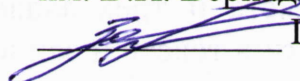


МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ  
Федеральное государственное автономное образовательное  
учреждение высшего образования  
**«КРЫМСКИЙ ФЕДЕРАЛЬНЫЙ УНИВЕРСИТЕТ ИМЕНИ В.И. ВЕРНАДСКОГО»**  
(ФГАОУ ВО «КФУ им. В.И. ВЕРНАДСКОГО»)

**Бахчисарайский колледж строительства,  
архитектуры и дизайна (филиал)  
ФГАОУ ВО «КФУ им. В.И. Вернадского»**

Утверждаю  
Директор Бахчисарайского  
колледжа строительства,  
архитектуры и дизайна  
(филиал) ФГАОУ ВО «КФУ  
им. В.И. Вернадского»

 Г.П. Пехарь

**МЕТОДИЧЕСКОЕ ПОСОБИЕ  
ТЕСТЫ И КОНТРОЛЬНЫЕ ЗАДАНИЯ  
К ПРОФЕССИОНАЛЬНО-НАПРАВЛЕННОМУ КУРСУ  
УЧЕБНОЙ ДИСЦИПЛИНЫ  
ОГСЭ.03 Иностранный язык (английский)**

Специальности:  
08.02.01 Строительство и эксплуатация зданий и сооружений,  
07.02.01 Архитектура  
для среднего профессионального образования

г. Бахчисарай  
2016 г.

Рассмотрено и одобрено на заседании

Введено в действие

методического совета,

приказом директора

протокол № 8 от «31» марта 2016 г. от «04» апреля 2016 г. № 65

Разработчик:

**Давыдова В.Д.** Методическое пособие. Тесты и контрольные задания к профессионально-направленному курсу учебной дисциплины ОГСЭ.03 Иностранный язык (английский) по специальностям 08.02.01 Строительство и эксплуатация зданий и сооружений, 07.02.01 Архитектура для среднего профессионального образования. – Бахчисарай: БКСАиД (филиал) ФГАОУ КФУ «им. В.И. Вернадского», 2016. – 34с.

Методическое пособие включает 30 вариантов тестов, каждый из которых состоит из текста и трех заданий: прочитать текст и ответить на вопросы по тексту, найти в тексте и записать английские эквиваленты к русским словам и словосочетаниям, соединить термины с их понятиями. Тематика разработанных текстов соответствует тематике разделов профессионально-направленного курса.

Предназначено для обучающихся дневного и заочного отделений по специальностям: 08.02.01 Строительство и эксплуатация зданий и сооружений, 07.02.01 Архитектура.

Утверждено на заседании цикловой комиссии № 2 общеобразовательных социально-гуманитарных дисциплин

«17» февраля 2016 г.

Протокол № 8

Председатель ЦК  Л.А. Сатарина

## ВСТУПЛЕНИЕ

Дисциплина ОГСЭ.03 Иностранный язык СПО изучается в цикле общих гуманитарных и социально-экономических дисциплин.

В результате изучения дисциплины «Иностранный язык» обучающийся должен:

**уметь:**

- общаться (устно и письменно) на иностранном языке на профессиональные и повседневные темы;
- переводить (со словарем) иностранные тексты профессиональной направленности;
- самостоятельно совершенствовать устную и письменную речь, пополнять словарный запас;

**знать:**

- лексический (1200–1400 лексических единиц) и грамматический минимум, необходимый для чтения и перевода (со словарем) иностранных текстов профессиональной направленности.

Данные тесты и контрольные задания разработаны к профессионально-направленному курсу учебной дисциплины ОГСЭ.03 Иностранный язык (английский) для среднего профессионального образования, разработанной на основе ФГОС СПО по специальностям 08.02.01 Строительство и эксплуатация зданий и сооружений, 07.02.01 Архитектура.

Тесты и контрольные задания соответствуют грамматической и лексической тематике профессионально-направленного курса. Каждый тест состоит из текста и трех заданий: прочитать текст и ответить на вопросы по тексту, найти в тексте и записать английские эквиваленты к русским словам и словосочетаниям, соединить термины с их понятиями. Тематика разработанных текстов соответствует тематике разделов профессионально-направленного курса.

Тексты и контрольные задания предназначены для аудиторного итогового контроля знаний обучающихся и выполняются в письменном виде.

**Оценка** индивидуальных образовательных достижений по результатам итогового контроля производится в соответствии с универсальной шкалой.

Процент результативности (правильных ответов), %	Качественная оценка индивидуальных образовательных достижений	
	Балл (отметка)	вербальный аналог
85 - 100	5	отлично
70 - 84	4	хорошо
50 – 69	3	удовлетворительно
39 и менее	2	не удовлетворительно

**Variant 1****TEXT. AN HONOURABLE PROFESSION****1. Read the text carefully and answer the following questions:**

In our country housing construction is being carried out on a large scale. Hundreds of factories producing prefab panels are being constantly built. The successful fulfilment of housing plans our country is a practicable realization of the industrialized building methods and the development of a large quantity of prefab ferroconcrete panels and parts. The work of a builder is no longer backbreaking and complicated.

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

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

1. Why does the building profession attract so many numbers of young men and women nowadays?
2. Why is the work of a builder no longer backbreaking and complicated?
3. What is the work of a welder?
4. What must a qualified building worker be able to do?
5. Have you ever worked at a construction site?

**2. Find in the text the English equivalents for the following words and word combinations:**

Выполнять в больших масштабах; поставлять на строительную площадку; использовать большое разнообразие строительных материалов; техническое черчение; развивать новые строительные методы.

**3. Match a line in A with a line in B to define the words:**

A	B
Builder	the art of making pictures or representing objects, plans with a pen or pencil
Construction site	a person whose job is building things, esp. houses
Welder	a building for people to live in
Drawing	a piece of ground for building on
House	a person whose job is to make welded joints

## Variant 2

### **TEXT. AN HONOURABLE PROFESSION**

#### **1. Read the text carefully and answer the following questions:**

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

Builders construct and reconstruct residential and industrial buildings, bridges, schools, palaces of culture, museums, theatres, kindergartens and hospitals. They build tunnels, canals, power stations, dams and reservoirs. Very many irrigation systems have been built and are being built and modernized. Hundreds of dams, reservoirs, locks, pumping stations have been erected on the rivers of our country by our hydrotechnicians.

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

Civil engineers and architects have a common aim – to provide people with all modern conveniences, such as running water, gas, electricity, central heating. An architect is a person who designs buildings. An architect must receive a great deal of scientific training connected with his profession. He must know mathematics, as well as many facts concerning materials – for example what loads different materials may safely carry – so that there will be no danger of his building falling down. Architects must need some knowledge of sculpture, painting, design, mechanical engineering, geography, city planning, etc.

1. Do you know what civil engineers construct and reconstruct at present?
2. What qualities must a person entering the building profession possess?
3. Civil engineers and architects have a common aim, right?
4. What kind of training must an architect receive?
5. Why is a builder an honourable profession?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Строить и реконструировать жилые и промышленные здания; оросительная система; полученные через опыт и серьезный труд; обеспечивать всеми современными удобствами – водой, газом, электричеством и центральным отоплением; проектировать здания.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Civil engineering	a person who plans new buildings and is responsible for making sure that they are built properly
To erect	a structure, usually with a roofs and walls, that is intended to stay in one
Architect	to build
Building	a system for keeping rooms and buildings warm
Heating	the planning, building, and repair of roads, bridges, large public buildings

### Variant 3

## **TEXT. THE ENGINEER AND CONSTRUCTION ECONOMY**

### **1. Read the text carefully and answer the following questions:**

The cost of a project is influenced by the requirements of the design and the specifications. Prior to completing the final design the engineer should give careful consideration to the methods and equipment which may be used to construct the project. Requirements which increase the cost without producing commensurate benefits should be eliminated. The ultimate decisions of the engineer should be based on a reasonable knowledge of construction methods and costs. The following are indicative of methods which an engineer may use to reduce the costs of construction:

1. Design concrete structures with as many duplicate members as practical in order to permit the reuse of forms without rebuilding.
2. Simplify the design of the structure where possible.
3. Design for the use of cost-saving equipment and methods.
4. Eliminate unnecessary special construction requirement.
5. Design to reduce the required labor to a minimum.
6. Specify a quality of workmanship that is consistent with the quality of the project.
7. Furnish adequate foundation information where possible.
8. Refrain from requiring the contractor to assume the responsibility for information that should be furnished by the engineer or for adequacy of design.
9. Use local materials when they are satisfactory.
10. Use standardized specifications, with which the contractors are familiar, where possible.
  1. What is the cost of a project influenced by?
  2. What should the engineer do prior to completing the final design?
  3. Which requirements should be eliminate?
  4. Should an engineer be reasonably familiar with construction methods and costs.
  5. Indicate some methods which an engineer may use to reduce the costs of constructor.

