

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ



## **Іноземна мова (англійська) за професійним спрямуванням**

Методичні вказівки до практичних робіт для студентів  
для здобувачів освітньо-кваліфікаційного рівня молодший спеціаліст  
галузь знань 19 Архітектура і будівництво  
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## Вступ

Вашій увазі пропонується методичні вказівки до виконання практичних робіт для студентів будівельних спеціальностей вищих навчальних закладів технічного профілю, які вивчають англійську мову у сфері професійної комунікації. Розробка відповідає програмі «Іноземна мова за професійним спрямуванням» навчального плану та рекомендується для використання студентами III-го курсу.

Навчальною метою методичної розробки є формування у студентів умінь спілкуватися на професійну тематику, читати іншомовну спеціальну літературу за фахом середнього рівня складності з безпосереднім розумінням прочитаного, здобувати необхідну для виробничої практики інформацію. Для досягнення визначених цілей у посібнику передбачена регулярна навчальна діяльність, метою якої є створення словника активної лексики, що включає як найбільш вживані для даної спеціальності поняття, так і загальні терміни технічного профілю.

Кожен урок-підрозділ цього навчального видання має чітку структуру: лексика тексту для активного засвоєння; основний текст; післятекстові вправи різного типу.

На початку кожного заняття пропонується нова фахова лексика (в англійському та українському варіантах) в обсязі, необхідному для розуміння тексту та активного обговорення зазначених в завданнях матеріалів. Показником того, що лексичний мінімум засвоєно, є набуття умінь тими, хто навчається, вільно, у нормальному мовному темпі відтворити кожне слово в його англійському та українському варіантах. Лише після цього рекомендується переходити до активізації слів у контексті та до безпосередньої роботи з матеріалом.

До кожного тексту запропоновано систему завдань, метою яких є формування у студентів умінь і навичок усного та письмового мовлення в межах професійної підготовки, технічної тематики, спрямованих на подальше спілкування англійською мовою в реальних ситуаціях виробництва. Відповідно до поставленої мети вправи побудовані так, щоб навчити студентів самостійно працювати з іншомовним текстом, забезпечити виокремлення основної інформації, її уточнення і деталізацію.

За формою завдань вправи поділяються на окремі види, наприклад, вибір правильного - неправильного варіанту, сполучення слів у реченні, розташування в певній послідовності, множинний вибір. За наповненням вони складаються з речень текстів. Їх виконання є по суті багаторазовим читанням уривку з конкретно поставленим в окремому випадку новим завданням. До кожного тексту передбачаються також вправи, що мають на меті розвиток вміння дати вмотивовану відповідь (спростувати твердження, дати відповідь на питання, що обмежується кількістю варіантів).

## Unit 1. Types of Buildings

*1. Запам'ятайте значення наступних слів і словосполучень для кращого розуміння тексту.*

<b>building industry</b>	будівельна промисловість
<b>managerial staff</b>	керівний апарат
<b>industrial construction</b>	промислове будівництво
<b>technological advance</b>	технічний прогрес
<b>off-site prefabrication</b>	заводське виготовлення
<b>office buildings</b>	службові будівлі
<b>storage facilities</b>	складські приміщення
<b>site planning</b>	планування робіт на будівельному майданчику
<b>prefabricated structures</b>	збірні конструкції
<b>present-day design</b>	сучасне проектування
<b>kitchen and sanitary fittings</b>	санітарне устаткування
<b>a food-processing plant</b>	харчовий комбінат

### *2. Прочитайте і перекладіть текст .*

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 labour force.

Building industry including residential, public and industrial construction holds a considerable place in the country's economy and is being carried out on a large scale. It is the largest industry in the economy of any country. The problems of construction have grown into major, political issues in most countries.

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 in the Ukrainian 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.

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.

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.

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 other storage facilities, exhibition halls, etc.

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.

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.

**3. Вкажіть, які з поданих нижче речень, розкривають основну думку тексту.**

1. In our country 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.

**4. Розташуйте подані нижче речення послідовно викладу тексту.**

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.

**5. Вкажіть, які з поданих нижче речень належать до опису житлових будівель, а які – промислових. Згрупуйте речення за запропонованими темами.**

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, total 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.

**6. Доповніть незакінчені речення за змістом тексту одним із запропонованих варіантів (a, b, c).**

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.

**7. Доповніть незакінчені речення необхідними за змістом аргументами.**

1. Housing construction has grown into a political issue because ...
2. In our country 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 ...

**8. Висловіть заперечення до наступних невірних тверджень відповідно до змісту тексту.**

- 3 P A 3 O K : Housing does not affect the level of living.*
- *This statement is incorrect. Housing affects the level of living. The improvement of housing shows a concrete and visible rise in the general level of living.*
1. Not much attention is paid to the problems of construction.
  2. Modern residential houses and industrial buildings are mostly built of bricks and timber.
  3. Modern industrial buildings have demonstrated the advantages of plastics and ceramics.

**9. Запропонуйте не менше, ніж три варіанти відповідей на кожне із запитань.**

1. Why is a house acquiring a new and modern look?
2. What have ever growing housing demands brought into being?

**10. Прочитайте текст і зазначте, які з перерахованих нижче проблем розглядаються в ньому.**

1. New building materials for earthquake-proof structures.
2. Methods of constructing earthquake-proof structures.
3. The role of prediction of earthquake threats.
4. Methods of evacuating the inhabitants in case of an earthquake.
5. Some practical experience in constructing earthquake proof structures.

## Unit 2. Social Functions of Building

<b>apartment assemblages</b>	багатоквартирні збірні
конструкції	
<b>reinforced concrete blocks</b>	залізобетонні блоки
<b>erect</b>	зводити
<b>a high output</b>	великий випуск
<b>built-in furniture</b>	вбудовані меблі
<b>conceal</b>	приховувати
<b>domestic (residential) construction</b>	житлове будівництво

### 2. Прочитайте і перекладіть текст.

Types of buildings depend upon social functions and are 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.

