

Министерство образования и науки Российской Федерации  
Федеральное государственное бюджетное образовательное учреждение  
высшего образования  
«Томский государственный архитектурно-строительный университет»

**МЕТОДИЧЕСКИЕ УКАЗАНИЯ И КОНТРОЛЬНЫЕ  
ЗАДАНИЯ ПО АНГЛИЙСКОМУ ЯЗЫКУ  
(PROFESSIONAL ENGLISH)  
ДЛЯ МАГИСТРАНТОВ**

**Томск 2017**

Методические указания и контрольные задания по английскому языку для магистрантов / Сост. С.Л. Васильева, Л.П. Даниленко – Томск: Изд-во Том. гос. архит-строит. ун-та, 2017. – 43 с.

Рецензент: Ю.Ю. Сильман  
Редактор: С.Б. Пономарева

Методические указания и контрольные задания по английскому языку для магистрантов заочной формы обучения. Методические указания содержат контрольные работы (тексты и лексико-грамматические упражнения к ним).

Печатаются по решению методического семинара кафедры английского языка. Протокол № 6 от 17. 03. 2017 г.

с 01.03.2017  
до 01.03.2022

Подписано в печать:  
Формат 60x90/16. Бумага офсет. Гарнитура Таймс.  
Уч.-изд. л. Тираж 50 экз. Заказ №

Изд-во ТГАСУ, 634003, г.Томск, пл. Соляная, 2.  
Отпечатано с оригинал-макета в ООП ТГАСУ.  
634003, г. Томск, ул. Партизанская,

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Методические указания содержат две контрольные работы.

**Первая контрольная работа выполняется перед экзаменом.** Она включает:

**UNIT 1.** Текст “The House” проработать устно, § 1, 3, 6 из текста перевести письменно. Упражнения 4, 5, 6 выполнить письменно, упражнения 1, 2 – устно.

**UNIT 2.** Текст 2 “The Most Important Building Materials” проработать устно, № 3, 5 из текста перевести письменно. Упражнения 1, 2 выполнить устно, упражнения 4, 5 выполнить письменно.

**UNIT 3.** Текст “Buildings and their functions” § 1, 2 перевести письменно. Упражнения 1, 2 выполнить письменно.

**Вторая контрольная работа выполняется перед зачетом.** Она включает:

**UNIT 4.** Текст “Building a house” § 2 перевести письменно. Упражнения 2, 5 выполнить письменно.

**UNIT 5.** Текст “Final steps in building a house ” проработать устно § 2, 4 из текста перевести письменно. Упражнения 1, 4, выполнить письменно.

## UNIT I

### FROM THE HISTORY OF HUMAN DWELLINGS

#### Word list

1. tent – палатка, шатер;
2. hut – хижина;
3. remains – руины, развалины; остатки;
4. earthen – земляной;
5. shallow hole - неглубокая яма;
6. pole – столб;
7. dwelling – жилище, дом;
8. to arouse admiration – вызывать восхищение;
9. to borrow – заимствовать;
10. slanting – наклонный;
11. to improve on – улучшить (по сравнению с чем-либо), усовершенствовать;
12. cornerstone – угловой камень;
13. to commemorate – ознаменовывать;
14. projecting fortifications – отчетливо выступающие укрепления;
19. to undergo changes – претерпевать изменения;
20. to assemble at a site – собирать (монтировать) на строительной площадке;
21. factory premises – заводские помещения;
22. assembly shop – сборочный цех;
23. labourous – трудоёмкий;
24. skyscraper – небоскрёб.

**1. What do you know about the history of architecture? Read the statements given below and if you think the statement is true, agree to it saying “That’s right”. If you think it is false, disagree saying “That’s wrong” and make the necessary corrections.**

1. The column has played an important part in the history of building, and it was ancient Italy that gave the world its first lessons in the art of making columns.
2. The greater part of the Earth was covered with forests and that's why the first houses in many parts of the world were made of wood.
3. In the past the kinds of houses to be built depended only upon the climate.
4. The Egyptian art of building was very beautiful because the ancient houses were not simple in construction.
5. During the Renaissance arts and sciences didn't undergo any great changes.
6. The churches of ancient Russia were strong buildings with thick walls and small windows and they served as fortresses against enemies.
7. Great effort has gone into restoring the finest ancient architectural monuments of Russia destroyed during the Second World War.
8. Buildings of the 19th century are characterized by widespread use of reinforced concrete.
9. The 20th century is notably for very high buildings and great diversity of architectural style.

### **Text 1. The House**

**Read and translate the text below to check if you are right or wrong.**

1. Man has always been a builder. The kind of house he built depended upon the climate, upon his enemies, and upon the building materials at hand. The first houses in many parts of the world were made of wood, for in those days the greater part of the Earth was covered with forests. Men tied together the tops of

several trees and covered them with the skins of animals or with leaves and grass. So a tent, or hut, was the first house of the primitive people who lived where there was much wood.

In other regions the most convenient building material was stone. Men began building houses out of stone very long ago. Although they were built without cement, the remains of a few of them still exist. It appears that the most ancient homes on the territory of Russia were earthenhouses. One such home was discovered near Voronezh in 1927. It consisted of a shallow hole of oval shape.

