, with spiral staircases in one corner leading to the secretary's room.
- e. It has provided a set of galleries, traditional in form and perfectly lit, in which pictures by Turner now hang.
- f. Here the Tate pavilion comes exactly opposite the public entrance to the Clore and both are axially reflected in the pool.

3. A. Match the words with their definitions 1-16.

- | | | | | |
|------------|-----------|----------------|-----------------|-------|
| ▪portico | ▪pavilion | ▪staircase | ▪balustrade | ▪wing |
| ▪lunette | ▪basement | ▪cornice | ▪attic | ▪pool |
| ▪extension | ▪pergola | ▪entrance hall | ▪revolving door | |
| ▪façade | ▪oriel | | | |

1. The front of a building, especially a large and important one. _____.
2. A covered entrance to a building, consisting of a roof supported by pillars. _____.
3. Another room or rooms which are added to a building. _____.
4. A temporary building or tent which is used for public entertainment or exhibitions and is often large with a lot of space and light. _____.
5. The area just inside the door of a house or other building, that leads to other rooms [= hallway]. _____.

6. A set of stairs inside a building with its supports and the side parts that you hold on to. _____.
7. One of the parts of a large building, especially one that sticks out from the main part. _____.
8. A room or area in a building that is under the level of the ground. _____.
9. Wood or plaster that runs along the top edge of a wall, used for decoration. _____.
10. A space or room just below the roof of a house, often used for storing things. _____.
11. A hole or container that has been specially made and filled with water so that people can swim or play in it. _____.
12. A structure made of posts built for plants to grow over in a garden. _____.
13. Round window in the roof. _____.
14. A type of door in the entrance of a large building, which goes around and around as people go through it. _____.
15. Niche _____.
16. A row of wooden, stone, or metal posts that stop someone falling from a bridge or balcony. _____.

B. Now use one of the words to complete the sentences. (There is one word you don't need).

1. She walked through the _____ into the lobby.
2. He constructed an impressive building with a red brick _____.
3. They couldn't build the planned _____ to the National Museum because the government didn't support them financially.
4. She walked to the edge of the terrace and leaned on the _____, looking out over Florence.
5. New beachfront hotels are going up, and the _____ on the boardwalk is being rebuilt.
6. We hung our coats in a cupboard in the _____.
7. Use _____ to get to the second floor, and then turn right and there you'll see Mr. Miles' room.
8. The building looks like a library or similar public building with its classical _____ and columns with Ionic capitals.
9. They decided to rebuild the north _____ of Manchester castle next year.
10. What had gone from the _____ she could only guess, for she did not remember half the things they stored there.
11. A carved _____ runs around the high-ceilinged room.
12. They have a nice _____ in their backyard.
13. A good plant for shade, it makes an attractive edging to the border under our _____.
14. I ran to the stairs, and down to the _____, to the empty store room.
15. This building has a small _____ to let light in.

‘PARKS AND GARDENS’

Text 36. Parks and Gardens in London

1. Scan the text and find out about what park is the following information:

- | | |
|---------------------|-----------------------|
| a. St. James’s Park | d. Kensington Gardens |
| b. Green Park | e. Regent’s Park |
| c. Hyde Park | |

1. Has Zoological Gardens, Queen Mary’s Garden etc –.
2. Has a view of Westminster from the bridge –.
3. Has Kensington Palace –.
4. The largest of all 5 parks (670 acres) –.
5. Used to be a deer-hunting park –.
6. Has 40-acre serpentine boating Lake –.
7. Has Speaker’s Corner –.
8. Share boating lake with other parks –.
9. Has thick, rich grass and trees –.
10. A lot of expensive boats sail there –.
11. Was made for George IV –.
12. There you can see joggers and riders –.
13. Is situated in the midst of government buildings and palaces –.

The special feature that distinguishes London from other capital cities is its many green parks, which have been enjoyed by its citizens since Hyde Park became the first public garden (1637). Five of London's nine royal parks are in the very heart of the capital. Among the most important parks that bring fresh life and colour to London are St. James's Park, Green Park, Hyde Park and Kensington Gardens that stretch across the West End. Each has its own character. Laid out in the midst of government buildings and palaces, **ST. James’s Park** is one of the smallest, but with its charming lake enlivened by water birds, well-maintained flower beds and view of Westminster from the bridge, is easily the most attractive. To the west, divided by The Mall, is **Green Park**, an unpretentious stretch of especially thick, rich grass and luxuriant stands of trees, the plainest of the Royal Parks. **Hyde Park** has an area of 361 acres and its outstanding feature is the 40-acre Serpentine boating lake. One of the great urban parks of the world was once a deer-hunting park for Henry VIII and in 1851 it was the site for London’s Great Exhibition. Londoners love to use this park and you'll find joggers – not to mention riding enthusiasts cantering around the horse track – taking advantage of its spaciousness. Another attraction of the park is Speaker’s Corner, near the Marble Arch, where anyone can get up on a makeshift rostrum – often a cardboard box – and spout their opinions. It’s hard to believe that the roads were once infested by villains and popular with duelists.