Speaking of residential construction we must say that 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.

The evolution of techniques is conditioned by two factors: one is economic – the search for a maximum of stability and durability in building with a minimum of materials, labour and time; the other is expressive – the desire to produce a meaningful form.

Large housing programmes have tended to stimulate technological change in the building industry. Modular design (i.e. 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.

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.

The built-in space of an apartment should be carefully 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

### 3. Згадайте значення наступних англійських слів та словосполучень і підберіть до них відповідний переклад з правого стовпчика таблиці

1. building materials	a. технічний прогрес
2. techniques	b. сучасний
3. residential construction	c. забезпечувати
4. technological changes	d. теплоізоляція
5. mechanized operations	e. будівельні методи
6. site	f. залізобетонні блоки
7. reinforced concrete blocks	g. житлове будівництво
8. construction methods	h. методи
9. thermal insulation	i. будівельні матеріали
10. to provide	j. механізовані операції
11. technological advance	k. будівельний майданчик
12. contemporary	l. зміни в технологічному процесі.

**4. Визначте, назвою якої частини тексту можуть бути використані подані нижче речення.**

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.

**5. Зазначте, в яких із наведених нижче речень відображено головну думку тексту.**

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 factors affecting the latter.

**6. Доповніть незакінчені речення необхідними за змістом аргументами.**

1. Types of buildings depend upon social factors because...
2. Large housing programmes 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...

**7. Доповніть незакінчені речення за змістом тексту одним із запропонованих варіантів (a, b, c).**

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 successfully achieved by...

a) reinforced concrete blocks and units;

b) technological change in the building industry;

c) craft operations at the building site.

**8. Відповідно до тексту визначте, до якого поняття належить наступне визначення: “is the weight of the structure itself”. Перекладіть текст усно без словника.**

### **Structures**

A structure is the part of a building that carries its weight, and for at least half the world's civil engineers, structures are most of civil engineering. We should also remember that anything built is a structure. (From an aeroplane engineer's point of view, an aeroplane also is a structure.) A structure may be a dwelling house, or a pyramid in Egypt, or a dam built by beavers across a Canadian river. A building is a structure with a roof and much of civil engineering structural design is the design of building structures. The building as a whole is designed by an architect, particularly in a densely populated area. Every structural design includes the foundation design. The structural design itself includes two different tasks, the design of the structure, in which the sizes and locations of the main members are settled, and the analysis of this structure by mathematical or graphical methods or both, to work out how the loads pass through the structure with the particular members chosen. For a common structure, such as a building frame, many methods have been developed for analysis, so that the design and analysis will be relatively easy and may need to be performed only once or twice.

But for any unusual structure the tasks of design and analysis will have to be repeated many times until, after many calculations, a design has been found, that is, strong, stable and lasting. For the typical multi-storey structure in a city, whether it is to be used for offices or dwellings, the most important member which the engineer designs is the floor— for two reasons: it repeats all the way up the building, and it has the greatest effect on the dead load of the building.

### Unit 3. Building Materials

*1. Запам'ятайте значення наступних слів і словосполучень для кращого розуміння тексту*

<b>lime</b>	вапно
<b>gypsum</b>	гіпс
<b>masonry</b>	кам'яна або цегляна кладка
<b>high alumina cement</b>	цемент с високим вмістом глинозему
<b>high rate of strength</b>	висока міцність
<b>resistance to</b>	міцність на
<b>crashed stone</b>	щебінь
<b>mortar</b>	будівельний розчин
<b>aggregate</b>	заповнювач бетону
<b>fine aggregate</b>	дрібний заповнювач бетону
<b>moisture content</b>	вміст вологи
<b>workability</b>	здатність до обробки (легкість, простота укладки)
<b>compressive load</b>	навантаження на стиск

#### *2. Прочитайте і перекладіть текст.*

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 work of construction, the civil engineer must consider many factors. These factors include availability, cost, physical properties of materials and others.

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 many other materials.

Lime, gypsum and cement are the three materials most 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.

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.

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.

The most important building materials may now 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.

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.

**3. Розташуйте подані нижче речення відповідно до викладу в тексті.**

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.

**4. Згрупуйте наступні речення за трьома тематичними напрямками (A, B, C).**

- A. The choice of materials for any work of construction.
- B. The properties of high alumina cement.
- C. 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 mortar. 3. A civil engineer must consider many factors when selecting the material for construction. 4. This kind of cement is very resistant to chemical attacks. 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.

**5. Які з наведених нижче речень належать до опису цементу, а які – бетону?**

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 other essential properties. 6. The most accurate method of measuring proportions is to weigh the required quantities of each material.

**6. Оберіть правильні відповіді на запитання.**

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.

**7. Доповніть незакінчені речення необхідними за змістом аргументами.**

1. Cement is the most widely used building material because ...
2. High alumina cement is an important class of cement since ...
3. Careful attention must be given to the selection of cement aggregate and water in proportioning concrete because ...

**8. Перегляньте текст і спробуйте скласти якомога більше словосполучень зі словами «concrete», «cement». Наприклад: «the production of concrete», «concrete mix».**

**9. Вкажіть, які із поданих нижче речень є правильними, а які ні. Обґрунтуйте відповідь не менш ніж двома-трьома виразами.**

*3 P A 3 O K : Steel and concrete are most widely used for binding together*

*masonry units. This statement is incorrect. Lime, gypsum and cement are used in building construction for the purpose of binding masonry units.*

1. The most important building materials may now be considered to be structural steel and concrete.
2. Lime, gypsum and cement are the three materials most widely used for making concrete.
3. Cement is the most important component of bricks.

**10. Запропонуйте не менше, ніж три варіанти відповідей на наступні запитання.**

1. Why is concrete the most important building material?
2. What is it necessary for the designer to know in order to select the most effective building materials?