### **2. Find in the text the English equivalents for the following words and word combinations:**

Оборудование; уменьшить стоимость строительства; использовать местные строительные материалы; проект здания; подрядчик

### **3. Match a line in A with a line in B to define the words :**

A	B
Contractor	to make less in size, amount, price, degree, etc.
Design	to employ for a purpose
Construction	the work of building ; building industry
To use	a person or company that contracts to do work or provide supplies in large amounts, esp. to provide building materials or workers
To reduce	a drawing or pattern showing how something is to be made

## Variant 4

### **TEXT. THE DEVELOPMENT OF THE HOUSE**

#### **1. Read the text carefully and answer the following questions:**

The first houses in different countries of the world were made of wood. At that time the greater part of our planet was covered with thick forests. Even in those days men found ways of using wood as a building material.

Stone was the most convenient building material in countries where there was not much wood but plenty of stone. People began to use stone widely to build their houses many centuries ago. With the development of stone cutting finer tools appeared.

About 4,000 years before our era the Egyptians possessed great constructional know-how (ability). They built simple houses by present standards. They used bricks which in their most primitive form were not burned, but were hardened by being dried in the sun. Since the middle- ages, brickwork has been in constant use everywhere, in every sort of, construction and in every architectural style. They made flat roofs because there was very little rain in Egypt. Their buildings were simple in construction but very beautiful.

Greek builders learned much from Egyptian builders. They built their houses with slanting roofs because the climate of these two countries differs greatly. Soon Greek builders became second to none in column making. But they added the arch, thus adding much strength and beauty to their buildings.

The use of precast concrete, a very advanced construction technique, has many advantages over other building materials» Precast building units can be assembled at the site all the year round in any weather.

1. What were the first houses of the world made of ?
2. Where was stone the most convenient building material ?
3. Who began to use bricks as a building materials?
4. Why did the Egyptians make flat, roofs?
1. What advantages has the use of precast concrete?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Использование древесины в качестве строительного материала; внедрение орудий позволило резать камни и древесину; кирпичные работы; плоская кровля; сборные строительные элементы можно монтировать на площадке целый год.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Roof	a hard rectangular piece of baked clay used for building
Timber	a curved top on two supports
Brick	a building material made by mixing sand, very small stones, cement, and water
Concrete	the outside covering on top of a building
Arch	wood for building

**TEXT. HOW A SMALL BRICK HOUSE IS BUILT****1. Read the text carefully and answer the following questions:**

Houses are more than just bricks and mortar. Before any bricks are laid a lot of thinking and planning has to be done. The plot of land has to be chosen, and it is then decided what kind of house is to be built. Quite a lot of people all work together to make the house. A surveyor measures the plot of land or site and makes a plan of it. An architect draws pictures of what the house will look like when it is built. He draws plans to show the size of the house, the shape of the rooms and where all the fittings must go in the house.

The plan of the house is drawn on to the plan of the site, ready for the builder. Copies of the plan are made and are given to the builder. He gives a copy to the men in charge of the different work that will have to be done. The builder then marks out the shape of the house on the site. He does this with wooden pegs and tape. Everything is now ready for the workmen to start. They dig away the top-soil and cut trenches about two or three meters deep along the tapes. The workmen mix cement, sand, pebbles and water in a cement mixer to make concrete. They use the concrete to fill in the bottoms of the trenches. This is called laying the foundations. The walls of the house will be built on the concrete foundations.

The spaces between the foundations walls are filled with concrete. This is sometimes used as a base for the floor of the building.

1. What do we call that part of a building on which the walls rest?
2. What does a surveyor do?
3. What is the first step in the construction of a house?
4. What sort of a mixture is concrete?
5. What are the spaces between the foundations walls filled with?

**2. Find in the text the English equivalents for the following words and word combinations:**

Необходимо выбрать участок земли; архитектор чертит план; снимают верхний слой земли  
стены дома строятся на бетонном фундаменте; используют как основу под пол.

**3. Match a line in A with a line in B to define the words :**

A	B
Foundation	the side of a building or room
Wall	a person whose job is building things, esp. houses
Floor	to make a hole by taking away the earth
Builder	the surface on which one stands indoors, a level of a building
To dig	the part of a building on which walls are based



## Variant 6

### **TEXT. HOW A SMALL BRICK HOUSE IS BUILT**

#### **1. Read the text carefully and answer the following questions:**

The man who builds walls is called a bricklayer. The bricks are stuck together with mortar. To make the walls stronger the bricks must overlap each other. This is called bonding. When the walls are just above the ground a layer of waterproof felt or slate is laid. This is called a damp-proof course and stops damp in the ground passing to the rest of the house. As the bricklayer works he often looks at the plans. Then he will know where to build in the door, windows and ventilators..

A carpenter now begins to work. He is the man who does the rough woodwork of the house. When the walls are at the level of the first floor he puts in the wooden floor joists these are strong wooden beams which will carry the upstairs floors and hold up the ceilings in the downstairs rooms. Then the joiner fixes the window-ledges and, when the walls are plastered he fixes the doors and other woodwork.

Nearly all the woodwork in a house used to be done by carpenters and joiners on the building site. This took quite a lot of time. Today most of the woodwork is made at a joinery works. At the joinery works, machines plane the wood smooth and cut it to the right size. Machines also make the joints ready for the men to fit the pieces together.

Doors, window frames and even the stairs all come to the building site on lorries. They are ready to be fixed in the houses.

1. What does a bricklayer do?
2. Who does the rough woodwork of the house?
3. What will carry the upstairs floors and hold up the ceiling?
4. What does a joiner do?
5. Where is most of the woodwork made?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Плотник выполняет грубую работу по дереву, когда стены оштукатурены столяр вставляет дверь; потолок; станки режут дерево нужного размера; столярная мастерская.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Bricklayer	a maker of wooden doors, doorframes, window frames, etc.
Carpenter	a workman who builds walls with bricks
Joiner	a person who is skilled at making and repairing wooden objects
Window	a movable flat surface that opens and closes the entrance to a building
Door	a glass-filled opening in the wall of a building to let in light and air

**Variant 7****TEXT. HOW A SMALL BRICK HOUSE IS BUILT****1. Read the text carefully and answer the following questions:**

When the walls of the house are too high for the bricklayer to reach, the first scaffold is made. A scaffold is a platform of planks for the workmen to stand on. This is usually held up by a frame of steel tubes. Extra scaffolds are put up as the workmen need them. As soon as the men get on to the scaffold all the things they need have to be lifted up to them. Men used to carry bricks and mortar up ladders. Now there are many different ways of getting these things up to the scaffolds. Some builders use elevators. These are like moving staircases. A man at the bottom puts the materials on, and a man on the scaffold platform takes them off. On tall buildings the builder may use a lift which can be moved to different places. All these things help the workmen to build houses more quickly.

