

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ
ФЕДЕРАЦИИ
Федеральное государственное бюджетное образовательное учреждение
высшего образования
«ТЮМЕНСКИЙ ИНДУСТРИАЛЬНЫЙ УНИВЕРСИТЕТ»
Институт сервиса и отраслевого управления

Кафедра межкультурной коммуникации

Лапицкая С.И., Баликаева М.Б.

АНГЛИЙСКИЙ ЯЗЫК ДЛЯ СТРОИТЕЛЕЙ

УЧЕБНОЕ ПОСОБИЕ
для студентов направления 08.03.01 «Строительство»,
профиль «Промышленное и гражданское строительство»,
профиль «Производство и применение строительных материалов,
изделий и конструкций»,
профиль «Городское строительное хозяйство»
очной формы обучения

Тюмень
ТИУ
2018

УДК – 811.111'36 (075.8)
ББК 81.2 Англ-923
Л 241

Рецензенты:

Доцент кафедры иностранных языков, УрГПУ О.М. Казакова
Старший преподаватель кафедры межкультурной коммуникации,
ИСОУ, ТИУ Н.А. Чуманова

Л 241 Лапицкая С.И., Баликаева М.Б. Английский язык для строителей. Учебное пособие для студентов направления 08.03.01 «Строительство», очной формы обучения /С.И. Лапицкая. – Тюмень: РИО ФГБОУ ВО «ТИУ», 2018. - 89с.

ISBN

Настоящее учебное пособие предназначено для студентов вузов направления 08.03.01 «Строительство», профиль «Промышленное и гражданское строительство», профиль «Производство и применение строительных материалов, изделий и конструкций», профиль «Городское строительное хозяйство» очной формы обучения составлено на основе современных аутентичных материалов по теме «Строительство» в форме лексических и грамматических упражнений и тестов, которые адаптированы к уровню подготовки студентов технического вуза.

УДК – 811.111'36 (0.75.8)

ISBN

© ФГБОУ ВО «Тюменский индустриальный университет», 2017

CONTENT

INTRODUCTION	4
UNIT I. DIFFERENT TYPES OF HOUSES	5
UNIT II. MY HOME IS MY CASTLE	10
UNIT III. CIVIL ENGINEERING	22
UNIT IV. BUILDING MATERILS	30
READING FOR TEST “BUILDING MATERIALS”	58
SUPPLEMENTARY READING	61
HOME READING	74
TEXTS FOR TEST	83
SOURCES	88

ВВЕДЕНИЕ

Данное учебное пособие предназначено для организации практической и самостоятельной работы бакалавров, направление «Строительство», профиль «Промышленное и гражданское строительство», профиль «Производство и применение строительных материалов, изделий и конструкций», профиль «Городское строительное хозяйство» очной формы обучения.

Основной целью пособия является развитие навыков чтения и понимания оригинальной литературы по специальности на английском языке, расширение словарного запаса, необходимого студентам для профессионального общения.

Учебное пособие способствует совершенствованию навыков чтения, технического перевода, составления резюме и усвоению лексики по терминологии направления и профиля.

В пособии использован современный материал, тексты отобраны из английских и американских источников с учетом их информативности и соответствия научно-техническим достижениям. Предлагаемый аутентичный материал способствует развитию навыков различных видов чтения (изучающее, просмотровое, ознакомительное, поисковое) и навыков работы со словарем.

Учебное пособие состоит из 4 частей, содержащих тексты различной направленности: типы домов, гражданское строительство, строительные материалы, лексико-грамматические упражнения для закрепления умения чтения и дополнительные тексты. Каждая часть начинается с введения активной лексики и упражнений после каждого текста, которые содержат в основном активную лексику и позволяют детально проработать каждую тему. Неоднократное повторение лексики способствует интенсивному овладению активным и пассивным словарем. Тексты сопровождаются комментариями и вопросами для самоконтроля.

Тесты, которые служат для контроля усвоения студентами лексических аспектов урока, представлены в конце каждого раздела. Большое количество текстов и заданий к ним дают возможность преподавателю варьировать работу в зависимости от уровня подготовки группы и давать индивидуальные задания студентам. К текстам прилагаются небольшие словари, облегчающие понимание, способствующие более точному переводу данных текстов и запоминанию лексики и терминологии по данному направлению и профилю.

Задачами деловых игр являются активизация лексики по изучаемой теме, совершенствование профессиональной компетенции студентов и вовлечение их в коммуникативную деятельность. Участие в деловой игре предполагает принятие самостоятельных решений. Дополнительные

тексты по тематике и лексике связаны с основными текстами и предназначены для самостоятельной и индивидуальной работы.

При отборе материала соблюдались принципы, отвечающие современным требованиям методики обучения иностранным языкам: мотивация, интегрированный подход.

Пособие может использоваться как для проведения практических занятий под руководством преподавателя, так и для самостоятельной работы теми, кто хочет научиться читать и переводить научно-техническую литературу. Данное учебное пособие рассчитано также на дистанционное обучение в семестрах.

Предлагаемое учебное пособие способствуют развитию следующих компетенций:

ОК- 5: способность к коммуникации в устной и письменной формах на русском и иностранном языках для решения задач межличностного и межкультурного взаимодействия;

ОПК- 9: владение одним из иностранных языков на уровне профессионального общения и письменного перевода.

UNIT I DIFFERENT TYPES OF HOUSES

1. Match the following words with the figures on pictures.

1. detached house 2. pitched roof 3. bay window 4. terraced house (UK), row house (US) 5. semi-detached/semi (UK), duplex (US) 6. chimney 7. porch 8. block of flats, tower block (UK), apartment building (US) 9. flat roof 10. cottage 11. thatched roof 12. shutters 13. town house (UK) 14. dormer window 15. bungalow (UK), ranch house (US) 16. stately home (UK), mansion

Fig.1



Fig.2



Fig.3



Fig.4

Fig..5



Fig.6



Fig.7

2. There are different types of houses in different countries and cultures.

Match the type of a house with its definition.

- A) a very tall modern city building.
- B) a small simple building with only one or two rooms.
- C) a house made from blocks of hard snow or ice.
- D) a structure with a round or pointed roof used as a home by some Native American tribes in the past.
- E) a very large strong building, built in the past as a safe place that could be easily defended against attack.
- F) a small house with one floor.
- G) the official home of a person of very high rank, especially a king or queen.
- H) a small house in the country.
- I) a vehicle that a car can pull and in which people can live and sleep when they are on holiday.
- J) a type of house that is divided into two parts, so that it has two separate homes in it

igloo, castle, bungalow, caravan, skyscraper, duplex, palace, wigwam, hut, cottage

3. Go through the table and look up the words you don't know in your dictionary.

Style: traditional, modern, apartment/flat, (semi) detached, terraced house, cottage, villa, 1/ 2/3 storey building, castle

Location: village, city, centrally located, residential area, close to the shops, in the suburbs, on the outskirts, isolated, in the country

Size: small, tiny, spacious, large, huge, average, family-sized, 1-/2- bedroomed

Cost: cheap, low-priced, overpriced, expensive, economical

General description: cosy, comfortable, secure, luxurious, well-maintained, fully furnished, airy, noisy, cold

Use the words to describe your house.

4. Practise the words and phrases that have to do with the places where people live. Read and translate the following texts. Describe a place where you lived, where you live now and where would you like to live.

a. I grew up in a red-brick terraced house in Manchester; a classic two-up, two-down, with a lounge and dining room on the ground floor and two bedrooms on the first floor. At times, there were six people in our household: my parents, my grandparents, my sister and I. Later, I moved to a tiny bedsit (now you'd say a studio) — a single room with a separate bathroom. the four-bedroom semi where I live now seems like a mansion by comparison

b. Well, I don't live in a castle. I live in a condo. I bought my beautiful small apartment five years ago when I moved to San Francisco. There are six apartments altogether, in the condominium, a fairly modern building in a quiet side street, and all of us owners get along really well. It's a shame you can't say the same about our cats

c. I'm an architect, and I specialize in planning low-energy houses. My current project is a modern three-storey family home in a residential neighbourhood. It's made entirely of wood and glass. There are solar panels on the roof, and the windows face south and have triple glazing. People already built well-insulated houses hundreds of years ago. My own home is a 200-year-old cottage with a straw thatched roof, so it's cool in summer and warm in winter.

5. Complete the sentences with words from the opposite page.

a) A _____ is an area covered by a roof at the entrance to a house.

- b) Your home and all the people who live in it are your _____.
- c) In the US, a condo or _____ is an apartment or a building containing apartments owned by the people who live in it.
- d) Some windows have _____ that you can close to keep the light out.
- e) A house that is protected against heat and cold is _____.
- f) Windows that have _____ have three layers of glass.
- g) A _____ is a vertical window that projects from a pitched roof.
- h) In a _____ area, there are lots of houses and not many offices or shops.

6. The floor of a building at ground level is called the “ground floor” in the UK and the “first floor” in the US. Complete the table with some more British- and American-English terms.

British English	American English
a) a set of rooms for living in b) a house with only one level c) a house joined to another house by a shared wall on one side d) a house in a row of houses that are all joined together	

flat, bungalow, duplex, row house, apartment, semidetached house, ranch house, terraced house

7. Number the phrases to order these types of housing from the largest (1) to the smallest (5).

- a) a bedsit in a tower block
- b) a five-storey town house
- c) a three-bedroom semi
- d) a one-bedroom thatched cottage
- e) a two-up, two-down terraced house

8. Look up the word house in a dictionary and find out...

- the pronunciation of the verb **to house**;

- the meaning of the adjectives **housebound**, **houseproud** and **house-trained**;
- the difference between **a householder** and **a housekeeper**. Try to make example sentences using these words.

UNIT II. MY HOME IS MY CASTLE

I.

1. The title above is taken from an English proverb. What do you think it means?

a. Which of the houses in the pictures:

has: five storeys and a house on top;
 a fibreglass shark; brick walls; a thatched roof;
 a chimney; a rock on the roof;
 wooden stairs up to the front door;
 stone walls; a pitched roof; a tiled roof?
 is: built underground;
 a castle;
 built on stilts?

b. Use the adjectives to describe each house. Give reasons.

- economical
- impractical
- cold
- spacious
- cramped
- airy
- comfortable
- attractive
- eccentric

House A is economical to maintain because it doesn't cost very much to heat and cool.

c. Which house would you/wouldn't you like to live in? Give reasons.

I'd like to live in the hut on stilts because it looks very attractive to me. I wouldn't like to live in the rock house because it must get very cold.

a)

Fig.8



b)

Fig.9



b)

Fig.10



c)

Fig.11



TEXT 1.

IN SEARCH OF THE PERFECT HOME

2. a) Look at the title of the article. What do you think it about? Where might you read it? Say words you expect to find in it.

b) Read the text quickly to get a general idea of what it is about. Look at the first part of the question, then find the part of the text the question refers to. Go through the choices and choose the answer that best fits. Keep in mind that the information may be rephrased. Even if you think you know the correct answer, always check that the others are not appropriate. Check your answers against the text.

How would you like to live in a castle, a tree house or even underground? This might not be as unusual as you think. It seems that these days more and more people want to live somewhere special and **out of the ordinary**, and if they can't buy what they want they are quite prepared to build it **from scratch**.

For John Mew and his wife Josephine their home really is their castle. They have built their own English castle in the Sussex countryside. The building

is **brand new** with all the luxuries you would expect from a house that cost more than £350,000 to build. However, when you first see it from the outside it would be easy to think that you are looking at an ancient monument. The building has a lot of the features of a traditional castle, including a **keep**, a **moat** and a **drawbridge**. “My choice of house is somewhat eccentric and building it was very hard work, but we’ve got the perfect place to live,” Mew says. Although some would say that the building is impractical and may be cold in harsh British winters, he certainly has got a unique and spacious home.

If you don’t look carefully, you might not even see the home that Jonathan Ridley-Jones and Shanon Ridd built at all! That’s because the house is a converted underground water tank. The only thing that can be seen from the surface is a door leading into the hillside. “We’ve never wanted to live in an ordinary house,” Shanon says. “Living below ground means that our home is quiet and very cosy – none of the usual **draughts**. It doesn’t damage the local surroundings and has very low **fuel bills**. Some of our friends find it dark and feel shut in when they first visit, but they soon get used to it!”

If an underground home doesn’t **appeal** to you, how about living in the tree tops? Dan Garner, a tree surgeon from Gloucestershire, certainly thinks that this is the way to go up in the world.

“When our family became **short of** space at home our solution was to build a luxury tree house in the garden. The tree house is built into a **spruce tree** six metres **above the ground**. It has one main room, a bedroom and a balcony running around two sides.” Garner is so happy with this practical **extension** to his home that he thinks he can convince more people of the benefits of living in the trees. He wants to set up his own enterprise making more of the deluxe tree dwellings, saying, “Tree houses are airy, secure and comfortable and the only disadvantage is that they might not be **suitable for** people who **suffer from hay fever** or a fear of heights!”

Even people who live in more ordinary **settings** sometimes can’t resist doing something to make them **stand out** from the crowd. One extreme example of this is Bill Heines’ house in Headington, Oxfordshire. Until one morning in 1986, his house looked much like all the others in his street, when suddenly overnight a 7.5 m long **fibreglass shark** appeared to have crashed through the roof. The shark was a **sculpture** by local artist John Buckley. At first some people complained that it might be dangerous or that it spoilt the look of the neighbourhood, but engineers checked that the sculpture was safe and the ‘Headington shark’ has become a well-known and popular landmark. It seems that no matter where you live, you can always do something to make sure your house says something about who you are.

3. Read the article. For questions 1-7, choose the answer (A, B, C or D) which fits best according to the text.

a. More and more people build their own home

- A so that they can live underground.
- B so that they can have exactly the home they want.
- C because it is cheaper than buying a new house.
- D because they want all the modern luxuries you find in a new home.

b. John and Josephine Mew

- A know that their choice of home is unusual.
- B found that creating their dream home was easy.
- C wanted to live like people would have in traditional castles.
- D converted an ancient building into a modern home.

c. According to the text, what could be a disadvantage of the Mews' home?

- A It might not be very comfortable.
- B It was very expensive to build.
- C Tourists often mistake it for a historic building.
- D It doesn't have enough luxury items.

d. Why might you not notice the home of Jonathan Ridley-Jones and Shanon Ridd?

- A It isn't in a busy area.
- B A hillside hides it from view.
- C Only its door is visible.
- D It has been built under a water tank.

e. What do Jonathan Ridley-Jones and Shanon Ridd say about their home?

- A It's just an ordinary house.
- B They always wanted to live underground.
- C It doesn't harm the environment.
- D They don't pay anything for heating and lighting.

f. Why did Dan Garner build a tree house in his garden?

- A He wants to persuade people to buy one.
- B His family wanted to live in a tree house.
- C He builds them for a living.
- D His family needed more room.

g. What does Dan Garner aim to do in the future?

- A build more tree dwellings in his garden
- B invite more people to visit his tree house
- C open a business selling tree houses
- D design a tree house to suit all tastes

c. Explain the words in bold, then suggest synonyms for the highlighted words.

4 a. List the advantages and disadvantages of Mew's, Ridd's and Garner's dwellings, then talk about them.

b. What would your ideal house be? Describe it giving reasons.

- My ideal house would be a castle. It would be made of ...

II. Read the text 'My Home Is My Castle' and say if you agree with the title.

TEXT 2. MY HOME IS MY CASTLE

House is essential for man's life. A house serves as a shelter and a place to satisfy all our needs: we sleep, eat, hide ourselves from bad weather, store personal property, work and rest there. So we want not just a house but a home. So what is the difference between a house and a home? It is considered that the place where you live is your home whatever type of house it is. British speakers often say that your home is the place where you belong and feel comfortable, so it is more than just a house. Some people think of home in terms of where they grew up or where they lived. For them it is a place that brings back old memories or feelings. The state of a person's home can physiologically influence his or her behavior, emotions, and mental health. Some people may become homesick when they are separated from their home environment.

There are a lot of proverbs and sayings supporting the importance of home to a person: East or West, home is best; There is no place like home; My house is my fortress; Home, sweet home; Home is where the heart is; Home is home, though it be never so homely; Dry bread at home is better than roast meat abroad and many others. Such sayings exist in any language and in any culture. Houses differ from one culture to another, depending on the world outlook of a certain community, which has its roots in the religion of a nation, its traditions and historic heritage. That is why there are so many types of houses and ways of life in the world. There are certain cultures in which members lack permanent homes, such as with nomadic people.

A person's home can tell us what culture he belongs to, because consciously or unconsciously, one usually keeps to one's native traditions, though it is rather difficult to do so in the modern world, especially in the city.