**11. Перекладіть текст письмово зі словником (Час – 30 хв.).**

### **Reinforced-Concrete Elements Production**

With the rapid growth in the employment of precast-concrete products, and particularly of wall panels, slabs, beams, etc. to serve a multitude of building needs, this industry has to maintain and improve the quality of the products. A vast amount of excellent work has already been done to raise the standards of this industry to their present level. Machinery and equipment designers have made important contributions by creating better machines and tools for the industry.

A great number of plants producing precast reinforced-concrete elements is now in operation in our country and abroad. Before the decision is made to establish a precast concrete products plant in a given area, a number of purely economic considerations deserve particular attention. A careful appraisal of the potential requirements provides valuable information for determining the size of the plant which should be built. A well-designed plant must have sufficient capacity for the normal output plus a reasonable margin for a possible increase. The design should specifically and carefully anticipate the future installation of additional equipment for increased production without disrupting the original lay-out.

## Unit 4. The Choice of Building Material

*1. Запам'ятайте значення наступних слів і словосполучень для кращого розуміння тексту.*

<b>mass production</b>	масове виробництво
<b>prefabricated concrete elements</b>	збірні залізобетонні елементи
<b>brittle</b>	крихкий
<b>tensile stress</b>	навантаження на розтяг
<b>volume weight</b>	об'ємна вага
<b>thermal conductivity</b>	теплопровідність
<b>rigid</b>	жорсткий
<b>resin</b>	смола

*Прочитайте і перекладіть текст.*

Which material can be used to the best advantage for a particular part of the building, depends as well 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.

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.

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 widely used both for residential houses and industrial buildings.

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, colours, 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.

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, aviation, textile industry, etc.).

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.

Plastics consisting of one polymer are referred to as simple. Thus, organic glass (plexiglass) 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.

**3. Підберіть англійські еквіваленти до наступних українських словосполучень.**

- |                                |                                  |
|--------------------------------|----------------------------------|
| 1. diverse properties          | a. успішно використовуються      |
| 2. tensile stress              | b. властивості матеріалів        |
| 3. properties of the materials | c. міцність на стиск             |
| 4. depending on application    | d. напруга на розтяг             |
| 5. pleasing appearance         | e. в залежності від застосування |
| 6. mechanical properties       | f. приємний зовнішній вигляд     |
| 7. wide application            | g. різноманітні властивості      |
| 8. compressive strength        | h. широке застосування           |
| 9. are advantageously utilized | i. звичайна цегла                |
| 10. ordinary brick             | j. успішно використовуються      |
| 11. volume weight              | k. властивості матеріалів        |

**4. Розділіть текст на логічні частини і визначте, які назви із запропонованих до них підходять.**

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.

**5. Визначте, які з поданих нижче речень належать до опису бетону, а які – цегли і пластмаси.**

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.

**6. Доповніть незакінчені речення відповідно до змісту тексту одним із запропонованих варіантів (a, b, c).**

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 situ 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, colours and textures.

**7. Дайте відповіді на наступні питання за змістом тексту.**

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. What made possible the mass production of prefabricated large-size concrete elements?
4. In what industrial fields are plastics used?
5. How does steel introduced into concrete change its properties?

**8. Відповідно до тексту визначте, до якого поняття належить наступне визначення: «... is a cement which has been ground more finely than ordinary Portland cement and therefore hardens more quickly and is slightly more expensive». Перекладіть текст усно без словника (Час – 30 хв.).**

### **Modern Building Materials**

Of the various Portland cements, the following varieties are now generally available:

- a) Ordinary Portland cement, the cheapest,
- b) Rapid hardening cement, which is slightly more expensive because it is ground rather finer and is thus more chemically active,
- c) Sulphate-resisting cement which has a special chemical position to resist; sulphates, and can be used in ground which contains them,
- d) Air-entraining cement for building roads which may suffer from frost damage,
- e) Low-heat cement for massive construction such as dams where the speed at which the heat is given off must be reduced, and slow development of strength does not matter.

These are the main Portland cements. A different cement, which should be mentioned, is high-alumina cement. High-alumina cement is usually black, unlike Portland which is grey, but it reaches a —Portland 28-day strength in twenty-four hours with correspondingly high heating and it must therefore not be cast in masses which are thicker than 60 cm. This common high-alumina cement costs roughly three times as much as Portland. Another high-alumina cement which is used for furnace linings is white; it is several times more expensive even than the black variety. White Portland cement is also obtainable, it is more expensive than ordinary. It is used for making white concrete or for painting or plastering concrete. A small addition of colouring material to white cement will often result in a pleasing colour but it may not be the colour expected because of the effect of the aggregates and impurities in the concrete.

## **Unit 5. BUILDING A HOUSE**

1. ***Read the text and get ready to explain what is necessary to begin with if you want to build a house:***

*Planning a house.* If a person decides to build a house, he or she must first select a lot or piece of land. The next step is to consult an architect or builder. This expert will check local zoning laws and electrical, building and plumbing codes. Knowledge of these codes protects the buyer in both the present and the future. For example the zoning law in the area may permit the construction of factories near the new house. Such construction might well decrease the value of the house.

The architect then designs the house, according to the buyer's ideas. He or she makes specifications and blue prints that become the basis for the contract between the builder and the buyer. They provide information on size, materials, and how the house is to be built. The architect also supervises the construction of the house.

*The frame* is the skeleton around which the rest of the house is built. After the footings and foundation have been formed, workers bolt wooden sills or base plates to the foundation. The sills support the outside walls. Floor joists or support beams are attached to the sills about 16 inches (41 centimeters) apart. A joist runs from one sill and joins with another joist from the opposite sill. They meet at a main support beam or basement wall about midway between the house's sides. Floor boards or plywood nailed on top of the joists make the bottom layer of the floor. The structure then is solid enough to hold the wall frames of the house. Wall frames include vertical pieces of lumber called studs and horizontal pieces called plates. Carpenters assemble and nail together each wall frame separately before attaching it to the sill. Then they lift each frame into place and brace it temporarily. When all the outside walls have been raised, they are nailed together and braced permanently.