A lot of strong timber which we cannot see is used to make a roof. The highest beam is called the ridge. The sloping beams are called rafters. When the roof is on, many different workmen can come and finish off the house.

Plumbers work on all the water pipes of the house. They lay pipes to carry clean water into the house from the water main. Plumbers also lay pipes to carry waste water- away to the sewers. Glaziers put glass in the window frames to keep out the wind and the rain. When all the wires and pipes are in place the house is ready for the plasterers. They are the men who make the ceilings and walls nice and smooth. The joiners finish all the woodwork in the house, and leave it ready for the painters and the decorators.

1. What is a scaffold?
2. What are elevators used for?
3. Who lays pipes carry clean water into the house?
4. What does glaziers do?
5. Who makes the ceilings and walls nice and smooth?

**2. Find in the text the English equivalents for the following words and word combinations:**

Щит- это платформа из досок на которой стоят рабочие; строители используют лифт; кровля или крыша; прокладывать трубы; столяр заканчивает все работы по дереву.

**3. Match a line in A with a line in B to define the words :**

A	B
Brick	a person whose job is painting houses, building
Mortar	a person whose job is to fit and repair water pipes, bathroom apparatus, etc.
Plasterer	a mixture of lime, sand, and water, used in building for joining bricks together
Plumber	a person whose job is to plaster walls, ceilings, etc.
House painter	a hard rectangular piece of baked clay used for building

## Variant 8

### TEXT

#### 1. Read the text carefully and answer the following questions:

Houses are built of wood, brick, stone and concrete. Many new types of individual house? are made from reed slabs, rolled gypsum concrete panels or wooden sheets. A lot of houses are built of prefabricated blocks (prefabs). All the parts of such houses are produced on an industrial scale in factories and assembled on the spot. The building process takes place under the supervision of engineers. The structure is put up by bricklayers, carpenters, plasterers, plumbers, painters, locksmiths, glass-cutters, etc. In the construction of a house the first step is to make a careful survey of the site and to examine the soil in order to find its bearing power. Next, the building lines are staked out. After this, the foundations are built. The excavation is dug for the basement and then followed by the actual building of the foundation walls below ground level. Then the foundation work is finished by providing anchoring sills. That is the case of a wooden building. In the case of a brick structure, the building of the walls may be directly proceeded with. Foundations are to keep the floors and walls from contact with the soil, to act against the action of the frost and to prevent from settlement. The part upon which the stability of the structure depends is the framework. It carries the loads which are imposed on it. To do this work properly and safely the floors, walls, roofs and other parts of the construction must be correctly designed and proportioned.

1. What building materials are houses built of?
2. What is the first step in the construction of a house?
3. When does the actual building of the foundation walls begin?
4. Is the part upon which the stability of the structure depends called the framework?
5. What part of a house carries the loads?

#### 2. Find in the text the English equivalents for the following words and word combinations:

в промышленных масштабах; делать тщательное геодезическое обследование; вырывать котлован под подвал; фундамент защищает пол и стены от контакта с землей; пол, стены, крыша и другие части дома должны быть тщательно спроектированы.

#### 3. Match a line in A with a line in B to define the words :

A

B

Gypsum	a person who cuts glass into pieces
Framework	a soft white chalklike substance
Structure	a man who makes and repair locks
Locksmith	a supporting frame , structure
Glass-cutter	something formed of many parts, esp. a building

## Variant 9

### **TEXT. THE CONSTRUCTION OF A BUILDING**

#### **1. Read the text carefully and answer the following questions:**

A building is a construction which is raised on a foundation and is generally made of stone, concrete blocks, bricks and mortar or cement. Bricks and concrete blocks are held together by mortar.

Every detail of a house must be carefully planned. The working plan itself is called a blueprint. Plans for building a house are drawn by an architect. The architect draws a separate plan for each individual floor. He shows all the parts of the house exactly as if the house were already built. It is from the blueprint of the architect that the workman sees where to place the walls, the windows, the doors, the staircases, etc. The size of the rooms, the width of the doors, and windows, the height of the ceilings are also marked on the plan by the architect. Different workmen are employed in building a house. The stonemason builds the foundation. The bricklayer builds the walls and other parts made of bricks. He lays the bricks one on the top of another and puts mortar between them with a trowel. The slater or tiler is employed for putting slates or tiles on the roof. The plumber fixes all the baths, water pipes and the sanitary fittings of drains and lavatories in the places marked for them in the plan drawn by the architect. The electrician runs electric wires and makes connections all through the house from the cellar under ground to the attics under the roof. All the doors and window-frames are made by the carpenter and put into their places by the joiner. The latter also lays down the floor. Then the plasterer puts plaster or cement over all the walls and ceilings and makes them smooth. The walls are then painted, papered or whitewashed as the case may be.

1. What are bricks and concrete blocks held together by?
2. What is called a blueprint?
3. What workmen are employed in building a house?
4. Who runs electric wires ?
5. Who lays down the floor?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Каждая деталь дома должна быть тщательно спланирована; размер комнат, ширина дверей и окон, высота потолка; каменщик строит фундамент; отмеченные в плане; стены красят или наклеиваются обои.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Stonemason	an underground room, usually without windows
Cellar	the inner surface of the top of a room
Ceiling	a set of stairs with its supports and side parts for holding on to
Staircases	a person who is skilled at making and repairing wooden objects
Carpenter	a person whose job is cutting stone into shape for building

## Variant 10

### **TEXT . THE PROPERTIES OF BUILDING MATERIALS**

#### **1. Read the text carefully and answer the following questions:**

Materials that are used for structural purposes should meet several requirements. In most cases it is important that they should be hard, durable, fire-resistant and easily fastened together. The most commonly used materials are steel, concrete, stone, wood and brick. They differ in hardness, durability and fire-resistance.

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 man. It is characteristic of many properties. They are mechanical strength, compactness, porosity, sound and heat insulation and fire-resistance.

Bricks were known many thousands of years ago. They are the examples of artificial building materials.

Concrete is referred to as one of the most important building materials. Concrete is a mixture of cement, sand, crushed stone and water.

Steel has come into general use with the development of industry. Its manufacture requires special equipment and skilled labour.

Plastics combine all the fine characteristics of a building material with good insulating properties. It is no wonder that the architects and engineers have turned to them to add beauty to modern homes and offices.

Natural building materials are: stone, sand, lime and timber. Cement, clay products and concrete are examples of artificial building materials.

1. What are the properties of the building materials?
2. What are the most common used building materials?
3. Do building materials differ each other?
4. What can you say about the most ancient building materials?
5. Is concrete an artificial or natural building material?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

отвечать требованиям; характеристика свойств; звуковая и тепловая изоляция; развитие промышленности; производство стали требует специального оборудования.

#### **3. Match a line in A with a line in B to define the words :**

A	B
steel	white substance obtained by burning limestone
plastic	wood for building
lime	a light artificial material produced chemically
timber	a metal consisting of iron used in building materials

cement                      a grey powder, made from lime and clay, which becomes hard like stone after being mixed with water and allowed to dry, used in building to join bricks together and in making concrete.

**TEXT . TIMBER****1. Read the text carefully and answer the following questions:**

Timber is the most ancient structural material. In comparison with steel timber is lighter, cheaper, easier to work and its mechanical properties are good. On the other hand, timber has certain disadvantages. First, it burns and is therefore unsuitable for fireproof buildings. Second, it decays. At present an enormous amount of timber is employed for a vast number of purposes. In building timber is used too.

Timber is a name applied to the cut material derived from trees. Timber used for building purposes is divided into two groups: softwoods and hardwoods. Hardwoods are chiefly used for decorative purposes, as for panelling, veneering in furniture, and some of them are selected for structural use because of their high strength and durability. In modern construction timber is often used for window and door frames, flooring, fences and gates, wall plates, for temporary buildings and unpainted internal woodwork.