Kensington Gardens are separated from Hyde Park by a road, but the difference in character is at once apparent – it is more formal, more enclosed. The Gardens share the boating lake with the neighboring park, but at this section it is

called the Long Water, where depending on the weather there is boating and ice-skating, or swimming. William III nipped 26 acres off the western end of Hyde Park in 1689 to make a garden for Kensington Palace. Kensington Gardens were not opened to the general public until the mid-19th century and, until recently, still retain some feeling of elevated separateness. Expensive boats are still sailed in the Round Pond and magnificent kites are flown. Another park set apart from the others (northwest of the City) is **Regent's Park**. It was once a royal hunting area. The park was laid out for George IV when he was Prince Regent and was given its present name about 1814. If Primrose Hill is included in its area, it is the largest of all parks, at 670 acres. Given its look by John Nash, this 'aristocratic garden suburb' is roughly circular in shape and encircled by a carriage road. Within the park are the 34-acre (14-hectare) Zoological Gardens, Queen Mary's Garden and the Open Air Theatre.

2. Find the false sentences and correct the mistakes.

1. London's parks have been very popular with its citizens since Regent's Park became the first public garden. ()
2. Five of the Royal Parks are in the suburbs of the capital. ()
3. St. James's Park is one of the largest. ()
4. Green Park is one of the plainest and unpretentious. ()
5. Hyde Park was once a deer hunting park for Henry VIII. ()
6. Hyde Park was the site for London's Great Exhibition of 1851. ()
7. Speaker's Corner where anyone can spout their opinion from a makeshift rostrum is in Green Park. ()
8. Long Water is a boating lake situated inside Kensington Gardens. ()
9. Kensington Gardens were not opened to the general public until the beginning of the 20th century. ()
10. Regent's Park is the largest of all parks, at 670 acres. ()

3. Make up 5 questions about the text and let students answer them.

Text 37. National parks in England

1. Make sure you know the following words: match the Ukrainian equivalent with the English words.

- | | |
|----------------|-------------------------------|
| 1. moor | a. давній, стародавній |
| 2. bay | b. кількість |
| 3. unfarmable | c. Дербішир |
| 4. to frequent | d. вересове пустище |
| 5. to strand | e. плотина |
| 6. throughout | f. оголення порід |
| 7. to contain | d. перешкода |
| 8. ancient | h. поклонятися |
| 9. to worship | i. непридатний для фермерства |
| 10. outcrop | j. часто відвідувати |
| 11. tors | k. Пенніни |

12. Derbyshire	l. містити (в собі)
13. midlanders	m. всюди
14. the Pennines	n. сісти на мілину
15. hazard	o. скеляста вершина пагорба
16. amount	p. люди, що живуть в центральних графствах Англії

The UK contains a wide variety of national parks, all of which have different names. Much of the area of the parks is owned by either the National Trust or the Forestry Commission.

In the south-west of England, Dartmoor is the largest of three parks, its area is over 2,500 sq. km. and as the name suggests it is a *moor*. This means that there are vast stretches of very wet ground or *bays* which are *unfarmable*. There are villages around Dartmoor Park and the famous Princeton Prison near the centre. Some of the land in the north is occasionally used for military exercises but generally it's *frequented* by only campers or sheep. The weather changes very quickly over the moor and many people have died after being *stranded* in the fog. Hidden *throughout* the moor are small or medium sized 'post boxes' these boxes *contain* a stamp and a visitor's book. If you are lucky enough to find one then you may write your name in the book. Over the last 50 years over 5,000 of these boxes have been hidden and discovered. Also in the south-west are Exmoor and Bodmin moor, they are both similar to Dartmoor but much smaller and with less *ancient* history, for it is thought that thousands of years ago Druids *worshipped* on these moors, amongst large granite *outcrops* or *tors*.

In the heart of the country lies the Peak District national park. This lies mainly in *Derbyshire*. With its individual looking red stone, this region is very popular with climbers trying different 'routes'. It is a popular region for *midlanders* to go on a Sunday afternoon and many of the rocks or stones have ancient stories to tell. The hills in this area are not very high so it is popular with the young and old alike.

In the north of England, close to the Lake District Park, is the *Pennines*. These hills run down the centre of England from Scotland to South Yorkshire. They are sometimes known as the 'Backbone of England'.

The hills rise from the rolling countryside into some stark looking peaks. However the hills look foreboding only and are really a pleasant place to spend summer afternoons. In the winter however there is often a lot of snow in this area and roads across the hills are cut off from time to time; the other main weather *hazard* in this area is the *amount* of rain that falls all the year round.