An Englishman's motto is 'My home is my castle.' A house doesn't only ensure privacy or give a sense of stability and security, but it is also a status symbol. A big and expensive house means that its owner is a very successful person. There are different types of houses in Britain. For example, a terraced house is a house joined to a row of other houses. A semi-detached house is joined to another house. The British dream of living in a detached house (which means a separate building) though having a detached house is much more expensive than a semi-detached or a terraced one. A cottage is a small, usually old house, typically in a rural, or semi-rural location. A bungalow is a fairly modern house built on only one level. Most people don't like blocks of flats, because they don't suit British attitudes and don't give people enough privacy. Besides many blocks of flats are badly built and are associated with poverty and crime.

Nowadays some people prefer living in a houseboat. It is a boat designed to be used as a human dwelling. In the United Kingdom, canal narrowboats are used as homes and also as mobile, rented, holiday accommodation. Over 15,000 people live afloat in Great Britain. They are found throughout the canals, rivers and coasts; in cities, in the country and in harbours. Some cruise continuously, some are permanently moored and the others mix cruising and mooring. Many people find houseboats very attractive because they can stay in one area for a few weeks or months and then move somewhere else. It helps them feel closer to Nature and escape from everyday problems of life ashore.

While travelling many people use a travel trailer or a caravan which is towed behind a road vehicle. It is much more comfortable than a tent and it gives travellers the opportunity not to spend their money on a motel or hotel. There are travel trailers and caravans of various types. They may be little more than a tent on wheels or they may contain several rooms with furniture and equipment. Travel trailers are especially popular in North America, Europe, Australia and New Zealand.

A house can say much about its inhabitants: their way of life, tastes, financial position, etc. No matter what type of house a person has, he should feel comfortable there. As a rule one's house is associated with one's family. Living under one roof people become closer and begin to understand each other better. So we can say that a house unites and for every person his house is a small Universe, a sacred place where love, friendship, mutual understanding and mutual respect reign.

TASKS

1. Complete each sentence (A—H) with one of the endings (1—8):

- A. British speakers often say that your home is
- B. The state of a person's home can
- C. A house doesn't only ensure privacy or give a sense of stability and security, but it is also

D. Most people don't like blocks of flats, because they
 E. In the United Kingdom, canal narrowboats are used as homes and also as
 F. A travel trailer is much more comfortable than a tent and it gives travellers the opportunity
 G. Travel trailers are especially popular in
 H. For every person his house is

1. not to spend their money on a motel or hotel.
2. don't suit British attitudes and don't give people enough privacy.
3. a small Universe, a sacred place where love, friendship, mutual understanding and mutual respect reign.
4. physiologically influence his or her behavior, emotions, and mental health.
5. North America, Europe, Australia and New Zealand.
6. the place where you belong and feel comfortable.
7. a status symbol.
8. mobile, rented, holiday accommodation.

2. Agree or disagree with the following statements. Explain your point of view

- House is essential for man's life.
- Home is where the heart is.
- A house gives a sense of stability and security.
- It is rather difficult to keep to one's native traditions in the modern city.
- A house can say much about its inhabitants.
- Living under one roof people become closer and begin to understand each other better.

3. Read some expressions containing the element 'home' and explain their meaning:

- home and dry
- home key
- home-thrust
- home truth
- last home/long home
- to be/feel at home
- to be not at home to anyone
- to be/feel at home in French (English etc.)
- to romp home
- to send smb home
- to come home to
- to bring smth home to smb

- to bring oneself home
- to bring a crime home to smb
- to touch home

4. Answer the questions

- 1) What is the difference between a house and a home?
- 2) Why do many people feel homesick when they leave their home?
- 3) Why do houses differ from one culture to another?
- 4) How can a house indicate a person's status?
- 5) What types of houses do you know?
- 6) Would you like to live in a houseboat? Why?
- 7) What are the main advantages and disadvantages of a travel trailer?
- 8) What kind of house is ideal to your mind?
- 9) Which is more important: the exterior of a house or the atmosphere that reigns in it? Explain your point of view.
- 10) Is your home important to you? Could you change your lodgings easily?

5. Read several interesting facts about houses and add some more

- The oldest house in the world was discovered at Mezhirich near Kiev in the Ukraine in 1965 by a farmer. It is approximately from 10,000 BC and it is made of mammoth bones
- The Smallest House in Great Britain can be found on the Quay, in Conwy, Wales. Its dimensions are 3.05 metres x 1.8 metres.
- Windsor Castle is the largest inhabited castle in the world and, dating back to the time of William the Conqueror, is the oldest in continuous occupation. Windsor Castle is one of the principal official residences of the British monarch.

Вставить картинки

The building officially opened on 4 January 2010 in United Arab Emirates, Dubai. From May, 2008 it's the tallest skyscraper in the world, its height is 828 m, 163 floors. Burj Khalifa has been designed like city within a city, with its own parks, lawns, boulevards

6.

Put each of the following words or phrases in its correct position in the passage below:

deposit	advertisements
landlord	self-contained
rent	references
flat	accommodation agency
fee	block

The first thing I had to do in Belfast was find somewhere to live, if possible a small, one-bedroomed (a) I didn't want to share a kitchen or toilet; I wanted to be independent in my own (b)place. I decided I could pay a (c) of £50 a week. I couldn't find what I wanted in the newspaper (d) so I went to an (e) They offered me a nice place. It was in a modern (f) on the third floor. I had to pay the agency a (g)..... , and the (h)..... wanted a big (i)..... and (j)..... from my employer and bank manager.

7. Put one of the following words in each space in the sentences below:

for at in on of into with

1. She wanted a placeher own.
2. He'll movetomorrow.
3. He'll move.....his new flat tomorrow.
4. I share the kitchen.....three other people.
5. The landlord asked the tenant..... more rent.
6. My flat isthe top floor.
7. My flat is.....a modern block.
8. The house isgood condition.
9. I lookedadvertisements.....the newspaper.
10. She pays a rent.....£90 a week.

8. Find Russian equivalents for the following proverbs:

1. People who live in glass houses should never throw stones.
2. Do not burn your house to get rid of the mice.
3. As you make your bed, so you must lie on it.
4. A rolling stone gathers no moss.
5. Home is where the heart is.
6. East or West - home is best.

9. Put each of the following words or phrases in its correct position in the passage below:

semi-detached	condition	removal	cramped
estate-agent	builder	surveyor	architect
terraced	detached	spacious	

Tony and Sheila's first home was a (a) house, one of a line of houses all connected. But several years later when they had a small child, they found it rather (b) for three people. They wanted something more (c) and so decided to move. They went to an (d) and looked at details of the houses he had to offer. They looked at a (e) house (one of a pair attached to each other), liked it, and asked a (f) to inspect it for them. He said that it was in good (g) and they therefore decided to buy it. Luckily they sold their house quickly and soon a (h) firm was taking all their furniture and other possessions to their new home. But already, after a couple of years, they are hoping to move again. Tony's business is doing well and they want to get an (i) to design a modern, (j) house for them, and a (k) to build it.

10. Match the two parts of the idioms and translate them into Russian:

- | | |
|--------------------------|-----------------------|
| 1) to build one's castle | a) the floor |
| 2) to build castles | b) the door |
| 3) room | c) doorstep |
| 4) to do something | d) on the carpet |
| 5) to be | e) an open door |
| 6) to take | f) carpet |
| 7) a window | g) upon the sand |
| to camp on somebody's | h) ears |
| 9) to shut the door | i) in the chair |
| 10) to show somebody | j) on the world |
| 11) to force | k) in somebody's face |
| 12) to call somebody | l) under the table |
| 13) a magic | m) to the wall |
| 14) wall have | n) in the air |
| 15) to drive somebody | o) at the top |

III. Read two texts, translate the underlined expression and be ready to speak about your home or your “sweet home”, how you imagine it would be.

TEXT 3. SWEET HOME

Home, sweet home. It does not matter what your home is like - a country **mansion**, a more modest **detached or semi-detached house**, a **flat** in a block of flats or even a **room** in a communal flat. Anyway, it is the place where you once move in and start to furnish and decorate it to your own taste. It becomes your second “ego”.

Your second “ego” is very big and disquieting if you have a **house**. There is enough space for everything: a hall, a kitchen with an adjacent dining-room, a living-room or a lounge, a couple of bedrooms and closets (storerooms), a toilet and a bathroom. You can walk slowly around the house thinking what else you can do to renovate it. In the **hall** you cast a glance at the coat rack and a chest of drawers for shoes. Probably, nothing needs to be changed here.

You come to the **kitchen**: kitchen furniture, kitchen utensils, a fridge with a freezer, a sink, a dishwasher or at least a dish drainer, an electric or gas cooker with an oven. Maybe, it needs a cooker hood?

The **dining-room** is lovely. A big dining table with chairs in the centre, a cupboard with tea sets and dinner sets. There is enough place to keep all cutlery and crockery in. You know pretty well where things go.

The spacious **living-room** is the heart of the house. It is the place where you can have a chance to see the rest of your family. They come in the evening to sit around the coffee table in soft armchairs and on the sofa. You look at the

wall units, stuffed with china, crystal and books. Some place is left for a stereo system and a TV set. A fireplace and houseplants make the living-room really cosy.

Your **bedroom** is your private area though most bedrooms are alike: a single or a double bed, a wardrobe, one or two bedside tables and a dressing table.

You look inside the **bathroom**: a wash-basin, hot and cold taps and a bath. There is nothing to see in the toilet except a flush-toilet.

You are quite satisfied with what you have seen, but still doubt disturbs you: 'Is there anything to change?' Yes! The walls of the rooms should be papered, and in the bathroom and toilet - tiled! Instead of linoleum there should be parquet floors. Instead of patterned curtains it is better to put darker plain ones, so that they might not show the dirt. You do it all. but doubt does not leave you. Then you start moving the furniture around in the bedroom, because the dressing table blocks out the light. You are ready to give a sigh of relief, but... suddenly find out that the **lounge** is too crammed up with furniture.

Those who live in one-room or two-room **flats** may feel pity for those who live in houses. They do not have such problems. At the same time they have a lot of privileges: central heating, running water, a refuse-chute and... nice neighbours who like to play music at midnight. Owners of small flats are happy to have small problems and they love their homes no less than those who live in three-storey palaces. Home, sweet home.

TEXT 4. MY HOME

I would like to tell you a few words about my home. To begin with, I want to tell you that I live in Odessa. Our city is comparatively young, but it is famous for being the biggest seaport of Ukraine and a popular sea resort. It is a crossroads of cultures, languages and trade.

Our family lives in a new **flat** in one of the largest newly built **residential areas**. We moved into our flat seven years ago. It is a three-room flat on the fifth floor of an eight-storey building. It consists of a living-room, a study, a bedroom, a kitchen, a bathroom, two closets and a lavatory. There are two balconies in our flat: the first one is in the living-room, and the second one is in the bedroom. Our flat has all modern **conveniences**: central heating, running cold and hot water, electricity, telephone and gas. Besides, there is a lift and a chute in our building. The layout is very good. I must admit. The rooms are light, though not very large. In my opinion, it's quite a modern-looking flat. The windows face the park in front of the building and the view is really wonderful.

Our **living-room** is quite a big room of about 19 square metres. It is the largest room in our flat. My parents don't like much furniture in the house, so in the living-room there are two comfortable armchairs, a sofa, a coffee-table and a nice thick carpet on the floor. Opposite the window there is a wall unit, but it doesn't take much space in the room. Of course there is a colour TV set, a stereo tape-recorder and a DVD in the living-room. A nice chandelier is hanging from the ceiling and there is a standard lamp to the left of the sofa. During the day, the light comes in through the window, but at night, when it gets dark, we switch on the light and draw the curtains across the windows. We like to receive our guests in this room.

Now I would like to describe our **study**. At first it was my daddy's room, but as I grew older, it became mine. To tell you the truth, I am very happy to have a room for myself, that's why I always try to keep it tidy. There is a sofa, a writing table, a bookcase and a wardrobe in my room. On the wall there are some shelves full of English, Ukrainian and Russian books. There is a radio set on the shelf and, I must confess, I like to listen to the wireless in the evening. The dressing-table is next to the sofa. In the chest of drawers I keep clean linen and handkerchiefs and in the wardrobe I keep my clothes, which I hang on coat-hangers. I have two water-colours on the wall above the sofa. They are nice copies of my favourite paintings by Serov.

My parents' **bedroom** is the smallest room in our flat, but it is very cosy. There is a double bed with a bedside table, a bracket and my parents' wardrobe in this room. There are also some beautiful houseplants on the windowsill.

But the most popular and favourite place for all of us is the **kitchen**, as we spend most of our time there. We all are not big-eaters, but we use the kitchen as a place where we can have a chat about our problems and life. In the kitchen there are some chairs, a table, a cupboard, a sink with water taps, a fridge and a gas cooker. Of course, we usually have our meals there.

We like our flat very much. It is also important that our house is rather close to the bus station and we can easily get to any place we like.

UNIT III. CIVIL ENGINEERING

Words to be remembered:

structure – конструкция, сооружение

construction – строительство, сооружение, конструкция

design – проект, чертеж, дизайн

engineering – конструирование, инженерное искусство

civil engineering – гражданское строительство

structural engineering – проектирование зданий и сооружений

material engineering – материаловедение

residential structure – жилое сооружение
housing – жилищное строительство
technique – технические приемы/методы
water supply system – система водоснабжения
sewerage – канализация, водоотведение
manufacture – производство, изготовление
construction site – строительная площадка
frame – каркас; рама
maintenance – техническое обслуживание, осуществление профилактического ремонта
installation – установка, монтаж
demolition – демонтаж или снос здания (сооружения)
storey (floor) – этаж
draft – чертеж, эскиз
drawing – чертеж, рисунок
computer simulation – компьютерное моделирование
masonry – каменная или кирпичная кладка
requirement (demand) – требование, потребность
strength – прочность
durability – прочность, долговечность
safety – безопасность
responsibility – ответственность
corrosion – коррозия, ржавление
fire protection – противопожарная защита
availability – наличие, пригодность
tender documents – тендерная документация
bill of quantities – предварительная смета строительных работ
structural engineer – инженер-проектировщик
customer – покупатель, заказчик
client – клиент, заказчик
contractor – подрядчик
advantage – преимущество, выгода
disadvantage – недостаток
automation – автоматизация
robotics – робототехника
casting – отливание; литье металла
welding – сварка
convenient – удобный
to assemble – собирать, монтировать
to disassemble – разбирать, демонтировать
to finish – отделывать, заканчивать, обрабатывать

to equip – оборудовать
 to transfer – передавать/переносить (нагрузку)
 to carry out – выполнять
 to make decision – принимать решение
 to take into consideration (account) – принимать во внимание, учитывать
 to estimate load – рассчитывать нагрузку

TEXT 1. CIVIL ENGINEERING



Fig.12

Civil engineering describes the profession of designing and executing structural works helping to make our world a better place to live. As the technological revolution expands, as the world's population increases, and as problems with environment are multiplied, civil engineering skills will be needed throughout the world. This branch of engineering covers different areas including the design and construction of buildings and houses, dams, tunnels, bridges, canals, sanitation systems, also the stationary parts of transportation systems – highways, airports, port facilities, and roadbeds for railroads.

It is traditionally broken into several sub-disciplines including architectural engineering, environmental engineering, geotechnical engineering, structural engineering, transportation engineering, municipal or urban engineering, water supply and sewerage engineering, material engineering, offshore engineering*, aerospace engineering, construction surveying, and some others. Each of these areas involves different duties and different uses of engineers' knowledge and experience.

Environmental Engineering. The skills of environmental engineers have become increasingly important as we protect our natural resources. Environmental engineers transform physical, chemical and biological processes into systems to destroy toxic substances, remove pollutants from water, reduce non-hazardous solid waste volumes, eliminate pollutants* from the air and develop groundwater supplies.

Geotechnical Engineering is required in all aspects of civil engineering because most projects are supported by the ground. A geotechnical engineer may develop projects below the ground, such as tunnels, foundations and offshore platforms. They analyse the properties of soil and rock that support and influence the behaviour of these structures. They evaluate potential settlement of buildings, the stability of slopes and fills, the effects of earthquakes. They also take part in the design and construction of dams, embankments and other structures.

Transportation engineering. The quality of a community is directly related to the quality of its transportation system. Transportation engineers work to move people, goods and materials safely and efficiently. They find ways to meet our ever-

Notes:

offshore engineering – сооружения на расстоянии от берега
pollutants – загрязнители

EXERCISES

1. Read the following international words and give their Russian equivalents.

Engineer, engineering, design, designer, designing, project, architecture, architect, structure, construction, profession, qualification, practice, industry, management, mechanics, technique, specialist, specialize, protection, consultant, material, metal, ceramics, polymer, laboratory, aspect, control, hydraulic, transport, airport, tunnel, canal, sanitation, energy, company, firm.