2. The ancient Egyptians built very simple houses, by present standards. They put up four walls, and above these they placed a flat roof. The roof was flat because there was very little rain in Egypt. Although their buildings were simple in construction, the Egyptian art of building was very beautiful. Their pyramids and monuments, sphinxes and palaces arose our admiration to this day. An important part in the history of building has been played by the column, and it was ancient Egypt that gave the world its first lessons in the art of making columns.

The Greeks learned much from Egypt. But they did not borrow the flat roof. They built a slanting roof because there was much rain in their country. They also improved on Egypt's columns and soon became the teachers of the world in column making. The Romans, in turn, learned much from the Greeks. First of all they borrowed the slanting roof and the columns. But they added the arch, thus adding much strength and beauty to their buildings.

3. In Ancient Russia architecture flourished for the first time in Kiev Russ. Unfortunately only a few of the church buildings of that period have remained, among them the famous Cathedral of St. Sophia, the cornerstone of which was laid in 1037 to commemorate the victory over the Pechenegs. The churches of that time were strong buildings with thick walls and small

windows. They often had to serve as fortresses against enemy invasions. During the Second World War the finest ancient architectural monuments were destroyed and great effort has gone into restoring them.

4. The Renaissance, which was a European movement, lasted roughly from the 14th to the 17th century. During this period, arts and sciences underwent great changes. In architecture these changes were marked by a return to classical forms and proportions of ancient Roman buildings.

5. Buildings of the 19th century are characterized by the use of new materials and by a great diversity of architectural styles. From the end of the 18th century iron and steel became widely used as alternatives of wood, for by that time many countries experienced shortage of this material. Later the Industrial Revolution brought mass-production of building parts which were manufactured at a factory and then simply assembled at a site.

6. The 20th century is notable for widespread use of steel – reinforced concrete. Huge reinforced concrete units manufactured in heated factory premises are brought to the site which becomes something like an assembly shop. This technique has many advantages over other building methods. First of all it cuts the labour needed for building by 60 to 70% and extends the building season what is very important for countries where winter lasts for many months. Furthermore the duration of building is greatly cut. All this makes the building process less expensive and much less labourous.

Architecture of the 20th century is characterized by very high buildings – particularly skyscrapers – and by great diversity of styles which completely differ from those of the past.

## **2. Choose the correct answer.**

1. Where are reinforced concrete units produced?
  - a) at a factory.
  - b) at a site.
  - c) at an assembly shop.
2. What material was in lack in many countries by the end of the 18th century?
  - a) iron.
  - b) steel.
  - c) wood.
3. What did the Romans borrow from the Greeks?
  - a) the slanting roof and the columns.
  - b) the flat roof and the columns.
  - c) the slanting roof and the arch.
4. What kind of roof did the ancient Egyptians build?
  - a) a slanting roof.
  - b) a flat roof.
  - c) a conical roof.
5. What kind of roof did the ancient Egyptians build?
  - a) a slanting roof
  - b) a flat roof
  - c) a conical roof

## **3. What do these numbers in the text refer to?**

by 60 to 70%; 1037; 1927; from the 14th to the 17 century; the end of the 18th century.

## **4. Complete the following sentences according to the text.**

1. In Ancient Russia architecture flourished for the first time in ...
2. From the end of the 18th century iron and steel became widely used as ..

3. The Greeks built a slanting roof because ...
4. It was ancient Egypt that gave the world ...
5. The most ancient homes on the territory of Russia were ...
6. The 20th century is notable for ...
7. A tent was the first house of ...
8. The Egyptian pyramids, monuments, sphinxes and palaces ...
9. During the Renaissance the changes in architecture were marked by ...

**5. Link the words in the left column with their English equivalents in the right column. Memorize new words.**

- |                               |                   |
|-------------------------------|-------------------|
| 1. производить, изготавливать | a. to extend      |
| 2. древний                    | b. crowded        |
| 3. прочность                  | c. brick          |
| 4. сталь                      | f. palace         |
| 5. форма                      | g. ancient        |
| 6. простой                    | h. strength       |
| 7. кирпич                     | i. simple         |
| 8. переполненный              | j. widespread     |
| 9. увеличивать                | k. shape          |
| 10. дворец                    | m. steel          |
| 11. разрушать                 | n. fortress       |
| 12. широко распространенный   | o. to destroy     |
| 13. крепость                  | p. to manufacture |

**6. Arrange the following in pairs of antonyms. Memorize new words.**

huge; absence; disadvantage; end; to extend; wide; presence; new; to cut; beginning; cheap; complexity; narrow; advantage; scarcity; old; small; abundance; expensive; simplicity.

## **Text 2. The History of Human Dwellings**

**Read and translate the text to find answers to the given questions.**

### **1. Where did primitive people look for protection?**

Most of the time of a modern man is spent within the walls of some building. Houses are built for dwelling; large buildings are constructed for industrial purposes; theatres, museums, public and scientific institutions are built for cultural activities of the people. The purposes of modern buildings differ widely, but all of them originate from the efforts of primitive people to protect themselves from stormy weather, wild animals and human enemies. Protection was looked for everywhere. In prehistoric times men looked for protection under the branches of trees, some covered themselves with skins of animals to protect themselves from cold and rain, others settled in caves.