2. Answer the questions.

1. What are the three largest parks in the south-west of England?
2. How different are they?
3. What do 'post boxes' contain?
4. What is the Peak District national park known for?
5. What lies close to the Lake District Park?
6. What do the hills look like?
7. What are the main weather hazards in the Pennines?

3. *Put questions on the text. Use different types of questions.*

4. *Fill in the gaps, using the correct forms of the verbs in the box:*

to use to be to run to contain

1. Some of the land _____ occasionally for military exercises.
2. 'Post boxes' _____ a stamp and a visitor's book.
3. The Pennines _____ down the centre of England.
4. The main weather hazard _____ the amount of rain.

5. *Complete the sentences, using the text, and translate them.*

1. Much area of the parks is owned by _____.
2. The vast stretches of very wet ground in Dartmoor are _____.
3. If you find 'post box', you may _____.
4. The Peak District is very popular _____.
5. The Pennines are known as _____.
6. The Pennines look foreboding only and are _____.

Text 38. Kent: the garden of England

1. *Read and memorize the following words:*

- a **peninsula** – півострів
- to **separate** – розділяти
- a **cliff** – скеля
- to **retreat** – відступати
- a **beaten army** – розбите військо
- to **feed** – годувати; пасти
- a **mutton** – баранина
- a **snow like blossom** – білосніжне цвітіння
- a **hop** – хміль
- to **dry** – сушити

Kent is a peninsula in the south-east corner of England. You can find it on the map. Kent is the nearest English county to the Continent. Only thirty-five kilometers of water separate it from France. On a clear day it is possible to see the white cliffs across the English Channel. The Romans, led by Julius Caesar, first landed in Kent. Today it is the land first seen by most visitors from Europe, and it is the county best known to them, as they pass through it on their way to London.

No place in Kent is far from the sea. Slowly the waves wash away the coast of Kent, in some places as much as three feet a year. In other places the sea has retreated like a beaten army.

The low hills running east and west are called the North Downs. They are covered with short grass, which feeds thousands of sheep. Kent gives the English

people wool and mutton. Kent is usually called the Garden of England. Lots of vegetables, fruits and flowers grown in the gardens of Kent are taken to London. Kent is famous for apples and plums, but especially for cherries. In early spring you can see miles of cherry-trees in snow like blossom.

Autumn is the time to visit hop gardens in Kent. The hop farmer has much work to do all the year round, but when the harvest time comes, he has more work than he and his family can do by themselves. Each September thousands of men and women, boys and girls are busy gathering the fruit of the hop-plant. The hops are gathered into large baskets and taken to be dried.

2. Complete the sentences, using the text, and translate them.

1. Kent is a peninsula _____.
2. On a clear day it is possible to see the white cliffs across _____.
3. The Romans, led by Julius Caesar, _____.
4. No place in Kent is _____.
5. Kent is famous for _____.

3. Answer the questions.

1. Where is Kent?
2. How far is Kent from France?
3. What does Kent give to the English people?
4. Why is Kent called the Garden of England?
5. What are people busy with in Kent in autumn?

4. Match sentences.

- | | |
|--|--------------------------------------|
| 1. Kent is nearest | a. separate it from France. |
| 2. Only 35 km. of water | b. are called the North Downs. |
| 3. In other places the sea | c. are taken to London. |
| 4. The low hills running east and west | d. has retreated like a beaten army. |
| 5. Lots of vegetables, fruits and flowers grown in the gardens of Kent | e. English county to the Continent. |

Text 39. Lake District National Park

The National Trust is a charity founded nearly 100 years ago by three people who were anxious that the natural beauty of the British countryside was not to be spoiled by the increasing industrialization of the country. Today the Trust owns around 2,400 sq. km. of land; it is the third largest landowner in the country. Its property includes famous gardens, villages, wind and watermills, lakes and mountains, abbeys and ancient ruins.

The Lake District is the largest national park in England, one quarter of the land is owned by the national trust, and with a large part of the rest owned by the Forestry Commission. As the name suggests, this region of Cumbria is dominated by its lakes. The lakes and the mountains that surround them were formed millions of years ago in the ice age. The largest lake is Windermere; this is often used for sailing,

water-skiing and other sports. The deepest lake, thought to be the oldest, is Wostwater, over 60m. deep. One fairly new 'lake' is Hawes-water reservoir. This is a man-made lake which was created by flooding a valley. However, the valley contained a village and there are many stories of village life continuing under the lake. On stormy nights, the story goes, it is still possible to hear the church bell ringing beneath the surface.