2. Match English and Russian equivalents.

- | | |
|---------------------------|---------------------------------|
| 1. Engineer | a) проект |
| 2. Designer | b) проектировщик |
| 3. Construction | c) управление |
| 4. Architect | d) исследователь |
| 5. Civil engineering | e) промышленность |
| 6. Material engineering | f) инженер |
| 7. Structural engineering | g) гражданское
строительство |
| 8. Project | h) исследование |
| 9. Management | i) механика |
| 10. Industry | j) материаловедение |
| 11. Research | k) сооружение |
| 12. Researcher | l) профессия |
| 13. Mechanics | m) проектирование
зданий |
| 14. Profession | n) архитектор |

3. Analyze the information from the text and match each type of engineering with its scope.

<i>TYPE OF ENGINEERING</i>	<i>SCOPE</i>
1. Civil engineering is ...	a) purification, water supply,

	control of different fluids and sewage
2. Structural engineering is ...	b) studying, creating and testing building materials and their composites
3. Water supply and sewage engineering is ...	c) designing and constructing buildings, roads, bridges
4. Material engineering is ...	d) constructing permanent structures like houses, hospitals, schools

4. Find correct answers for the questions.

1. What is engineering?
2. What areas of activity does civil engineering cover?
3. What are the main subdivisions of civil engineering?

5. Read and translate the text using the dictionary.



TEXT 2. STRUCTURAL ENGINEERING

Structural engineering covers the conception*, planning, designing, drawings and construction for all types of structures, that support their own weight and the loads they carry, and that resist extreme forces from wind, earthquakes, temperature and others. Bridges, buildings, and

Рис.13

many kinds of projects

are included with this speciality. Structural engineers develop appropriate combinations of steel, concrete, timber, plastic and new exotic materials. They also plan and design, and visit projects sites to make sure work is done properly.

Professional engineers work as a team at any given project under the overall control of an architect for a building structure. Don't think that structural engineers' work is mechanical or routine in nature; it is useful to

consider his/her position in building construction where the parties involved are:

- *the client* (or owning organization), who has a need for a given building and will finance the project;
- *the architect*, who produces proposals* in the form of building plans and models (or a computer simulation) to meet the client's requirements, who controls the project and who engages consultants to bring the proposals into being.
- *consultants* (structural, mechanical, electrical, heating and ventilating etc.), who carry out the detail design, prepare working drawings and tender documents and supervise construction;
- *contractors*, who carry out fabrication and erection of the structural framework, floors, walls, finishes and
- installation of equipment and services.



The structural engineers work as the members of a team, and to operate successfully it is necessary to have knowledge, experience and the ability to do their work with great responsibility. Their role may be summarized as planning, design preparation of drawings and tender documents and supervision of construction.

They make decisions about materials, structural

Fig.14

form and design methods to be used. They are responsible for safety and must ensure that the consequences of failure* due to accidental causes are limited.

Notes:

conception – концепция,
понятие proposal –
предложение
consequences of failure – последствия разрушения

EXERCISES

1. Give the Russian for:

Conception, fabrication, erection, planning, client, walls, computer simulation, heating, ventilating, structural framework, floors.

2. Give the English for:

Рабочие чертежи, работа в команде, рутинная работа, ответственная работа, финансировать проект, подрядчик, соответствовать требованиям

заказчика, консультант, тендерная документация, отделочные работы, руководить строительством, установка оборудования, отвечать за безопасность, сократить последствия разрушения.

3. Match the terms with their definitions.

1. An architect is ...a) a person who needs a structure and who finances the project
2. An engineer is ...b) a person who works out the plan for some kind of structural work (for example a house, a bridge, a heating system etc.)

3. A structural designer is ...	c) an occupation which requires a specialized education and training
4. A client is ...	d) a specialist who carries out fabrication and erection of a structure
5. A consultant is ...	e) a member of engineering profession, a specialist with higher or special education
6. A contractor is...	f) a specialist who prepares tender documents and supervises construction
7. A profession is ...	g) a qualified specialist who carries out architectural designing and interior solutions

4. Read and translate the text, do the exercises given below.

TEXT 3. NEED FOR AND USE OF STRUCTURES

Structures are one of mankind's basic needs next to food and clothing, and they are a feature of civilization. The main purpose of structures is to carry loads and transfer them to the ground. Structures may be classified according to use and need. A general classification is:

- **residential** – houses, apartments;
- **commercial** – offices, banks, department stores, shopping centres;

- **educational** – schools, universities;
- **social** – exhibition halls, theatres, museums, art galleries, leisure centres, sports stadiums, etc.;
- **industrial** – factories, plants, warehouses*, power stations, aircraft hangars* etc.

Speaking of residential construction we must say that the apartment houses are mostly built to suit urban conditions. Mass 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 the total technological development of a society. Present-days designs for residential construction include all modern conveniences for a dwelling*; they advocate larger, better built and better equipped flats and houses. There is a marked improvement in the heating and ventilating systems as well as in hot-water supply, kitchen and sanitary fittings*.

Industrial buildings comprise another significant type of construction. Modern industrial buildings have demonstrated the advantages of reinforced concrete arches, metal frames, and glass walls.

Other important engineering structures are:

- bridges;
- towers – water towers*, pylons*, lighting towers* etc.;
- special structures – offshore structures, car parks, radio telescopes, mining structures etc.

Notes:

warehouses – *склады*

aircraft hangars – *ангары для самолетов*

mass housing – *массовое жилищное строительство или застройка*

facilities – *оборудование*

dwelling – *жильё, жилище*

sanitary fittings – *сантехника*

water towers – *водонапорные башни*

pylons – *опоры*

lighting towers – *маяки*

EXERCISES

1. Give the English for:

Характеристика цивилизации, основная потребность человечества, переносить нагрузку, жилые сооружения, образовательные и общественные сооружения, городские условия, коммерческие и промышленные сооружения, атомная станция, склад, мост, башня, парковка, жилище, современные удобства, технология строительства, горячее водоснабжение, отопление и вентиляция, сантехника.

2. Match two columns and make up 6 sentences.

Model: An institute is an example of an educational structure.

Bank	industrial
Mine	commercial
College	social
Power station	residential
Cinema hall	educational
Apartment	special

3. Say if the sentences given below are *true* or *false*.

1. Constructing buildings is one of the principle features of civilization.
2. People's main needs are food, clothes and dwelling.
3. Technological progress doesn't influence the techniques of construction.
4. The systems of heating, ventilating, water supply and sanitary fittings are getting better and better.
5. The example of a social structure is a swimming pool.
6. Stores, offices and banks are the examples of industrial structures.

UNIT IV. BUILDING MATERILS

Words to be remembered:

brick – кирпич

stone – камень

crushed stone – щебень

sand – песок

sandstone – песчаник

lime – известь

limestone – известняк

clay – глина

cement – цемент

concrete – бетон

reinforcement – арматура



Fig.15

reinforced concrete – железобетон
prestressed concrete – предварительно напряженный бетон
prefabricated concrete – бетон заводского изготовления
timber – древесина; пиломатериал
laminate – ламинат, многослойный материал
plastics – пластмасса, пластик
ceramics – керамика, керамические изделия
gravel – гравий
granite – гранит
steel – сталь
marble – мрамор
glass – стекло
glass brick – стеклоблок, стеклянный строительный кирпич
aggregate / filler – заполнитель
alloy – сплав
mixture – смесь
mortar – строительный раствор
density – плотность
property – свойство
ductility – пластичность; вязкость
heat insulation – теплоизоляция
sound insulation – звукоизоляция
porosity – пористость
watertight – водонепроницаемый
artificial – искусственный
fire-resistant – жароупорный, негорючий, огнестойкий
flexible – гибкий, эластичный, упругий
binding – вяжущий (материал)
curing – выдерживание/вызревание бетона
bearing structure – несущая конструкция
hardness – твердость, прочность
to fasten – скреплять, закреплять
to decay – гнить, разрушаться
to harden – твердеть

TEXT 1. MODERN BUILDING MATERIALS

Some of the most important building materials are: timber, brick, stone, concrete, metal, plastics and glass.

Timber is provided by different kinds of trees. Timber used for building purposes are divided into two groups called softwoods and hardwoods. Timber is at present not so much used in building construction, as in railway

engineering, in mining and in the chemical industry where it provides a number of valuable materials.

However, timber is still employed as a building material in the form of boards. For the interior of buildings plywood and veneer serve a number of purposes.

A **brick** is best described as a “building unit”. It may be made of clay by moulding and baking in kilns, of concrete, of mortar or of a composition of sawdust and other materials. In shape it is a rectangular solid and its weight is from 6,5 to 9 lb.

There exists variety of bricks for different purposes: ordinary, hollow or porous, lightweight, multicolor bricks for decorative purposes, etc. Bricks are usually laid in place with the help of mortar.

The shape and convenient size of brick enables a man to grip it with an easy confidence and, because of this, brick building has been popular for many hundreds of years. The hand of average man is large enough to take a brick and he is able to handle more than 500 bricks in an eight-hour working day.

It is necessary, therefore, for the “would be” bricklayer to practice handling a brick until he can control it with complete mastery and until he is able to place it into any desired position.

The brick may be securely handled by placing the hand over the surface of the upper part of a brick and by placing the thumb centrally down the face of the brick with the first joints of the fingers* on the opposite face. It is better to protect the thumb and the fingers with leather pads, which also prevent the skin from rough bricks.

Sometimes natural stones such as marble, granite, basalt, limestone and sandstone are used for the construction of dams and foundations. Marble, granite and sandstone are widely used for decorative purposes as well, especially with the public building.

Natural stone is used for foundations and for the construction of dams. The main varieties of building stone are basalt, granite, marble, sandstone and limestone.

Metals: *Aluminium*, principally in the form of various alloys, is highly valued for its durability and especially for its light weight, while *brass* is frequently used for decorative purposes in facing.

Steel finds its use in corrugated sheets for roofing, for girders, frames, etc. Various shapes are employed in construction.

Plastics are artificial materials used in construction work for a vast number of purposes*. Nowadays plastics can be applied to almost every branch of building, from the laying of foundation to the final coat of paint. Synthetic resins are the main raw material for plastics. Plastics have some good advantages as they are lighter than metals, not subject to corrosion, and they can be easier machined*. Besides, they are inflammable, they can take any colour

and pattern, and they are good electrical insulators. More over, they possess a high resistance to chemical action.

A lot of decorative plastics, now available, have 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 builders' 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.

Foamed glass is a high-porosity heat insulating material, available in block made of fine-ground glass and a frothing agent.

Foamed glass is widely used in prefabricated house building, to insure heat insulation of exterior wall panels, and in industrial construction.

Foamed glass has a high mechanical strength, is distinguished by moisture, vapour and gas impermeability. It is non-inflammable, offers resistance to frost, possesses a high sound adsorption, and it is easily sewn and nailed.

Structural foamed glass blocks designed to fill ceilings, and for making interior partitions in buildings and rooms, to ensure heat and sound insulation. For insulation mineral wool or cinder wool is often resorted to.

Concrete is perhaps the most widely spread building material used nowadays. Concrete is an artificial stone, made by thoroughly mixing such natural ingredients or aggregates as cement, sand and gravel or broken stone together with sufficient water to produce a mixture of the proper consistency. It has many valuable properties. It sets under water, can be poured into moulds so as to get almost any desirable form, and together with steel in reinforced concrete it has very high strength, and also resists fire. Prestressed concrete is most widely used at present while prefabricated blocks are employed on vast scale for skeleton structures.

- * ... the first joints of the fingers – первыми фалангами пальцев
- * ... for a vast number of purposes – для многих целей
- * ... and they can be easier machined – и их легче обработать

1. Find English equivalents in the text.

Различные виды деревьев, железнодорожный транспорт, в виде досок, отливка и обжиг, прямоугольное твёрдое тело, для декоративных целей, держать кирпич с лёгкой уверенностью, восьмичасовой рабочий день, предохраняет кожу от грубого кирпича, основные разновидности строительного камня, ценится за долговечность, отрасль строительства,

принимать любую форму, много слоёв бумаги, для использования и снаружи, и внутри помещения, теплоизолирующий материал, морозостойкость, шлаковая вата, преднапряженный бетон, площадь поперечного сечения, выдержать напряжение растяжения.

2. Add the missing parts of the sentences from the text.

1. ... for building purposes are divided into two groups called softwoods and hardwoods.
2. However, timber is still employed ...
3. ... ordinary, hollow or porous, lightweight, multicolour bricks for decorative purposes, etc.
4. ... they use natural stones such as marble, granite, basalt, limestone and sandstone.
5. ... while brass is frequently used for decorative purposes in facing.
6. These materials are sufficiently rigid to stand
7. ... severe weather conditions for more than ten years without serious deformation.
8. ... to ensure heat insulation of exterior wall panels, and in industrial construction.
9. It is non-inflammable, offers resistance to frost,

3. Match the words with their definitions

- | | |
|------------|--|
| 1) timber | a) a long thin flat piece of wood used for making floors, walls, fences etc: |
| 2) brick | b) a mixture of cement or lime, and sand and water, used in building for holding bricks or stones together |
| 3) clay | c) a metal that consists of two or more metals mixed together |
| 4) board | d) a strong beam, made of iron or steel, that supports a floor, roof, or bridge |
| 5) veneer | e) a hard block of baked clay used for building walls, houses etc. |
| 6) mortar | f) a type of rock that contains calcium |
| 7) sawdust | g) something that you hold in your hand and use to do a particular job |
| 8) alloy | h) a thick sticky liquid that comes out of some trees |

- | | |
|------------------|---|
| 9) girder | i) wood prepared for use in building and carpentry |
| 10) raw material | j) very small pieces of wood that are left when you have been cutting wood |
| 11) tool | k) the work or industry of getting gold, coal etc out of the earth |
| 12) resin | l) a type of heavy sticky earth that can be used for making pots, bricks |
| 13) limestone | m) a thin layer of wood or plastic that covers the surface of a piece of furniture made of cheaper material, to make it look better |
| 14) mining | n) an unprocessed natural product used in manufacture |

4. Fill in the gaps with the following words: *tool, raw material, alloy, mortar, timber, clay, brick, board, veneer*

1. ... pot cooking is a technique of cooking food in an unglazed ... pot which has been soaked in water so as to release steam during the cooking process.
2. The wardrobe is made of chipboard with a pine
3. We'll have to take the ...s up to check the wiring.
4. Modern ...s are typically made from a mixture of sand, a binder such as cement or lime, and water.
5. I don't have the right ...s to start fiddling around with the engine.
6. ... are often natural resources such as oil, iron and wood.
7. There are many benches made of ... in our park.
8. Protesters attacked the police with stones and
9. Brass is an ... of copper and zinc.

5. Answer the questions.

1. Why is concrete more fit for foundation?
2. What floor covering is the best?
3. What colour should bedroom walls be? (kitchen walls, living-room walls)
4. What should a chimney be made of?
5. Why is it nice to have a mantelpiece?
6. What timber is considered to be the best for the window frames?
7. What professionals does a construction team need?

6. Classify the properties of building materials listed below as *advantageous* and *disadvantageous*.

Advantages:

Disadvantages:

High cost, low water-resistance, heat-insulation, fire-resistance, light weight, durability, low strength, hardness, low cost, corrosion-resistance, heavy weight, softness, high strength, non-fire-resistance, sound insulation.

7. Choose from the block the antonyms for the following adjectives:

Natural, light, exterior, cheap, disadvantages, weak, primary, combustible, unstable, main, soft.

advantageous –	durable –
artificial –	heavy –
auxiliary –	strong –
interior –	fire-proof –
hard –	expensive –

8. Learn the dialogue by heart.

Customer: I would like to order a countryside house. Here is the project.

Foreman: Let's see. A two-storey house with a garage. Ten rooms and two staircases. What will the foundation made of? Concrete?

C: Yes, ferro-concrete.

F: And what about the walls?

C: I want red brick walls. The windows are large. By the way, the panes should be airtight. I want them to be double-glazing.

F: We'll make them hermetic with patty. We put it in the grooves, and then fix the panes.

C: Excellent. The hinges and handles should be bronze.

F: Ok. What type of roof would you like?

C: I want the roof to be flat, with a small garden.

F: Do you have an interior designer?

C: Yes, but the drafts aren't ready.

F: What idea does he have?

C: There will be a mantelpiece in the hall and the walls will be decorated with panels.

F: Plastic panels?

C: Oh, no. Panels must be of wood.

F: What wood do you prefer?

C: I think oak is the best.

F: How do you pay the construction?

C: I've got the mortgage for 25 years from the bank.

F: So we'll make oak panels then.

WOOD

TEXT 1.