### **2. Why were the houses in town higher than in the country?**

In the days of early civilization, once men had learnt how to build simple houses for their families, they began to feel a need to have a number of different kinds of houses in one place. At first the difference was mainly in size – the chief or leader had a larger hut or tent than the rest of the people. Much later, when men began to build towns, there grew up a difference between town houses and country houses. The streets in towns were very narrow and there was not much place for building within the town walls, and therefore houses had to be higher than they were in the country. A typical town house consisted of a shop opening on the street where the man did his work or sold his goods, with a kitchen behind and a bedroom above.

### **3. What were the houses in ancient Egypt built of?**

In the country ordinary people lived in simple one-storey cottages which did not differ much from the mud and stone huts of an earlier age. The rich people in the country, on the other hand, built

huge castles with thick walls and narrow windows. These castles were built not only as dwellings, but also to stand up to enemy attack and to be strong bases in time of war. The earliest houses of which anything is known are those of ancient Egypt. They were built of bricks dried in the sun. Some of them were built around a courtyard or garden with rooms opening into it.

#### **4. How did the light come into early English house?**

Greek houses, too, had a courtyard in the middle. There were special women's quarters, usually upstairs on the second storey. In Rome bricks were used for building and houses were often finished with plaster over bricks on both inside and outside walls. The centre of family life was a garden-courtyard, surrounded by columns and with rooms opening out into it.

The earliest houses in Britain were round, built of wood or wicker basket work plastered over with clay. In the centre of the house was the hearth and light came in through the hole in the roof above it and through the door because there were no windows.

### **1. Write the questions to the following answers.**

1. Theatres, museums, public and scientific institutions.
2. From the efforts of primitive men to protect themselves from stormy weather, wild animals and enemies.
3. The chief or leader.
4. Of a shop opening on the street, with a kitchen behind and a bedroom above.
5. In simple one-storey cottages.
6. To stand up to enemy attack.
7. With plaster over bricks on both inside and outside walls.
8. Of wood or wicker basket work.
9. Because there were no windows.

## UNIT II

### BUILDING MATERIALS

#### Word list

1. fire-resistant огнестойкий
2. artificial ..... искусственный, не природный
3. timber ..... лесоматериал, древесина
4. lime ..... известь
5. auxiliary ..... вспомогательный
6. clay ..... глина
7. To decay ..... гнить
8. to belong to ..... принадлежать
9. porosity ..... пористость
10. sound and heat insulation звуко и теплоизоляция
11. indestructible ..... неразрушимый
12. permanent ..... (зд.) прочный
13. forerunner ..... предвестник
14. variety ..... разнообразие

#### Text 1. The Oldest Materials of Construction

##### Read and translate the text.

1. Materials that are used for structural purposes should be hard, durable, fire-resistant and easily fastened together. All building materials are divided into three main groups: 1) Main building materials such as rocks and artificial stones, timber and metal. 2) Binding materials such as lime, gypsum and cement. 3) Secondary or auxiliary materials which are used for the interior parts of the buildings.

Natural building materials are: stone, sand, lime and timber. Artificial building materials are: cement, clay products and concrete. The most commonly used materials are: steel, concrete, reinforced concrete, stone, wood and brick. They differ in hardness, durability and fire-resistance.

2. Wood is the most ancient structural material. It is light, cheap and easy to work. But wood has certain disadvantages: it burns and decays. Stone belongs to one of the oldest building materials used by men. The properties of stone are the following: mechanical strength, compactness, sound and heat insulation, fire-resistance.

3. Bricks were known many thousands of years ago. They are the examples of artificial building materials. Brick is a universally used structural material which in modern times is made by pressing clay into blocks and burning them to hardness. Bricks in their most primitive form were not burnt, but were hardened by being dried in the sun. In that form they were utilized during many centuries and are used even today in regions with the proper climate. Brick probably existed in times of which no record remained.

4. Since the Middle Ages brickwork has been in constant use everywhere, in every sort of construction and in every architectural style. Good bricks are practically indestructible by fire or atmospheric action and more durable than stone.

At the beginning of the 19th century mechanical processes came into everyday use and by the end of the century had almost entirely replaced the ancient hand-fashioned methods. It is not so long ago when almost all permanent structures were built of brick, stone or wood. They still are used extensively. But the introduction of concrete and structural steel was a forerunner to the development of a great variety of new construction materials.

**1. Match the beginnings of the sentences to their ends according to the text.**

- |   |  |
|---|--|
| 1. Building materials differ in ...   | a. mechanical strength, porosity, compactness, sound and heat insulation, fire-resistance. |
| 2. Secondary or auxiliary materials are used for ...  | b. a great variety of the construction   |
| 3. Natural building materials are...  | c. brick, stone, wood  |
| 4. Artificial building materials are ...  | d. stone, sand, lime, timber   |
| 5. It is not so long when almost all permanent structures were built of ...                     | e. cement, clay products, concrete   |
| 6. Construction materials should be...  | f. hardness, durability and fire resistance  |
| 7. The properties of stone are the following ...  | g. hard, durable, fire-resistant, easily- fastened together                                |
| 8. The introduction of concrete and structural steel was a forerunner to the development of ... | h. the interior parts of the buildings   |

## 2. Answer the questions.

1. How many groups are all building materials divided into? What are they?
2. What are the most commonly used building materials?
3. What are the oldest materials?

4. What are the properties of stone?
5. How was brick made in past times?
6. What properties do good bricks have?
7. What led to the development of a great variety of new building materials?

