МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА
И ПРОДОВОЛЬСТВИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

ГЛАВНОЕ УПРАВЛЕНИЕ ОБРАЗОВАНИЯ, НАУКИ И КАДРОВ

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АНГЛИЙСКИЙ ЯЗЫК

CIVIL ENGINEERING

Сборник текстов и упражнений
для студентов мелиоративно-строительного факультета,
обучающихся по специальности
1-74 04 01 Сельское строительство и обустройство территорий

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Приведены тексты и упражнения для обучения специальной лексике и развития умений чтения профессиональной литературы.

Для студентов мелиоративно-строительного факультета, обучающихся по специальности 1-74 04 01 Сельское строительство и обустройство территорий.

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ВВЕДЕНИЕ

Сборник текстов и упражнений предназначен для студентов дневного и заочного отделений мелиоративно-строительного факультета, обучающихся по специальности 1-74 04 01 Сельское строительство и обустройство территорий.

Цель материалов сборника – познакомить студентов с английской терминологией по специальности и подготовить их к чтению оригинальной научно-технической литературы. Сборник состоит из четырех разделов. Каждый раздел посвящен определенной теме и состоит из нескольких уроков. Тексты для уроков взяты из оригинального источника и адаптированы (разработки снабжены поурочным словарем). Каждый урок состоит из предтекстовых и послетекстовых заданий и собственно текста. Целью предтекстовых заданий является снятие лексико-грамматических трудностей при чтении текста, послетекстовые задания направлены на закрепление лексико-грамматического материала и состоят из двух разделов: «Comprehension» и «Vocabulary and Grammar».

Сборник текстов и упражнений рекомендован как для аудиторной работы студентов в сотрудничестве с преподавателем, так и для самостоятельной работы.

UNIT 1

BRIDGES

Lesson 1

Pre-reading task

1. Read the words and learn them.

Outstanding – выдающийся
Bridge – мост
To measure – оценить, определить, измерить
Structure – конструкция, строение
Vehicle – транспортное средство
Obstacle – препятствие, помеха
Canyon – каньон
Ravine – ущелье, лощина, овраг
To range – выстраивать, располагать
Occurrences – явления, катаклизмы
Earthquake – землетрясение
Weight – вес, масса
Railroad – железная дорога, железнодорожный
Adjacent – соседний, смежный
Span – пролет
Abutment – стык
Single-span bridge – однопролетный мост
Pier – устой
Multi-span bridge − многопролетный мост
Support – опора, поддержка
Take into consideration – учитывать, принимать во внимание
Suitable – подходящий
Loads – груз(ы)

2. Make up your own sentences with the words given above. Use as many words as possible.

3. Translate the following sentences into Russian paying attention to the translation of the verb "have". Decide, whether it is translated as:

− <u>иметь</u> (I have three classes today. − У меня сегодня три пары.);

− <u>должен</u> (I have to be there in time. − Я должен быть там вовремя.);

− <u>не переводится</u>, а является вспомогательным глаголом во временах группы Perfect. (I have lost my key. − Я потерял свой ключ.).

1. There have been several bad accidents at this corner recently.
2. I shall have to take a local train.
3. He did not have much work to do.
4. It's a long time since I have visited that town.
5. I don't want to have any argument.
6. The papers have not yet been sent.
7. They had to walk home because the last bus had gone.
8. I shall have to come to the Institute at 8 o'clock tomorrow.
9. Did you have a lecture on philosophy yesterday?
10. We have four classes a day.

4. Translate the following sentences into Russian paying attention to the translation of the verb in the Passive Voice.

1. These computers are made in China.
2. A lot of houses are built in our town every year.
3. Coffee is imported from Brazil.
4. English is spoken all over the world.
5. The table is made of wood.
6. I am always invited to the parties.
7. Airports are built near big cities.
8. The machines are tested for us every day.
9. These books are published in Minsk.

5. Read and translate the text to learn more about a bridge.

Text A

What is a Bridge?

One of the outstanding statesmen once said in his speech, "There can be little doubt that in many ways the story of bridge-building is the story of civilization. By it we can readily measure an important part of a people's progress." Great rivers are important means of communication for in many parts of the world they have been, and still are, the chief roads. But they are also barriers to communication and people have always been concerned with finding ways to cross them.

For hundreds of years men have built bridges. A bridge is a structure used by people and vehicles to cross areas that are obstacles to travel.

Engineers build bridges over lakes, rivers, canyons, and busy highways and railroad tracks. Without bridges, people would need boats to cross waterways and would have to travel around such obstacles as canyons and ravines.

Bridges range in length from a few feet or meters to several miles or kilometers. A bridge must be strong enough to support its own weight as well as the weight of the people and vehicles that use it. It also must resist natural occurrences, including earthquakes, strong winds, and changes in temperature. Most modern bridges have a concrete, steel, or wood framework and an asphalt or concrete roadway. The roadway is the part of a bridge on which people and vehicles travel.

Most bridges are held up by at least two supports set in the ground. The distance between two adjacent supports is called a span of a bridge. The supports at each end of the bridge are called abutments, and the supports that stand between the abutments are called piers. The total length of the bridge is the distance between the abutments. Most short bridges are supported only by abutments and are known as single-span bridges. Bridges that have one or more piers in addition to the abutments are called multi-span bridges. Most long bridges are multi-span bridges. The main span is the longest span of a multi-span bridge.

A modern bridge probably demands greater skill from designer or builder than any other civil engineering project. Many things should be taken into consideration, and these may vary widely according to local conditions. In deciding what type of bridge is the most suitable the designer has to allow for the type and weight of the traffic, and width and depth of the gap to be bridged, the nature of the foundations and the method of erecting the bridge. The designer has to calculate carefully how the various loads would be distributed and to decide which building materials are more suitable for carrying these loads.

Comprehension

6. Answer the following questions.

1. What is a bridge?
2. Who builds bridges?
3. Why do people build bridges?
4. What do most modern bridges have?
5. What is a single-span bridge?
6. What is a multi-span bridge?
7. What part of a bridge is called the roadway?

7. Say if the sentences are true or false.

1. Engineers build bridges over such obstacles as rivers, lakes, canyons and so on.
2. Bridges can be from a few feet or metres to several kilometres or miles in length.
3. When people build bridges they also have to pay their attention to such natural occurrences as strong winds, changes in temperature, earthquakes etc.
4. The total length of the bridge is the distance between the spans and piers.
5. Most short bridges are known as multi-span bridges.
6. Most long bridges are single-span bridges.
7. People can't live without bridges.

Vocabulary and Grammar

8. Say the same in English.

Общая длина, транспортное средство, изменения в температуре, оживленные автомагистрали, судоходные русла, противостоять природным явлениям, деревянный каркас, опоры, самый длинный пролет моста, строительные материалы, расстояние между стыками, землетрясения, длинные мосты, современные мосты, конструкция, лодки, железнодорожные пути, каньоны, часть моста, проезжая часть, сильные ветры, асфальт, должен быть достаточно прочным, метод возведения моста, вероятно, гражданское строительство, один из выдающихся государственных деятелей, более подходящий, ширина и глубина.

9. Match the columns.

1	Bridges range in length from…	A	… one or more piers in addition to the abutments.
2	A span of a bridge is …	B	… to support its own weight.
3	Single-span bridges are …	C	… a few feet or meters to several miles or kilometers.
4	Multi-span bridges are …	D	… natural occurrences, including earthquakes, strong winds, and changes in temperature.
5	A bridge must be strong enough …	E	… the distance between two adjacent supports.

6	The total length of a bridge is …	F	… on which people and vehicles travel.
7	Most bridges are held up …	G	… the distance between the abutments.
8	A bridge must resist …	H	… by at least two supports set in the ground.
9	The roadway is the part of a bridge …	I	… supported only by abutments.

10. Fill in the gaps with the words from the table.

bridge	distance	vehicle	steel	length
build	travel	engineer	structure	

1. In the old days people had to _____ several days, weeks and months to get to the place they needed.
2. The _____ _____ of this tunnel is 3 km.
3. They are going to _____ a new bridge across the river.
4. _____ is needed to produce cars, lorries, tractors, trains, etc.
5. An early man probably got the idea of a _____ from a tree fallen across a stream.
6. The jeep is a small light _____ with great freedom of movement especially for military use.
7. The competition to design the bridge started in 1957 and was won by Riccardo Morandi, an Italian civil _____.
8. The _____ between Minsk and Moscow is 718 km.
9. It's difficult to imagine modern _____ without concrete.