1. Scan the text and describe major uses of wood in the construction industry.



Wood has many characteristics that make it an important construction material. It can be easily shaped with tools and fastened with nails, screws, staples, and adhesives. It is light but strong. Wood provides insulation against electricity, heat, cold, and sound. It can hold paint and other finishes, and it does not rust like metal construction materials. Wood is a renewable resource.

Fig. 16 Some of the chief wood

structural materials are round timbers, lumber, plywood, veneer products, and particle board. Round timbers include pilings, poles, and posts. Pilings are driven into the ground as foundations for buildings. Poles link overhead telephone wires and power lines. Posts are used chiefly to build fences. Lumber includes boards and larger pieces of wood that have been sawed from logs. The construction industry uses about 50 per cent of the lumber manufactured.

We can classify lumber as softwood or hardwood. Softwood lumber comes from needle leaf trees that are also called evergreens or conifers. It is used primarily for structural work because of its straightness and length. Softwoods include pine, larch, fir, cedar. Hardwood lumber comes from trees that lose their leaves every autumn. They are widely used for flooring, furniture and paneling. Popular hardwoods include birch, maple, oak, walnut, and mahogany.

Plywood consists of a number of thin sheets of wood called veneers that are glued together.

Veneer products include beams that support ceilings and floors.

Particle board is made from wood shavings, flakes, wafers, splinters, or sawdust left over in sawmills. This wood is mixed with an adhesive and pressed at a high temperature and pressure to form large panels. Particle board shrinks and swells very little in length and width.

2. Render the text in Russian.

3. Ask your group-mates the following questions.

1. Is timber a very ancient structural material?

2. What are the advantages and disadvantages of timber in comparison with steel?
3. What two groups is timber used for building purposes divided into?
4. What purposes is timber often used in modern construction for?
5. Why cannot timber be used immediately it has been felled?
6. What increases strength, durability and elasticity of timber?

4. Say if the sentences given below are *true* or *false*.

1. Timber is a comparatively new material.
2. Timber as a building material has no one disadvantage.
3. Mechanical properties of timber are good.
4. Softwoods are mainly used for decorative purposes.
5. Hardwoods are characterized by durability and high strength.
6. Builders can use timber in their work just after trees have been felled.

5. Complete the following sentences.

1. Timber is lighter, cheaper, easier in work than...
2. Timber has two disadvantages, they include...
3. Timber is a name we apply to the cut material derived from...
4. In modern construction timber is widely used for ...

TEXT 2. WOODWORKING (1)

Woodworking is the forming and shaping of wood to make useful and decorative objects. It is one of the oldest crafts and ranks as a popular hobby and an important industry. A skilled woodworker with a well-equipped home workshop can build items as simple as a birdhouse or as complicated as decorative furniture. Tools for a workshop can be purchased at hardware and department stores. Timber retail stores and hobby shops sell a wide variety of wood.

The construction industry employs carpenters who construct the wooden framework of buildings. Other kinds of woodworkers include finish carpenters and cabinetmakers. Finish carpenters do the inside trim work around windows, cabinets, and other features that must fit exactly. Cabinetmakers design, shape, and assemble furniture, built-in cabinets, and stairways.

The history of woodworking goes back to about 8,000 B.C., when people first used an ax as a woodworking tool. In the Middle Ages, woodworkers and other craft workers formed organizations called guilds. The guilds were similar in some ways to today's labor unions.

1. Find English equivalents in the text:

деревообработка – _____
декоративные предметы – _____
важная отрасль – _____
строительный магазин – _____
магазин для розничной продажи пиломатериалов – _____
магазин товаров для хобби – _____
деревянный каркас – _____
плотник-отделочник – _____
краснодеревщик – _____
внутренняя отделочная работа – _____
встроенный шкаф – _____
ремесленник – _____
сегодняшние профсоюзы – _____
хорошо оборудованная домашняя мастерская – _____

2. Give Russian equivalents to the following:

skilled woodworker – _____
decorative furniture – _____
department store – _____
wide variety of wood – _____
must fit exactly – _____
assemble furniture – _____
stairway – _____
woodworking tool – _____
called guilds – _____
be similar in some ways – _____
other kinds – _____
shaping of wood – _____
ranks as a popular hobby – _____
framework of a building – _____

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

1. Woodworking is a comparatively new industry.
2. Any woodworker can build simple and complicated items as well.
3. Wood for a workshop can be purchased at a department store.
4. You can find a wide variety of wood at lumber retail stores.
5. Carpenters are often employed in the construction industry.
6. Cabinetmakers do not deal with woodworking.
7. Finish carpenters usually do the work on the roof of the building.
8. An ax as a woodworking tool was first used long before Christ.
9. Today carpenters form organizations called guilds.

4. Choose the right variant:

1. Woodworking is the forming and shaping of wood ...

- а) Деревообработка – это формирование и моделирование дерева ...
 - б) Деревообработка – это придание формы лесоматериалам ...
 - в) Деревообработка – это придание формы и конфигурации дереву ...
2. Woodworking is one of the oldest crafts and ranks as a popular hobby ...

- а) Деревообработка – это одно из древнейших ремесел и считается популярным хобби ...
- б) Деревообработка – это одно из древнейших ремесел, которое считается таким же популярным, как и хобби ...
- в) Деревообработка – это одна из старейших профессий, которая стоит в одном ряду с популярным хобби ...

3. Other kinds of woodworkers include finish carpenters and cabinetmakers.

- а) Другие типы деревообработчиков включают окончательных плотников и краснодеревщиков.
- б) Другие типы деревообработчиков включают плотников-отделочников и оформителей кабинетов.
- в) Другие типы деревообработчиков включают столяров-отделочников и краснодеревщиков.

4. The history of woodworking goes back to about 8000 B.C. ...

- а) История деревообработки берет свое начало примерно с 8000 года до нашей эры ...
- б) История деревообработки началась 8000 лет назад ...
- в) История деревообработки возвращает нас к 8000 году до рождения Христа ...

5. Continue the sentence:

1. A skilled woodworker with a well-equipped home workshop can ...

- а) ... design and construct the whole project.
- б) ... make pavements and overpasses.
- в) ... make useful and decorative objects.

2. Wood for woodworking can be purchased at ...

- а) ... hardware stores. б) ... department stores. в) ... lumber retail stores.

3. Carpenters are employed by the construction industry to ...

- а) ... mix concrete.
- б) ... design the modern roofs of buildings.
- в) ... construct the wooden framework of buildings.

4. Built-in cabinets and stairways are designed ...
 a) ... by a design team. b) ... by cabinetmakers. c) ... by any woodworker.
5. Finish carpenters deal with ...
 a) ... construction of a birdhouse.
 b) ... construction of the wooden framework of buildings.
 c) ... the inside trim work.

6. a) Complete the table:

Noun	Verb	Adjective
	decorate	
		ranked
equipment		
	purchase	
		varied
employment		
	include	
		trimmed
assembly		
	organize	

b) Choose the word from the table to complete the sentence:

- The wooden framework of buildings is constructed by carpenters who are ... by the construction industry.
- There are other kinds of woodworkers which ... finish carpenters and cabinetmakers.
- Nowadays woodworking ... as a popular hobby and an important industry.
- Cabinet makers design, shape and ... furniture, built-in cabinets and stairways.
- Woodworkers form and shape wood to make useful and ... objects.
- The inside ... work is usually done by finish carpenters.
- You can ... tools for a workshop at a hardware store.
- In ancient times woodworkers formed ... called guilds.
- A wide ... of wood is sold in lumber retail stores.
- Having good ... at a home workshop a woodworker can build simple and complicated items as well.

7. Scan the text and answer the questions:

- What is woodworking?
- When does the history of woodworking begin?
- Where can a skilled woodworker build simple and complicated items?
- Where can you buy tools for a workshop?
- What do lumber retail stores sell?
- Who constructs the wooden framework of buildings?

7. What other professions do woodworkers include?
8. What do cabinetmakers deal with?
9. Who does the inside trim work around wooden features that must fit exactly?
10. When did people use an ax as a woodworking tool?
11. When did woodworkers start forming guilds?
12. Were the guilds similar to any today's organizations?

TEXT 3. WOODWORKING (2)

Drilling enables a woodworker to connect sections of wood with screws, metal plates, and hinges. Drilling may also be required when constructing some joints. Braces and hand drills have bits to make holes of different sizes for various purposes. Portable electric drills and drill presses also use bits to drill holes. They have attachments for sanding and other purposes.

Fastening. Sections of wood are fastened together with metal fasteners, such as screws and nails, and with adhesives. Tools for fastening include screwdrivers and hammers. Screwdrivers insert screws that connect sections of wood and hold hinges and metal plates. Hammers are used to drive in nails and a variety of other types of metal fasteners.

Gluing is one of the oldest methods of fastening sections of wood and a variety of adhesives are used in woodworking. Polyvinyl resin emulsion glue, or white glue, can be applied directly from the bottle. It should not be used if it will come in contact with water or high temperatures.

1. Find English equivalents in the text:

- детали из дерева – _____
- давать возможность плотнику – _____
- ручной бурав – _____
- коловорот – _____
- для различных целей – _____
- сверлильный станок – _____
- насадка для шлифовки – _____
- закрепление – _____
- металлическое крепежное средство – _____
- склеивающее вещество – _____
- вкручивать шурупы – _____
- вбивать гвозди – _____
- поливиниловый эмульсионный клей – _____
- прямо из бутылки – _____
- его не следует использовать – _____
- делать отверстия – _____

2. Give Russian equivalents to the following:

- drilling – _____

to connect sections – _____
a screw – _____
a metal plate – _____
a hinge – _____
some joints – _____
a portable electric drill – _____
a hand drill bit – _____
other purposes – _____
a nail – _____
tools for fastening – _____
a screwdriver – _____
a hammer – _____
gluing – _____
white glue – _____
high temperature – _____

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

1. A woodworker can connect sections of wood with the help of a hand drill only.
2. Woodworkers use nails to make holes of different sizes for various purposes.
3. There are bits of different size for portable electric drills and drill presses.
4. Braces and hand drills have attachments for sanding and other purposes.
5. Various adhesives are used for fastening sections of wood together.
6. Woodworkers use hammers to insert screws that connect sections of wood.
7. One of the oldest methods of fastening sections of wood is drilling.
8. Screwdrivers are used for drilling.
9. White glue should be used after it will come in contact with water.

4. Choose the right variant:

1. Drilling may also be required when constructing some joints.

- a) Сверление возможно также необходимо, как и соединение стыков.
- б) Сверление может также понадобится при соединении некоторых стыков.
- в) Сверление может также требовать соединения стыков.

2. They have attachments for sanding and other purposes.

- a) У них есть дополнительные присоединения для посыпания песком и других целей.
- б) Они приспособлены для шлифовки и других целей.

в) У них есть насадки для шлифовки и других целей.

3. Sections of wood are fastened together with metal fasteners ...

а) Детали из дерева крепятся металлическими крепежными средствами...

б) Деревянные секции прикрепляют к металлическим крепежам ...

в) Секции из дерева крепятся вместе с металлическими крепежами ...

4. Gluing is one of the oldest methods of fastening sections of wood and a variety of adhesives are used in woodworking.

а) Склеивание один из древнейших методов скрепления деталей из дерева и различных клеящих материалов, используемых в деревообработке.

б) Склеивание один из древнейших методов при креплении секций из дерева к различным клеящим материалам и используется в деревообработке.

в) Склеивание один из древнейших методов соединения деталей из дерева и различные клеящие материалы используются в деревообработке.

5. Continue the sentence:

1. Woodworkers use screws, metal plates and hinges ...

а) ... to make holes of different sizes.

б) ... to connect sections of wood.

с) ... to drive them in sections of wood.

2. Portable electric drills have ... for sanding and other purposes.

а) ... bits...

б) ...braces...

с) ...attachments...

3. Woodworkers use ... to drive in different types of metal fasteners.

а) ...screwdrivers...

б) ...hammers...

с) ...braces...

4. Woodworkers use screwdrivers ...

а) ... to drive in nails and a variety of other types of metal hinges.

б) ... to make holes of different sizes for various purposes.

с) ... to insert screws that connect sections of wood.

6. a) Complete the table:

Noun	Verb	Adjective
	vary	
		constructed
connection		
	apply	

		required
fastening		
	attach	
		contacted

b) Choose the word from the table to complete the sentence:

1. Woodworkers use screwdrivers to ... sections of wood.
2. Screws, nails and adhesives are used for ... sections of wood together.
3. Woodworkers use braces and hand drills to make holes for ... purposes.
4. They usually ... white glue directly from the bottle.
5. Drilling is also used to ... some joints.
6. Connection of sections of wood may also ... drilling.
7. Portable electric drills have ... for sanding and other purposes.
8. They usually do not use white glue after it comes in ... with water.

7. Scan the text and answer the questions:

1. What do woodworkers use drilling for?
2. How do they usually connect sections of wood?
3. What do woodworkers use for making holes of different sizes?
4. What do portable electric drills have for sanding?
5. What are metal fasteners used for?
6. What tools for fastening do woodworkers usually use?
7. How do woodworkers use hammers?
8. What is used for glueing sections of wood?
9. How can white glue be applied?
10. When shouldn't white glue be used?

CONCRETE TEXT 1.

The most common form of concrete consists of Portland cement, construction aggregate (generally gravel and sand) and water.

Concrete does not solidify from drying after mixing and placement; the water reacts with the cement in a chemical process known as hydration. This water is absorbed by cement, which hardens, gluing the other components together and eventually creating a stone-like material. When used in the generic sense, this is the material referred to by the term concrete.

Concrete is used more than any other man-made material on the planet. It is used to make pavements, building structures, foundations, motorways/roads, overpasses, parking structures, brick/block walls and bases for gates, fences and poles.

As of 2015, about six billion cubic meters of concrete are made each year, amounting to the equivalent of one cubic meter for every person on Earth.

Concrete powers a US\$35 billion industry which employs over two million workers in the United States alone. Over 55,000 miles of freeways and highways in America are made of this material. China currently consumes 40 % of world cement production.

1. Find English equivalents in the text:

строительный заполнитель – _____
пескогравий – _____
смешивание и укладка – _____
известный как – _____
склеивая другие компоненты – _____
материал похожий на камень – _____
общий смысл – _____
искусственный материал – _____
паркинговые сооружения _____
кирпичные стены – _____
основание для забора – _____
промышленность, приносящая прибыль в 35 млрд долларов – ____
только в Соединенных Штатах – _____
мировое производство бетона – _____

2. Give Russian equivalents to the following:

common form – _____
Portland cement – _____
solidify – _____
chemical process – _____
hydration – _____
harden – _____
pavement – _____
overpass – _____
pole – _____
amount to – _____
employ – _____
freeways and highways – _____

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

1. Concrete consists of Portland cement, gravel and sand.
2. Concrete hardens after mixing and placement.
3. Concrete is used more than any other natural material on the planet.
4. We use concrete to make motorways and pavements.
5. Since 2015 the production of concrete has increased greatly.
6. Only 2 hundred thousands workers in the United States deal with concrete production.

7. They do not use concrete in making highways in the United States.
8. China consumes only a small part of world cement production.

4. Choose the right variant:

1. As of 2015, about six billion cubic meters of concrete are made each year ...
 - а) Что касается 2015 года, около 6 млрд. м3 бетона замешивается каждый год ...
 - б) В 2015 году было произведено около 6 млрд. м3 бетона ...
 - в) Начиная с 2015 года, около 6 млрд. м3 бетона производится каждый год ...
2. Concrete powers a USD 35 billion industry ...
 - а) Бетон дает в долларах США 35 миллиардную прибыль промышленности...
 - б) Бетон приводит в действие 35 миллиардную промышленность ...
 - в) Бетон поддерживает промышленность, приносящую в долларах США 35 миллиардную прибыль ...
3. ... which employs over two million workers in the United States alone.
 - а) ... что предоставляет работу двум миллионам рабочих в Соединенных Штатах.
 - б) ... которая обеспечивает работой более двух миллионов рабочих только в Соединенных Штатах.
 - в) ... которая дает работу только двум миллионам рабочих в Соединенных Штатах.
4. This water is absorbed by cement, which hardens, gluing the other components together ...
 - а) Эта вода поглощает цемент, который затвердевает, склеивая другие компоненты ...
 - б) Эта вода абсорбируется цементом, который схватывается при помощи клея и других компонентов ...
 - в) Вода поглощается цементом, который затвердевает, склеивая другие компоненты ...

5. Continue the sentence:

1. The most common form of concrete consists of ...
 - а) ... construction aggregate and Portland cement.
 - б) ... gravel, sand and water.
 - в) ... construction aggregate, Portland cement and water.
2. Concrete hardens ...

- a) ... from drying after mixing and placement.
- b) ... after water reacts with cement.
- c) ... after mixing and drying.

3. Concrete is used more than any other ...

- a) ... artificial material.
- b) ... natural material.
- c) ... fire-resisting material.