Timber cannot be used for either carpenters' or joiners' work immediately it has been idled because of the large amount of sap which it contains. Most of this moisture must be removed, otherwise the timber will shrink excessively, causing defects in the work and a tendency to decay. Elimination of moisture increases the strength, durability and resilience of timber.

1. What are the advantages of timber in comparison with steel?
2. What are the disadvantages of timber in comparison with steel?
3. What two groups is timber divided into?
4. What purposes is timber often used in modern construction for?
5. What increases the strength, durability and resilience of timber?

**2. Find in the text the English equivalents for the following words and word combinations:**

по сравнению с ...; древесина имеет определенные неудобства; древесина используется в строительных целях; за высокую прочность и устойчивость; для временных зданий.

**3. Match a line in A with a line in B to define the words :**

A	B
Timber	a movable frame in a wall
Gate	wood for building
Building	water or other liquids in small quantities
Fence place	a structure, usually with a roof and walls, that is intended to stay in one place
Moisture	an upright structure like a wall, dividing two areas of land

## Variant 12

### **TEXT. STONE**

#### **1. Read the text carefully and answer the following questions:**

Stone has been used as a structural material since the earliest days. Almost all famous buildings of classic times, of the medieval and Renaissance periods and of the eighteenth and early nineteenth centuries were erected of stone. The art of making any structure in stone is called stone masonry. In some places stone was used because of the scarcity of timber, but in other places stone was preferred because of its durability.

The stones which are usually used for masonry work are as follows: 1. Granite: Granite is very hard, strong and durable. It is used particularly for basements, base courses, columns and steps and for the entire facades. Its colour may be grey, yellow, pink or deep red. 2. Sandstone. Sandstone is composed of grains of sand or quarts cemented together. Sandstones form one of the most valuable materials. The durability of sandstones depends very largely upon the cementing material. Thus there are different kinds of sandstones. Many sandstones are exceptionally hard and are selected for steps, sills, etc. It is an excellent material for concrete aggregate. 3. Marble. Marble is a crystalline stone chiefly used for decorative purposes. White and black marbles are used for ornamental decoration where the beauty of the marble is shown to its best advantage.

1. What is called stone masonry?
2. Why did people begin to use stone?
3. Can you name the stones used for masonry?
4. What special properties has granite?
5. What does the durability of sandstone depend upon?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

искусство строительства из камня; недостаток в древесине; гранит используется в основном для фундаментов, колонн, лестниц а также для внешних фасадов; каменная кладка; наиболее ценный материал.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Stone and in deserts	loose material of very small fine grains, found in wide masses along seacoasts
Granite	soft rock formed by sand fixed in a natural cement
Sandstone building	a piece of rock, not very large, either of natural shape or cut out specially for
Marble	a very hard rock, used for building and making roads
Sand smooth.	a sort of white or irregularly coloured limestone that is hard, cold to touch, When polished, and used for buildings, statues, gravestones.

**TEXT . METALS AND CONCRETE****1. Read the text carefully and answer the following questions:**

All metals are divided into ferrous metals and non-ferrous metals. Ferrous metals include iron, steel and its alloys. Nonferrous metals are metals and alloys the main component of which is not iron but some other element. Metals, in general, and especially ferrous metals are of good importance in variations.

Metals possess the following properties: 1) All metals have specific metallic lustre. 2) They can be forged. 3) Metals can be pulled. 4) All metals, except mercury, are hard substances. 5) They can be melted. 6) In general, metals are good conductors of electricity.

These characteristics are possessed by all metals but the metals themselves differ from one another. Steel and cast iron are referred to the group of ferrous metals. Cast iron is the cheapest of the ferrous metals. It is chiefly used in building for compressed members of construction, as the supporting members.

When an engineer designs a steelwork he must carefully consider that the steel frame and every part of it should safely carry all the loads imposed upon it. The steel framework must be carefully hidden in walls, floors and partitions. It is steel and metal that is employed as reinforcement in modern Ferro concrete structures. In the curriculum of the Institute there is a special course on metal structures.

Steel. There are different kinds of steel. Alloyed steel (or special steel) is corrosion-resistant steel. This kind of steel is widely used in building. Stainless steel is also corrosion-resistant steel.

It is used for cutlery, furnace parts, chemical plant equipment, valves, ball-bearings, etc.

1. What do ferrous metals include?
2. Is iron the main component of non-ferrous metals?
3. What properties do metals possess?
4. What must an engineer carefully consider when he designs a steelwork?
5. Where must the steel framework be carefully hidden?

**2. Find in the text the English equivalents for the following words and word combinations:**

черные и цветные металлы; металлы - хорошие проводники электрического тока; необходимо тщательно рассмотреть; нержавеющая сталь; оборудования для химических заводов.

**3. Match a line in A with a line in B to define the words :**

A	B
Iron	a building material made by mixing sand, very small stones, cement, and water
Steel	a very common and useful metal that is simple element
Partition	an upright dividing surface intended for defence, or for enclosing something
Concrete	a metal consisting of iron and containing some carbon
Wall	a thin wall inside a building that divides a large room



## Variant 14

### TEXT . ALUMINIUM IN STRUCTURES

#### 1. Read the text carefully and answer the following questions:

Aluminium is not a new material. Probably the first example of large-scale structural use i., aluminium was in 1933 when the floor steelwork of a large road bridge in Pittsburg, Pennsylvania, was replaced with aluminium and the resulting saving in dead weight — about 1 ton/ft run — enabled the bridge to carry with greater safety the increased loads of modern traffic. Extensive use of aluminium in buildings such as aircraft hangers did not occur until about 30 years ago.

In many ways aluminium has been slow in making progress, mainly because of its cost; it is produced by electrolytic means which requires cheap hydro-electric power. About 10 units of electricity are required to make 1 lb. New reduction plants of large capacity have been coming into service in many parts of the world and these provide increased production with improved efficiency. The use of aluminium in structures may well expand in corresponding manner as simultaneous advances are being made with the development of improved aluminium materials and products.

The principal virtues of aluminium are lightness combined with strength and freedom from corrosion. The extent to which the latter two properties are developed depends on the alloy concerned.

The advantage of lightness — one-third the density of mild steel with nearly the same strength — is particularly of value where weight saving is of importance — in lift bridges, long span roofs, dome roofs, crane jibs and in a wide range of moving and portable structures.

%

1. Is aluminium a new material?
2. When was the first example of large-scale structural use of aluminium?
3. Why has aluminium been slow in making progress?
4. What are the main advantage of aluminium?
5. Where is aluminium used ?

#### 2. Find in the text the English equivalents for the following words and word combinations:

был заменен алюминием; увеличенную нагрузку современного транспорта; развитие алюминиевых материалов; принципиальная ценность алюминия - это легкость совмещенная с прочностью и коррозиоустойчивость

#### 3. Match a line in A with a line in B to define the words :

A	B
Aluminium	an apparatus in a building for taking people and goods from one floor to another
Bridge	a silver-white metal that is a simple element light in weight, and easily shaped
Roof	a part of a bridge, arch, etc. between supports
Lift	the outside covering on top of a building, closed vehicle, tent, etc.
Span	a structure that carries a road or railway over a valley, river, etc.

**TEXT. ALUMINIUM****1. Read the text carefully and answer the following questions:**

1. Aluminium alloys can possess the strength of steel, though only a third the weight.
2. In direct contact with a heat source, aluminium is an excellent conductor.
3. World's lightweight champion in the long-distance transport of electricity, aluminium has virtually replaced heavier copper in high-voltage power lines.
4. Aluminium is alloyed with small amounts of other metals.
5. Copper adds strength; magnesium imparts additional marine-corrosion resistance.
6. Unlike copper or iron, aluminium does not occur naturally in metallic form.
7. Aluminium exists only in combination with other elements, primarily oxygen, with which it forms an extremely hard oxide known as alumina. When tinted by traces of other elements, alumina can take the form of gems such as rubies and sapphires.
8. Constituting 8 per cent of the earth's crust, aluminium is the most abundant of metals, as well as one of the hardest to produce.
9. Even fly ash from coal-burning furnaces could become a source of aluminium.
10. When we recycle aluminium, we save 95 per cent of the energy needed to make new metal from bauxite.
11. The uses of aluminium are almost illimitable.
12. Builders can use aluminium nails, screws, and bolts to install aluminium storm doors, screens, flashing, gutters, downspouts, shingles, awnings, and Venetian blinds — some 200 building products in all.
13. In 1884, when aluminium was still as valuable as silver, a hundred-ounce tip of the metal was chosen by architects to finish the 555 ft high Washington Monument in Washington, D.C., USA.