11. Match the words with their definitions.

1	Canyon	A	The length of something from one end to the other.
2	Bridge	B	A structure that holds the weight of something above it.
3	Span	C	A deep, narrow valley with steep sides.
4	Abutment	D	The structural frame of a building or other built asset such as a bridge, tunnel and so on.
5	Framework	E	A structure that is built over a river, road, or railway to allow people and vehicles to cross from one side to another.

12. Make the plural.

A boat, a foot, a bridge, a river, a lake, an engineer, a span, a vehicle, an abutment, a person, a mile.

13. Fill in the gaps with the necessary prepositions and particles.

1. Bridge is a structure used _____ people.
2. A bridge must be strong enough _____ support its own weight.
3. The roadway is the part _____ a bridge.
4. Most bridges are held _____ by at least two supports set _____ the ground.
5. The supports _____ each end of the bridge are called abutments.
6. The total length _____ the bridge is the distance _____ the abutments.
7. Bridges have one or more piers in addition _____ the abutments.
8. Most single-span bridges are supported only _____ abutments.

14. Give the missing forms of the verbs. Translate the verbs.

	V_1	**V_2**	**V_3**	**Translation**
1	build			
2		had		
3			been	
4		held		
5		called		
6	stand			
7			known	
8			supported	
9	travel			

Lesson 2

Pre-reading task

1. Read the words and learn them.

Log – бревно
Stream – ручей
Probably – вероятно
Span – перекрытие
Eventually – возможно
Crossbeam arrangement – расположение перекладины
Pole – столб
Well – водоем

Stick – палка
Deciduous – опавший, упавший
Fibres – волокна, нити
Arch bridge – арочный мост
The Arkadico Bridge – мост Аркадико
Antiquity – античность
Aqueduct – акведук (водопровод)
Mortar – раствор (строительный)
Treatise – трактат, исследование
To mention – упоминать
Plaited – переплетенный
Military – военный
The Zhao Zhou Bridge [`djaodjou] – мост Аньцзи
The Middle Ages – средние века
Drawbridge – разводной мост, подъемный мост
Moat – ров
Suspension bridge – подвесной мост
Just prior – незадолго до
Truss bridge – связывающий мост
Timber – древесина
Hubert Gautier – Губерт Готье (французский инженер)
Breakthrough – прорыв
Erection – возведение, строительство
Cast iron – чугун
Wrought iron – сварочное железо
Girder bridge – балочный мост
Cantilever bridge – консольный мост
Steel – сталь
Concrete – бетон
Reinforced concrete – железобетон
Pre-stressed concrete – предварительно укрепленный бетон
Welded bridge – сварной мост
Cable-stayed bridge – подвесной мост

2. Make up your own sentences with the words given above. Use as many sentences as possible.

3. Read the following numbers first as numbers and then as years.

1955, 2200, 1700, 1500, 2006, 1987, 1578, 1344, 2000.

4. Study the suffixes with the help of which the following names of nationalities are formed. Translate the names of the nationalities into Russian.

-ese	Japanese, Chinese, Portuguese, Sudanese, Lebanese
-ian (-an)	Egyptian, Italian, Belarusian, American, Russian
-ish	Polish, English, Turkish, Finnish, Spanish
-i	Pakistani, Iraqi, Israeli, Saudi
others	French, Czech, Dutch, Swiss, Greek, Thai

5. Complete the phrases using the following words.

English	German	Greek	Italian	French
Austrian	Turkish	Danish	American	Nigerian
Chinese	Kenyan	Dutch	Swiss	Polish

Example: A man from England is **English**.

1. A man from Italy is ...
2. A man from Greece is ...
3. A man from the USA is ...
4. A man from China is ...
5. A man from the Netherlands is ...
6. A man from Switzerland is ...
7. A man from Germany is ...
8. A man from Nigeria is ...
9. A man from Poland is …
10. A man from Kenya is …
11. A man from Denmark is …
12. A man from France is …
13. A man from Austria is …
14. A man from Turkey is …

6. Read and translate the text to learn more about a bridge and its history.

Text B

History of bridges

The first bridges were made by nature itself – as simple as a log fallen across a stream or stones in the river. The first bridges made by humans were probably spans of cut wooden logs or eventually stones, using a simple support and crossbeam arrangement. Some Americans used trees or bamboo poles to cross small wells to get from one place to another. A

common form of sticks, logs, and deciduous branches together involved the use of long fibres woven together to form a rope used for binding and holding together the materials used in early bridges.

The first bridge known to historians was an arch bridge built in Babylon about 2200 BC. The ancient Chinese, Egyptians, Greeks, and Romans also built arch bridges, using bricks and stone as building materials. The Arkadiko Bridge is one of the oldest arch bridges still in existence and use. It was built in the 13th century BC.

The greatest bridge builders of antiquity were the ancient Romans. The romans built arch bridges and aqueducts that could stand in conditions that would damage or destroy earlier designs. The Romans also used cement, which reduced the variation of strength found in natural stone. One type of cement consisted of water, lime, sand, and volcanic rock. Brick and mortar bridges were built after the Roman era, as the technology for cement was lost then later rediscovered.

An ancient Indian treatise mentions the construction of dams and bridges. The use of stronger bridges using plaited bamboo and iron chain was visible in India by about the 4th century. A number of bridges, both for military and commercial purposes, were constructed in India.

Large Chinese bridges of wooden construction existed from 476 to 221 BC. The oldest surviving stone bridge in China is the Zhao Zhou Bridge, built from 595 to 605 AD.

During the Middle Ages, moveable bridges called drawbridges were built across the moats of many castles in Europe.

Rope bridges, a simple type of suspension bridge, were used by the Inca civilization in the Andes Mountains of South America, just prior to European colonization in the 16th century.

Truss bridges were developed in the 1500s.

Most bridges were made of stone or wood until the late 1700s. During the 18th century, there were many innovations in the design of timber bridges. The first book on bridge engineering was written by Hubert Gautier in 1716. A major breakthrough in bridge technology came with the erection of the Iron Bridge in England in 1779. It used cast iron for the first time as arches to cross the river Severn.

Many suspension bridges that hung from wrought iron chains were built in the early 1800s.

The first plate girder bridge was completed in 1847, and the modern cantilever bridge was introduced about 1870. In the late 1800s, steel became the chief material used in bridge construction.

The first bridge made of concrete was built in 1869. A short time later, builders began using reinforced concrete for bridges. During the 1930s, pre-stressed concrete became an important material for bridge building.

In 1927 the first welded road bridge was built.

The modern cable-stayed bridge was introduced in 1955.

Comprehension

7. Answer the following questions.

1. What were the first bridges like?
2. What did early Americans use to build bridges?
3. What is one of the oldest survived bridges?
4. Who were the most famous bridge builders?
5. What did Indians use to reinforce the structure of their bridge?
6. When was the oldest stone bridge in China build?
7. What nation started building rope bridges?
8. What innovation was introduced in the XVIII century?
9. What bridge was built in 1927?

8. Say if the sentences are true or false.

1. Aliens built the first bridges.
2. The first bridge known to historians was a girder bridge.
3. Aqueducts and arch bridges were built by the Romans.
4. The Roman technology for cement was lost then later rediscovered.
5. Ancient Indians started building bridges and dams using bamboo and iron chains.
6. The oldest surviving bridge in China was made of wood.
7. Moveable bridges were built across the moats of many castles in Europe during the Middle Ages.
8. A rope bridge is the prototype of an arch bridge.
9. First rope bridges appeared in South America.
10. Steel became the chief material used in bridge construction in the 20^{th} century.

Vocabulary and Grammar

9. Give the English equivalents to the following words and word combinations.

Кирпич, строительные материалы, железные цепи, современный консольный мост, средние века, известняк, строительство дамб, сталь,

строительство моста, древние египтяне, Вавилон, римляне, упавшие ветки, песок, разводной мост, вулканическая порода, заново открыт, сплетенные вместе, канатные мосты, арочные мосты, европейская колонизация, Римская эпоха, известный историкам, торговые цели.

10. Put the following words into the correct column.

Span, stick, cement, arch, destroy, pole, timber, erect, branch, aqueduct, steel, weld, cast iron, rope, suspension bridge, cut, sand, damage, volcanic rock, dam, stand, cross, mortar, log, lime, build.

Building materials	Actions	Structures

11. When were these bridges built? Match the columns.

1	Suspension bridges	A	In the early 1800s
2	Cable-stayed bridges	B	Before the 16th century
3	Arch bridges	C	During the Middle Ages
4	Cantilever bridges	D	In 1955
5	Welded road bridges	E	In 1847
6	Truss bridges	G	About 2200 BC
7	Girder bridges	H	In 1927
8	Drawbridges	I	In the 1500s
9	Rope bridges	J	About 1870

12. Translate the sentences from Russian into English.

1. Чтобы сплести веревку, древние люди использовали древесное волокно.