The sheathing or inner layer of the outside wall may be wood, fiber-board, or plasterboard nailed to the studs. Sometimes builders tack tar paper to

the sheathing before adding the siding or outer layer. Siding may be aluminium, brick, stone, or wood placed directly over the sheathing or tar paper.

The roof seals the top of the house. Some roofs are flat, but most are slanted. Slanted roofs are often formed by pieces of lumber called rafters. Carpenters nail the bottom ends of the rafters to the plates at the top of the outside walls. The rafters slant from the plates and meet at the ridge-board. A board placed at the ridge, or top edge of the roof. Rafters support the weight of the roof just as joists support the weight of the floor.

After carpenters nail sheathing to the tops of the rafters, they add heavy building paper or building felt to it. Then they add the final layer of asphalt or slate shingles, or roofing asphalt. Flashings, or strips of sheet metal, placed around the chimney and other roof openings, insulate the roof from the chimney and also prevent water from leaking into the house.

## ***2. Answer the following questions:***

1. What is necessary to do first if you decide to build a house? 2. Whom is necessary to consult with? 3. Why is it necessary to consult with an expert? 4. What protects the buyer in both the present and the future?

5. Who designs the house, according to the buyer's ideas? 6. Is it important to sign the contract between the builder and the buyer and why? 7. Who supervises the construction of the house? 8. What is the frame? 9. When do workers bolt wooden sills or base plates to the foundation? 10. What supports the outside walls? 11. What runs from one sill? 12. Where do they meet? 13. What is called studs? 14. What do carpenters do? 15. What materials are used for sheathing or inner layer of the outside wall? 16. What materials are used for siding? 17. What seals the top of the house? 18. What is the form of the roofs? 19. How do we call slanted roofs formed by pieces of lumber? 20. Where do carpenters nail the bottom ends of the rafters to?

21. What supports the weight of the roof and the floor? 22. When do carpenters add heavy building paper or building felt to sheathing? 23. What is placed around the chimney and other roof openings? 24. Why is it necessary to

do?

**3. Agree or disagree with the following statements:**

1. If a person decides to build a house, it is necessary to have money.
2. The next step is to consult with relatives.
3. The architect suggests the designs according to his own taste.
4. The sill is the skeleton around which the rest of the house is built.
5. The frame supports the outside walls.
6. Floor joists or support beams are attached to the sills about 18 inches (42 centimeters) apart.
7. A joist runs from one sill and joins with another joist from the sill which is above it.
8. Horizontal pieces are called footing.
9. Carpenters assemble all the parts of the house.
10. The sheathing or inner layer of the outside wall may be steel, iron, or plasterboard nailed to the studs.
11. Sometimes builders tack decorative paper to the sheathing before adding the siding or outer layer.
12. Carpenters put siding on the roof.
13. The roof seals the top of the house.
14. Roofs are always flat.
15. Flat roofs are called rafters.
16. Rafters are pieces of wood.
17. Rafters support the weight of the floor.
18. At the end carpenters add the final layer of asphalt or slate shingles, or roofing asphalt.

**4. Complete the sentences according to the text:**

1. ... he or she must first select a lot, or piece of land.
2. Knowledge of these codes protects ...
3. ... , according to the buyer's ideas.
4. The frame is ...
5. After the footings and foundation have been formed, ... or base plates to the foundation.
6. A joist runs from one sill and ... from the opposite sill.
7. ... make the bottom layer of the floor.
8. Carpenters assemble and nail together ... before attaching it to the sill.
9. ... may be wood, fiberboard, or plasterboard nailed to the studs.
10. ... before adding the siding or outer layer.
11. Some roofs are flat, but ...
12. Carpenters nail the bottom ends of the rafters to ...
13. After carpenters nail sheathing to the tops of the rafters, ...
14. Then they add the final layer of asphalt or ...

**5. Choose a word to put into each gap:**

*Carpenters, a joist, lumber, the frame, rafters, the sheathing, slate shingles, plates, plywood, plasterboard, studs, the footings, nail, the roof, stone, layer, the ridgeboard, bolt, asphalt, pieces, aluminium, leaking, slanted, the siding, sill, fiberboard, wall frame, tar paper, the chimney, wood, slant, the weight.*

- 1.... is the skeleton around which the rest of the house is built.
2. After ... and foundation have been formed, workers ... wooden sills or base ... to the foundation.
3. ... runs from one ... and joins with another joist from the opposite sill.
4. Floor boards or ... nailed on top of the joists make the bottom ... of the floor.
5. Wall frames include vertical pieces of ... called ... and horizontal ... called plates.
6. ... assemble and ... together each ... separately before attaching it to the sill.
7. ... or inner layer of the outside wall may be wood, ... , or ... .
8. Sometimes builders tack ... to the sheathing before adding ... or outer layer.
9. Siding may be... , brick, ... , or ... placed directly over the sheathing or tar paper.
10. ... roofs are often formed by pieces of lumber called ... .
11. The rafters ... from the plates and meet at ... .
12. Rafters support the weight of ... just as joists support ... of the floor.
13. Carpenters add the final layer of ... or ... , or roofing asphalt.
14. Flashings insulate the roof from ... and also prevents water from ... into the house.

**6. Find out from your partner:**

if he knows what is necessary to do to build a house;  
what the role of an architect is.

**16. Prove that:**

the frame is a skeleton of a house;

knowledge of codes are important.

**17. Comprehensive check. Choose the best alternative according to the text:**

1. *If a person decides to build a house, ... .*

- a) he or she must have enough money;
- b) he or she must first select some partners;
- c) he or she must first select a lot or piece of land.

2. *... , according to the buyer's ideas.*

- a) The architect fulfils all the documents;
- b) The architect designs the house;
- c) The lawyer chooses everything necessary.