## **Text 2. The Most Important and Widely Used Building Materials**

### **Word List**

1. to select – выбирать;
2. uniform – однородный;
3. high rate of strength – высокая прочность;
4. high-alumina cement – высокоалюминистый цемент;
5. conglomerate – обломочная горная порода;
6. crushed stone – щебень;
7. mortar – раствор;
8. gypsum – гипс;
9. lime – известь;
10. masonry – каменная или кирпичная кладка;
11. compressive load – нагрузка на сжатие;
12. brittle – хрупкий;
13. tensile stress – растягивающее напряжение;
14. ordinary reinforcement – обычная (простая) арматура;
15. prestressed reinforcement – предварительно напряженная арматура;
16. to reinforce – укреплять, армировать (материалы);
17. aggregate – заполнитель;
18. limestone – известняк.
19. rapid-hardening – быстросхватывающийся, быстротвердеющий;

20. blast-furnace cement – шлаковый цемент;
21. blast-furnace slag – доменный шлак;
22. desirable – желательный;
23. to undergo – подвергаться, выдерживать (нагрузку);
24. rod – стержень, прут.

### **Read and translate the following text.**

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 work of construction, the civil engineer must consider many factors. *Every specialist knows of availability, cost and physical properties of materials being very important ones.*

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 many other materials.

3. *We know of lime, gypsum and cement being 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. These materials form very important elements in all masonry structures. As a class they are designed as cementing materials.

4. One of the common building materials used in construction is **cement**. It is made of limestone and clay. There are two groups of cement: natural and artificial. The artificial cement group includes: a) Portland cement (ordinary or normal, rapidhardening, blast-furnace, white, coloured); b) high alumina cement.

Portland cement is used in foundations, walls, floor, roofs, bridges, etc. ***Rapid-hardening cement can be employed in cold weather because of its being less liable than ordinary cement to damage from frost.*** Portland blast-furnace cement is a mixture of ordinary Portland cement and blast-furnace slag. High alumina cement is a material containing alumina. It has an extremely high rate of strength.

5. As ***concrete*** is one of the strongest materials it is the most common building material for modern construction practice. Concrete may be considered an artificial conglomerate of crushed stone, gravel or similar inert material with a mortar. A specific characteristic of this material is to be able to undergo high compressive loads. In general, concrete must be hard, strong, durable, fire-resistant. The characteristics of concrete depend on the quality of the materials it consists of, grading of the aggregates, proportioning and amount of water used.

6. The most important construction material which gives modern architecture its special character is ***reinforced concrete***. Reinforced concrete is a combination of two strongest materials, concrete and steel. The resulting material has the advantages of both. Concrete cannot withstand tensile stresses as it is brittle, 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. Like any other stone materials, concrete offers a good resistance to compressive loads. 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.

**1. Choose the correct answer.**

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) Lime, gypsum and cement may be considered to be the most important binding materials.
3. What does the artificial cement group include?
  - a) High alumina cement and Portland cement;
  - b) Ordinary Portland cement, rapid-hardening cement, blast-furnace cement, white and coloured cements;
  - c) Normal Portland cement.
4. Which is used for ornamental purposes in construction?
  - a) Ordinary Portland cement;
  - b) Blast-furnace cement;
  - c) White Portland cement.
5. What are the aggregates of concrete?
  - a) Gravel, crushed stone;
  - b) Gravel or similar inert material;
  - c) Mortar.
6. Why can't concrete withstand tensile stresses?
  - a) Because it is durable, strong, hard and fire-resistant;
  - b) Because it is one of the strongest materials;
  - c) Because it is brittle.
7. What is reinforced concrete used for?
  - a) It is used for industrial buildings;

- b) This material is used for industrial and residential buildings;
- c) It is used for decoration of buildings.

**2. Are these sentences true or false? Correct the false ones.**

1. Steel and concrete are most widely used for binding together masonry units.
2. Cement is the most important component of bricks.
3. The material which contains alumina has an extremely high rate of strength increase.
4. 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. The factors that condition the selection of materials for construction do not include physical properties, cost and availability.
6. Binding materials are cement, gypsum and lime.
7. Rapid-hardening cement can be used in cold weather because it is less liable than ordinary cement to damage from frost.
8. Reinforced concrete is a building material in which the joint functions of concrete and steel are advantageously utilized.

**3. Find in the text nouns corresponding to the following verbs, translate and memorize them.**

to mix, to decorate, to design, to construct, to combine, to resist, to reinforce, to apply.

**4. Fill in each gap with a suitable word from the list below the sentences.**

*rapid-hardening, combination, prestressed, artificial, composition, conglomerate, compressive, mortar, desirable, tensile, heat insulating*

1. The ... cement group includes Portland cement and high alumina cement.
2. ... cement is used in cold weather.
3. White Portland cement has the same chemical ... as ordinary Portland cement.
4. White cement is used for decoration of buildings where the white colour is ...
5. Concrete is an artificial ... of crushed stone, gravel or similar inert material with a ...
6. To undergo high ... loads is a specific characteristic of concrete.
7. Reinforced concrete is a ... of steel and concrete.
8. Concrete can't withstand ... stresses.
9. There are two kinds of reinforced concrete: with ordinary reinforcement and concrete with ... reinforcement.
10. All kinds of concrete – heavy, light and ... are employed.