2. Арка – это красивое и прочное сооружение, которое может выдержать большую нагрузку.

3. К сожалению, многие древние мосты на сегодняшний день повреждены или разрушены.

4. Первый сварной мост был построен в 1927 году.

5. Строительный раствор может состоять из известняка или цемента, смешанного с песком и водой.

6. Веревочный мост – это самая простая форма подвесного моста.

7. Акведук – это очень прочное сооружение, построенное римлянами и сохранившееся до наших дней.

13. Match the words with their definitions.

1	aqueduct	A	A structure, consisting of a curved top on two supports that holds the weight of something above it.
2	dam	B	A long deep hole, usually filled with water dug for defense round a castle, fort etc. in former times
3	concrete	C	A natural flow of water moving across country between banks
4	arch	D	A thick piece of tree trunk or branch, especially one cut for burning on a fire or building something
5	moat	E	A watercourse constructed to carry water from a source to a distribution point far away
6	brick	F	Building material made by mixing sand, very small stones, cement, and water
7	log	G	A barrier that stops or restricts the flow of water or underground streams
8	stream	H	A hard piece of baked clay used for building

14. Put the words in the right order to make up a sentence.

1. As / people / used / the ancient / bricks / stone / and / materials / building.

2. Later / bridges / builders / for / began / reinforced / using /concrete.

3. People / bridges / built / many / of / castles / the moats / moveable / across.

4. Were / bridges / made / most / of / stone / wood / and.

5. Were / Greece / aqueducts / in / ancient / and / Egypt / ancient / used / ancient / Rome.

15. Fill in the gaps with the necessary prepositions.

1. Rope bridges were used _____ the Inca civilization _____ the Andes Mountains of South America.

2. The first bridge made _____ concrete was built _____ 1869.

3. Some Americans used trees or bamboo poles to cross small wells to get _____ one place _____ another.

4. One type of cement consisted _____ water, lime, sand, and volcanic rock.

5. The first book _____ bridge engineering was written _____ Hubert Gautier in 1716.

6. _____ the Middle Ages drawbridges were built _____ the moats of many castles _____ Europe.

7. _____ the late 1800s, steel became the chief material used _____bridge construction.

16. Give the missing forms of the adjectives.

Positive	Comparative	Superlative
large		the largest
ancient		
	older	
		the most important
	stronger	the strongest
high		
	earlier	the earliest
simple		
		the greatest
	smaller	
	more visible	
modern		

17. Fill in the gaps with an appropriate derivative of the word in brackets.

1. The Romans also used cement, which reduced the variation of strength found in _____ stone. (NATURE)

2. A major breakthrough in bridge technology came with the _____ of the Iron Bridge in England in 1779. (ERECT)

3. The Arkadiko Bridge is one of the oldest arch bridges still in _____ and use. (EXIST)

4. Steel became the chief material used in bridge _____ in the late 1800s. (CONSTRUCT)

5. The greatest bridge _____ of antiquity were the ancient Romans. (BUILD)

6. The Romans also used a type of cement that consisted of water, lime, sand, and _____ rock. (VOLCANO)

7. The ancient Chinese, _____, Greeks, and Romans built arch bridges,

using bricks and stone as building materials. (EGYPT)

8. The first bridge known to _____ was built in Babylon about 2200 BC. (HISTORY)

18. Find information about one ancient bridge and describe it.

19. Find information about a modern bridge and describe it.

Lesson 3

Pre-reading task

1. Read the words and learn them.

Steel cable – стальной трос
Tower – башня
To hold (held, held) – держать
To hang (hung, hung) – вешать
Experience – опыт
Exactly – точно
Wood – дерево (как материал), древесина
To force into – нагнетать
Dangerous – опасный
Accident – авария
Sick – больной
To encourage – поддерживать, ободрять
Pain – боль
Similar – такой же, подобный
Cripple – калека
Construction – строительство
Wonder – чудо
Traffic – движение транспорта

2. Make up your own sentences with the words given above. Use as many sentences as possible.

3. Answer the following questions before reading the text.

1. Have you seen any pictures of the Brooklyn Bridge?
2. Do you know where the Brooklyn Bridge is situated?
3. Can you describe what it looks like?

4. Read and translate the text to learn more about the Brooklyn Bridge.

Text C

The Brooklyn Bridge

The Brooklyn Bridge was built in the year 1883. It is still one of the most popular places of interest in New York.

The plan for the Brooklyn Bridge was made by a man named John Roebling. This was in the year 1867.

Roebling was a German. He had come to the United State to live when he was twenty-five years old. In 1867 Roebling was already quite famous. Years before he had invented the steel cable. Using this steel cable, he has built several bridges, one at Niagara Falls and a second across the Monongahela River at Pittsburgh. He was sure he could build this new bridge.

It was decided to give Roebling a chance. A company was organized. Roebling was head engineer. He began to work making the plans for the bridge. He sent his son Washington to Europe to study some new bridges there. Some experiments had been made with working in a large box under water.

And then the accident happened. Roebling was working near the river. A boat struck the dock on which he was standing. Two weeks later he died. Before he died he asked that his son Washington would continue his work.

W. Roebling began to work with the same interest and energy as his father. The bridge was begun. There were many problems. According to the plans, there were to be two large towers. One of these towers was to be on the Brooklyn side of the river and the other was to be on the Manhattan side. From the towers hung a system of steel cables. These steel cables were to hold the bridge.

Today engineers know how to do these things. They have had much experience. They have special machines. But at that time no one knew exactly how to do this work. The Brooklyn Bridge was the first bridge of its kind in the world. They used the new box that Washington Roebling had studied in Europe. The box was made of wood and was about the size of a house. In this box men could work under water. Air was forced into the box and the water was forced out of it. It was very dangerous. No one understood the problems of this kind of work. Men became sick. There were many accidents. Roebling himself worked with the men in the box. He tried to encourage the men.

One day a worker went down into the box. He felt perfectly well. Within

half an hour he began to feel strong pains. Five minutes later he was dead. The same thing happened to other men. One day Roebling himself had a similar attack. He could not talk. He could not hear. He became paralysed. After a week or two he felt better. He went back again to work in the box. He had a second attack, more serious than the first. He could not work again. In fact, he was unable to work again during the rest of his life. He remained a cripple. Yet the work had to continue. And Washington Roebling continued to direct the construction of the bridge. His home was near the bridge. He used a telescope. He watched the work every day. His wife helped him. Each day she went to the bridge. She carried her husband's orders to the men. She worked with the men. At night she returned to her husband. She told him about the work of the day. In this way, year after year the work continued.

In 1876 the first cable was placed from one tower to the other. In 1883 about fifteen years after it was first begun, the bridge was officially opened. Many important people, including the President of the US, took part in the ceremony. Washington Roebling watched the ceremony through his telescope.

The bridge was one of the wonders of the nineteenth century. It is still today. There is more traffic on it today than ever before. The bridge remains very strong. It also remains a monument to the two men who built it, John Roebling and his son Washington.

Comprehension

5. Complete the sentences.

1. When John Roebling came to the United States …
a) nobody knew him;
b) he was known for his invention;
c) only his friends knew about him.
2. Washington Roebling …
a) was only making the plans for the bridge;
b) was making experiments;
c) began building the bridge.
3. During the construction of the bridge the people used the box …
a) which was constructed by John Roebling;
b) which was used in Europe;
c) which was invented by Washington Roebling.
4. Washington Roebling became a cripple after …

a) he had fallen down the bridge;

b) he had had an accident during the construction of the bridge at Niagara Falls;

c) he had worked in the box.

5. Washington Roebling …

a) did not live to see the ceremony of the opening of the bridge;

b) could see the ceremony;

c) was present at the ceremony.

6. Answer the following questions.

1. When was the Brooklyn Bridge built?
2. Where is the Brooklyn Bridge situated?
3. When was the plan for the bridge made?
4. Who made the plan for the Brooklyn Bridge construction?
5. Where did John Roebling use the steel cable before?
6. What kind of box did W. Roebling use in his work?
7. What happened to a worker one day when he went underwater in the box?
8. What accident happened to W. Roebling?
9. Who took part in the ceremony of the official opening of the bridge?