1. Can aluminium alloys possess the strength of steel?
2. Is aluminium an excellent conductor when it is in direct contact with a heat source?
3. When combined with oxygen, what does aluminium form?
4. How many building products are now made of aluminium?
5. Was there a time when aluminium was as valuable as silver?

**2. Find in the text the English equivalents for the following words and word combinations:**

Сплав алюминия; прочность стали; алюминий существует только в комбинации с другими элементами; использование алюминия почти неограниченно; алюминиевые гвозди, винты, болты.

**3. Match a line in A with a line in B to define the words :**

A	B
Nail	a silver-white metal that is a simple element light in weight, easily shaped
Hammer	a soft reddish metal that is a simple element, is easily shaped, and allows heat and electricity to pass through it easily
Silver	a thin pointed piece of metal for hammering into a piece of wood to fasten the wood to something else
Copper	a tool with a heavy metal head for forcing nails into wood
Aluminium	a soft whitish metal carries electricity very well, can be brightly polished, and is used in jewelry, coins, etc.

## Variant 16

### TEXT. CONCRETE

#### **1. Read the text carefully and answer the following questions:**

It is difficult to imagine modern structure without concrete. Concrete is the very building material which led to great structural innovations. The most important quality of concrete is its property to be formed into large and strong monolithic units. The basic materials for making concrete are cement, aggregate and water. Cement is the most essential material and the most important one for making concrete of high quality. Cement is made of limestone and clay. It is burnt (calcined) at high temperature and ground up into powder. Depending on the kind and composition of the raw materials different types of cement are obtained. Portland cement, blast furnace cement are suitable for putting up marine structures.

Concrete is made by mixing cement, water, sand and gravel in the right amount. As soon as it is thoroughly mixed it is poured into forms that hold it in place until it hardens. The crystals forming in the process of making concrete stick together in a very hard artificial stone. Cement starts hardening one hour after the water has been added and the process of hardening lasts for about twenty-eight days. The process is called concrete curing.

1. How is concrete made?
2. What takes place when water is added to the cement?
3. Does the whole mixture set and harden when hydration takes place?
4. Do you know what is termed "aggregate"?
5. Is sand known as "fine aggregate"?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Важнейшее качество бетона; базовые материалы для изготовления бетона - это цемент, наполнитель и вода; путем смешивания; цемент начинает твердеть; твердый искусственный камень.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Concrete	a gray powder, made from lime and clay, which becomes hard like stone after being mixed with water and allowed to dry, used in building to join bricks together and in making concrete
Stone	a building material made by mixing sand, very small stones, cement, and water
Water	loose material of very small fine grains, found in wide masses along seacoasts and in deserts
Sand	a piece of rock, esp. not very large, either of natural shape or cut out specially for building
Cement	the most common liquid, without colour, taste, or smell, which falls from the sky as rain, forms rivers, lakes, and seas, and is drunk by people and animals

**TEXT . GENERAL PROPERTIES OF CEMENT****1. Read the text carefully and answer the following questions:**

All types of cement shrink during setting. In a normal concrete the amount of this shrinkage will depend both on the proportion of cement in the mix and the quantity of mixing water employed. Provided enough water is present to enable the chemical action of setting to take place, then the smaller the amount of water the less shrinkage there will be. The type of aggregate used has an appreciable effect upon both the amount of water and the amount of aggregate that can be mixed with given quantity of cement. Strength and durability of concrete are linked properties in that they are both associated with the low water-cement ration. In addition to the proportion of cement and the water cement ratio of a cement product, the method of curing will also affect the amount of shrinkage. Normally, the slower the drying the less shrinkage there will be. All cement products are liable to a considerable shrinkage during setting and hardening.

**Strength**

The important thing is the strength of the final cement product rather than the strength of the cement itself. The strength of the cement, however, gives some indication of the possible variation in the former, although the strength of the product will also depend upon the and grading of the aggregate used, the proportion of aggregate and other factors such as water cement ratio and quality of workmanship.

1. What does the shrinkage of concrete depend on?
2. What do the strength and durability of concrete associated with?
3. Is "hardening" a physical process?
4. Does the completion of the "final set" mean that the cement product will cease to change its properties?
5. What does the strength of the product depend on?

**2. Find in the text the English equivalents for the following words and word combinations**

пропорция наполнителя; соотношение воды и цемента; значительное сжатие при схватывании и затвердевании; прочность продукта зависит от; все типы цемента сжимаются при затвердевании.

**3. Match a line in A with a line in B to define the words :**

A	B
To mix	to pour water on smth.
To dry	to harden to become smaller
To shrink	to combine so that the parts no longer have a separate shape or cannot easily be separated
To water	to make or become dry by removing liquid
To dry	to make or become firm and stiff

## Variant 18

### **TEXT. GAS CONCRETE**

#### **1. Read the text carefully and answer the following questions:**

Lime and silica are ground together to very fine limits. The silicious material can vary considerably in its composition. Much use is made of such waste materials as fly ash from power-stations, blast furnace slag, as well as natural pozzolanas, pumice, etc. The degree of foaming in the gas concrete, and thus its specific gravity, is determined by the amount of aluminium powder or other agent added. The practical limits of the final density are between 13 and 90 lb. per cu. ft. If the gas concrete is allowed to harden on its own, it usually takes about three weeks before the final strength is achieved. It is more customary to accelerate the setting of the gas concrete by steam hardening it in autoclaves with superheated steam at about 140 lb per sq in. The steam hardening process takes about 15-20 hr. Air-cured gas concrete can be used for the manufacture of special components for the refrigeration industry. Such blocks are cast to special dimensions.

Gas concrete can be cast horizontally to form room-sized outer wall units.

It is possible to incorporate electric conduit pipes, piping for the cold and hot water systems and, also drainage pipes. The units usually include windows and doors, and are reinforced by embedding steel mesh in the mix.

Gas concrete can be used as thermally insulating floor screeds or as an additional thermally insulating layer on top of a concrete roof.

1. Which materials are used for the production of gas concrete?
2. How can the setting of gas concrete be accelerated?
3. Can you name the main purposes for which air hardening gas concrete is used?
4. Where can gas concrete be successfully used?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Силикатные материалы; алюминиевый порошок; практическое ограничение конечной плотности; трубы для холодной и горячей воды; внешние стеновые блоки.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Lime	tubes used for carrying liquids or gas, often underground
Silica	the outside covering on top of a building
Roof	a chemical compound that is found naturally as sand, quartz and is used in making glass
Gas	a white substance obtained by burning limestone
Pipes	substance like air, which is not solid or liquid and usually cannot be seen.

## **TEXT. STEAM TREATMENT PROCESS TO PRODUCE THERMOPLASTIC MATERIALS AND HYDRAULIC CEMENTS**

### **1. Read the text carefully and answer the following questions:**

This invention relates to the manufacture of thermoplastic materials and hydraulic cements from certain glass compositions. More particularly, this invention relates to the manufacture of such products through the steam treatment of glass powders in the alkali metal silicate composition field. A thermoplastic material is one having the property of softening when heated and of hardening and becoming rigid again when cooled. Hence, such a material is normally hard at room temperature but will soften and become moldable, adhesive, and cohesive when heated to some higher temperature. This property of thermoplasticity is well-recognized in such organic materials' as cellulose acetate, polyethylene, and vinyl polymers and in glasses at temperatures around and somewhat above the softening points thereof. The value of this property is apparent in the forming of articles through molding, pressing, extrusion, rolling, etc., and in forming composite structures, laminates, and the like.