### **5. Translate into English using the words of the text.**

1. Известь, гипс и цемент широко используются для связывания (скрепления) элементов кирпичной или каменной кладки.
2. Цемент является самым важным компонентом бетона.
3. Цемент делают из известняка и глины
4. Портландцемент может быть простым, быстротвердеющим, шлаковым, белым и цветным.
5. Цемент с высоким содержанием глинозёма намного дороже обычного портландцемента.
6. Бетон должен быть твердым, прочным, долговечным и огнестойким.
7. Железобетон имеет выгодные свойства и бетона, и стали.
8. Железобетон придаёт современной архитектуре особый характер.

## UNIT III

### TYPES OF BUILDINGS

#### Word list

1. to govern – определять, обуславливать;
2. residential construction – жилищное строительство;
3. technological development – технический прогресс;
4. evolution – развитие;
5. to condition – обуславливать;
6. search – поиск;
7. to promote – способствовать;
8. technological changes – изменения в технологическом процессе;
9. to replace – заменять, замещать;
10. assemblage – монтаж, сборка;
11. factory-made – заводского изготовления;
12. to fit – устанавливать, собирать;
13. carpenter – плотник;
14. to achieve – достигать;
15. reinforced concrete blocks – железобетонные блоки.

#### Text 1. Buildings and their functions

#### Read and translate the text.

1. Types of buildings depend upon social formations and may be classified according to the role in the community. The types of buildings may be domestic, educational, office, industrial, recreational, etc. The type and the function of a building govern its design, building materials and techniques. But the common and necessary conditions are:

- 1) its suitability to use by human beings in general and its adaptability to particular human activities;
- 2) 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 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 meaningful form. It should be mentioned that long ago large housing programs promoted technological changes in the building industry. Craft operations at the building site were replaced by mechanized operations at the factory.

4. Now houses are assemblages of factory-made elements. Windows and doors, once made and fitted by carpenters at the site now arrive from a factory fitted and finished with hardware and glass, ready to be set in place. The windows and doors must look well from the interior as well as from the exterior. Windows must be sized and located for the best possible lighting and ventilation. 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 at mechanized factories and erected at the site.

## 1. Match the beginnings of the sentences to their ends.

- |   |  |
|---|--|
| 1. Types of buildings may be classified according to ...                  | a. reinforced concrete blocks and units          |
| 2. The type and the function of a building govern ...                     | b. the building industry                         |
| 3. The apartment houses mostly built to ...                               | c. differ widely                                 |
| 4. Craft operations at the building site were replaced by ...             | d. factory-made elements                         |
| 5. Large housing programs promoted technological changes in ...           | e. mechanized operations at the factory          |
| 6. Houses are assemblages of ...  | f. its design, building materials and techniques |
| 7. The high degree of mechanization and standardization is achieved by... | g. the role in the community                     |
| 8. The purposes of modern buildings ...                                   | h. suit urban conditions                         |

## 2. Answer the questions.

1. What do types of buildings depend upon?
2. What are the apartment houses built for?
3. What influences the techniques of construction?
4. What factors is the evolution of techniques conditioned by?
5. What promoted technological changes in the building industry?
6. What is the high degree of mechanization achieved by?
7. What do various methods of constructing reinforced concrete houses involve?

## Text 2. Residential and Industrial Buildings

### Word list

1. skilled – квалифицированный;
2. managerial staff – управленческий аппарат;
3. storage facilities – складские помещения;
3. housing – жилищное строительство;
4. technological advance – технический прогресс;
5. to emphasize – подчеркивать, придавать особое значение;
6. to affect – влиять;
7. to envisage – предусматривать;
8. to advocate – отстаивать;
9. hot-water supply – горячее водоснабжение;
10. sanitary fittings – сантехническое оборудование;
11. to acquire – приобретать;
13. to demand – требовать.
14. issue – вопрос, проблема;
15. to utilize – использовать;
16. offsite prefabrication – фабричное изготовление;
17. site planning – планирование работ на строительной площадке;
18. prefabricated – заводского изготовления, сборный;
19. to require – требовать;
20. to employ – предоставлять работу; держать на службе/работе;
21. proportion – часть;
22. modern amenities – современные удобства;
23. to afford – позволить себе;
24. food processing plant – пищекомбинат;
25. frame – рама, каркас.

**1. What is your knowledge of residential and industrial buildings? Complete the sentences choosing the most suitable variant. Then read the text given below to see if you are right or wrong.**

1. Building industry includes ...
  - a) residential and industrial construction;
  - b) industrial and public construction;
  - c) residential, public and industrial construction
  
2. Industrial type of construction involves ...
  - a) theatres, cinemas, museums, libraries;
  - b) factories, mines, laboratories, food processing plants;
  - c) flats and houses
  
3. Modern industrial buildings have demonstrated the advantages of ...
  - a) hot-water supply and sanitary fittings;
  - b) reinforced concrete arches, metal frames, glass walls and prefabricated parts;
  - c) all modern conveniences for a dwelling
  
4. The level of living is ... by housing.
  - a) very much affected;
  - b) not affected;
  - c) not very much affected
  
5. Present-day designs for residential construction envisage ...
  - a) all modern conveniences for a dwelling;
  - b) technological advance;
  - c) storage facilities

**Read and translate the text. Check your answers to the questions of the previous exercise.**

## **Residential and Industrial Buildings**

1. Building industry including residential, public and industrial construction holds a considerable place in the National Economy. The problems of construction being very important, they have grown into major political issues in most countries.