7. Say if the sentences are true or false.

1. The Brooklyn Bridge was built in the 20^{th} century.
2. John Roebling was born in the United States.
3. When John Roebling came to the United States he was already a well-known specialist.
4. Washington Roebling continued his father's work and began building the bridge.
5. The Brooklyn Bridge was the first bridge of its kind in the world.
6. During the construction of the bridge the people used the box which was used in Europe for work under water.
7. Washington Roebling became a cripple after he had worked on the bridge.
8. Many important people, took part in the ceremony.
9. Washington Roebling did not live to see the ceremony of the bridge opening.
10. The Brooklyn bridge remains a monument to the two men who built it, John Roebling and his son Washington.

Vocabulary and Grammar

8. Find in the text English equivalents to the following words and word combinations.

Стальной трос, большие башни, одна из самых популярных достопримечательностей, система стальных тросов, был сделан человеком по имени, должны были удерживать мост, чувствовать сильную боль, остался калекой, несчастный случай, одно из чудес XIX века, согласно планам, главный инженер, строительство моста, был официально открыт, принимали участие в церемонии, сделанная из дерева, наблюдал церемонию через свой телескоп, более серьезный, две недели спустя, фактически, под водой, возле реки, много важных людей.

9. Fill in the gaps with the words form the box. Translate the sentences into Russian.

Project	bridges	width	cables
chain	depth	rope	brick

1. These steel _____ are necessary to hold the bridge.
2. A big engineering _____ was suggested by a group of designers.
3. The road needs widening as its _____ is not enough for the present-day traffic.
4. For hundreds of years men have built _____ over fast flowing rivers or deep and rocky canyons.
5. The two boats were linked with an iron _____.
6. The first railway bridges were built of stone _____.
7. A _____ was stretched across the street.
8. They were to measure the _____ of the river.

10. Odd one out.

a) iron	b) steel	c) concrete	d) coal
a) road	b) tunnel	c) river	d) bridge
a) wood	b) fuel	c) stone	d) brick
a) method	b) designer	c) engineer	d) constructor
a) new	b) large	c) project	d) strong
a) make	b) cable	c) build	d) invent
a) experiment	b) work	c) accident	d) every

11. Find in the text the translation of the following sentences.

1. Было решено дать ему шанс.
2. Эти стальные тросы должны были удерживать мост.

3. Спустя неделю или две он почувствовал себя лучше.

4. В этом ящике люди могли работать под водой.

5. Много важных гостей приняли участие в церемонии открытия моста.

6. Мост был официально открыт в 1883 году.

12. Fill in the gaps with the necessary prepositions.

1. The Brooklyn Bridge is one _____ the most popular places of interest _____ New York.

2. The plan for the Brooklyn Bridge was made _____ John Roebling.

3. J. Roebling sent his son _____ Europe to study some new bridges there.

4. In 1876 the first cable was placed _____ one tower _____ the other.

5. The box was made _____ wood.

6. The Brooklyn Bridge was the first bridge _____ its kind _____ the world.

7. His wife told him _____ the work of the day.

8. Many important people took part _____ the ceremony.

9. The bridge was one _____ the wonders of the nineteenth century.

10. There is more traffic _____ the bridge today than ever before.

13. Fill in the table with the degrees of comparison of the following adjectives. Translate them into Russian.

Positive	**Comparative**	**Superlative**
		the most popular
famous		
		the largest
	better	
		the newest
strong		
	more serious	
dangerous		

UNIT 2

TUNNELS

Lesson 1

Pre-reading task

1. Read the words and learn them.

Tunnel – туннель
Complex – сложный
Challenge – задача, трудность
Civil engineering – гражданское строительство
Tunneling – прокладка туннеля, туннелирование
Masterpiece – шедевр, творение
Passageway – ход, проход, коридор
Movement – движение, перемещение
Sewage – сточные воды, канализация
Rock – горная порода, скала, камень
To dig – копать
Quarry – карьерный
To drill – углубиться
Firm – твердый, крепкий
Cut and cover – открытый способ строительства; проходка туннеля
Circular – круглый
Cross-section – поперечное сечение
Horseshoe-shaped – подковообразный
The Channel Tunnel – туннель под Ла-Маншем
The Gotthard Base Tunnel – Готардский базисный туннель
Switzerland – Швейцария
Folkstone – Фолкстон (город в Англии)
Calais – Кале (город во Франции)
Drive on, drive off – с колес на колеса

2. Make up your own sentences with the words given above. Use as many sentences as possible.

3. Read and translate the text to learn more about a tunnel.

Text A

Tunnel construction

Constructing a tunnel is one of the most complex challenges in the field of civil engineering.

Many tunnels are considered technological masterpieces and governments have honored tunnel engineers as heroes.

Building tunnels is a large civil engineering project that could cost very high sums of money. Tunneling is a difficult and dangerous engineering work. The planning and building of a long tunnel may take many years.

A tunnel is an underground passageway, which is built through mountain ranges, under or over rivers. Some tunnels are used for cars, and others are used for trains. Sometimes, a tunnel is used for movement of ships. Some tunnels are built for communication cables and some are built for electricity cables. Tunnels can also provide underground channels for water, sewage or oil. Other tunnels are built for animals.

Tunnels are dug in different kinds of grounds, from soft sand to hard rock. The method of tunnel construction depends on such factors as the ground conditions, the ground water conditions, the length and diameter of the tunnel drive, the depth of the tunnel, the final use and shape of the tunnel. There are two additional ways of digging: quarry and “cut and cover”. In quarry, the tunnel path is drilled in a horizontal way. This system requires a deep tunnel that’s built in a firm rock. In the “cut and cover” system, a tunnel is dug in the ground and, afterwards, a roof is built above the tunnel. This system fits tunnels that are close to the ground like road tunnels and infrastructure.

Modern tunnels are often very long and deep. Some tunnels are over 50 feet in diameter. Many are circular in cross-section. Others are horseshoe-shaped, with a level floor on which it is easy to lay permanent roads and railways. The Channel Tunnel between France and England is one of the longest tunnels in the world. It is 50 km long. The longest tunnel in the world is the Gotthard Base Tunnel. It’s a railway tunnel through the Aps in Switzerland. Its length is 57 km.

The Channel Tunnel

The Channel Tunnel (often called the "Chunnel" for short) is an undersea tunnel linking southern England and northern France. It runs between Folkstone in south Kent and Calais in Northern France. A railway shuttle between Folkstone and Calais carries passengers in cars, vans and other vehicles.

The Channel Tunnel is made of three separate tunnels running parallel to each other. They are two rail tunnels and a service tunnel.

The Channel Tunnel is 50.45 km long. 37.9 km of the Channel Tunnel is under the English Channel, making it the world's longest undersea tunnel. At its deepest, the tunnel is 75 meters below the sea level.

The idea of building a tunnel between the Continent and Britain dates from the l9th century. First attempts at building the tunnel were made in 1882, but they were soon abandoned, as there was a treat that the French could use the tunnel for invading Britain. Then in the 70s of the 20th century, the project was resumed. But the work was stopped because of the lack of money. Finally in 1986 the government of Britain and France signed an agreement on building the tunnel and in 1994 the tunnel was opened to traffic. Now a traveller doesn't depend on weather. He can drive his car to the station and together with the car take the Euroshuttle train near Folkstone. In 35 minutes he and his car will be in Calais. Such a journey is called drive on, drive off service. Eurotunnel runs passenger shuttle service every 15 minutes.

Comprehension

4. Answer the following questions.

1. Is tunneling an easy engineering work?
2. How long does it take to build a long tunnel?
3. What is a tunnel?
4. What are the purposes of tunnel construction?
5. What does the method of tunnel construction depend on?
6. How long can tunnels be?
7. What is the longest tunnel in the world?
8. What countries does the Channel Tunnel connect?
9. When were the first attempts at building the tunnel made?
10. When was the work resumed?
11. Why was it stopped?

12. When was it opened to traffic?
13. How do the passengers go?
14. For how long does the journey last?

5. Say if the sentences are true or false.

1. Many tunnels are considered technological masterpieces.
2. Building tunnels is a cheap civil engineering project.
3. Tunnels are used only for movement of cars and trains.
4. Modern tunnels are often very long and deep.
5. The longest tunnel in the world is the Channel Tunnel.
6. The Channel Tunnel runs between Folkstone and Calais.
7. The Channel Tunnel is made of four separate tunnels.
8. The idea of building a tunnel between the Continent and Britain dates from the 20th century.

Vocabulary and Grammar

6. Find in the text English equivalents to the following words and word combinations.

50 футов в диаметре, современные туннели, одна из самых сложных задач, трудная и опасная инженерная работа, твердая горная порода, глубина, очень большие суммы денег, в сфере гражданского строительства, нефть, для движения кораблей, длина и диаметр туннеля, горные хребты, подземный проход, форма, электропроводы, зависит от таких факторов, как электричество, первые попытки, из-за нехватки денег.