4. A great deal of concrete is made each year, amounting ...

- a) ... to one cubic meter for every person on Earth.
- b) ... six billion cubic meters.
- c) ... to USD 35 billion industry.

6. a) Complete the table:

Noun	Verb	Adjective
	place	
reaction		
		absorbed
	park	
consumer		
		employed
hardener		

b) Choose the word from the table to complete the sentence:

1. In the process of concrete production the water is ... by cement, which hardens, creating a stone-like material.
2. Concrete is used to make foundations, brick walls, building and ... structures, pavements and things like that.
3. Concrete production industry ... over two million workers in the United States alone.
4. Concrete does not solidify from drying after mixing and
5. China currently ... 40 % of world cement production.
6. The water ... with the cement in chemical process known as hydration.
7. After the water is absorbed by cement, the aggregate usually

7. Scan the text and answer the questions:

1. What does the most common form of concrete consist of?
2. When does concrete harden?

3. How is this process called?
4. What is concrete used for?
5. Is concrete a popular material?
6. How much concrete is made each year?
7. How many people does concrete production employ in the United States?
8. How many miles of highways are made of concrete in America?
9. Who is the largest consumer of world cement production?

TEXT 2. KINDS OF CONCRETE

- ordinary concrete – обычный бетон
- dense concrete – плотный бетон
- heavy concrete – тяжелый бетон
- prefabricated concrete – бетон заводского изготовления
- ready-mixed concrete – готовый бетон
- cast-in-situ concrete – монолитный бетон
- prestressed concrete – предварительно-напряженный бетон
- reinforced concrete – железобетон
- precast concrete – сборный бетон
- lightweight concrete – легкий бетон

Reinforced concrete is made by casting concrete around steel rods* or bars*, and steel strengthens concrete. Almost all large structures require this extra-strong type of concrete.

Prestressed concrete usually is made by casting concrete around steel cables* stretched by hydraulic jacks*. After concrete hardens, the jacks are released* and the cables compress concrete. Concrete becomes the strongest when it is compressed. Steel cables can also be bent* into an arc, so that they develop a force in any desired direction, such as upward* elements in a bridge. Prestressed concrete beams*, roofs, floors are often cheaper for some uses than those made of reinforced concrete.

Precast concrete is cast and it hardens before being used for construction. Precasting firms make concrete sewer pipes*, floor and roof units, wall panels, beams, and girders*, and transport them to the construction sites. Sometimes builders make such pieces at the construction site and hoist them into place after they hardened. Precasting makes possible the production of concrete building elements.

Aerated concrete contains tiny air bubbles*. These bubbles are formed by adding half brick* like resinous* or fatty* materials to the cement, or to the concrete when it is mixed. The bubbles give the water in concrete enough space

to expand as it freezes. The bubbles also protect the surface of the concrete from chemicals used to melt ice. Such qualities make aerated concrete a good material for roads and airport runways.

High-early-strength concrete is chiefly used in cold weather. Concrete is made with high-early-strength Portland cement, and it hardens much more quickly than ordinary concrete. High-early-strength concrete is often cheaper to use, because it cuts the amount of time necessary for its hardening.

Lightweight concrete weighs less than other kinds of concrete. Builders make it in two ways. They may use lightweight shale*, clay, pumice*, or other materials instead of sand, gravel, and crushed stone. Or they may add chemicals which foam and produce air spaces in the concrete when it hardens. These air spaces are much larger than the air spaces in aerated concrete.

Foam concrete is one of the lightest varieties of the mineral. Various processes are used to make it. One of them relies on natural porous fillers (gravel and crushed stone) and their artificial substitutes (expanded clay aggregate).

Notes:

to bind – связывать; крепить

to mould – формовать; отливать в форму

sewage – сточные воды

rod – арматурный стержень

bar – арматурный прут/стержень

steel cable – стальной трос

hydraulic jacks – гидравлический домкрат

to release – расцеплять, отсоединять

to bend – гнуть, изгибать

upward – поднимающийся вверх, восходящий beam – балка

half brick – кирпич-половняк

resinous material – смолистый материал

fatty material – смазочный материал

sewer pipe – сточная труба, коллектор

girder – балочная ферма, балка

bubbles – пузыри (воздуха или газа)

shale – сланец

pumice – пемза

1. Match the words and word-combinations with their definitions.

1. Cement is ...	a) a kind of concrete casting around steel cables stretched
------------------	--

	by hydraulic jacks
2. Concrete is ...	b) a kind of concrete casting around steel rods or bars
3. Reinforced concrete is ...	c) a fine grey powder for making concrete
4. Prestressed concrete is ...	d) a cast and hardened kind of concrete
5. Precast concrete is ...	e) a mixture of cement, sand, water and gravel

2. Give the English for:

Механическая прочность, дробленый камень, бетонные фундаменты, водонепроницаемый, огнестойкий, стены, пол, крыша, не требовать особого ухода, заливать бетон, быстро застывать (схватываться), обычный бетон, легкий бетон, железобетон, тяжелый бетон, готовый бетон.

3. Give the Russian for:

Density, heat insulating capacity, a fine powder, a ceiling slab, dense concrete, prefabricated concrete, foam concrete, aerated concrete, precast concrete, prestressed concrete, high-early-strength concrete.

4. Complete the following sentences.

1. To make concrete one should...	a) light, very light, heavy, very heavy
2. Concrete as a building material can be divided into four classes...	b) heat escapes from the building
3. The higher is thermal resistance, the less...	c) an extremely strong and durable mass
4. Concrete quickly hardens into...	d) mix cement, water, sand and gravel
5. Almost all the cement used nowadays is...	e) Portland cement

6. Cars and lorries travel on concrete ...	f) reinforced concrete structures
7. Airplanes land on concrete...	g) roads
8. Concrete pipes distribute...	h) it is compressed
9. To strengthen concrete we use...	i) runways
Concrete becomes stronger 10. when...	j) water to our houses
Prestressed constructions are 11. often cheaper than...	k) high-early strength concrete
A cheaper kind of concrete 12. which fastens quicker than ordinary one is called...	l) steel

5. Fill in the gaps with a missing word(s).

1. Concrete is water-proof, fire-resistant and comparatively...
2. Heat insulating capacity is controlled by the coefficient of...
3. ... is hydraulic cement which can harden under water.
4. Almost all houses, factories, skyscrapers stand on concrete ...
5. ...protect underground telephone wires and electric power lines.
6. ...makes possible the production of concrete building materials.
7. The kind of concrete with the least weight is called ...

STONE

TEXT 1. BUILDING STONE

1. Look through the text and give a short summary.

Stone belongs to one of the oldest building materials used by man. Almost all famous buildings of classic times, of the medieval and Renaissance (*Ренессанс, эпоха Возрождения*) 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***. It is characterised by many properties. It has mechanical strength, compactness, porosity, sound and heat insulation and fire-resistance. Building stone ranks in importance with steel as a building material. Stone is used for the foundations, walls, and steps of buildings, for the supports of piers* and bridges, and for finishing and decorating all types of structures.

Crushed stone* is mainly used as an aggregate of concrete and in road construction. Crushed stone is quarried stone crushed into small pieces suitable for such uses as the surfacing of roads and industrial construction.

Dimension stone* is stone in natural blocks or slabs cut in definite shapes and sizes. Builders expect good dimension stone to last at least a hundred years. The best dimension stone has the fewest pores* of air cells, making it able to resist the wearing* effects of weather. Dimension stone includes granite, limestone, sandstone, and marble.

Granite is one of the strongest of all the building stones. It is used particularly for basements, columns and steps and for entire facades. Its colour may be grey, yellow, pink or deep red. It is used extensively in the construction of public buildings.

Limestone is a hard building stone that can be cut easily and shaped with saws, and even lathes*. These dark yellow or grey stones are sometimes placed over the rough stonework of a building to make an attractive surface. Limestone is also used for sills*, floors, steps, and cladding*.

Sandstone is easy to work and is used for the same purposes as limestone. Sandstone that is well-cemented with silica* is probably more durable and weather resistant than most other building stones. The durability of sandstones depends largely on cementing material.

Marble is the most elegant building stone. Pure marble is white with black, grey, green, pink, red, and yellow veins. Builders use marble to make monuments and tombstones, and to decorate stairways, fire-places, floors, and paneling.

Notes:

stone masonry – кладка из природного камня

pier – столб, опора, пилон

crushed stone – щебень

dimension stone – штучный камень, точно-обработанный камень

pores – поры

wear – физическое изнашивание, износ

lathes – пила и токарный станок

sill – подоконник

cladding – отделка

silica – кремнезем, кварц

2. Give the written translation of the text.

TEXT 2. BRICK. TYPES OF BRICKS



Fig.17

width – 12 cm and length – 25 cm. Refractory brick varies widely in size, but is usually slightly larger than building brick.

Building brick is subdivided into *face brick* (*облицовочный кирпич*) and *common brick*. The highest quality and most attractive building brick is called face brick. This brick is used in highly visible areas of structures, such as the interior or exterior walls of houses. Face brick comes in a variety of colours and surface textures, and it is extremely uniform in shape and size. Most of it is made from high-grade fire clay (*высококачественная и огнеупорная глина*). Off-colour and slightly defective brick is called common brick. Common brick is used in less visible places than face brick.

Refractory brick, also called refractories, can withstand temperatures between 1100°C and 2200°C. It is also highly resistant to chemical damage, physical wear and thermal cycling (rapid changes in temperature). Refractories are used in a wide variety of structures, including fire-places and industrial furnaces (*производственные печи*). Refractories differ in composition according to their use. The main types are made from such raw materials as alumina (*окись алюминия*), carbon, chrome ore (*хромовая руда*), dolomite, fire clay, magnesite (*магнезит*), silica (*кварц*), and zircon.

Stucco (*стукко, прочная цементно-известковая штукатурка*) is a plaster-like material applied to outside walls. It forms a hard protective covering. Stucco usually consists of sand, water and a cementing mixture. Workers usually apply three coats, using trowels (*мастерок*). Stucco can be applied in many finishes and colours.

1. Match English and Russian equivalents.

1. Stone masonry	а) облицовочный кирпич
2. Face brick	б) щебень

3. Crushed stone	с) известняк
4. Granite	д) штукатурка, гипс
5. Sandstone	е) кладка из природного камня
6. Refractory brick	ф) мрамор
7. Dimension stone	g) штучный камень
8. Marble	і) гранит
9. Limestone	ј) обыкновенный кирпич
10. Stucco	к) огнеупорный кирпич
11. Building brick	l) песчаник

2. Find the word with the most common meaning in each line. Try to remember its Russian equivalents.

1. Face brick, refractory brick, common brick, brick, building brick.
2. Marble, sandstone, stone, granite, limestone, crushed stone, dimension stone.
3. Silver, steel, wrought iron, titanium, cast iron, mercury, metal, copper, chrome, aluminium.

3. Say if the sentences given below are *true* or *false*.

1. Stone as well as wood is one of the most ancient building materials.
2. Crushed stone is considered to be more valuable than dimension stone.
3. Limestone, granite, marble, sandstone are all the examples of dimension stones.
4. Builders use one coat of stucco to finish outside walls.
5. The most attractive and the highest quality building brick is called refractory brick.
6. Clay is the main component for producing bricks.

4. Complete the following sentences.

1. Almost all famous buildings of classic times, the Renaissance, the 18th and the 19th centuries were built of...
2. The advantages of stone as a building material are...
3. The examples of dimension stone are...
4. The most elegant building stone is...
5. Brick is made of...
6. The two main groups of brick are...
7. The size of a building brick in the UK is...
8. Refractory brick can withstand the temperature of...
9. The special instrument builders use to put stucco is called...

5. Translate the following sentences into English.

1. Искусство создания сооружений из камня называется каменной кладкой.
2. Основные характеристики камня – это механическая прочность, компактность, пористость, звукоизоляция, теплоизоляция и огнеупорность.
3. В современном строительстве камень широко используется для фундаментов, стен, полов, лестниц, опорных сооружений, отделки и декорирования зданий.
4. Люди используют кирпич как строительный материал уже много тысяч лет.
5. Штукатурку готовят из песка, воды, цементирующей смеси и широко используют для внутренней и внешней отделки стен.

FINISHING MATERIALS

1. Look through the text and speak about glass manufacture.



Fig.18

TEXT 1. GLASS

Glassmaking is considered an art form as well as an industrial process. Clear windows have been used since the invention of glass to cover small openings in a building. Glass panes (*панель, оконное стекло*) provided humans with the ability to both let light into rooms and

to keep from rainy weather outside.

Glass is generally made from mixtures of sand and silicates in a very hot fire stove called a kiln (*обжигочная печь*), and it is very brittle (*хрупкий*). The use of glass in architectural buildings has become very popular in modern

culture. Glass “curtain walls” (*наружная стеклянная стена*) can be used to cover the entire façade of a building, or it can be used to span over a wide roof structure in a “space frame”. Glass brick was invented in the early of the 20th century.

2. Read and translate the text, do the exercises given below.

TEXT 2. PLASTIC

Plastic is usually organic polymer with high molecular mass derived from petrochemicals (*нефтехимические вещества*), but there is plastic which is partially natural. Plastic is a building material consisting of a wide range of synthetic or semi-synthetic organics that can be moulded into solid objects of diverse shapes. Plasticity is the general property of this material.

Plastic has appeared comparatively recently but, owing to its valuable and diverse properties, has found a wide application in construction and many other industries (machine-building, aviation, textile industry, etc.). Plastic combines all the fine characteristics of a building material with good insulating properties. It is no wonder that architects and engineers have turned to it to add beauty to modern houses and offices. Application of plastic in the building field widens from year to year.

With respect to physical and mechanical properties at a normal temperature of 20 °C all plastics are divided into rigid (*жесткий*), semi-rigid, soft and plastic. As to the number of constituents plastics may be classified as simple and complex. In the building field we usually deal with complex plastics, e.g. plastics consisting of a polymer and other components.

Due to their relatively low cost, ease of manufacture, large assortment, and water-resistance, plastics are used in an enormous and expanding range of products, from paper clips to spaceships. In some fields they have already displaced many traditional materials, such as wood, stone, leather, metal, glass, and ceramics. The world’s first fully synthetic plastic was bakelite (*бакелит, жесткая пластмасса*) invented in New York in 1907 by Leo Baekeland who introduced the term “plastic”. Many chemists contributed to the materials science of plastic, including Nobel winner Herman Staudinger who has been called “the father of polymer physics”.

The main properties of plastic are:

- durability;
- cost effectiveness;
- recycling;
- energy saving;
- safety;

- ease of installation and maintenance.

1. Give the Russian for:

Glassmaking, clear window, glass pane, glass roof, safety of plastics, organic polymer, high molecular mass, relatively low cost, piping, bakelite, synthetic and semi-synthetic organics, partially natural, petrochemicals.

2. Give the English for:

Смесь песка и различных силикатов, хрупкий материал, обжиговая печь, изобретение стекла, стеклянный строительный кирпич, пропускать свет, простота при установке и в уходе, пластик, пластичный, пластичность, водонепроницаемый материал.

3. Answer the following questions.

A

1. Is glass a new building material?
2. What is glass made of?
3. What sort of equipment is necessary for producing glass?
4. When was glass brick invented?
5. Where is glass used in modern construction?

B

1. What is plastic and what is this material usually derived from?
2. What is the most common property for all types of plastics?
3. Where are plastics applied in modern construction?
4. What are the main advantages of plastics as a building material?
5. Can plastic displace traditional building materials in future? How can you prove your opinion?

READING FOR TEST “BUILDING MATERIALS”

1. Translate the text without using the dictionary.

THE OPTIONS OF USING TIMBER, CONCRETE AND STEEL

There are three of the most common building materials in the world: steel, concrete, timber.

STEEL

Steel products are ones of the most widely used building materials in construction today, mainly because they are diverse, durable, and available, and no matter what kind of project you are working at.

Steel as a structural material has a high strength/weight proportion; the dead weight (*собственный вес*) of steel structures is relatively small. This property makes steel a very attractive structural material for:

- high-rise buildings;
- long-span bridges;
- structures located on soft ground.

Ductility. Steel can undergo large plastic deformation before failure, thus providing a large reserve strength. This property is referred to as ductility. Properly designed steel structures can have high ductility, which is an important characteristic for resisting shock loading such as blasts (*взрыв*) or earthquakes. A ductile structure has energy-absorbing capacity and it will not be suddenly collapsed. It usually shows large visible deflections (*прогиб, отклонение*) before failure or collapse.

Properties of steel can be predicted with a high degree of certainty. Steel in fact shows elastic behavior up to a relatively high and usually well-defined stress level. Steel properties do not change considerably with time.

Advantages of steel.