A hydraulic cement is one that is capable of hardening under the influence of water. Hence, sue ft a material, when mixed with water and allowed to stand, gradually sets up as a hard, massive solid structure. Portland cement is probably the best known material commercially of this type.

1. What is the way of the manufacture of thermoplastic materials?
2. What properties have thermoplastic materials?
3. What is the value of these properties?
4. What materials are made through the steam treatment?
5. What material is best known of a hydraulic cement?

### **2. Find in the text the English equivalents for the following words and word combinations:**

производство термопластичных материалов; изобретение; свойство смягчаться; изготовление предметов путем отливки, прессования, экструзии (выдавливания), проката.

### **3. Match a line in A with a line in B to define the words :**

B

Cement                      a transparent solid easily broken material made from sand melted under great heat and used esp. to make windows and containers for liquids

Glass                      material made by joining many thin sheets of the material (plastic, metal) on top of each other

Powder                      a gray powder, made from lime and clay, which becomes hard like stone after being mixed with water and allowed to dry, used in building to join bricks together and in making concrete.

Laminate                      a chemical compound having a simple structure of large molecules

Polymer                      substance in the form of extremely small grains

## Variant 20

### TEXT. REINFORCED CONCRETE

#### 1. Read the text carefully and answer the following questions:

Reinforced concrete is a combination of two of the strongest structural materials, concrete and steel.

This term is applied to a construction in which steel bars or heavy steel mesh are proper, embedded in concrete. The steel is put in position and concrete is poured around and over it then tamped in place so that the steel is completely embedded. When the concrete hardens and sets the resulting material gains great strength. This new structural concrete came into practical application at the turn of the 19th century. The first results of the tests of the reinforced concrete beams were published in 1887. Since that time the development of reinforced concrete work; has made great progress. And the reasons of this progress are quite evident. Concrete has poor elastic and tensional properties, but it is rigid, strong in compression, durable under and above ground and in the presence or absence of air and water, it increases its strength with age, it is fireproof. Steel has great tensional, compressive and elastic properties, but it is not durable being exposed to moisture, it loses its strength with age, or being subjected to high temperature. So, what is the effect of the addition of steel reinforcement to concrete?

Steel does not undergo shrinkage or drying but concrete does and therefore the steel acts as a restraining medium, in a reinforced concrete member. Shrinkage causes tensile stresses in the concrete which are balanced by compressive stresses in the steel.

Steel constructions with reinforced concrete have become the most important building materials invented in centuries and they have given modern architecture its peculiar features.

1. Is reinforced concrete a combination of two of the strongest structural materials'?
2. What is the process of making reinforced concrete?
3. When did this new structural concrete come into practical application'?
4. Can you name the properties of concrete?
5. Will you name the properties of steel?

#### 2. Find in the text the English equivalents for the following words and word combinations:

армированный бетон; стальная стенка вмонтирована в бетон; практическое применение; прочный при сжатии; сталь не поддается сжатию.

#### 3. Match a line in A with a line in B to define the words :

A	B
Reinforced concrete	the art and science of building, including its planning, making, and decoration
Steel	a large long heavy piece used as part of the structure of a building
Concrete	a metal consisting of iron in a hard strong form containing some carbon
Beam	stonelike material (concrete) strengthened by metal rods placed in it before it harden, and is used in building
Architecture	a building material made by mixing sand, very small stones, cement, and water

**TEXT . RECENT RESULTS IN FRENCH RESEARCH ON REINFORCED EARTH****1. Read the text carefully and answer the following questions:**

Reinforced earth, invented in 1966 by the French engineer Vidal, is a material which has been used frequently in the civil engineering field in recent years. It is a composite material, a combination of earth and reinforcements, the latter generally consisting of metal strips arranged horizontally and able to withstand high tensile stresses.

The principle of reinforced earth is .analogous to that of reinforced concrete; it is an economical means of improving the mechanical properties of the basic material, earth, by reinforcing it in the directions in which it is subject to the greatest stresses. The essential phenomenon in reinforced earth is the friction between the earth and the reinforcements.

Reinforced earth has been mainly used for the construction of retaining structures and foundation rafts. The influence of the fine fraction of the fill on the friction between earth and reinforcements has been studied in laboratory tests on samples of sand and powdered clay mixtures.

1. When was reinforced earth invented?
2. Who invented reinforced earth?
3. What does reinforced earth consist of?
4. What is the essential phenomenon in reinforced earth?
5. Where is reinforced earth mainly used?

**2. Find in the text the English equivalents for the following words and word combinations",**

Противостоять высокому давлению при растяжении; металлические ленты размещены горизонтально; экономичное средство улучшения механических свойств; трения между землей и железобетоном; лабораторный тест на примере песка и смеси перетертой глины.

**3. Match a line in A with a line in B to define the words :**

A	B
to reinforce	to employ for a purpose
to invent	to make or produce for the first time
to use	to strengthen
sand	heavy firm earth that is soft when wet but becomes hard when baked at a
high temperature	
clay	loose material of very small fine grains, found in wide masses along
seacoast and in deserts	



## Variant 22

### **TEXT. Sand Concrete**

#### **1. Read the text carefully and answer the following questions:**

For many, many years nature has been destroying stone, changing it into sand. Now man is learning to do the opposite: he is using sand and cement to create materials which could compete with stone in strength and beauty.

At first the idea of making concrete by using sand was completely rejected. It is common knowledge that concrete is made from gravel and cement, while a mixture of sand and cement is considered useful only to bind bricks. This idea has gripped the attention and minds of scientists and engineers to such an extent that it is no easy task to cast doubt upon this universally accepted truth.

"Sand" concrete is made by putting the matrix under vibration which almost completely eliminates its weak points. Sand concrete has now become almost twice as strong as ordinary concrete with a coarse aggregate, and much cheaper as well. At present several varieties of sand concrete have been developed.

1. What is the process of making sand concrete?
2. What are the main properties of sand concrete?
3. What materials is concrete made from?
4. Is sand concrete a cheap or an expensive material?
5. How strong is sand concrete?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

природа разрушила камень; сравниваться по силе и красоте; идея захватила внимание; раствор; устранять слабые стороны; в 2 раза прочнее чем обычный бетон.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Sand	a building material made by mixing sand, very small stones, cement, and water
Concrete	a grey powder, made from lime and clay, which becomes hard like stone after being mixed with water and allowed to dry, used in building to join bricks together and in making concrete
Gravel	a hard rectangular piece of baked clay used for building
Cement	small stones usually mixed with sand
Brick	loose material of very small fine grains, found in wide masses along seacoasts and in deserts

**TEXT. DEFORMATION****1. Read the text carefully and answer the following questions:**

Whenever a force acts upon a body, there is an accompanying change in shape or size of the body. This is called deformation. In designing structures, it is often necessary that we know what the deformation in certain members will be. A floor joist, for instance, may deflect to such an extent that the floor will vibrate or the plastered ceiling below may crack. For the usual cases we can readily determine what the deformation will be.

**Tension.** When a force acts upon a body in such a manner that the body tends to lengthen or pull apart, the force is called tensile.

**Compression.** When the force acting upon a body has a tendency to shorten it, the force is called compressive and the stresses within the member are compressive stresses. A typical example of compression is a column having a load on its upper end.

**Shear.** A shearing stress occurs when we have two forces acting on a body in opposite directions but not in the same line. Forces acting as a pair of scissors, tending to cut a body, is an illustration.

**Bending.** The fibers in the upper part of the beam are in compression, and those in the lower part are in tension. These stresses are not equally distributed over the cross section.

1. What is called deformation?
2. What kind of deformation do you know?
3. What happens when a force acts upon a body?
4. What kind of force is called compressive force?
6. When does a shearing stress occur?