7. Match the synonyms.

1. complex	a. round
2. masterpiece	b. to deepen
3. passageway	c. to construct
4. to drill	d. difficult
5. firm	e. near
6. circular	f. corridor
7. to dig	g. difficulty
8. challenge	h. to excavate
9. close to	i. masterwork
10. to build	j. strong

8. Match the antonyms.

1. difficult	a. ancient
2. long	b. shallow
3. deep	c. short

4. dangerous d. hard
5. modern e. easy
6. soft f. below
7. above g. safe

9. Fill in the gaps with an appropriate derivative of the word in brackets.

1. The tunnel path is drilled in a _____ way. (HORIZONT)
2. Many tunnels are considered _____ masterpieces. (TECHNOLOGY)
3. Tunneling is a difficult and _____ engineering work. (DANGER)
4. A tunnel is sometimes used for _____ of ships. (MOVE)
5. The method of tunnel _____ depends on various factors. (CONSTRUCT)
6. The _____ of the Gotthard Base Tunnel is 57 km. (LONG)
7. There are two _____ ways of digging: quarry and "cut and cover". (ADD)
8. Some tunnels are built for _____ cables. (COMMUNICATE)
9. In 1986 the _____ of Britain and France signed an agreement on building the tunnel. (GOVERN)

10. Match the words with their definitions.

1	Tunnel	A	A long, narrow way
2	Engineer	B	The building of something, typically a large structure
3	Passageway	C	To make something deeper
4	Rock	D	An artificial underground passage
5	Construction	E	The external form of appearance characteristic of someone or something
6	To drill	F	A solid mineral material
7	Shape	G	A person who designs, builds, or maintains engines, machines, or public works

11. Fill in the gaps with the necessary prepositions.

1. Tunnels are dug in different kinds of grounds, _____ soft sand _____ hard rock.
2. The longest tunnel _____ the world is the Gotthard Base Tunnel.
3. Constructing a tunnel is one _____ the most complex challenges _____ the field of civil engineering

4. The method of tunnel construction depends _____ various factors.

5. A tunnel is an underground passageway, which is built _____ mountain ranges.

6. Tunnels can also provide underground channels _____ water, sewage or oil.

Lesson 2

Pre-reading task

1. Read the words and learn them.

Consumption – потребление
Sewer – водосточная труба
Relatively – относительно, сравнительно
Stable – прочный, стойкий
Initially – изначально, сначала, прежде всего
Vicinity – окрестность
Hostile – неблагоприятный
March – поход
Harsh terrain – труднопроходимая местность
Workforce – рабочая сила
Naples – Неаполь (город в Италии)
Pozzuoli – Поццуоли (город в Италии)
Ventilation shaft – вентиляционная шахта
Footprint – земля, отчужденная под строительство
Tide – морской прилив и отлив
Shipping – судоходство
Landscape – ландшафт
Scenery – пейзаж
Hazard – опасность, риск, угроза
To asphyxiate – задыхаться

2. Make up your own sentences with the words given above. Use as many sentences as possible.

3. Read these international words and try to guess their meaning.

Horizontal, traffic, canal, hydroelectric, technique, potential, planet, construction, structure, factor, form, project, system.

4. Before you start reading the text answer the following questions.

− Are there many tunnels in your country?

− What is the difference between tunnels and bridges?

5. Read and translate the text to learn more about a tunnel and its history.

Text B

History of tunnels

A tunnel is an underground or underwater passage that is primarily horizontal. A tunnel may be for foot or vehicle traffic, for rail traffic, or for a canal. Some tunnels are aqueducts to supply water for consumption or for hydroelectric stations or are sewers. A tunnel is relatively long and narrow; the length is often much greater than twice the diameter.

Some 3000 years ago, when our ancestors started discovering techniques of building stable and strong bridges, they also discovered a new way of connecting two points of land − tunnels. This discovery was initially used not for transport of goods and people across harsh terrains, but for defensive purposes in the vicinities of important military or royal posts (tunnels below castles). Babylonian and Persian architects were the first who saw the potential of large underground networks of tunnels. These irrigation tunnels were used to transport water underground through deserts, enabling life in some of the most hostile lands on planet. In Babylonia, royal families enjoyed fresh water from Euphrates that was delivered to them through incredibly built 900 m long tunnel that was lined with bricks.

Greeks and Romans took all the knowledge of Babylon and Ancient Egypt, and improved it. With tunnels they were able to transform marches, transport water through mountains, and create pedestrian tunnels through very harsh terrains. To this day historians wonder how much workforce was involved in the construction tunnel between Naples and Pozzuoli that was created around 36 BC. This incredible structure was 4800 foot long, 25 foot wide and 30 foot high, and it even had ventilation shafts. Less than 100 years later in 41 AD, Romans used around 30,000 workers to build even larger tunnel that was 5.6 km long.

In European Middle Ages, tunnels were almost exclusively used for mining or for military. After public transportation they finally started to grow under the affluence of Renaissance and trading with distant lands. Hundreds of smaller tunnels were created between mid-1600s and 19th century, but by then new driving force of tunnel construction came – railroads. This new form of transport soon enabled spreading of tunnels across entire world.

Choice of tunnels vs. bridges

Bridges usually require a larger footprint on each shore than tunnels. In areas with expensive real estate, such as Manhattan and urban Hong Kong, this is a strong factor in tunnels' favor. Boston's Big Dig project replaced elevated roadways with a tunnel system to increase traffic capacity, hide traffic, and redecorate.

Other reasons for choosing a tunnel instead of a bridge include avoiding difficulties with tides, weather and shipping during construction, aesthetic reasons (preserving landscape and scenery).

However, there are particular hazards with tunnels, especially from vehicle fires when combustion gases can asphyxiate users, as happened at the Gotthard Road Tunnel in Switzerland in 2001.

Comprehension

6. Answer the following questions.

1. What is a tunnel?

2. Is the length or diameter of a tunnel greater?

3. When were tunnels discovered?

4. What were tunnels initially used for?

5. Who was the first to notice the potential of tunnels?

6. What was the function of irrigation tunnels?

7. What was the function of tunnels in Middle Ages?

8. What form of transport enabled spreading of tunnels across the world?

9. What are the main reasons for choosing tunnels instead of bridges?

10. What hazards are there with tunnels?

7. **Say if the sentences are true or false.**

1. A tunnel is an underground or underwater passage that is primarily vertical.

2. Greeks were the first to see the potential of large underground networks of tunnels.

3. A tunnel may be only for vehicle traffic.

4. Some tunnels are aqueducts to supply water for consumption or hydroelectric stations.

5. Tunnels were initially used for transport of goods and people.

6. Irrigation tunnels were used to transport water through desserts.

7. Due to tunnels Greeks and Romans could transform marches and

create pedestrian tunnels through very harsh terrains.

8. In Middle Ages tunnels were used only for mining or military.

9. Railroads contributed to spreading of tunnels across the world.

10. Tunnels usually require a larger footprint on each shore than bridges.

11. Reasons for choosing a tunnel instead of a bridge include avoiding difficulties with tides, weather and shipping during construction, aesthetic reasons.

Vocabulary and Grammar

8. Match the synonyms.

1. supply	a. link
2. entire	b. impact
3. defensive	c. originally
4. vicinity	d. unbelievable
5. relatively	e. transfer
6. connect	f. protective
7. influence	g. deliver
8. transport	h. comparatively
9. initially	i. surroundings
10. incredible	j. whole

9. Give English equivalents of the following words and word combinations.

Гидроэлектростанции, предки, пешеходное движение или движение транспортных средств, дорогая недвижимость, железные дороги, поставлять воду, водосточные трубы, для оборонительных целей, перевозка товаров, распространение туннелей, средние века, рабочая сила, пешеходные туннели, увеличить пропускную способность, туннели через труднопроходимые местности, торговля с далекими краями, ирригационный туннель, выхлопные газы, новый способ соединения двух точек, вентиляционные шахты, надземные дороги.

10. Choose a word to put into each gap: *combustion, underwater, to transport, ancestors, hazards, mining, to transform, military, mountains, harsh terrains*.

1. A tunnel is an underground or _____ passage that is primarily horizontal.

2. Some 3000 years ago our _____ discovered a new way of connecting two points of land − tunnels.

3. Irrigation tunnels were used _____ water underground through deserts.

4. With tunnels, Greeks and Romans were able _____ marches, transport water through _____, and create pedestrian tunnels through very _____.