- Steel structures can be erected quite rapidly.
- Steel structures in general can be repaired quickly and easily.
- Steel is highly suitable for prefabrication and mass production.
- Steel can be reused after a structure is disassembled.
- Steel buildings can be easily expanded by adding new bays or wings. Steel bridges may be widened.
- Steel structures have relatively good fatigue (*усталость*) strength.

Disadvantages of steel in certain cases.

Steel structures may be more costly than other types of structures.

- The strength of steel is reduced when heated at temperatures commonly observed in building fires. Also, steel conducts and transmits heat from a burning part of the building quite fast. Consequently, steel frames in buildings must have adequate fireproofing.
- Steel structures are subjected to air, water and corrosion and should be painted regularly. Application of weathering and corrosion-resistant steel may eliminate this problem.
- Steel members are in general more subjected to deformation than reinforced concrete compression members.

TIMBER

The building industry is increasingly recognising the potential results available from working with environmentally focused products i.e. timber, that combine clean aesthetics and structural properties.

Advantages of timber.

- Timber is an excellent insulator: brick-built houses are also known to have outstanding insulating properties, but timber surpasses them.
- Timber is an elastic material: in comparison with brick or concrete walls, timber walls don't have to be very thick. A 20 cm wall, for example, is strong enough to protect against the winter cold, if it has a proper treatment.
- Timber houses are very attractive; they don't need special decorative finishes.

Disadvantages of timber.

- Timber is vulnerable (*уязвимый*) to vital forces like termites (*термиты*), woodworms (*личинки древоточца*) or wood ants (*муравьи*).
- Natural forces like the sun, fire, water and etc. can have unfavorable effect on timber.
- Timber is subjected to shrinking (*усадка*) and swelling (*набухание, вспучивание*). Timber has a natural ability to absorb water which is also known as hygroscopy.

CONCRETE

Concrete is an artificial stone-like material used for various structural purposes. It is made by mixing a binding material as cement and various aggregates i.e. inert materials, such as sand, crushed stone, pebbles (*галька, мелкий булыжник*), gravel, shale, etc with water and allowing the mixture to harden by hydration (*гидратация – присоединение воды к ...*).

Advantages of concrete.

- Concrete is economical when ingredients are readily available.
- Long life of concrete and relatively low maintenance requirements increase its economic benefits.
- It is not subjected to corrosion or decay as other building materials.
- Concrete has the ability to be moulded or cast into almost any desired shape.

Concrete is non-combustible material which makes it fire-safe and able to withstand high temperatures

- It is resistant to wind, water, and insects. Therefore, concrete is often used for storm shelters.

Disadvantages of concrete.

- Concrete has a relatively low tensile strength compared to other building materials.

- Low ductility.

- Low strength-to-weight ratio.

- Concrete is subjected to cracking (*трещинообразованию*).

1. Create three groups. Each group chooses one material from this unit (stone, timber and concrete). Use your own words to describe it to the other groups.

2. Use the information from the texts to complete the following table.

	stone	timber	concrete
advantages			
disadvantages			

SUPPLEMENTARY READING

1. Read the text:

TEXT 1. Civil engineering

In modern usage, civil engineering is a broad field of engineering that deals with the planning, construction, and maintenance of fixed structures, or public works, as they are related to earth, water, or civilization and their processes. Most civil engineering today deals with power plants, bridges, roads, railways, structures, water supply, irrigation, environment, sewer, flood control, transportation and traffic. In essence, civil engineering may be regarded as the profession that makes the world a more agreeable place in which to live.

Engineering has developed from observations of the ways natural and constructed systems react and from the development of empirical equations that provide bases for design. Civil engineering is the broadest of the engineering fields, partly because it is the oldest of all engineering fields. In fact, engineering was once divided into only two fields - military and civil. Civil engineering is still an umbrella term, comprised of many related specialities.

2. Find the following words and word combinations in the text:

гражданское строительство – _____
стационарные сооружения – _____
общественные сооружения – _____
инженерное искусство, (зд.) строительство – _____
водоснабжение – _____
инфраструктура – _____
мелиорация – _____
канализация – _____
регулирование паводкового стока – _____
более приятное место – _____
по существу – _____
эмпирические соотношения – _____
обобщающий термин – _____

3. Give Russian equivalents of the following:

to deal (with) – _____
a broad field – _____
a modern usage – _____
a construction – _____
a power plant – _____
may be regarded – _____
maintenance – _____
bases for design – _____
transportation and traffic – _____
observations of the ways – _____
many related specialities – _____

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

1. Civil engineering deals with construction only.
2. Construction of fixed structures or public works is a part of a broad field of engineering.
3. Civil engineering makes the world a more attractive place to live in.
4. Civil engineering is a new field of engineering.
5. Civil engineering is only a small part of all engineering fields.
6. Engineering was once divided into only two fields.
7. Observations of the ways natural and constructed systems react gave development to the engineering.

5. Choose the right variant:

1. ... deals with the planning, construction and maintenance of fixed structures or public works ...

- а) ... связана с планированием строительства и поддержанием стационарных и общественных сооружений...
- б) ... связана с планированием, строительством, техническим обслуживанием и ремонтом стационарных и общественных сооружений...
- в) ... связана с планированием, строительством сооружений и техническим обслуживанием и ремонтом стационарных сооружений и общественных работ...

2. ... civil engineering may be regarded as the profession that makes the world ...

- а) ... гражданское строительство может быть профессиональным, что делает мир ...
- б) ... гражданское строительство может рассматриваться как профессия, которая заставляет мир ...
- в) ... гражданское строительство может рассматриваться как профессия, которая делает окружающий нас мир ...

3. Civil engineering is the broadest of the engineering fields, partly because it is the oldest of all engineering fields.

- а) Гражданское строительство – самая широкая область из всех областей строительства, часть из которого является самой старой областью строительства.
- б) Гражданское строительство – самая широкая область из всех областей строительства частично и потому, что она является самой старой областью строительства.
- в) Гражданское строительство – самая широкая область в строительстве именно потому, что она является самой старой областью строительства.

6. Continue the sentence:

1. Civil engineering is a broad field of engineering that deals with ...

- а) the planning of fixed structures only.
- б) the maintenance of military structures.
- с) the construction and maintenance of fixed structures or public works.

2. Civil engineering makes the world ...

- а) more irritable.
- б) a more agreeable place for being lonely.
- с) more attractive for living.

3. Civil engineering is the broadest of the engineering fields, ...

- а) partly because it is a very progressive field of engineering.

- b) partly because it is a very ancient field of engineering.
c) partly because it is a very new field of engineering.

7. a) Complete the table:

Noun	Verb	Adjective
		constructive
agreement		
		developed
	observe	
		maintaining
transportation		employed

b) Choose the word from the table to complete the sentence:

1. Civil engineering makes the world a more ... place in which to live.
2. Civil engineering is a broad field of engineering that deals with the ... of fixed structures, or public works.
3. Engineering has developed from ... of the ways natural and constructed systems react.
4. The ... of empirical equations provide bases for design.
5. One of the tasks of civil engineering is to ... public works.
6. Civil engineering deals with railways, water supply, sewer, ... and traffic.

8. Scan the text and answer the questions:

1. What does civil engineering deal with?
2. What are fixed structures and public works related to?
3. Are bridges, roads, railways a part of structures that engineering deals with?
4. How may civil engineering be regarded?
5. What has engineering developed from?
6. What provides bases for design?
7. Is civil engineering the oldest or the newest of all engineering fields?
8. In how many fields was engineering once divided?
9. What is civil engineering comprised of?

9. Read and translate the text, do the exercises given below.

TEXT 2. AGGREGATES FOR CONCRETE

Study the words and word combinations

- 1) aggregates - каменные материалы, заполнители бетона
- 2) concrete - бетон

3) surround	- окружать
4) bond	связывать
5) binder	- связующее вещество
6) rock	- камень
7) denote	- означать
8) filler	- наполнитель
9) resisting	- сопротивление
10) apply	- употреблять, применять
11) percolation	- просачивание
12) reduce	- уменьшать
13) hardening	- затверждение
14) sufficient	- достаточный
15) impurities	- включения, примесь
16) pebbles	- галька, мелкий щебень
17) slag	- шлак
18) cinder	- угольный мусор
19) pumice	- пемза
20) character	- качество, свойство
21) tensile	- растяжимый
22) span	- перекрывать
23) sag	- оседать, падать
24) bend	- гнуться
25) edge	- край
26) tension	- напряжение
27) cross-section	- поперечное сечение
28) incorporate	- вмещать

29) reinforcement	- арматура
30) devoid	- свободный
31) exceed	- превышать
32) pipe	- труба
33) storage tank	- резервуар-хранилище

AGGREGATES FOR CONCRETE

By the simple definition from the dictionary “aggregates are the materials, such as sand and small stones, that are mixed with cement to form concrete”. In other words *aggregates (or cushioning materials)* can be defined as a mass of practically inert mineral materials, which, when surrounded and bonded together by an active binder, form the rock. This rock is denoted by the general term *concrete*.

Aggregates have three principal functions in the concrete: they provide a relatively cheap filler for the concreting material, or binder; they provide a mass of particles which are suitable for resisting the action of applied loads, of abrasion, of percolation of moisture through the mass, and of climate factors; they reduce volume changes resulting from the action of the setting and hardening of the concrete mass.

All aggregates, both natural and artificial, which have sufficient strength and resistance to weathering, and which do not contain harmful impurities may be used for making concrete.

As aggregates such natural materials as sand, pebbles, broken brick, gravel, slag, cinder, pumice and other can be used.

Prestressed Concrete

Prestressed concrete is not a new material. Its successful use has been developed rapidly during the last two decades, chiefly because steel of a more suitable character has been produced. Concrete is strong in compression but weak when used for tensile stresses.

If, therefore, we consider a beam made of plain concrete, and spanning a certain distance, it will at once be realized that the beam's own weight will cause the beam to “sag” or bend. This sagging at once puts the lower edge of the beam of tension, and if the cross-sectional area is small, causes it to break, especially if the span is relatively large.

If, on the other hand, we use a beam of similar cross-section, but incorporate steel bars in the lower portion, the steel will resist the tensile stress derived from the sag of the beam, and thus assist in preventing it from breaking.

In prestressed concrete steel is not used as reinforcement, but as a means of producing a suitable compressive stress in the concrete. Therefore any beam

(or member) made of prestressed concrete is permanently under compression, and is consequently devoid of crack under normal loading, or so long as the “elastic limit” is not exceeded.

Prestressed concrete is not only used for beams but is now employed extensively for columns, pipes, and cylindrical water towers, storage tanks, etc.

1. Find English equivalents in the text

Заполняющие материалы, связанные вместе, относительно дешевый наполнитель, уменьшить масштаб изменений, вредные примеси, битый камень, сталь более подходящего качества, напряжение растяжения, собственный вес балки, площадь поперечного сечения, помогает предохранять от разламывания, постоянно находится под напряжением, предел упругости, водонапорная башня, удачное использование, цементируемый материал, искусственный камень, быть постоянно под напряжением.

2. Choose the antonym

- | | | | |
|-------------|-------------|-------------|---------------|
| 1) inert | a) active | b) rapid | c) slow |
| 2) bond | a) surround | b) separate | c) break |
| 3) cheap | a) high | b) strong | c) expensive |
| 4) suitable | a) tensile | b) unfit | c) broken |
| 5) resist | a) persist | b) assist | c) divide |
| 6) harden | a) soften | b) indurate | c) band |
| 7) natural | a) normal | b) bright | c) artificial |
| 8) harmful | a) diseased | b) spoilt | c) useful |
| 9) rapidly | a) slowly | b) fast | c) proper |
| 10) strong | a) hard | b) weak | c) heavy |
| 11) break | a) crack | b) repair | c) change |
| 12) prevent | a) save | b) | c) permit |
| 13) reduce | a) apply | b) enlarge | c) produce |

14) strength

a) weakness

b) length

c) durability

3. Fill in the gaps with these words: *incorporate, concrete, span, rock, impurities, character, exceed, bend, tensile, bond, denote, pebbles, edge.*

1. ... a very hard building material made by mixing together cement, sand, small stones and water.
2. This new adhesive can ... metal to glass.
3. Mountains and cliffs are formed from ...
4. The colour red is used to ... passion or danger.
5. All natural minerals contain ...
6. The beach was covered with smooth white ...
7. If a material is ... , it can be stretched.
8. If a bridge ...s an area of water, especially a river, it goes from one side to the other.
9. He stood at the water's ... staring across the lake.
10. Working hours must not ... 42 hours a week.
11. Suggestions from the survey have been ...ed into the final design.
12. The idea was to modernize various aspects of the house without changing its essential ...
13. The road ...s to the left after the first set of traffic lights.

4. Add the missing parts of the sentences from the text

1. ... to produce a mixture of the proper consistency.
2. Concrete is an artificial stone, made by thoroughly ...
3. ... they provide a relatively cheap filler for the concreting material, or binder; ...
4. This sagging at once puts the lower edge ...
5. ...as a means of producing a suitable compressive stress in the concrete.
6. ... any beam made of prestressed concrete is permanently under compression ...

5. Learn the dialogue by heart.

Construction Manager: Hallo! Could I speak to Mr. William Jefferson, please? That's the supervisor of the builders' team. I would like to discuss some details about the construction of your house in Abby Moth.

Mr. Jefferson, customer: Hallo, what's up?

CM: Hallo, Mr. Jefferson. I just wanted to talk over some possible changes in the project of the foundation.

C: What are those?

CM: You have ordered to make a concrete foundation. But those concrete beams are too heavy.

C: So?

CM: I suggest that we make it ferro-concrete. It will be better.

C: Fine. And could we possibly discuss some details concerning the woodwork?

CM: But we haven't started the earthwork yet, Mr. Jefferson...

C: You know, I'm leaving for the USA for a long time, so I won't be able to order some changes later.

CM: Ok, I can come to you with the project plans tomorrow.

C: Thank you. So I'm waiting for you tomorrow at 10 a.m.

CM: See you tomorrow.

C: Good-bye then.

TEXT 3. MODERN MANAGEMENT PRACTICES IN THE COMPETITIVE CONSTRUCTION INDUSTRY

Study the words and word combinations.

- | | |
|------------------|-------------------------------------|
| 1) skilful | - опытный, квалифицированный |
| 2) craftsmanship | - мастерство, умение |
| 3) entire | - цельный, единый |
| 4) enable | - давать возможность что-л. сделать |
| 5) carry out | - выполнять, осуществлять |
| 6) background | - подоплека, задний план, фон |
| 7) perceive | - воспринимать |
| 8) reluctant | - неохотный, вынужденный |
| 9) obvious | - очевидный |
| 10) implement | - осуществлять, выполнять |
| 11) prove | - доказывать |
| 12) consider | - рассматривать, учитывать |
| 13) adopt | - принимать |
| 14) loss | - убыток |
| 15) advantage | - выгода, польза |
| 16) ascertain | - выяснять, устанавливать |

17) relevance	- значимость, важность
18) efficiently	- рационально, разумно
19) survival	- выживание
20) profit	- прибыль
21) surveyor	- землемер, топограф
22) estimator	- оценщик
23) QA manager	- начальник службы технического контроля
24) integral	- неотъемлемый
25) assume	- допускать, предполагать
26) mainstream	- основной
27) retail store	- магазин, торгующий в розницу
28) workload	- объем работы
29) diverse	- разнообразный, разный
30) seniority	- трудовой стаж
31) graduate	- выпускник учебного заведения
32) undergraduate	- студент
33) tertiary education	высшее образование
34) establishment	- учреждение, организация
35) attitude	- позиция, отношение
36) challenge	- сложная задача, проблема
37) stem	- являться результатом (чего-л.)
38) couple	- соединять
39) embrace	- принимать, охватывать
40) ladder	- лестница
41) lag	- отставание

Civil engineering is the oldest and one of the most highly respected of all the engineering disciplines. It is a traditional industry, by its nature. From the very beginning man has been a builder and his creative ability and skilful craftsmanship are what the modern civil engineering industry is founded on. Today these traditional skills are coupled with the entire modern technology and thinking available to enable civil engineers to carry out their work to the highest of standards.

The traditional background of the industry presents, however some problems. First of all, it is often perceived as old fashioned and reluctant to fully come to terms with the business world of today*. But it is obvious that new ideas cannot be implemented until they have been tried, proved and tested. So, if new management techniques are not considered and adopted, there would be a loss in competitive advantages, a vital factor in a highly competitive industry. That's why it is necessary to ascertain the importance and relevance of management training in the construction industry.

People have been managing companies ever since companies came into existence. If a company produces work of a quality that satisfies customers, then a continuous flow of work to the company will follow. The world has, however, changed. It is now necessary to manage a company effectively and efficiently as well as to produce high quality goods. It is especially important nowadays when construction work is limited and construction companies have to cut margins to obtain work*. Therefore, the effective management of an organization has become an art form in itself.