3. *The basis for the contract between the builder and the buyer are*

*... .*

- a) agreements for building the house;
- b) documents selected by the lawyer;
- c) specifications and blue prints.

4. *The documents which are the basis for the contract provide information on ... .*

- a) size, materials, and how the house is to be built;
- b) qualification of the workers who will build the house;
- c) money which is necessary to pay.

5. *The frame is the skeleton ... .*

- a) around which all the works are organized;
- b) around which the rest of the house is built;
- c) which is the main part of the house.

6. *Workers bolt wooden sills or base plates to the foundation ... .*

- a) after the footings and foundation have been formed;
- b) after they are asked to do this;
- c) before the footings and foundation have been formed.

7. *Floor joists or support beams are attached to the sills about ... .*

- a) 17 inches (41 centimeters) apart;

- b) 16 inches (42 centimeters) apart;
  - c) 16 inches (41 centimeters) apart.
8. *A joist runs from one sill and joins with another... .*
- a) joist from the nearest sill;
  - b) plate from the opposite sill;
  - c) joist from the opposite sill.
9. *Floor boards or plywood ... make the bottom layer of the floor.*
- a) covered the top of the joists;
  - b) nailed on top of the joists;
  - c) nailed on the bottom of the joists.
10. *... separately before attaching it to the sill.*
- a) Carpenters assemble and nail together each wall frame;
  - b) Carpenters select and paste together each wall frame;
  - c) Builders assemble and nail together each wall frame.
11. *The sheathing or inner layer of the outside wall ... nailed to the studs.*
- a) may be wood, fiberboard, or plasterboard;
  - b) may be cement, fiberboard, or plasterboard;
  - c) is necessary to be wood, fiberboard, or plasterboard.
12. *... before adding the siding or outer layer.*
- a) Obligatory builders tack tar paper to the sheathing;
  - b) Sometimes builders tack tar paper to the sheathing;
  - c) Sometimes builders tack clay to the sheathing.
13. *Siding may be aluminium, brick, stone, or wood placed ... .*
- a) directly above the fiberboard or tar paper;
  - b) directly over the sheathing or tar paper;
  - c) at the sides of the walls.
14. *The roof seals the top of the house, they may be ... .*
- a) flat, but most are slanted;
  - b) only slanted;
  - c) slanted, but most are flat.
15. *Slanted roofs are often formed by ... .*

- a) pieces of plasterboard called sills;
- b) plates of tar paper called rafters;
- c) pieces of lumber called rafters.

16. *Rafters support the weight of the roof just as ... .*

- a) beams support the weight of the whole house;
- b) studs support the weight of the floor;
- c) joists support the weight of the floor.

17. *After carpenters nail sheathing to the tops of the rafters, ... .*

- a) they finish their work and declare about it to a master;
- b) they add heavy building paper or building felt to it;
- c) they add tar paper or shingle to it.

18. *Flashings or trips of sheet metal, placed around the chimney and other roof openings, ... .*

- a) prevent water from leaking into the house;
- b) prevent mud and clay from coming into the house;
- c) make the roof not dangerous for living.
- d)

## **Unit 6. Parts of building**

Almost everyone has watched building of a house and followed its progress with interest.

First the excavation is dug for the basement, then the foundation walls bellow ground level are constructed; after this the framework is erected and clothed with various finishing materials and protected by several coats of paint.

The part upon which the stability of the structure depends is the framework. It is intended for safely carrying the loads imposed. The floors, walls, roof and other parts of the building must be carefully designed and proportioned.

The architect or designer must decide what the size of the walls, the floors, the beams, the girders and the parts which make up the framework must be, and how they must be placed and arranged. Sometimes it is done by the architect who draws the plans for the house, sometimes by a designer.

Here are the main parts of a building and their functions.

**Foundations** are to keep the walls and floors from contact with the soil, to guard them against the action of frost, to prevent them from sinking and settling which can cause cracks in walls and uneven floors.

**Floors** divide the building into stories. They may be either of timber or of a fire-resisting material.

**Walls** are built to enclose areas and carry the weight of floors and roofs. The walls may be solid or hollow. The materials used for the wall construction can be brick, stone, concrete and other natural and artificial materials.

Roofs cover the building and protect it from exposure to weather. They tie the walls and give the construction strength and firmness.

### **I. Give Ukrainian equivalents to the following:**

progress – \_\_\_\_\_

foundation walls – \_\_\_\_\_

below ground level – \_\_\_\_\_

parts of the building – \_\_\_\_\_

the loads – \_\_\_\_\_

must be carefully proportioned – \_\_\_\_\_  
to prevent them from sinking – \_\_\_\_\_  
fire-resisting material – \_\_\_\_\_  
the weight of floors – \_\_\_\_\_  
brick – \_\_\_\_\_  
to tie the walls – \_\_\_\_\_  
natural materials – \_\_\_\_\_  
to protect from exposure to weather – \_\_\_\_\_

**II. Translate the text and say whether these statements are true or false:**

1. First the excavation is dug for the framework.
2. The foundation walls are constructed above ground level.
3. The framework is clothed with various finishing materials and protected by several coats of paint.
4. The part upon which the stability of the structure depends is the basement.
5. The walls and other parts of the building must be carefully proportioned.
6. The architect must decide what the size of the floors, the beams and the girders must be.
7. Sinking and settling of a construction can cause cracks in walls and uneven floors.
8. Floors may be of timber only.
9. The materials used for the wall construction can be natural only.
10. Roofs cover the building and protect it from settling.