5. In European Middle Ages, tunnels were almost exclusively used for _____ or for _____.

6. There are particular _____ with tunnels, especially from vehicle fires when _____ gases can asphyxiate users.

11. Write the derivatives of the following words.

1. Some tunnels are aqueducts to supply water for _____. (CONSUME)

2. Tunnels were initially used for _____ purposes in the vicinities of important military or royal posts. (DEFEND)

3. The tunnel between Naples and Pozzuoli was created around 36 BC and it even had _____ shafts. (VENTILATE)

4. Romans used around 30,000 _____ to build a tunnel that was 5.6 km long. (WORK)

5. _____ tunnels were used to transport water underground through deserts. (IRRIGATE)

6. In European Middle Ages, tunnels were almost _____ used for mining or for military. (EXLUSIVE)

12. Find information about one ancient tunnel and describe it.

13. Find information about a modern tunnel and describe it.

Lesson 3

Pre-reading task

1. Read the words and learn them.

Explosive – взрывчатка
Tunnel drive – проходка туннеля
Drill and blast method – буровзрывной способ
Blast hole – скважина для взрывных работ
Bored tunnel – туннель, сооруженный щитовым способом
Cutter head – буровая (режущая) головка
Lining of the tunnel – обделка туннеля
Rear end – задняя часть
Shaft – шахта
Shallow tunnel – туннель мелкого заложения

Trench – котлован
Tunnel boring machine – бурильная установка для проходки туннелей
Cut-and-cover tunnel – туннель, сооруженный открытым способом
Shield – щит
Immersed tube tunnels – подводный туннель из опускных секций

2. Make up your own sentences with the words given above. Use as many words as possible.

3. Read these international words and try to guess their meaning.

Method, diameter, detonator, progress, minimize, type, mixture, component, material, element, segment, transport, vertical.

4. Before you start reading the text answer the following questions.

− Do you know how a tunnel is built?

− What are the purposes of tunnel construction?

5. Read and translate the text to learn more about the ways of tunnel construction.

Text 3

Methods of tunnel construction

The method of tunnel construction depends on such factors as the ground conditions, the ground water conditions, the length and diameter of the tunnel drive, the depth of the tunnel, the final use and shape of the tunnel.

Drill and Blast is one of the most widely used tunneling methods. It is used when the tunnels are in rock and involves the use of explosives. Explosives and timed detonators are placed in the blast holes. Once blasting is carried out, waste rocks and soils are transported out of the tunnel before further blasting.

Bored tunneling by using a Tunnel Boring Machine (TBM) is often used for excavating long tunnels. Tunnel Boring Machine (TBM) is specially designed for constructing tunnels which could perform different functions during tunneling works. With a large rotating steel cutter head at the front of the shield, TBMs can pass through different types of soil, rock or mixture of both. The TBM can excavate and remove excavated materials and at the same time install the reinforced concrete lining of the tunnel as it progresses. The use of TBM requires relatively less works area, thus minimizing the impact to the traffic of nearby area.

A shaft is built for delivering the components of the TBM from ground

level to the tunnel level for assembly. As the TBM pushes forward, the excavated materials will be transported to the rear end of the TBM for removal through the vertical shaft.

Shallow tunnels are often of the cut-and-cover type, while deep tunnels are excavated often using a tunneling shield. For intermediate levels, both methods are possible.

Cut-and-cover is a simple method of construction for shallow tunnels where a trench is excavated and roofed over to carry the load of what is to be built above the tunnel. Strong supporting beams are necessary to avoid the danger of the tunnel collapsing.

There are also several approaches to underwater tunnels, the two most common being bored tunnels or immersed tubes.

Immersed tube construction of underwater tunnels will have its elements built separately in a dry dock or shipyard. These elements are then taken to the site where a trench has already been made under the water to receive them. The segments are then immersed in the water and then joined each other to form the tunnel.

Costs for immersed tube tunnels are considerably lower than those involved in boring a tunnel beneath the water. The speed of construction is also greater, mainly because activities are simultaneously carried out for almost the entire length of the tunnel.

Comprehension

6. Answer the following questions.

1. What are the main factors on which methods of tunnel construction depend?
2. What method is applied when tunnel is in rock?
3. What method is preferred for excavating long tunnels?
4. What does drill and blast method use?
5. What is the function of a tunnel boring machine?
6. Where is cut-and-cover method applied?
7. Why are supporting beams necessary in the case of cut-and-cover method?
8. What are the peculiarities of an immersed-tube method?

7. Say if the sentences are true or false.

1. The two most common methods of underwater tunneling are cut-and-cover and drill and blast.
2. The elements of immersed tube construction are built in the shipyard.

3. Cut-and-cover method uses explosives in the process of tunneling.

4. Tunnel boring machines can pass through both rock and soil.

5. For intermediate level of depth cut-and-cover method is applicable.

6. The main function of a shaft is delivering the components of the tunnel-boring machine from ground level to the tunnel level.

7. Tunneling shield is used for the construction of shallow tunnels.

8. In the case of immersed tube tunnels activities are simultaneously carried out for almost the entire length of the tunnel.

8. Discuss the methods of tunnel construction and find the examples to each method.

Vocabulary and Grammar

9. Give English equivalents of the following words and word combinations.

Выполнять различные функции, для сборки, туннель мелкого заложения, скважина для взрывных работ, железобетонная обделка туннеля, минимизировать воздействие, оба метода, задняя часть бурильной установки, глубокие туннели, использование взрывчатки, опорные балки, разрушение туннеля, подводный тоннель из опускных секций, одновременно, доставка компонентов, котлован, различные типы почвы, относительно, простой метод строительства, извлеченный грунт, избегать опасность, несколько подходов, значительно ниже.

10. Using the vocabulary of Text 3 match the words to get the correct word combinations.

1. tunnel	a. hole
2. ground	b. construction
3. rear	c. drive
4. nearby	d. level
5. blast	e. tube
6. reinforced	f. shaft
7. immersed	g. water
8. intermediate	h. area
9. speed of	i. end
10. vertical	j. concrete

11. Put the steps of cut-and-cover construction in the right order.

1. Services like water pipes and electricity and communication cables are moved away from the tunnel route.

2. The tunnel is opened to traffic.

3. Surveyors mark out the route the tunnel will take and, in particular, the lines the tunnel walls will take.

4. Cranes and excavators arrive on site and build the walls of the tunnel.

5. The floor of the tunnel is built, and anchored into the bedrock below.

6. Excavators remove the dirt and rock from between the walls.

7. The tunnel services are installed including lights, fire protection systems, emergency exits and ventilation fans.

8. The roof beams are installed between the walls to hold them in place.

12. Fill in the gaps using the following words: *cut-and-cover, hard rock, blast, tunnel boring machines, trench, immersed tube tunnel, ground, shafts, underwater, sizeable.*

1. Before building a tunnel it is important to examine the conditions and type of _____ and groundwater.

2. Tunnels are dug in types of materials varying from soft clay to _____.

3. A _____ is excavated with ground support as necessary and the tunnel is constructed in it.

4. Are the main entrance in and out of the tunnel until the project _____ is completed.

5. The world's oldest _____ tunnel is the Terelek kaya tüneli under Kızıl River in Turkey.

6. Seven _____ will be used to construct the tunnels for SCL project.

7. A 1.3km SCL cross-harbour tunnel across Victoria Harbour will be built by using _____.

8. _____ is a method of tunnel construction where a trench is excavated and roofed over.

9. The first _____ tunnel in soft ground was the Tronquoy tunnel (туннель Тронкуа) on the St Quentin canal in France in 1803.

10. Before the advent of tunnel boring machines, drill and _____ was the only economical way of excavating long tunnels through hard rock, where digging is not possible.

13. Translate the sentences from Russian into English using the vocabulary of Unit 2.

1. Туннели строятся как для пешеходов, так и для транспортных средств.

2. До начала строительства туннелей важно исследовать грунтовые воды и тип почвы.

3. Первый в мире железнодорожный туннель был построен на участке Ливерпуль − Манчестер в Великобритании в 1826–1830 годах.

4. Туннель является одним из древнейших изобретений человечества наряду с мостом.

5. Буровзрывной метод строительства туннелей использовался еще до появления буровых машин.

6. Существуют также так называемые экологические туннели, которые прокладываются под автомобильными или железными дорогами, чтобы животные могли безопасно перемещаться.

7. В раннее Средневековье туннели строились редко и в основном в военных целях.

8. Основная часть метро также проложена в виде туннелей.

9. Самым длинным автомобильным туннелем в России является Гимринский туннель (4303 м), расположенный в Дагестане.