Civil engineering is a business and its survival is in making a profit. And it is the success of the "team" that is important. The team could be made up of engineers, quantity surveyors, estimators, planners, QA managers, personnel and computer specialists; all form an integral and equally important part of the business. Engineers may not grow into managers, but they must be trained for this role.

But it would be wrong to assume that years of engineering experience produce an effective manager. Mainstream management focuses on repetitive operations, as in a factory or retail store, but in the construction industry these operations are not applied. Managers in the industry operate in an unstable business environment, according to the workload of their company. And it is a recognized fact that construction managers do not come into being by themselves. The range of skills required is so diverse that a natural progression up now a need to train managers through the ranks of seniority will not provide all the necessary knowledge to produce an effective manager.

The training of graduate engineers in the construction industry at present consists of the undergraduate training within tertiary education, and

postgraduate training within the industry itself. Although the number of hours devoted to teaching management is increasing at educational establishments, graduates are still not adequately prepared for industry.

Management and management training within the construction industry is varied and is depend on the sector, consulting or contracting, within which an engineer operates. It is necessary to take into consideration the attitudes of civil engineers and their companies towards modern management practices. Constructors (or construction managers) are moving rapidly to meet the challengers of a modern business world and are making full use of the tools available*. Consultants are a little behind in their attitudes to modern management but are improving; they haven't yet realized the full potential of management training.

The alteration of construction industry attitude towards management practice* would appear to stem from the business market within which a company is going to operate.

* ... to fully come to terms with the business world of today – полностью соответствовать современному деловому миру...

* ... have to cut margins to obtain work – приходится снижать стоимость, чтобы получить работу.

* ... are making full use of the tools available – полностью используют все доступные средства.

* The alteration of construction industry attitude towards management practice – Изменение отношения к управлению в строительной области...

1. Find English equivalents in the text.

Творческие способности, современная технология, выполнить работу, старомодный и вынужденный, потеря конкурентного преимущества, важность и актуальность подготовки управленческих кадров, строительная промышленность, удовлетворять клиентов, эффективно и рационально управлять компанией, получение прибыли, неотъемлемая часть бизнеса, работать в нестабильной деловой среде, диапазон необходимых навыков, подготовка выпускников инженеров, не должным образом подготовлен, текущее состояние отрасли, принимать во внимание, удовлетворять требованиям.

2. Match the definitions of the words: *constructor, technology, civil engineering, construction, loss, training, customer, graduate, industry, goods, market, workload, profit, craftsmanship, management, undergraduate, personnel, surveyor.*

1) ... is the planning, building, and repair of roads, bridges, large buildings etc.

- 2) ... means businesses that produce a particular type of thing or provide a particular service.
- 3) ... is very detailed work that has been done using a lot of skill, so that the result is beautiful.
- 4) ... means new machines, equipment, and ways of doing things that are based on modern knowledge about science and computers.
- 5)... means the activity of controlling and organizing the work that a company or organization does.
- 6) If a business makes a ... , it spends more than it earns.
- 7) ... means the process of teaching or being taught the skills for a particular job or activity.
- 8) ... is someone who buys goods or services from a shop, company etc.
- 9) ... are things that are produced in order to be sold.
- 10) ... means the process of building things such as houses, bridges, roads etc.
- 11) ... is money that you gain by selling things or doing business, after your costs have been paid.
- 12) ... is someone whose job is to examine the condition of a building, or to measure and record the details of an area of land.
- 13) ... means the people who work in a company, organization, or military force.
- 14) ... is the amount of work that a person or organization has to do.
- 15) ... is a student at college or university, who is working for their first degree.
- 16) ... is someone who has completed a university degree, especially a first degree.
- 17) ... is a company or person that builds things.
- 18) ... means the total amount of trade in a particular kind of goods.

3. Find the synonyms in the text.

Imaginative, dexterous, produce, unwilling, evident, clear up, suffice, essential, rationally, benefit, topographer, significant, changeable, different, student, work (v), quickly, instrument.

4. True or false? Correct the false sentences.

- 1) The construction industry is often perceived as modern and reluctant.
- 2) New ideas cannot be implemented until they have been tried, proved and tested.
- 3) A company can produce work of any quality and a continuous flow to the company will follow.
- 4) Nowadays construction companies have to cut margins to obtain work.
- 5) Engineers always grow into managers and it isn't necessarily to train them for this role.

- 5) Managers in the construction industry operate in an unstable business environment.
- 7) The number of hours devoted to teaching management is decreasing at educational establishment.
- 8) Graduates are not adequately prepared for industry.
- 9) Consultants have completely realized the full potential of management training.
- 10) Management within the construction industry is depend on the sector, consulting or contracting, within which an engineer operates.

5. Fill in the gaps with the following words: *skilful, training, ladder, advantage, workload, engineer, manage, profit, challenge, seniority.*

- 1) He hurt himself falling off a
- 2) The company is ready to meet the ...s of the next few years.
- 3) On the course we received ... in every aspect of the job.
- 4) I had fifteen years ... , and they couldn't fire me.
- 5) We've got to find ways of reducing Gail's ... next year.
- 6) He was asked to ... a new department.
- 7) Western countries enjoyed considerable ... in terms of technology.
- 8) He trained as a civil
- 9) After a few years, he became very ... at drawing.
- 10) Our daily ... is usually around \$500.

HOME READING

III семестр

1. Read and translate the following texts.

Building material is any material which is used for a construction purpose. Many naturally occurring substances, such as clay, sand, wood and rocks, even twigs and leaves have been used to construct buildings.

Apart from naturally occurring materials, many man-made products are in use, some more and some less synthetic. The manufacture of building materials is an established industry in many countries and the use of these materials is typically segmented into specific specialty trades, such as carpentry, plumbing, roofing and insulation work. This reference deals with habitats and structures including homes.

Types of Building Materials Used in Construction

Natural Building Materials

Building materials can be generally categorized into two sources, natural and synthetic. Natural building materials are those that are unprocessed or

minimally processed by industry, such as lumber or glass. Synthetic materials are made in industrial settings after much human manipulations, such as plastics and petroleum based paints. Both have their uses.

Mud, stone, and fibrous plants are the most basic building materials, aside from tents made of flexible materials such as cloth or skins. People all over the world have used these three materials together to create homes to suit their local weather conditions.

In general stone and/or brush are used as basic structural components in these buildings, while mud is used to fill in the space between, acting as a type of concrete and insulation.

A basic example is wattle and daub mostly used as permanent housing in tropical countries or as summer structures by ancient northern peoples.

Fabric

The tent used to be the home of choice among nomadic groups the world over. Two well known types include the conical teepee and the circular yurt. It has been revived as a major construction technique with the development of tensile architecture and synthetic fabrics. Modern buildings can be made of flexible material such as fabric membranes, and supported by a system of steel cables or internal (air pressure.)

Mud and clay

The amount of each material used leads to different styles of buildings. The deciding factor is usually connected with the quality of the soil being used. Larger amounts of clay usually mean using the *cob/adobe* style, while low clay soil is usually associated with *sod* building.

The other main ingredients include more or less sand/gravel and straw/grasses. *Rammed earth* is both an old and newer take on creating walls, once made by compacting clay soils between planks by hand, now forms and mechanical pneumatic compressors are used.

Soil and especially clay is good thermal mass; it is very good at keeping temperatures at a constant level. Homes built with earth tend to be naturally cool in the summer heat and warm in cold weather. Clay holds heat or cold, releasing it over a period of time like stone.

Earthen walls change temperature slowly, so artificially raising or lowering the temperature can use more resources than in say a wood built house, but the heat/coolness stays longer.

Peoples building with mostly dirt and clay, such as cob, sod, and adobe, resulted in homes that have been built for centuries in western and northern Europe as well as the rest of the world, and continue to be built, though on a smaller scale. Some of these buildings have remained habitable for hundreds of years.

Rock

Rock structures have existed for as long as history can recall. It is the longest lasting building material available, and is usually readily available. There are many types of rock through out the world all with differing attributes that make them better or worse for particular uses.

Rock is a very dense material so it gives a lot of protection too, its main draw-back as a material is its weight and awkwardness. Its energy density is also considered a big draw-back, as stone is hard to keep warm without using large amounts of heating resources.

Dry-stone walls have been built for as long as humans have put one stone on top of another. Eventually different forms of mortar were used to hold the stones together, cement being the most commonplace now.

The granite-strewn uplands of Dartmoor National Park, United Kingdom, for example, provided ample resources for early settlers. Circular huts were constructed from loose granite rocks throughout the Neolithic and early Bronze Age, and the remains of an estimated 5,000 can still be seen today.

Granite continued to be used throughout the Medieval period (see Dartmoor longhouse) and into modern times. Slate is another stone type, commonly used as roofing material in the United Kingdom and other parts of the world where it is found.

Mostly stone buildings can be seen in most major cities, some civilizations built entirely with stone such as the Pyramids in Egypt, the Aztec pyramids and the remains of the Inca civilization.

Thatch

Thatch is one of the oldest of building materials known; grass is a good insulator and easily harvested. Many African tribes have lived in homes made completely of grasses year round. In Europe, thatch roofs on homes were once prevalent but the material fell out of favour as industrialization and improved transport increased the availability of other materials.

Today, though, the practice is undergoing a revival. In the Netherlands, for instance, many of new builds too have thatched roofs with special ridge tiles on top.

Brush

Brush structures are built entirely from plant parts and are generally found in tropical and sub-tropical areas, such as rainforests, where very large leaves can be used in the building. Native Americans often built brush structures for resting and living in, too. These are built mostly with branches, twigs and leaves, and bark, similar to a beaver's lodge. These were variously named wikiups, lean-tos, and so forth.

Ice

Ice was used by the Inuit for igloos, but has also been used for ice hotels as a tourist attraction in northern areas that might not otherwise see many winter tourists.

Wood

Wood is a product of trees, and sometimes other fibrous plants, used for construction purposes when cut or pressed into lumber and timber, such as boards, planks and similar materials. It is a generic building material and is used in building just about any type of structure in most climates. Wood can be very flexible under loads, keeping strength while bending, and is incredibly strong when compressed vertically.

There are many differing qualities to the different types of wood, even among same tree species. This means specific species are better for various uses than others. And growing conditions are important for deciding quality.

Historically, wood for building large structures was used in its unprocessed form as logs. The trees were just cut to the needed length, sometimes stripped of bark, and then notched or lashed into place.

In earlier times, and in some parts of the world, many country homes or communities had a personal wood-lot from which the family or community would grow and harvest trees to build with. These lots would be tended to like a garden.

With the invention of mechanizing saws came the mass production of dimensional lumber. This made buildings quicker to put up and more uniform. Thus the modern western style home was made.

Brick and Block

A brick is a block made of kiln-fired material, usually clay or shale, but also may be of lower quality mud, etc. Clay bricks are formed in a moulding (the soft mud method), or in commercial manufacture more frequently by extruding clay through a die and then wire-cutting them to the proper size (the stiff mud process).

Bricks were widely used as a building material in the 1700, 1800 and 1900s. This was probably due to the fact that it was much more flame retardant than wood in the ever crowding cities, and fairly cheap to produce.

Another type of block replaced clay bricks in the late 20th century. It was the Cinder block. Made mostly with concrete.

An important low-cost building material in developing countries is the Sandcrete block, which is weaker but cheaper than fired clay bricks.

Concrete

Concrete is a composite building material made from the combination of aggregate (composite) and a binder such as cement. The most common form of concrete is Portland cement concrete, which consists of mineral aggregate (generally gravel and sand), portland cement and water.

After mixing, the cement hydrates and eventually hardens into a stone-like material. When used in the generic sense, this is the material referred to by the term **concrete**.

For a concrete construction of any size, as concrete has a rather low tensile strength, it is generally strengthened using steel rods or bars (known as rebars). This strengthened concrete is then referred to as reinforced concrete.

In order to minimise any air bubbles, that would weaken the structure, a vibrator is used to eliminate any air that has been entrained when the liquid concrete mix is poured around the ironwork. Concrete has been the predominant building material in this modern age due to its longevity, formability, and ease of transport.

Metal

Metal is used as structural framework for larger buildings such as skyscrapers, or as an external surface covering. There are many types of metals used for building. Steel is a metal alloy whose major component is iron, and is the usual choice for metal structural building materials. It is strong, flexible, and if refined well and/or treated lasts a long time. Corrosion is metal's prime enemy when it comes to longevity.

The lower density and better corrosion resistance of aluminium alloys and tin sometimes overcome their greater cost. Brass was more common in the past, but is usually restricted to specific uses or specialty items today.

Metal figures quite prominently in prefabricated structures such as the Quonset hut, and can be seen used in most cosmopolitan cities. It requires a great deal of human labor to produce metal, especially in the large amounts needed for the building industries.

Other metals used include titanium, chrome, gold, silver. Titanium can be used for structural purposes, but it is much more expensive than steel. Chrome, gold, and silver are used as decoration, because these materials are expensive and lack structural qualities such as tensile strength or hardness.

Glass

Clear windows have been used since the invention of glass to cover small openings in a building. They provided humans with the ability to both let light into rooms while at the same time keeping inclement weather outside. Glass is generally made from mixtures of sand and silicates, and is very brittle.

Modern glass "curtain walls" can be used to cover the entire facade of a building. Glass can also be used to span over a wide roof structure in a "space frame".

Ceramics

Ceramics are such things as tiles, fixtures, etc. Ceramics are mostly used as fixtures or coverings in buildings. Ceramic floors, walls, counter-tops, even ceilings. Many countries use ceramic roofing tiles to cover many buildings.

Ceramics used to be just a specialized form of clay-pottery firing in kilns, but it has evolved into more technical areas.

Plastic

The term plastics covers a range of synthetic or semi-synthetic organic condensation or polymerization products that can be molded or extruded into objects or films or fibers. Their name is derived from the fact that in their semi-liquid state they are malleable, or have the property of plasticity.

Plastics vary immensely in heat tolerance, hardness, and resiliency. Combined with this adaptability, the general uniformity of composition and lightness of plastics ensures their use in almost all industrial applications today

Foam

Foamed plastic sheet to be used as backing for firestop mortar at CIBC bank in Toronto.

More recently synthetic polystyrene or polyurethane foam has been used on a limited scale. It is light weight, easily shaped and an excellent insulator. It is usually used as part of a structural insulated panel where the foam is sandwiched between wood or cement.

Cement composites

Cement bonded composites are an important class of building materials. These products are made of hydrated cement paste that binds wood or alike particles or fibers to make precast building components. Various fibrous materials including paper and fiberglass have been used as binders.

Wood and natural fibres are composed of various soluble organic compounds like carbohydrates, glycosides and phenolics. These compounds are known to retard cement setting. Therefore, before using a wood in making cement boned composites, its compatibility with cement is assessed.

Wood-cement compatibility is the ratio of a parameter related to the property of a wood-cement composite to that of a neat cement paste. The compatibility is often expressed as a percentage value. To determine wood-cement compatibility, methods based on different properties are used, such as, hydration characteristics, strength, interfacial bond and morphology.

Various methods are used by researchers such as the measurement of hydration characteristics of a cement-aggregate mix; the comparison of the mechanical properties of cement-aggregate mixes and the visual assessment of microstructural properties of the wood-cement mixes.

It has been found that the hydration test by measuring the change in hydration temperature with time is the most convenient method. Recently, Karade et al. have reviewed these methods of compatibility assessment and suggested a method based on the ‘maturity concept’ i.e. taking in consideration both time and temperature of cement hydration reaction.

Modern Industry

Modern building is a multibillion dollar industry, and the production and harvesting of raw materials for building purposes is on a worldwide scale. Often being a primary governmental and trade keypoint between nations. Environmental concerns are also becoming a major world topic concerning the availability and sustainability of certain materials, and the extraction of such large quantities needed for the human habitat.

Virtual materials

Certain materials like photographs, images, text may be considered virtual. While, they usually exist on a substrate of natural material themselves,

they acquire a different quality of salience to natural materials through the process of representation.

Building Products

When we talk about building products we refer to the ready-made particles that are fitted in different architectural hardware and decorative hardware parts of a building. The list of building products exclusively exclude the building materials, which are used to construct the building architecture and supporting fixtures like windows, doors, cabinets, etc. Building products do not make any part of a building rather they support and make them working.

IV cemectp

1. Read and translate the following texts.

Text 1. Building Construction

The construction of the homes and buildings in which people live and work has been a major industry ever since early human beings first made huts of sticks, mud, or rocks. Methods of building construction have been constantly improved since those first crude structures. Modern skyscrapers can be built within a year or two. Prefabricated buildings, with their various parts made in factories by assembly-line methods, can be built in a day or two, but are rarely as durable as traditionally made buildings. A building has two main parts, the substructure (the part below ground) and the superstructure (the part above ground). The substructure is usually called the foundation. It includes the basement walls, even though these may extend above the ground.