2. Housing is prominent among the factors affecting the level of living. Any architect emphasizes the importance of the housing improvement, this improvement representing a concrete and visible rise in the general level of living. In our country home building industry is the concern of the state, particular attention being paid to the research and development in housing technology. Building industry has brought to life new methods and techniques of construction with great emphasis upon standardization, new level of technological advance utilizing such techniques as offsite prefabrication, use of reinforced concrete panels and large-scale site planning.

3. At present prefabricated structures may be classified into two principal groups – for residential houses and industrial buildings. It must be mentioned that with building industry requiring skilled workers, building engineers and architects, managerial staff and designers, it employs a considerable proportion of the qualified specialists.

4. Present-day designs for residential construction envisage all modern amenities for a dwelling, they advocate large, 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. A house which is a physical environment where a family lives is acquiring a new and modern look.

5. 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.

6. Each of these functions demands its own structural solutions 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.

## **2. Here are some false statements. Correct them.**

1. Housing does not affect the level of living.
2. Not much attention is paid to the problems of construction.
3. Modern residential houses and industrial buildings are mostly built of bricks and timber.
4. Modern industrial buildings have demonstrated the advantages of plastics and ceramics.
5. Buildings may be divided into three classes according to whether the plan must give greater attention to the size and movement of machinery or of persons.
6. The differing functions of industrial buildings do not require their own structural solutions and techniques.
7. Industrial type of construction involves better built and better equipped flats and houses.

## **3. Arrange the following in pairs of synonyms. Memorize new words.**

to affect, to require, houses, to bring into being, to demand, to use, to influence, dwellings, conveniences, housing, prefabricated, to utilize, to bring to life, amenities, residential construction, factory-made, present-day, significant, skilled, technological development, importance, flat, qualified, technological advance, important, apartment, modern, significance.

#### **4. Translate the following sentences into English.**

1. Жилищное строительство влияет на уровень жизни людей.
2. Проблемам строительства нужно уделять много внимания.
3. Строительной промышленности требуются квалифицированные рабочие, инженеры-строители, архитекторы, проектировщики.
4. Строительная промышленность предоставляет работу многим квалифицированным специалистам.
5. Современные проекты жилищного строительства предусматривают все коммунальные удобства.
6. Дом приобретает новый современный вид.
7. Промышленный тип строительства включает заводы, шахты, лаборатории, пищекомбинаты, складские помещения, выставочные залы, здания для учреждений и т.д.
8. Здания можно разделить на 3 группы, существуют жилые, промышленные и общественные здания, такие как театры, кинотеатры, музеи, библиотеки.
10. Современные промышленные здания продемонстрировали преимущества железобетонных арок, металлических рам, деталей заводского изготовления.

## UNIT IV

### BUILDING A HOUSE

#### Word list

1. a lot – участок земли (амер.)
2. a frame – каркас, корпус
3. a footing – нижняя часть фундамента
4. to supervise – руководить
5. to bolt – скреплять
6. joist – брус/балка
7. a beam – балка, перекладина
8. plywood – фанера
9. to nail – прибивать (гвоздями)
10. lumber – лесоматериал
11. a stud – стойка
12. a plate – планка
13. sheathing – обшивка
14. fiberboard – ДВП
15. plasterboard – гипсокартон
16. tar paper – рубероид
17. rafter – стропило
18. ridgeboard – коньковый брус (на крыше)
19. a ridge – конек
20. shingle – кровельная плитка
21. flashing – слив, фартук (элемент кровли)
22. a base bar – лежень

## Text 1. Building a house

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

1. ***Planning a house.*** If a person decides to build a house, he or she must first select a lot or a piece of land. The next step is to consult an architect or a 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 the 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.

2. ***The frame*** is the skeleton around which the rest of the house is built. After the footings and foundations have been formed, workers bolt wooden base plates to the foundation. The base bars support the outside walls. Floor joists or support beams are attached to the base bars about 16 inches (41 centimeters) apart. A joist runs from one base bar and joins with another joist from the opposite base bar. Floor boards or plywood nailed on top of the joists make the bottom layer of the floor. The structure is then 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 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.

3. The sheathing or the inner layer of the outside wall may be wood, fiberboard, or plasterboard nailed to the studs. Sometimes builders put 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.

4. 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 ridgeboard. A board is 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.

5. After that carpenters nail sheathing to the tops of the rafters and they add heavy building tar 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, places around the chimney and other roof openings, insulate the roof from the chimney and also prevent water from leaking into the house.

### **1. Answer the following questions.**

1. What is necessary to do first if you decide to build a house?
2. Who designs the house according to the buyer's ideas?
3. What is the frame?
4. What supports the outside walls?
5. What is called studs?
6. What materials are used for sheathing or inner layer of the outside wall?
7. What materials are used for siding?
8. What form can a roof have?
9. What supports the weight of the roof and the floor?

## 2. Choose a word to complete the sentences.

*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, base bar, fiberboard, wall frame, tar paper, the chimney, wood, slant, the weight.*

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

## 3. Find out from your partner:

- if he/she knows what is necessary to do to build a house;
- what the role of an architect is;
- what the role of a carpenter is;

#### 4. Prove that

- the frame is the skeleton of the house;
- the knowledge of codes is important.