10. Туннели играют важную роль в развитии инфраструктуры современных городов, но в то же время они являются зоной опасности. Туннели под водой часто строят вместо мостов там, где мосты мешают проходу судов.

11. Обделка является важнейшим элементом туннеля, которая обеспечивает гидроизоляцию туннеля.

12. Проходка туннелей является одним из самых сложных видов строительных работ.

UNIT 3

CONSTRUCTION

Lesson 1

Pre-reading task

1. Read the words and learn them.

Dwelling – жилище
Primitive man – первобытный человек
Cave – пещера
To shelter – укрываться
Hut – хижина
The branches of trees – кроны деревьев
The Ice Age – ледниковый период
The Old Stone Age – каменный век
To feel a need – чувствовать потребность
Pole – столб, шест, жердь

Courtyard – внутренний двор
Covered walk – аллея
Pillar – колонна, столб
Quarter – помещение
Wicker basket work – плетение из прутьев
To plaster – штукатурить
Clay – глина
Hearth – очаг
Mud – глинистая масса
On the other hand – с другой стороны
Castle – за́мок
Huge – огромный
Therefore – поэтому
At least – по крайней мере

2. Make up your own sentences with the words given above. Use as many sentences as possible.

3. Read these international words and try to guess their meaning.

Modern, construction, industrial, activities, primitive, decoration, model, historic, finish, typical, column, centre, cultural, origin.

4. These words can be used both as verbs and nouns. Make up your own sentences to show the difference in their usage.

Branch, pole, plaster, cover, shelter, attack, paint, need, finish, walk.

5. Read and translate the text to learn more about the history of human dwelling.

Text 1

From the history of human dwelling

Most of the time of a modern man is spent within the walls of some buildings. Houses are built for dwelling. Large buildings are constructed for industrial purposes. Theatres, museums, public and scientific institutions are built for cultural activities of the people. The purpose of modern buildings differs widely but all of them originate from the efforts of primitive men to protect themselves from stormy weather, wild animals and human enemies.

Protection was looked for everywhere. In prehistoric times men looked for protection under the branches of trees. Some covered themselves with skins of animals to protect themselves from cold and rain but others settled in caves.

When the Ice Age had passed, Europe remained very cold, at least in winter, and so the people of the Old Stone Age had to find some warm and dry place to shelter from bad weather. They chose caves, dwelling places that storm and cold could not destroy. On the walls of their caves ancient people painted pictures. Such decorated caves are found in Europe, Asia and Africa.

When man began to build a home for himself, caves were imitated in stone structures. Trees were taken as a model for huts built of branches. Skins were raised on poles and formed tents.

Primitive stone structures, huts, and tents are the earliest types of human dwellings. They were lost in the prehistoric past but serve as prototypes for structures of later historic times.

In the country ordinary people lived in simple one-storey cottages which did not differ much from the mud and stone huts of an earlier age. The rich people in the country, on the other hand, built huge castles with thick walls and narrow windows. These castles were built not only as dwellings, but also to stand up to enemy attack and to be strong bases in time of war.

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

The earliest houses of which something is known are those of ancient Egypt. They were built of bricks dried in the sun. Some of them were built around a courtyard or garden with rooms opening into it.

Greek houses, too, had a courtyard in the middle and round their courtyard ran a covered walk, its ceiling supported by pillars. There were special women's quarters, usually upstairs on the second storey.

In Rome bricks were used for building and houses were often finished with plaster over bricks on both inside and outside walls. The centre of family life was a garden-courtyard, surrounded by columns and with rooms opening out into it.

The earliest houses in Britain were round, built of wood or wicker basket work plastered over with clay. In the centre of the house there was a

hearth and light came in through the hole in the roof above it and through the door because there were no windows.

Comprehension

6. Answer the following questions.

1. Where does a man spend most of the time?
2. What buildings are built for cultural activities of the people?
3. Why did primitive men build their houses?
4. Where did primitive men look for protection?
5. What was the weather like after the Ice age?
6. What was taken as a model for huts built of branches?
7. What is the earliest type of human dwelling?
8. What was lost in the prehistoric past?
9. Where did people live in the country?
10. What did rich people build in the country?
11. When did a man feel a need to have a number of different kinds of houses in one place?
12. Why was it necessary to build higher houses in towns than in countries?
13. What was a typical town house like?
14. What material did ancient people use in Egypt for building?
15. What were the houses like in Greece?
16. What materials were used in Rome?
17. Were the earliest houses in Britain small?
18. How did the light come into early English houses?

7. Agree or disagree with the following statements?

1. Most of the time of a modern man is spent abroad.
2. Large buildings are constructed for rich people.
3. In prehistoric times men looked for protection in the open air.
4. On the walls of their caves ancient people raised skins of wild animals to be warm.
5. In the country ordinary people lived in simple one-storey cottages.
6. The rich people in the country built huge castles with thick walls and narrow windows.
7. In the days of early civilization people began to feel a need to have a number of different kinds of houses in one place.
8. People built houses higher in the towns than in the villages because they were richer.

9. A typical house was very simple with many rooms.

10. In ancient Egypt the houses were built from stone.

11. Greek houses had a courtyard in the middle and round their courtyard ran a covered walk.

12. In Rome bricks were used for building.

13. The earliest houses in Britain were round, built of stone.

8. Complete the sentences according to the text.

1. _____ are built for cultural activities of the people.

2. In prehistoric times men looked for _____.

3. The people of the Old Stone Age had to _____ from bad weather.

4. On the walls of their caves ancient people _____.

5. _____ were taken as a model for huts built of branches.

6. Primitive stone structures, huts, and tents are _____.

7. In the days of early civilization, when men had learnt how to build simple houses for their families, _____.

8. At first, the difference was mainly in size: _____ than the rest of the people.

9. The streets in towns were very narrow and ____.

10. A typical town house consisted of _____.

11. In ancient Egypt the earliest houses were built around a courtyard or _____.

12. Greek houses, too, had a courtyard in the middle and _____.

13. In Rome bricks were used for building and houses were often finished with _____.

14. The earliest houses in Britain were _____.

15. In the centre of the house there was _____.

Vocabulary and Grammar

9. Give English equivalents of the following words and word combinations.

Намного позже, хижина, внутри и снаружи, для промышленных целей, научные институты, Древний Египет, под солнцем, в доисторические времена, шкуры животных, защититься от холода и дождя, аллея, теплое и сухое место, толстые стены, греческие дома, узкие окна, типичный городской дом, в центре дома, пещера, товары, центр семейной жизни, окруженный колоннами, внутренний двор, современный человек.

10. Combine the words with the help of the preposition *of*.

Translate these word combinations.

1	the walls		A	trees
2	cultural activities		B	the caves
3	the purpose		C	human dwelling
4	the efforts		D	war
5	the branches		E	some building
6	skins		F	wood
7	walls		G	primitive men
8	huts built	of	H	animals
9	the earliest types		I	houses
10	structures		J	the people
11	in time		K	family life
12	the days		L	modern buildings
13	different kinds		M	branches
14	the centre		N	early civilization
15	to build		O	later historic times

11. Write the derivatives of the following words.

1. Theatres, museums, public and _____ institutions are built for _____ activities of the people. (SCIENCE, CULTURE)

2. Modern buildings _____ from the efforts of primitive men to protect themselves from _____ weather, wild animals and human enemies. (ORIGIN, STORM)

3. In _____ times men looked for _____ under the branches of trees. (HISTORIC, PROTECT)

4. A _____ town house consisted of a shop opening on the street where the man did his work or sold his goods, with a kitchen behind and a bedroom above.(TYPE)

5. When men had learnt how to build simple houses for their families, they began to feel a need to have a number of _____ kinds of houses in one place. (DIFFER)

6. In Rome bricks were used for _____. (BUILD)

7. The centre of family life was a garden-courtyard, _____ by columns and with rooms opening out into it. (ROUND)

12. Fill in the gaps with the necessary prepositions.

1. Houses are built _____ dwelling.

2. In prehistoric times men looked _____ protection under the branches of trees.

3. _____ the walls of their caves ancient people painted pictures.

4. Much later, when men began to build towns, there grew up a difference _____ town houses and country houses.

5. In the country ordinary people lived _____ simple one-storey cottages.

6. The rich people _____ the country built huge castles _____ thick walls and narrow windows.

7. A typical town house consisted _____ a shop, a kitchen and a bedroom.

8. In the centre _____ the house there was a hearth and light came in _____ the hole in the roof above it.

13. Make the plural.

An enemy, an animal, a picture, a man, a cave, a woman, a family, a wall, a branch, a hut, a house.