**VI. Continue the sentence:**

1. The framework is intended for safely carrying ...
  - a) the weight of the walls.
  - b) the weight of the floors and roofs.
  - c) the loads imposed.
2. Foundations guard the walls against the action of ...
  - a) sun.
  - b) frost.
  - c) thunder.
3. Floors may be ...
  - a) neither of timber nor of a fire-resisting material.
  - b) of a fire-resisting material only.
  - c) either of timber or of a fire-resisting material.
4. The materials used for the wall construction can be ...
  - a) natural only.
  - b) artificial only.
  - c) natural and artificial

## Unit 7. City Planning

*1. Запам'ятайте значення наступних слів і словосполучень для кращого розуміння тексту.*

<b>environment</b>	навколишнє середовище; околиці
<b>forecast</b>	прогноз
<b>master plan</b>	генеральний план забудови
<b>flexible</b>	гнучкий
<b>congestion</b>	перенаселеність, скупчення
<b>pattern</b>	зразок
<b>design</b>	проектувати
<b>dwelling</b>	житловий
<b>pollution</b>	забруднення
<b>survey</b>	геодезичний огляд
<b>suburbs</b>	передмістя, райони
<b>housing construction</b>	житлове будівництво
<b>recreation</b>	відпочинок
<b>define</b>	визначати
<b>development</b>	(тут) забудова

*2. Прочитайте і перекладіть текст. Дайте визначення поняттю «генеральний план».*

That cities should have a plan is now admitted in our time of large-scale construction and plan-making has become an everyday activity. The purpose of a town plan is to give the greatest possible freedom to the individual. It does this by controlling development in such a way that it will take place in the interests of the whole population.

The new development absorbs or modifies an existing environment, and so before it can be designed it is necessary to find out about that environment. It is also necessary to do research of the trends of population growth, the distance from work to home, the preferences for different types of dwelling, the amount of sunshine in rooms, the degree of atmospheric pollution and so on. After the survey is complete a forecast of future development is made in the form of a map, or series of maps: the master plan or development plan. As no one can be certain when the development is to take place and since a society is an organic thing, with life and movement, the plan of a city must be flexible so that it may extend and renew its dwellings, reconstruct its working places, complete its communications and avoid congestion in every part

The plan is never a complete and fixed thing, but rather one that is continually being adapted to the changing needs of the community for whom it is designed. Until quite recent years town plans were always made as inflexible patterns, but history has shown that a plan of this description inevitably breaks down in time.

The flexible plan, preceded by a survey, is one of the most revolutionary ideas that man has ever had about the control of his environment.

Most towns today have a characteristic functional pattern as follows: a central core containing the principal shopping center: business zones,

surrounded by suburbs of houses. Most town planners accept the traditional town pattern. In the preparation of a master plan they are preoccupied with the definition of the town center, industrial areas, and the areas of housing; the creation of open space for recreation, the laying down of a pattern of main roads which run between the built-up areas (thus leaving them free of through traffic) and connect them to each other.

The master plan thus has to define the ultimate growth of the town, but though the master plan is a diagram, and even a flexible one, it is the structure upon which all future development is to take place.

**3. Згадайте значення наступних англійських слів і підберіть до них відповідний переклад з правого стовпчика таблиці.**

1. description	a. повний;
2. purpose	b. основний;
3. freedom	c. свобода;
4. development	d. змінювати;
5. to exist	e. рух;
6. society	f. розвиток; збільшення;
7. recent	g. оточувати;
8. needs	h. потреби;
9. to accept	i. опис;
10. to define	j. ціль, мета;
11. to connect	k. визначати;
12. complete	l. створення;
13. movement	m. здійснювати;
14. to change	n. пристосовуватися;
15. main	o. суспільство;
16. to adapt	p. з'єднувати;
17. creation	q. приймати;
18. to surround	г. нещодавній.

***ть, які з поданих речень розкривають головну думку тексту.***

1. In the preparation of the master plan it is necessary to define the town zones.
2. All cities should have a plan.
3. Before a flexible plan is made it is necessary to find out about the existing environment.
4. The master plan also defines places for active and passive recreation.

**5. Вкажіть, до яких підрозділів тексту можуть підходити запропоновані назви. Розташуйте їх послідовно до викладу матеріалу.**

1. Features of the traditional town pattern.
2. The purpose of a master plan.
3. The purpose of a town plan.
4. What main points should be included in a survey?

**6. Доповніть незакінчені речення відповідно до змісту тексту одним із запропонованих варіантів (a, b, c).**

1. The purpose of a town plan is...
  - a) to do research of the trends of population growth;
  - b) to give the greatest possible freedom to the individual;
  - c) to find out about the existing environment.
2. Before a town plan is designed, it is necessary...
  - a) to renew and extend the dwellings, reconstruct the working places;
  - b) to make a forecast of future development in the form of a map or a series of maps;
  - c) to find out about the existing environment.
3. History has shown that a town plan should be flexible, because...
  - a) it should continually be adapted to the changing needs of the community for whom it is designed;
  - b) it defines the position of schools, shopping centers and business centers;
  - c) it suggests the routes of public transport.
4. The master plane has to define the ultimate the town and...
  - a) no one can be certain when the development is to take place;
  - b) a society is an organic thing with life and movement;
  - c) therefore it is the structure upon which all future development is to take place.
5. In the preparation of a master plan the planners are preoccupied with...
  - a) the idea that in our time plan-making has become an everyday activity;
  - b) the definition of the town pattern and the laying down of a pattern of main roads;
  - c) the necessity to determine the distance from work to home.

**7. Складіть план до тексту із п'яти пунктів і перекажіть його.**

**8. Звертись з текстом і оберіть потрібне значення для наведених нижче виділених слів у словосполученнях і перекладіть їх.**

- |                             |   |
|-----------------------------|---|
| 1. large-scale construction | a. шкала; масштаб; розмір;              |
| 2. everyday activity        | b. щоденний; звичний;                   |
| 3. in such a way            | c. дорога; засіб; спосіб; шлях;         |
| 4. development plan         | d. розвиток; удосконалення; забудова;   |
| 5. master plan              | e. головний; провідний; керівний;       |
| 6. most towns               | f. більш за все; найбільший; більшість; |
| 7. through traffic          | g. крізь; наскрізний; без перешкод;     |
| 8. town pattern             | h. зразок; характер; тип; структура;    |
| 9. lay down the pattern     | i. укласти; скласти; установити.        |

**9. Дайте відповіді на наступні запитання, використовуючи один із запропонованих варіантів.**

1. Why is it necessary to make a survey of the existing environment?
  - a) It is because no one is certain when the development is to take place;

- b) It is because the new development absorbs or modifies the environment;
  - c) It is because growth is a law of life.
2. What does a survey consist in?
- a) It consists in completing the town's communications;
  - b) It consists in finding out about the environment, in research into the trends of population growth and the types of dwellings and into atmospheric pollution as well;
  - c) It consists in defining a place for recreation.