**2. Find in the text the English equivalents for the following words and word combinations:**

Изменения в форме и размере; когда сила действует на тело; тенденция сокращаться; типичный пример компрессии; волокно в верхней части балки - в компрессии, а в нижней в растяжении.

**3. Match a line in A with a line in B to define the words :**

A	B
Ceiling	a large long heavy piece of wood used as part of the structure of a building
Floor	natural or physical power
Column	the surface on which one stands indoors, level of a building
Beam	the inner surface of the top of a room
Force	a tall solid upright stone post used in a building as a support or decoration

## Variant 24

### TEXT

#### 1. Read the text carefully and answer the following questions:

**Kinds of Loads.** The two types of loads that commonly occur on beams are called concentrated and distributed. A concentrated load is assumed to act at a definite point, such as a column resting on a beam. A distributed load is one that acts over a considerable length of the beam. A concrete slab supported by a beam is an illustration of a distributed load.

**Designing Steel Beams.** In designing beams, the loads are never known accurately because the size of the beam and consequently its weight are unknown when the computations are begun. One method employed is to estimate the weight due to the beam itself and to check this assumed load with the actual weight of the beam selected as a result of computations.

**Design of Steel Columns.** In the absence of safe load tables, the design of columns is accomplished by the trial method. Data include the load and the length of the column; the designer selects a trial cross section and, by means of a column formula, computes the allowable load that it will support. If this allowable load is less than the actual load the column will be required to support, the column section assumed is too small and another section is tested in a similar manner.

1. What are the two types of loads called that commonly occur on beams?
2. Where is a concentrated load assumed to act?
3. What does a distributed load act over?
4. Why are the loads never known accurately in designing beams?
5. By what method is the design of columns accomplished?

#### 2. Find in the text the English equivalents for the following words and word combinations:

Виды нагрузки: концентрированные и распределенные; значительная длина балки; проверить допустимую нагрузку; результаты расчета; рассчитать допустимую нагрузку.

#### 3. Match a line in A with a line in B to define the words :

A	B
Weight	a tall solid upright stone post used in a building as a support or decoration
support	a large long heavy piece of wood, esp. used as part of the structure of a building
column	a thick flat usually four-sided piece (of stone, metal, wood, etc.)
beam	something that bears the weight of something else
slab	the heaviness of something

**TEXT. PILE FOUNDATIONS****1. Read the text carefully and answer the following questions:**

The durability of a structure depends on how the foundation is built and on the property of the ground.

Prior to the beginning of the last century buildings were put up mostly on stable ground. Bands of stone and baked bricks bound together by lime mortar served as foundations. Towns and cities have appeared in places where there had recently been swamps, on the permafrost ground of the northern Regions . Pile foundations are widely used there. They cut through the unstable thickness of the ground and rest upon firm layers.

Ferro-concrete was discovered about 200 years ago. Wooden piles gradually became a thing of the past. They have been replaced by ferro-concrete and metal piles.

During the last few decades pile boring has found wide application. A bore hole is first filled with steel framework, then with concrete, and the pile is ready.

A group of specialists has developed piles without using building materials for the purpose. At the depth of 16—18 m a hole is drilled. A special burner is then inserted. At 1,400°C the earth fuses. It then hardens and becomes a bearing pillar. Several buildings have already been erected on such "piles".

The foundation of the Alma-Ata TV tower is quite original. The tower was built on a small site in the mountains, where force 10 earthquakes can occur. The foundation is a reinforced casing. On it there stands a three-storey building together with a metal tower 360 m high.

1. What does the durability of a structure depend on?
2. How were foundations built prior to the beginning of the last century?
3. When was ferro-concrete discovered?
4. Can piles be made without using building materials?
5. Why is the foundation of the Alma-Ata TV tower quite original?

**2. Find in the text the English equivalents for the following words and word combinations:**

Прочность конструкции зависит от фундамента и свойств почвы; известковый раствор; сваи (сваи) фундамента; широкое применение; без использования строительного материала.

**3. Match a line in A with a line in B to define the words :**

- | A              | B  |
|----------------|--|
| pile           | a hard rectangular piece of baked clay used for building   |
| foundations    | a heavy wooden, metal, or concrete post hammered upright into the ground as a support for a building, bridge |
| ferro-concrete | a white substance obtained by burning limestone  |
| lime           | concrete strengthened by metal rods placed in it before it hardens, and used in building                     |
| brick          | the solid stonework, brickwork, etc. first set in holes dug deep in the earth, to support a building         |

## Variant 26

### **TEXT. A BUILDING NOTED FOR ITS HIGH ENERGY EFFICIENCY**

#### **1. Read the text carefully and answer the following questions:**

The California Department of General Services building in downtown Sacramento is noted for its high energy efficiency<sup>1</sup> and architectural beauty. A subterranean<sup>2</sup> base connects the building with a six-story solar slab structure that contains 12,000 sq ft of solar collectors. The solar system integrates high intensity concentrating collectors that track the sun, absorption cooling, storage, ice-making screw compressors<sup>3</sup>, heat recovery, and an air handling system. The collectors generate hot water, which is passed through an absorption refrigeration machine. The resultant chilled water is then pumped to air handling units. If the hot water supply exceeds the machine's needs, the excess is stored in tanks for use when solar hot water generation is difficult. Efficient load management of the cooling cycle is accomplished through screw compressors that chill brine<sup>4</sup> fluid at night when power costs are low. The brine, at 14° F, circulates through steel pipes in the ice builder and produces 550 ton-hrs of refrigeration, which can be stored for daytime air conditioning. The storage system holds energy at both hot and cold temperatures so that a variety of functions can be performed economically. The city's central steam plant provides back-up<sup>6</sup>.

A mini-computer control system optimizes system operation.

#### Notes

1.energy efficiency — энергетический потенциал

2.subterranean — подземный

3.screw compressors — винторезные компрессоры

4.brine — соляной раствор

5.back-up — поддержка

1.What does the subterranean base connect the building with?

2.For what purpose does the solar system integrate high intensity concentrating collectors?

3.Do the collectors generate hot water?

4.How is efficient load management of the cooling cycle accomplished?

5.What is system operation optimized by?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Шестиэтажная конструкция с солнечными плитами; коллекторы генерируют горячую воду; поставки горячей воды; цикл охлаждения; соляной раствор циркулирует по стальным трубам.

#### **3. Match a line in A with a line in B to define the words :**

A	B
Steam	the most common liquid, without colour, taste, or smell
Water	the mixture of gases which surrounds the earth and which we breathe
Brine	the mist formed by water becoming cool
Air	using the power of the sun's light and heat
Solar	water containing a lot of salt

**TEXT. BUILDING MATERIALS****1. Read the text carefully and answer the following questions:**

**Corrugated Steel and Iron.** On industrial buildings black or galvanized sheets of copper-bearing steel or pure iron are sometimes used as a cheap covering. The sheets are usually 26 in. wide with  $2\frac{1}{2}$ -in. corrugations and are given an end lap of 6 in. and side laps of 2 corrugations. They may be fastened by nailing to wood roof boarding or by clips and straps directly to the steel purlins. Sheets not galvanized should be well painted with red lead and linseed oil. Condensation of water on the underside of corrugated sheets may be prevented by stretching several layers of asbestos paper under the sheets supported on wire mesh stretched over purlins.

**Glass.** Flat glass is used for roofing greenhouses, and ribbed or prism glass may be inserted domes or on the roofs of public buildings. Corrugated glass is often adapted to industrial buildings. When strength is required wire glass is employed. Glass inserts are often cast in cement slabs, and corrugated glass sheets may be used in connection with corrugated steel and asbestos. The ends are lapped, but the side joints are butted and covered with asbestos cushions and metal caps.