The English lakes are a popular area for outdoor activities such as hiking, camping, climbing and water sports. It is more popular for families to visit in the summer and the only real industry in the region is tourism. One can spend hours in the towns of Windermere, Ambleside, Penrith or Keswick just looking at the clothes made from Lakeland wool, sweets from Lakeland farms or drink the special Lakeland beer, brewed by Marstons. The only three mountains in England are all found in the Lake District; they are Scafell Pike (977m), Helvellyn (949m) and Skiddaw (931m). They can each be climbed easily in a day and very little specialist equipment is needed. If the weather is fine, one can see almost to the coast of Ireland from the summits.

1. Answer the questions.

1. What do you think is the aim of the National Trust?
2. Why is it important to save areas of outstanding national beauty?
3. In your opinion, why do people like to walk up high mountains?
4. When is the National Trust founded?
5. Who founded the National Trust?
6. Does the National Trust include famous gardens, villages, mills, lakes, abbeys and ancient ruins?
7. Is the Lake District the largest or the smallest national park in England?
8. The lakes and the mountains were formed millions of years ago in the ice age, weren't they?

2. Complete the sentences, using the text.

1. The largest lake is Windermere, it often used _____.
2. On stormy nights, the story goes, it is still _____.
3. The English lakes are a popular _____.

3. Fill in the gaps, using the correct forms of the verbs in brackets.

1. Region of Cumbria (to dominate) by its lakes.
2. If the weather (to be) fine, one can see almost to the coast of Ireland from the summits.

4. Match the endings of the sentences.

- | | |
|---|---|
| 1. The deepest lake is Wostwater, | a. Windermere, Ambleside, Penrith or Keswick. |
| 2. One can see hours in the towns of | b. Scafell Pike, Helvellyn and Skiddaw. |
| 3. The only three mountains in England are all found in the Lake District, they are | c. over 60 m. deep. |

'BRIDGES'

Text 1. Tower Bridge

1. Do you like high places or are you afraid of heights (vertigo)?

Choose two words in your own language to describe standing on a tall building.

Compare your words with the rest of the class.

How do you say these words in English?

2. Read the text quickly and answer the questions below.

1. Where is Tower Bridge situated?

2. When was it built?

3. Whom was it built by?

4. How was it used?

3. Complete the text by putting one word in each space. Use the words in the box. Check the meaning of any new words in the dictionary.

- | | | |
|---------------|------------|--------------------|
| ▪ mechanism | ▪ walkways | ▪ steel framework |
| ▪ wharf | ▪ hinges | ▪ bascule ▪ height |
| ▪ traffic-way | ▪ symbol | ▪ towers |

This flamboyant piece of Victorian engineering, designed by Sir Horace Jones, was completed in 1894 and soon became a (1) _____ of London. Its two Gothic towers contain the (2) _____ for raising the roadway to permit large ships to pass through. The (3) _____ are made of a supporting (4) _____ clad in stone, and are linked by two high level (5) _____ which were close between 1909 and 1982 due to their popularity with suicides and prostitutes. The bridge now houses The Tower Bridge Experience, with interactive display bridging the bridge's history to life. There are fine river views from a look at the steam engine room that powered the lifting machinery until 1976, when the system was electrified.

This bridge built in 1894, is still in daily use even though the traffic in and out of the London (6) _____ has increased to an extraordinary extent during the course of the 20th century.

Even today Tower Bridge regulates a large part of the impressive traffic of the Port of London. Due to a special mechanism, the main (7) _____ consisting of two parts fixed to two (8) _____ at the ends can be lifted up. In this way, the entrance and departure of extremely large vessels is possible, and allows them to reach the Pool of London.

While the central stay measures 142 feet, each (9) _____ to be raised weighs 1,000 tons. Nowadays the pedestrian path is closed. This footpath crossing which used to be allowed was by the upper bridge which connected the top of each tower, situated at a (10) _____ of 142 feet above the waters of the famous Thames.

Tower Bridge commands wide and magnificent views of both the city and the river. After Tower Bridge, the wharves of London extend until Tilbury - the gigantic port of this city, which has one of the heaviest movements of ocean-going traffic in the entire world, occupies practically the whole of the Thames from Teddington. It is virtually impossible to get a complete idea of its colossal extension. In fact it is one wharf after another, apparently continuing endlessly.

There is one way to form a closer idea of the grandiosity of this port: to view it from Tower Bridge on a clear day. To get the most accurate idea of its formidable extension and complexity, one can recommend taking one of the boats that during the summer months are organized to ply popular sightseeing trips along the Thames.

4. Read the text again and decide if the sentences below are true (T) or false (F).

1. The bridge was designed for letting the ships pass through. T/F
2. It has two Gothic towers. T/F
3. The lifting machinery of the bridge was electrified long before 1976. T/F
4. The path for pedestrians is opened. T/F
5. If you want to get a better idea how gigantic Tilbury port is – go to Tower Bridge. T/F

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