**10. Висловіть заперечення до наступних невірних тверджень відповідно до змісту тексту.**

*3 P A 3 O K : Most city planners suggest quite new town patterns.*

*– No, they don't. Most city planners do not suggest quite new town patterns.*

*As the text says, most town planners accept the traditional town pattern.*

1. The purpose of a plan is to limit the active life of its population.
2. The plan is a complete and fixed thing, since the needs of the community do not change.
3. Growth is a law of life and town growth should not be controlled by any plan.

**11. На основі змісту тексту накресліть план-схему нової забудови. Прокоментуйте її англійською мовою.**

**12. Відповідно до тексту визначте, до якого поняття належить наступне визначення: “It means showing on maps which areas are to locate housing or different kinds of industry”. Перекладіть текст усно без словника (Час – 30 хв.).**

### **Planning**

Planning, or town and country planning, is the control of the locations of towns, of industry, shops, housing, railways, parks, lakes, schools, universities and of the roads and rail ways to them. Zoning means the planning decisions which have been made and drawn out on maps, showing which area or zone is for heavy or light industry or for housing or so on.

There are many professions among practicing planners, including lawyers, architects, agriculturists, economists, scientists, public health doctors and engineers. A civil engineer is probably the most suitable person to locate a town site, apart from such purely civil engineering structures as reservoirs, railways, roads and so on, which only a civil engineer can locate.

The past growth of the population must be studied carefully with all known plans for future industrial development for at least the next twenty-five years, so as to predict with some accuracy the population growth. It is also helpful to know, based on the last count of the population, what its age grouping is. The water engineers and sewage treatment engineers of any area will, with the planners, be particularly interested in any forecasts of population growth.

## Unit 8 Town Design

*1. Запам'ятайте значення наступних слів і словосполучень для кращого розуміння тексту*

<b>to site</b>	розташовуватися
<b>a layout</b>	план, забудова
<b>urban</b>	міський
<b>to pollute</b>	забруднювати
<b>convenient</b>	зручний
<b>a pavement</b>	тротуар
<b>a lamp post</b>	вуличний ліхтар
<b>raw materials</b>	сировина
<b>quality</b>	якість
<b>a vital need</b>	життєво необхідна потреба
<b>to restore</b>	відновлювати
<b>to arouse</b>	викликати

*2. Прочитайте і перекладіть текст.*

In considering the design of a town or city we must always remember that the town must be sited in a healthy position, free from dust, fogs, its layout must not encourage winds through urban spaces, and it must not pollute its own atmosphere. It must provide proper standards of space and sunlight to its buildings and open spaces, and it must be possible to move about the town easily and without danger to life. Its parts must be so arranged that it is a convenient place for dwelling, working and playing.

Connected with these and many other technical problem is the problem of economy. The problem must be thoroughly examined which does not suggest that the cheapest scheme may be the best.

The town must work properly but it should also give pleasure to those who look at it. When we say that a town should be beautiful, we do not mean that it should have some fine parks and noble buildings, we mean that the whole of the environment, down to the most insignificant detail, should be beautiful.

If we examine a typical urban scene we see all kinds of objects like buildings, lamp posts, pavements, posters and trees. It is all of them, together with all the other kinds of objects that are found in the town, that are called the raw materials of a town design. Each of them down to the least important should be aesthetically satisfying.

Designing in terms of past time does not imply the imitation of the existing environment but respect of the form, colour, texture, and general qualities of the existing development. That which is being constructed is for immediate use which is not to suggest that there must be an attempt to ignore the past and be —modern||.

Future time must also be thought of in terms of the estimated life of the objects. Objects like buildings and lamp posts grow old and become out-of-date, and the designer must select those materials that are adequate for their life, no more and no less.

Until comparatively recent times the growth of cities has been without purpose in any sense. Cities must grow, for growth is a law of life. But this natural overgrowth should have aroused action to restore balance. Mere size, as such, is no index of greatness.

All overgrowth means overcrowding, which is loss of space, one of the vital needs of cities. The lesson that has to be learned is that natural growth, and all the other forms of growth have to be made subject to will and intelligence, or the city must be harmed. This is a certain lesson of history.

**3. Згадайте значення наступних англійських слів і підберіть до них відповідний переклад з правого стовпчика таблиці.**

1. to design	a. пропонувати;
2. dwelling	b. розширення, забудова;
3. building	c. проектувати;
4. through	d. кризь;
5. to suggest	e. розглянути;
6. development	f. житловий будинок;
7. to construct	g. можливий;
8. growth	h. будівля;
9. environment	i. задовільний, приємний;
10. to remember	j. навколишнє середовище;
11. to consider	k. вивчати;
12. to examine	l. будувати;
13. possible	m. існувати;
14. satisfying	n. пам'ятати;
15. population	o. ріст;
16. to exist	p. руйнувати;
17. to demolish	q. населення;
18. to site	r. відповідний, належний;
19. to provide	s. розташовувати;
20. proper	t. забезпечувати.