#### 5. 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. Workers bolt wooden 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.

6. *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.
7. *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.
8. *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.

## **Text 2. Foundations**

### **Word list**

- 1. undisturbed – цельный, неповрежденный
- 2. a shaft – шахта
- 3. a pile – столб/свая
- 4. a pit – карьер
- 5. to lean – наклоняться
- 6. to forecast – предвидеть
- 7. to float – поддерживать на поверхности
- 8. hollow – пустой
- 9. to grip – держать
- 10. unevenly – неравномерно
- 11. an ironstone – железная руда

## **Read and translate the text.**

1. The foundation supports a house. If the earth is stable, laying the foundations of small buildings possesses few problems. But in a tall modern structure the load may be very heavy indeed. That's why 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.

2. First construction workers begin excavating, or digging holes or trenches for the footings, the lowest part of the foundation. 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 changes 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.

3. The footings support each wall load. They are made by pouring concrete into wood or steel forms that workers place below the frost line or the depth to which the ground freezes. This is done so that the footings will not freeze and move. Footings usually extend from 1 to 6 feet (30 to 180 centimeters) beneath ground level. Builders generally use concrete or concrete block for the house's foundation. The foundation may extend from 8 inches to 3 feet (20 to 91 centimeters) above the ground.

4. 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 holds the column and prevents it from moving.

5. The area within the foundation below the first story is the basement. Basements add to the cost of building a house, but they provide extra room. In other words, when it is a question of floating a building, the foundations take the form of a vast, hollow concrete box. This box is divided into separate chambers for the home's heating unit, ventilating plants and laundry equipment, and for storage space for the building. Some basements also have a recreation room. Only about 40 per cent of the houses, built today, have basements.

6. In many low or damp regions, houses are raised above the ground on concrete piers, or supports. Sometimes a slab foundation is laid directly on the ground, especially if the earth beneath a house is hard. The ground must first be leveled. Workers then spread a filler, usually stone, and cover it with a moistureproof paper. The filler and the paper prevent moisture from coming through the slab that is made by pouring concrete, about 4 inches (10 centimeters) thick, directly on top of the paper. Luckiest of all are those foundation engineers whose buildings stand on hard rock like granite or ironstone. For them neither piles nor flotation need to be used.

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

1. What were the problems of a building's foundations from the earliest times?
2. Why is it difficult to lay foundation of a tall modern structure?
3. What supports a house?
4. What must engineer learn before deciding what type of foundation is necessary for that soil?

5. Why do workers place the footings below the frost line?
6. What is used for the house's foundation?
7. In what cases are the piles used?
8. What is a basement?
9. What prevents moisture from coming through the slab?

## **2. Prove that:**

- the foundation engineer has an extremely important job to do;
- foundation supports a house.

## **UNIT V**

### **UTILITY SYSTEM**

#### **Word list**

1. a plumber – сантехник (водопроводчик);
2. a pipe – труба;
3. a fixture – приспособление, зажим;
4. a sink – сточная труба;
5. a trap – затвор-ревизия (санитарных приборов);
6. sewage – сточные воды, нечистоты;
7. a washbasin – умывальник, раковина;
8. a drain – водосток, спускное отверстие;
9. a tip – штекер/наконечник;
10. to leak – просачиваться, течь;
11. a cast-iron – чугун;
12. to dissolve – растворять, разжижать;
13. a sludge – отстой, осадок сточной жидкости;
14. an insulation – изолирующий материал;
15. a perlite – перлит (вулканическое стекло);
16. a fiberglass – стекловолокно;

17. flaky – пластинчатый, чешуйчатый, хлопьевидный;
18. vermiculite – вермикулит;
19. a fan – вентилятор;
20. to carry away waste – избавляться от отходов;
21. to keep out – выводить, выбрасывать;
22. a disposal pipe – очистная труба;
23. the city sewerage system – городская канализационная система;
24. a septic tank – отстойник;
25. a dead-air space – застойная зона;
26. to save fuel costs – экономить тепловые затраты;
27. a rock wool – шлаковата;
28. in radiant heating – при радиантной подаче тепла;
29. sewerage – канализация;
30. a plumber – сантехник.

### **Text 1. Final steps in building a house**

#### **Read and translate the text.**

1. *Plumbing*. During construction, plumbers install the pipes that will supply gas and water, and carry away waste. They install bathroom fixtures and sinks just before other workers add the finishing touches to the house. Plumbers also install traps to keep out sewages. The trap used for bathroom washbasins, for example a P-shaped pipe, locates directly below the drain. To function properly, traps must have outside ventilation of the air.

A cast-iron waste disposal pipe runs from inside the house to about 5 feet (1,5 meters) outside, where it connects with a pipe of another material, usually clay. This pipe connects home-disposal pipe with the sewerage system of the city. In areas without a city sewerage system, a septic tank near the house holds sewage until it

dissolves. The sludge, remaining in the tank, must be removed at intervals.