Both the substructure and the superstructure help to support the load (weight) of the building. The dead load of a building is the total weight of all its parts. The live load is the weight of the furniture, equipment, stored material, and occupants of a building. In some regions, the wind load of a building is important if the structure is to withstand storms. The snow load may also be an important factor. In some areas, buildings have to be constructed to withstand earthquake shocks. Foundations are the chief means of supporting a building. They carry both the dead and live loads. There are three main types of foundations: (1) spread, (2) pier, and (3) pile.

Spread foundations are long slabs of reinforced concrete that extend beyond the outer edges of the building. Such foundations are not so firm as those based on solid rock. The footing areas in contact with the soil must be of sufficient size to spread the load safely over the soil and to avoid excessive or uneven settlement. Any such settlement would cause walls to crack or doors to bind. Pier foundations are heavy columns of concrete that go down through the loose topsoil to a bed of firm rock. This bed may also be sand, gravel, or firm clay. If the bed consists of firm clay, the pier is usually enlarged at the base, to increase the bearing area.

Pile foundations are long, slender columns of steel, concrete, or wood. Machines, called pile drivers hammer them down as deep as 60 metres to a layer of solid soil or rock. Workers can tell when the columns reach their proper depth by the number of blows the pile driver needs to drive the columns a few centimetres deeper. These columns transmit the building load to the supporting soil. Most skyscrapers are supported by rock foundations.

Text 2. Types of construction

In load-bearing-wall construction the walls transmit the load to the foundation. In skeleton construction, all loads are transmitted to the foundation by a rigidly constructed framework made up of beams, girders and columns. This skeleton carries the roof, walls, and floors, together with their loads. Load-bearing-wall construction is usually most economical for buildings less than four storeys high, but skeleton construction is better for taller buildings. All buildings in the skyscraper class are of skeleton construction. The first building to have skeleton construction was the 10- storey Home Insurance Building in Chicago. Completed in 1885, this building was the world's first skyscraper.

Many parts of a building have no structural function. Partition walls and curtain walls carry only their own weight and serve to divide the interior of a building or to keep out the elements. Other nonload-bearing parts include windows, doors, stairs, and lifts.

In one method of construction, called tilt-up construction, concrete wall panels are formed at ground level. Cranes or derricks then lift them into position. Lift-slab construction may be used for positioning roof and floor slabs. These slabs are formed with concrete at ground level, within the framework of the building. They are then lifted into place using hydraulic jacks.

Beams, girders, and columns support a building much like bones support the body. They form the skeleton of the superstructure, and bear the weight of the walls and each floor of the building. Beams and girders run horizontally. Girders are usually larger than beams. Closely spaced beams are called joists, especially in wooden buildings. Purlins are small beams that brace rafters or girders and help provide the structure to support roofs. Beams above window and door openings are called lintels. Slabs are beams whose width is greater than their depth.

Columns are heavy vertical supports that carry the load of beams and girders. Trusses consist of many wood or steel supports that are connected in triangular patterns. They provide the strength and rigidity to span large distances with relatively small amounts of material. Arches are curved supports that usually extend over openings.

Text 3. Prefabricated Construction

Prefabrication has become an important part of most types of building construction. Prefabricated sections of a building are produced in large quantities in a factory and then shipped to various construction sites. This procedure may allow work to continue despite poor weather conditions and should reduce any waste in time and material at the site. As a result, costs are lowered and construction time decreases.

Many types of building sections can be prefabricated. For example, entire walls may be prefabricated for a wooden-frame house. Huge wooden arches are prefabricated for use as supports in churches, gymnasiums, and other buildings.

Concrete beams, floors, roofs, and wall panels may be precast for many types of structures. Entire buildings may be constructed in a factory and then transported to the desired location.

Prefabricated structures are sometimes made by a process called modular construction, first used in Japan. Modular construction refers to the use of a standard measurement as the basis for all building materials. The size of the module may vary considerably from country to country. In the United States, the basic module is 10 centimetres. All building parts are designed so that each dimension equals this measurement. Modular parts are also used in buildings that are not prefabricated.

Text 4. Building Stone

Building stone ranks in importance with steel as a construction material. Stone is used for the foundations, walls, and steps of buildings, for the support of piers and bridges, and for finishing and decorating all types of structures. Crushed stone accounts for most building stone used in construction. Crushed stone is quarried stone crushed into small pieces suitable for such uses as the surfacing of roads and industrial construction.

Dimension stone is stone in natural blocks or slabs cut in definite shapes and sizes. Builders expect good dimension stone to last at least a hundred years. The best dimension stone has the fewest pores or air cells, making it able to resist the wearing effects of weather. Stone with large, open pores will chip off if water freezes and expands in the pores. Dimension stone includes granite, limestone, sandstone, marble and slate.

Granite is one of the strongest of all the building stones. However, it is difficult to cut and handle because it is extremely hard. It is used extensively in the construction of public buildings. Granite can be polished to a glossy finish, and is an excellent background for carvings and lettering.

Limestone is a hard and lasting building stone that can be cut easily and shaped with saws, planes, and even lathes. These buff or gray stones are sometimes placed over the rough stonework of a building to make an attractive surface. Limestone is also used to tile floors, and for sills, steps and trimming.

Marble is the most elegant building stone. Pure marble is white, streaked with veins of black, gray, green, pink, red, and yellow. Builders use marble to

make monuments and tombstones, and to decorate stairways, hearths, floors, and panelling. Slate is fine-grained rock that can be split easily into thin slabs and used for roofing shingles and flagstone flooring.

Text 5. Constructing a skyscraper

New methods in the design and construction of skyscrapers have been closely related to the development of computers. Engineers use computers to solve the complex mathematical problems involved in such construction projects. Computers do this work quickly by breaking the design down into a limited number of precalculated elements.

Before construction begins, engineers determine the strength of the soils that will lie underneath the new building. With this information, they can design the proper foundation. After the building site is cleared, levelled and drained of water, excavation (digging) begins. Mobile diggers usually excavate the foundation. Ground made of rock may be excavated by blasting.

After the excavation is finished, the footings (base) and the superstructure are built. Most steel used in the superstructure, such as beams, girders, and columns, comes prefabricated. Each piece of steel should have a number indicating the exact place where it should be used. When the steel is raised into place, workers fasten the pieces together temporarily with bolts. Later, welders and riveters join these pieces together permanently.

Many kinds of cranes and derricks are used in the construction of skyscrapers. The two main kinds are mobile cranes and tower cranes. Mobile cranes are mounted on trucks or special vehicles and can manoeuvre around the outside of the building to hoist materials and equipment from various locations. Tower cranes are supported on a steel tower erected next to or inside a building's framework.

After workers complete the superstructure and outside walls, the building is ready to be finished, decorated and furnished.

TEXTS FOR TEST

III семестр

1. Прочитайте и переведите следующий текст на русский язык, пользуясь словами и выражениями из текстов, прочитанных дома.

TEXT 1. MODERN BUILDING MATERIALS

Some of the most important building materials are: timber, brick, stone concrete, metal, plastics and glass.

Timber is provided by different kinds of trees. Timbers used for **building purposes** are divided into two groups called **softwoods** and **hardwoods**. Timber is at present not so much used in **building construction**, as in railway

engineering, in mining and in the chemical industries where it provides a number of **valuable materials**.

However, timber is still **employed** as a building material **in the form of boards**. For interior of buildings plywood and veneer serve a number of purposes.

A *brick* is best described as a “**building unit**”. It may be made of clay by **moulding** and baking in kilns, of concrete, of **mortar** or of a composition of sawdust and other materials. In shape it is a rectangular solid and its weight is from 6,5 to 9 lb.

There exists variety of bricks for different purposes: **ordinary, hollow or porous, lightweight**, multicolor bricks for decorative purposes, etc. Bricks are usually laid in place with the help of mortar.

The shape and convenient size of brick enables a man to grip it with an easy confidence and, because of this **brick building** has been popular for many hundred years. The hand of the average man is large enough to take a brick and he is able to handle more than 500 bricks in an eight-hour working day.

Sometimes natural stones such as marble, granite, basalt, **limestone** and **sandstone** are used for the construction of dams and foundations. Marble, granite and sandstone are widely used for decorative purposes as well, especially with the **public buildings**.

Metals: Aluminum, **principally in the form of various alloys**, is **highly valued for its** durability and especially for its light weight, while brass is frequently used for decorative purposes **in facing**.

Steel finds its use in corrugated sheets for **roofing**, for girders, frames, etc. Various shapes are employed in construction.

Plastics are **artificial materials** used in construction work for a vast number of purposes. Nowadays plastics, which are artificial materials, can **be applied** to almost every branch of building, from the laying of foundation to the **final coat of paint**. **Synthetic resins** are the main **raw material** for plastics. Plastics have some good advantages as they are **lighter** than metals, not **subject to corrosion** and they can be easier **machined**. Besides, they are **inflammable**, they can take any colour and pattern, and they are good **electrical insulators**. More over, they possess a **high resistance** to chemical action.

A lot of decorative plastics, now available, have 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.

Foamed glass is a high –porosity **heat insulating material**, available in block made of fine-ground glass and a frothing agent.

Foamed glass is widely used in **prefabricated house building**, to ensure heat insulation of exterior wall panels, and in **industrial construction**.

Foamed glass has a high mechanical strength, is distinguished by moisture, vapour and gas impermeability. It is non-inflammable, offers **resistance to frost**, possesses a **high sound absorption**, and it is easily sewn and nailed.

Structural foamed glass block are designed to fill ceilings, and for making interior partitions in buildings and rooms, to ensure **heat and sound insulation**.

Concrete is perhaps the most widely spread building material used nowadays. Concrete is an **artificial stone**, made by thoroughly mixing such natural ingredients or **aggregates** as cement, sand and gravel or **broken stone** together with sufficient water to produce a mixture of the proper consistency. It has many **valuable properties**. It **sets** under water, can be **poured into moulds** so as to get almost any desirable form, and together with steel in **reinforced concrete** it has very **high strength**, and also resists fire. **Prestressed concrete** is most widely used at present while **prefabricated blocks** are employed on vast scale for **skeleton structures**.

2. Прочитайте и переведите выделенные в тексте слова и выражения.

3. Прочитайте и определите, какие предложения относятся к а) дереву, б) кирпичу, в) пластику г) бетону. Предложения переведите на русский язык.

1. This material is provided by different kinds of trees.
1. Synthetic resins are the main raw material for production of this material.
2. It can be hollow, porous and lightweight.
3. It is employed as a building material in the form of boards.
4. It is lighter and not subject to corrosion.
5. It is made of cement, sand and gravel or broken stone together with water.
6. It sets under the water.
7. It can be used for decorative purposes.
8. It can be easier machined.
10. It may be made of clay by moulding and baking in kilns.
11. Together with steel it has very high strength.
12. It is laid in place with the help of mortar.
13. It possesses a high resistance to chemical action.
14. Prefabricated blocks are made of it and they are employed for skeleton structures.

4. Закончите предложения о металле, слоистом пластике и пеностекле в соответствии с текстом. Предложения переведите.

1. Aluminum in the form of various alloys is highly valued for ...
2. Steel finds its use in...
3. Laminate is a strong material manufacture from...
4. It resists severe weather conditions for more than ten years ...
5. It is used for ...
6. Foamed glass is made of ...
7. It is widely use in prefabricated house building for ...

IV семестр

1. Прочитайте и переведите данный текст. Вспомните, как переводятся выделенные слова и выражения.

TEXT 1. THE PROPERTIES OF CONCRETE

Concrete must be **hard, strong, durable, dense, non-porous, fire-resisting and economical**.

Concrete has proved to be durable when made of good materials, well mixed, and properly **cured**. Failures can be found in concrete work, but the trouble is usually caused by **poor material**, faulty foundations, and lack of knowledge of the properties or poor workmanship. For example some cements will give better results in sea water than others. This fact had to be established by experience and experiments.

It is more difficult to secure durable **reinforced concrete** than **mass concrete**. This is due to the **reinforcing steel** and the additional water required to make the concrete flow around the **steel bars**. When moisture reaches the steel, it will **rust** and expansion caused by the rust will crack the concrete, resulting in unsightly structure and necessary repairs. In all structures **exposed** to the weather the reinforcing steel must be carefully placed and well secured so that it cannot be displaced while **concreting**. Small wires will soon cause rust spots on the surface of the concrete if they are exposed.

Concrete, to be durable, must be made of good materials, uniform in quality, mixed with a minimum of water, and properly **placed** and **protected** while curing. Concrete exposed to sea water and the rise and fall of water levels, especially in cold climates where ice forms on the structures, requires special attention in the selection of the cement, aggregates, mixing, **placing and curing**.

With the use of dense aggregates the proportions which will produce the **densest** products are generally those which contain the maximum amount of **coarse aggregate** and still contain enough **fine aggregate** to produce a smooth

surface. With porous aggregates used in the production of **light weight units**, the amount of material in the mix passing a 50-mesh sieve is generally limited and in addition more of the coarse aggregate is used to produce a unit of less density and lower weight. This is generally desirable for light weight units except where fire resistance or **watertightness** are important.

The strength of **plain concrete** depends upon the quality of the cement, the strength and character of the aggregate, the quantity of cement in a unit of volume, and the density of the concrete. Other things being equal the strongest concrete is that containing the largest amount of cement in a given volume of concrete, the strength of the concrete varying directly as the amount of cement. The strength of concrete also depends upon the methods used in mixing, upon the care taken in measuring the ingredients, and in the mixing and placing the concrete. Concrete exposed to the air **hardens** more rapidly than protected concrete. **The setting** of cement is a chemical change brought about by the addition of water to the cement, the strength increasing very rapidly the first few days, after which the mixture slowly hardens and **increases in strength**.

Concrete has poor **elastic and tensional properties**, but it strong in **compression**. Its tensile strength is only one-tenth of its **compressive strength**. The compressive strength of plain concrete varies between wide limits, depending upon the cement, the proportions of cement and aggregates, and the methods of mixing, and placing and the age.

2. Закончите следующие предложения в соответствии с текстом.

Переведите полученные предложения.

1. Concrete must be ...
2. Failure in concrete work are caused by ...
3. It is more difficult to protect reinforced concrete than mass concrete because:
 - a) it will ...
 - b) the expansion caused by the rust will
 - c) the result of this is ...
4. In all structures exposed to the weather the reinforcing steel must be ...
5. Concrete to be durable must be made ...
6. More of the coarse aggregate is used to produce ...
7. Light weight units can't be used where fire resistance and ...
8. The strength of plain concrete depends upon ...
9. Concrete exposed to the air hardens more rapidly than ...
10. Concrete has poor ... but it is strong in ...

3. Переведите предложения, обращая внимание на выделенные грамматические формы.

1. Concrete has proved to be durable when made of good materials.

2. This fact **has to** be established by experience and experiments.
3. Reinforcing steel in concrete can rust **resulting in** an unsightly structure and necessary repairs.
4. Concrete **to be** durable must be protected **while curing**.
5. The densest products are **those**, which contain maximum amount of coarse aggregate and still contain **enough** fine aggregate **to produce** a smooth surface.
6. The strongest concrete is **that containing** the largest amount of cement in a given volume of concrete, **the strength of concrete varying** directly as the amount of cement.
7. The setting of cement is a chemical change, **the strength increasing** very rapidly the first few days.
8. The compressive strength of plain concrete varies **depending** upon the cement.

Библиографический список:

1. Гарагуля С.И. Английский язык для студентов строительных специальностей / С.И. Гарагуля. - Ростов-на-Дону: Феникс, 2013. - 347 с.
2. Развадовский В.Ф. Английский язык для будущих инженеров / В.Ф. Развадовский. - Гродно: ГрГУ, 2010. - 124 с.
3. Caruzzo P. Flash on English for Construction /P.Caruzzo. - Reconati, 2012. - 50 p.
4. Civil engineering [Electronic resource]. – Mode of access: <https://www.engineeringcivil.com/> (дата обращения: 07.10.2017).
5. Handbook for undergraduate engineering programs [Electronic resource]. – Mode of access: <https://stanford.app.box.com/s/frvfj1d8zjl3da8ylgoal1ej6oxgb29b> (дата обращения: 07.10.2017).

Учебное пособие

Лапицкая С.И., Баликаева М.Б.

В авторской редакции

Подписано в печать Формат 60х90 1/16. Печ. л. 8,4. Тираж .. экз.
Заказ № 276.

Библиотечно-издательский комплекс
федерального государственного бюджетного образовательного
учреждения высшего образования
«Тюменский индустриальный университет».
625000, Тюмень, ул. Володарского, 38. Типография библиотечно-
издательского комплекса.
625039, Тюмень, ул. Киевская, 52.