**4. Визначте, які з поданих нижче речень не відповідають змісту тексту.**

1. When building a town we should be very careful not to spoil what exists already. 2. The streets and buildings of existing towns will serve many future generations. 3. When designing a town we should not forget that its citizens should be able to move about it without any danger to their life. 4. The economies of a town plan and the technical problems are closely connected. 5. Scientific forecast also includes progressive methods of planning. 6. The designer should select the best building materials for the objects of his planned town. 7. Cities will grow but their growth must be controlled.

**5. Розташуйте наступні пункти плану відповідно до змісту тексту.**

1. The whole town, and even its details, should be beautiful.
2. A town should be a nice place to live, to work and to rest in.

3. The town designer should remember that his raw materials will exist in the future.

4. All the objects in the town are called the raw materials of town design.

5. City growth should be controlled.

**6. Запропонуйте закінчення до наступних речень згідно тексту.**

1. Before a development plan is made, it is necessary...

2. The plan of a city has to be flexible because...

3. The traditional town pattern is as follows: ...

**7. Перекладіть текст письмово зі словником (Час – 30 хв.).**

As a result of new economic and social forces, the twentieth century witnessed a multiplication of cities, a transformation of their physical utilities, and an unparalleled increase in their size – in population, in area, and often in density. The typical city of the Middle Ages, outside Italy, held less than fifteen thousand people –and often less than five thousand – though Marco Polo had brought back from China accounts of cities with a million inhabitants. As a result of the expansion of financial, industrial, and political power from the year of 1500 onwards, the newer centres often had more than a hundred thousand people. In the twentieth century, cities of a hundred thousand became common and those of a million, like London, Paris, and Berlin, became possible. Indeed the forces that created giant cities were in operation before the technical means to make them habitable were available: London had a million inhabitants at a time (in 1800) when in many quarters the water supply was turned on only twice a week.

## Unit 9. Earth-Moving Machinery

*1. Запам'ятайте значення наступних слів і словосполучень для кращого розуміння тексту.*

<b>plant</b>	механічне обладнання, парк
<b>leveling</b>	планування, планувальні роботи
<b>site</b>	будівельний майданчик
<b>excavation</b>	земляні роботи
<b>to plane off</b>	стругати, знімати шар
<b>bucket</b>	ківш
<b>trenching</b>	риття траншей
<b>wheel</b>	ротор, колесо
<b>blade</b>	ніж
<b>shovel</b>	пряма лопата
<b>to power</b>	приводити в рух
<b>dig</b>	копати
<b>earth-moving machines (equipment)</b>	землерийні машини (обладнання)

*2. Прочитайте і перекладіть текст.*

Mechanized earth digging operations require 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 «American Devils» as they were popularly called.

**3. Визначте, які з наступних речень неправильні або не відповідають змісту тексту.**

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.

**4. Знайдіть в цьому уривку речення, що є відповіддю на поставлене запитання (Час – 3 хв.).**

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.

**5. З'єднайте попарно наступні неповні речення з груп А і В.**

**A.** 1. The best economy is achieved when an all-purpose earth-moving machine is designed...

2. A scraper is simply a box made of sheet steel with an open mouth...

3. Site preparation and leveling are...

4. It is not possible to start on a construction job...

5. The use of expensive mechanical plant requires...

**B.** 1. ... without a good deal of preliminary leveling the site.

2. ... the most fully mechanized of all the operations in building construction.

3. ... careful planning and efficient site organization.

4. ... capable of being converted to suit any class of work.

5. ... which is dragged along the surface of the ground until it is full.

**6. Продовженням яких з незакінчених речень (а, б, с) є наступні вирази?**

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...

**7. Складіть план-конспект до тексту англійською мовою; прокоментуйте пункти плану якомога детальніше українською мовою.**

**8. З'єднайте парами слова з двох стовпчиків і утворіть терміни.**

- |                 |                |
|-----------------|----------------|
| 1. earth-moving | a. tractor     |
| 2. excavating   | b. shovel      |
| 3. site         | c. equipment   |
| 4. continuous   | d. plant       |
| 5. crawler      | e. preparation |
| 6. pneumatic    | f. edge        |
| 7. cutting      | g. tracks      |
| 8. revolving    | h. machinery   |
| 9. railroad     | i. chain       |
| 10. mechanical  | j. tyre        |

**9. Підберіть слова, що мають схоже значення з двох поданих груп слів.**

- |                  |                     |
|------------------|---------------------|
| 1. annual        | a. to reach         |
| 2. amount        | b. to fulfill       |
| 3. to come up to | c. work             |
| 4. to require    | d. to have room for |
| 5. job           | e. yearly           |
| 6. preliminary   | f. to demand        |
| 7. to carry out  | g. not small        |

**10. Перекладіть текст письмово зі словником (Час – 30 хв.).**

### **Mobile Cranes**

The function of a crane is to hoist or lower a load suspended from its jib. Various types of cranes are available, the type and size best suited for a specific

operation being influenced by the following factors: 1. The nature of the work on which it is to operate. 2. The weight of load it has to handle.

Mobile cranes have a wide range of uses on building and civil engineering works of construction. Cranes of this type usually take the form of a frame carrying a jib, a winch, and other necessary hoisting and controlling equipment, the whole being mounted on a cast-iron bed plate fitted with road wheels of the pneumatic type. One may also have them mounted on caterpillar tracks or on a lorry chassis if desired.

At present rope-operated mobile cranes are being superseded by hydraulically operated ones, in which all working operations, but travelling, are performed with the help of hydraulic rams. The jib of the mobile crane can be of the solid or latticed type, the latter being preferred now because of its lower weight.

***11. Вкажіть, які з наведених нижче тверджень, не відповідають змісту тексту Mobile Cranes***

1. A disadvantage of cranes with telescopic booms is that it takes much time to bring them into action from the travelling position.
2. The ability to change the length of the telescopic boom makes it possible to vary the load-lifting capacity of the crane.
3. The hydraulic rams used in hydraulic-ally operated mobile cranes lower the maneuverability of such cranes.

***12. Опишіть дві переваги мобільного крана з телескопічною стрілою.***

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