2. *Insulation* reduces the amount of heat or cold that passes through walls, floors, and ceilings of a house. When the air around the house is warmer or colder than the air inside, heat passes from the warm air to the cold air. This means that in winter the heat will pass to the outside, and the house will become cold. In summer the heat outside passes into the house. Insulation fills the air spaces in walls, floors and ceilings and creates dead-air space. This helps to prevent heat from passing through. Insulation can save fuel costs in heating a house. Insulation is made from many materials, including cellulose, rock wool, a glassy lava called perlite, gypsum, certain plastics, fiberglass, and a flaky mineral called vermiculite. Insulation comes as blankets, boards, paper and sheathing. The type of insulation used depends on the climate and on whether it insulates floors, ceilings or walls.

3. *Heating and air conditioning.* Most houses have central heating systems. One furnace or heating unit, supplies heat for the entire house. Such houses are heated by warm air, steam, or hot water. In hot-air heating a fan, connected to the furnace, blows warm air through pipes into the rooms. In steam or hot-water heating the steam or hot water passes through radiators that stand throughout the house. In radiant heating, hot-water pipes run under the floors or in the ceilings or walls.

Air-conditioning units may be used to cool and heat houses. An air conditioner takes warm air from the house, cools it, removes moisture, and recirculates cool air. It also may warm cold air, add moisture and recirculate warm air.

4. *Interior decoration.* In a new house, builders usually paints the rooms and finish the floors as a part of the contract with the homeowner. The owner generally selects, buys and arranges the furnishings. But sometimes the owner hires a professional

interior decorator to do this job. Landscaping is the last step in building a house. Most builders try to keep the natural outline of the land and to preserve different sorts of trees which grow in this place.

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

1. What do plumbers do during construction?
2. What is necessary to install to keep out sewages?
3. What is necessary to install in areas without a city sewerage system to hold sewage until it dissolves?
4. Where does water from the sewage flow?
5. What is the function of insulation?
6. What supplies heat for the entire house?
7. When may air-conditioning units be used?
8. Who paints the rooms and finishes the floors?
9. Why does the owner hire a professional interior decorator to do some jobs?
10. What is the last step in building a house?
11. Why is it important to keep the natural outline of the land?

### **2. Agree or disagree with the following statements:**

1. During construction, plumbers install the pipes that will supply heat and ventilation.
2. Plumbers also install special traps to keep out sewages.
3. To function properly, traps must have inside ventilation of the air.
4. The cast-iron waste disposal pipe connects home-disposal pipe with the sewerage system of the city.
5. In areas without a city sewerage system, a sink near the house holds sewage until it comes into ground.
6. Insulation increases the amount of heat or cold that passes

through walls, floors, and ceilings of a house.

7. Insulation is made from many materials, including cotton, wool, wadding etc.
8. The type of insulation used depends on size of a house.
9. In radiant heating, cold-water pipes run between the walls.

### **3. Prove that:**

- insulation can save fuel costs in heating a house;
- it is necessary to keep the natural outline of the land near a new house.

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

1. *Plumbers install the pipes that will supply ... .*

- a) heat and water, and carry away bad smell;
- b) gas and water, and carry away waste;
- c) gas and heat, and carry out cold air.

2. *... , a septic tank near the house holds sewage until it dissolves.*

- a) In areas which are rather far from a city sewerage system;
- b) In village areas which have no sewerage system near their houses;
- c) In areas without a city sewerage system.

3. *Water from the sewage flows ... .*

- a) through pipes into a special septic tank;
- b) directly into the ground;
- c) through pipes into the ground.

4. *When the air around the house is warmer or colder, than the air inside, ... .*

- a) heat passes from the cold air to the warm air;
- b) heat passes from the warm air to the cold air;
- c) water passes from one pipe to the other.

5. *Insulation fills ... and creates dead-air space.*

- a) the air spaces in walls, floors and ceilings;
- b) all spear places in walls, floors and ceilings;
- c) the air spaces in floors and ceilings.

6. *Insulation is made from many materials, including ... .*

- a) cellulose, rock wool, a glassy lava called perlite;
- b) cellulose, cotton, wool, a glassy lava called perlite;
- c) cellulose, rock wool, a glassy lava called vermiculite.

7. *One furnace or heating unit, ... .*

- a) is used for heating a house;
- b) supplies heat for only one room;
- c) supplies heat for the entire house.

8. *In hot-air heating a fan, connected to the furnace, ... .*

- a) blows cold air through pipes into the kitchen;
- b) blows warm air through pipes into the rooms;
- c) blows hot air through pipes into the bathroom.

9. *An air conditioner ... , and recirculates cool air.*

- a) takes warm air from the house, cools it, removes moisture;
- b) takes hot air from the lower floor, cools it, removes moisture;
- c) takes warm air from radiators, cools it, removes moisture.

10. *An air conditioner may ... .*

- a) cold hot air, add moisture and recirculate cold air;
- b) moisture warm air, add cold air and recirculate warm and cold air;
- c) warm cold air, add moisture and recirculate warm air.

11. *Sometimes the owner hires a professional interior decorator ...*
- a) to help him to buy necessary tools for making a repair of a flat;
  - b) to select, to buy and to arrange the furnishings;
  - c) to select and to buy new wall papers for his flat.
12. *... and to preserve different sorts of trees which grow in this place.*
- a) Professional decorators advise to keep the natural outline of the land;
  - b) Most builders try to keep the natural outline of the land;
  - c) Most builders try to clean the territory round the new house.

### **Список использованной литературы.**

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