**Plastics.** Sheets made of thermoplastic acrylic resin (Plexiglass and Lucite) are available in flat and corrugated sheets. They may be employed in conjunction with corrugated steel and cement-asbestos board. Acrylic plastic is obtainable in transparent, or opaque sheets and in a wide variety of colors. This material is readily formed into curved shapes and, therefore, is often used in place of glass. Polyester sheets reinforced with glass fibers are somewhat transparent and are selected when high impact strength is needed. These materials are available not only for roofing purposes but also for partitions and window glazing.

1. What are black or galvanized sheets of copperbearing steel or pure iron used for?
2. What should the sheets not galvanized be well painted with ?
3. What is flat glass used for ?
4. What kind of plastics do you know?
5. What are plastics used for?

**2. Find in the text the English equivalents for the following words and word combinations:**

Рифленая сталь и железо; щиты прибиваются гвоздями; несколько слоев асбеста бумаги; для прочности применяют проводное стекло; применяется для кровель, перегородок, стекол окон.

**3. Match a line in A with a line in B to define the words :**

A	B
Steel	a transparent solid easily-broken material made from sand melted under great heat and used esp. to make windows and containers for liquids
Iron	a soft reddish metal that is easily shaped, and allows heat and electricity to pass through
Copper	a very common and useful metal that is used in the making of steel
Glass	a light artificial material produced chemically, easily formed into various shapes by pressing, and able to keep the new shape
Plastic	a metal consisting of iron in a hard strong form, and used in building materials

## Variant 28

### **TEXT. INTERIOR AND EXTERIOR PAINTING**

#### **1. Read the text carefully and answer the following questions:**

Let the painting commence. The initial coat of paint that is applied on the raw surfaces is usually called the primer, sealer, sanding sealer, and so on. What it means is that this first coat is a little thinner than regular paint so that it will penetrate deeper into the surfaces. After this coat dries, it is sanded and dusted off, and the finish coats of paint are applied. The finish coats of paint will be the ones where the color and sheen are selected. The color is something only you can pick. The sheen has to do with whether the paint is flat or glossy. Most people use water-based flat paint for the walls and oil-based semi-gloss for the trim. Paint can be applied in many ways. Spraying, rolling, and brushing are the typical ways houses are painted. All of the methods will work for getting the right amount of the right color and the right type of the right paint on the right part of the right house. After all that, the color probably would be pastel chartreuse.

Painting the exterior of the house is totally independent from the interior. The outside can be painted anytime the exterior of the house is ready. The preparation is the same. The only major difference is the weather. Paint should be applied per the manufacturer's written recommendations. Usually, the manufacturer wants the weather to be at least forty-five degrees and rising so that the paint does not freeze. It's just common sense; do not paint in the rain and things like that.

So one more time, paint the Sheetrock with flat, water-based latex and the trim with semi-gloss oil-based enamel and use as many coats as it takes to make the paint look rich.

1. What is called the primer?
2. When is the coat of paint sanded?
3. What kinds of paints are applied for interior painting?
4. What typical ways houses are painted?
5. Is it possible to paint in the rain outside?

#### **2. Find in the text the English equivalents for the following words and word combinations:**

Украшение, внутренняя отделка; покраска снаружи дома; сырая поверхность; первый слой краски; грунтовка, красить щеткой, валиком или распылителем..

#### **3. Match a line in A with a line in B to define the words :**

A	B
Wall	a person whose job is painting houses, building
Mortar	liquid colouring matter which can be put or spread on a surface to make it a certain colour
Paint	a mixture of lime, sand, and water, used in building for joining bricks together
Floor	an upright dividing surface intended for defence, or for enclosing something
House painter	the surface on which one stands indoors, a level of a building

**TEXT. PLASTICS ALL OVER THE WORLD****1. Read the text carefully and answer the following questions:**

Nowadays plastics can be applied to almost every branch of building, from the laying of foundation to the final coat of paint.

A lot of decorative plastics now available has brought about a revolution in interior and exterior design. But plastics are used now not only for decoration. These materials are sufficiently rigid to stand on their own without any support. They can be worked with ordinary builder's tools. Laminate is a strong material manufactured from many layers of paper or textile impregnated with thermosetting resins. This sandwich is then pressed and subjected to heat. Laminate has been developed for both inside and outside use. It resists severe weather conditions for more than ten years without serious deformation. As a structural material it is recommended for exterior work. Being used for surfacing, laminate gives the tough surface.

1. Where can plastics be applied?
2. What advantages do plastics offer?
3. What can plastics be used for except decoration?
4. What does plastic material consist of?
5. What for is plastics recommended as a structural material?

**2. Find in the text the English equivalents for the following words and word combinations:**

Пластик может быть применен для украшения; работать обычными строительными инструментами; изготовлен из многих слоев бумаги; ламинат используют для внутренних и наружных работ; без серьезной деформации.

**3. Match a line in A with a line in B to define the words :**

Deformation	liquid colouring matter which can be put or spread on a surface to make it a certain colour
Plastic	simple instrument that is held in the hands and used for doing special jobs
Tool	the action of changing the usual shape of something
Surface	a light artificial material produced chemically, which can be made into different shapes when soft, keeps its shape when hard
paint	the outer part of an object



## Variant 30

### TEXT. THE MANEGE

#### 1. Read the text carefully and answer the following questions:

The Manege (Manezh) is a building in Moscow, standing in the square on the western side of the Kremlin. Officially, it is called now the Central Exhibition Hall.

The Manege was built in 1817 for parades and the training of the Moscow garrison cavalry, and as a memorial of Russian victory in 1812. So it had to be one of the largest and most attractive buildings in the city.

Its project was worked out by General Bethencourt. The walls of the building were 166.1×44.7 m long. There is not a single internal support. The roof rests on crosswise timber rafters (a canopy).

Architect Bove, who did a lot to restore Moscow, ornamented the building with strong half columns and decorated the walls with stucco moulding. The building was completed in 6 months and won praise from all. Contemporaries wrote that there was "nothing anywhere in Europe that had such architectural grandeur or such an original roof. Many engineers have made a study of the roof, which has been described in many building textbooks. Its architecture still gladdens the eye by its harmony, classicism and simplicity.

In the 19th century the Manege became a major cultural centre in the city. It was used for architectural, agricultural, scientific, technical and ethnographic exhibitions. In 1908 the building was used for the first international exhibition of cars, bicycles and sports equipment.

The finest musicians in Russia and Europe, including Hector Berlioz, have played at gala concerts at the Manege building. On December 27, 1867, Berlioz conducted a choir and orchestra of 700 there, playing his own music and that of Russian composers, before an audience of 12,000.

In 1957 the Soviet Government decided that the Manege should be turned into a Central Exhibition Hall. Since then it has housed many art exhibitions which attract over a million visitors a year.

1. Where does the Manege building in Moscow stand?
2. When was this building built?
3. What was the Manege built for?
4. "Who worked out the Manege project?
5. What can you say about the roof of this building?
6. What is the Manege used for now?

#### 2. Find in the text the English equivalents for the following words and word combinations:

Проект был разработан; главный культурный и выставочный центр; здание было закончено; деревянные стропила; реставрация Москвы; оригинальная крыша.

#### 3. Match a line in A with a line in B to define the words :

A	B
Roof	a hard rectangular piece of baked clay used for building
Timber	a curved top on two supports
Brick	a building material made by mixing sand, very small stones, cement, and water
Concrete	the outside covering on top of a building
Arch	wood for building

## ЛИТЕРАТУРА

1. Ажищев Н.И., Суэта Ф.С. «Профессия строитель» – М., 1986.
2. Бжиская Ю.В. Английский язык для строительных специальностей/ практикум – Ростов-на-Дону, 2008.
3. Бурлак А.И. Учебник английского языка для студентов архитектурных и инженерно-строительных вузов. – М., 1982.
4. Мусихина О.Н., Гисина О.Г., Яськова В.Л. Английский язык для строителей. Практикум. – Ростов-на-Дону, 2004.
5. Словарь современного английского языка: В 2-х т. – М., 1992.