14. Fill in the table with the degrees of comparison of the following adjectives. Translate them into Russian.

Positive	Comparative	Superlative
modern		
wild		
	worse	
		the earliest
different		
	richer	
dry		
		the warmest

Lesson 2

Pre-reading task

1. Read the words and learn them.

To depend on – зависеть от
Convenient – удобный
To arouse one's wonder – приводить в восхищение
To remain – оставаться
To have something at hand – иметь что-то под рукой
To be engaged – быть занятым (вовлеченным)
To exist – существовать
To serve as – служить в качестве чего-то
Flat – плоский

Slanting – покатый
Instead of – вместо
Improved – улучшенный
To flourish – расцветать
Thick – толстый
Invasion – нашествие
To manufacture – производить
Advanced – прогрессивный
To assemble – собирать
Site – площадка
Residential – жилой, жилищный
Unskilled – неквалифицированный
Former – бывший
To place – класть
To hoist – поднимать
Gantry-crane – портальный кран
Plumber – сантехник
Reinforced concrete – армированный бетон
Precast concrete – железобетон
To be in great use – широко использоваться
Prefabricated units – сборные конструкции

2. Make up your own sentences with the words given above. Use as many sentences as possible.

3. Read these international words and try to guess their meaning.

Climate, material, region, standard, construction, monument, sphinxes, column, pyramid, tourists, method, industrial, traditional, crane, bulldozer, excavator, decorative.

4. These words can be used both as verbs and nouns. Make up your own sentences to show the difference in their usage.

Part, cover, dry, place, change, manufacture, rain, paint, affect, flourish, hoist.

5. Read and translate the text to learn more about construction.

Text B

Construction

Man has always been a builder. The kind of house he built in the beginning depended on the climate, on his enemies and on the building

material at hand. The first houses in many parts of the world were made of wood, for in those days the greater part of the earth was covered with forests. In other regions the most convenient building material was stone. Although houses were built without cement, the remains of a few of them still exist.

The ancient Egyptians built very simple houses by present standards. Having dried the bricks in the sun they put up four walls and above these they placed a flat roof. The roof was flat because there was very little rain in Egypt. Although their buildings were simple in construction, the Egyptian art of building was very beautiful. Their pyramids and monuments, sphinxes and palaces arouse our wonder to this day.

The first lessons in the art of making columns were given to the world in ancient Egypt.

In our country architecture flourished for the first time in Kiev Russ. Unfortunately, only a few of the church buildings of that period have remained. The churches of the time were strong buildings with thick walls and small windows. They often had to serve as fortresses during enemy invasions. Tourists from all over the world come to see the famous Cathedral of St. Sophia in Polotsk the cornerstone of which was laid in 1037 to commemorate the victory over the Pechenegs.

Since then the architecture and structural materials have been greatly changed. A very advanced construction technique today is the use of precast concrete. According to this method the reinforced concrete units are manufactured at a factory and are then simply assembled at the construction site. This method helped our country to restore its economy after the Second World War, when many residential as well as industrial buildings were destroyed.

The first blocks made of prefabricated units appeared in the villages in the Volgograd and Moscow regions.

At present, the building industry is the largest in Belarus and it holds an important place in the National Economy of our country. Many highly-educated civil engineers, who are trained at Belarusian universities, skilled and unskilled workers are engaged in construction. Builders use many new materials such as reinforced concrete, precast concrete, light weight concrete, gas concrete, many decorative materials, oil paints, wall paper. Synthetics are among them. Such traditional materials as stone, brick, wood are in great use as well. Various elements and components are assembled on the site.

Now everywhere in Belarus vibro-rolled panels are being widely used in

construction. The assembly method is developing into the main method of apartment and industrial construction.

All the working processes are mechanized. Modern construction can't be imagined without building machinery. Lorries, cranes, bulldozers, excavators are available at all construction sites of Belarus. Prefabricated structures are transported by lorries and immediately hoisted into position. Finished blocks of prefabricated flats with interior decoration are assembled on many construction sites. Transport brings a complete flat to the prepared foundations of a building. A powerful gantry-crane lifts the 18–20 ton flat and carefully sets it on the foundation. After the final inspection, electricians, plumbers and gasmen can begin their work.

As a result our country builds more than any other country of the former Soviet Union. Thanks to special government's programmes thousands of Belarusian people get flats every year. Flats have all modern conveniences, such as hot and cold water supply, central heating, lifts, ventilating plants, etc.

The building industry is paid much attention in our country as it affects greatly the general level of living.

Comprehension

6. Answer the following questions.

1. What did the kind of house depend on?
2. What materials were the first houses made of? Were they strong?
3. What country was the first to use brick to build houses?
4. What houses were built in ancient Egypt?
5. Why did Egyptians use a flat roof?
6. What arouse our wonder to this day?
7. Where were given the first lessons in the art of marking columns?
8. Where did architecture flourish for the first time in our country?
9. In what way can you describe the churches of the old time?
10. What purposes did they often serve?
11. What do tourists from all over the world come to see?
12. What new materials help to speed up the rate of building?
13. What method helped our country to restore its economy after the Second World War?
14. Who are engaged in construction nowadays?
15. What new materials are used by our builders?
16. Do they use any traditional materials?

17. What sort of panels is being widely used in construction in our country?

18. What is the main method of apartment and industrial construction?

19. What machines are used at all construction sites?

20. Where are the finished blocks of prefabricated flats with interior decoration assembled?

21. With the help of what a complete flat brings to the prepared foundations of a building?

22. What is the role of a powerful gantry-crane?

23. Who begins to work after the last inspection?

24. Why is the building industry paid great attention in our country?

7. Say if the sentences are true or false.

1. Man has always been an inventor.

2. The kind of house he built in the beginning depended on his mood.

3. In some regions the most convenient building material was wood.

4. The ancient Egyptians built very fantastic houses.

5. The Egyptian art of building was very beautiful.

6. The first lessons in the art of marking columns were given to the world in ancient Greece.

7. The churches of the time were small buildings with thin walls and without windows.

8. These churches had to serve as dwellings for the poor people.

9. Since the old times the architecture and structural materials were not changed.

10. A very advanced construction technique today is the use of timber.

11. The first blocks made of prefabricated units appeared in the villages in the Vitebsk and Minsk regions.

12. At present, the building industry is the largest in Belarus.

13. Many highly-educated civil engineers, who are trained abroad, are engaged in construction.

14. Synthetics are greatly used in construction.

15. Various elements and components are assembled at the plants.

16. Our builders do not use such traditional materials as stone, brick and wood.

17. Prefabricated structures are transported by gantry-cranes.

18. Lorries, cranes, bulldozers, excavators are available at all construction sites of Belarus.

19. After the final inspection, engineers, electricians and architects can finish their work.

20. The building industry is not paid much attention in our country.

8. Choose the best alternative according to the text.

1. The kind of house a man built many years ago depended on _____.

a) the climate, on his enemies and on the building material at hand;

b) the weather, on his family and on the building material at hand;

c) the climate, on the surroundings and on the money he had.

2. The greater part of the earth was covered with forests that's why _____.

a) the first houses in many parts of the world were made of wood;

b) all the houses in many parts of the world were built in the forests;

c) the first houses were built near these forests.

3. The ancient Egyptians put up four walls and _____.

a) above these they placed a decorative roof;

b) above these they placed a straight roof;

c) above these they placed a flat roof.

4. The roof was flat because _____.

a) there was very little rain in Egypt;

b) it looked very nice;

c) it was very hot in Egypt.

5. The first lessons in the art of marking columns _____.

a) were given to the world in ancient Greece;

b) were given to the world in ancient Egypt;

c) were given to the world in ancient Russia.

6. The churches of that time were _____.

a) small buildings with thin walls and round windows;

b) strong buildings with high walls and big windows;

c) strong buildings with thick walls and small windows.

7. The churches often had to _____.

a) serve as fortresses during enemy invasions;

b) serve as dwellings to poor people;

c) serve a place for meetings.

8. A very advanced construction technique today is _____.

a) the use of prefabricated units;

b) the use of precast concrete;

c) the use of a reinforced concrete and wood.

9. According to the modern method the reinforced concrete units _____.

a) are assembled at a building plant;

b) are manufactured at a factory;

c) are produced at a construction site.

10. Such traditional materials as stone, brick, wood are _____.

a) in great use nowadays;

b) used only to build small houses;

c) used as secondary materials.

11. Modern construction can't be imagined _____.

a) without prefabricated units;

b) without skillful workers;

c) without building machinery.

12. Prefabricated structures are transported by lorries and ...

a) immediately hoisted into position;

b) hoisted by a big crane;

c) hoisted into position with the help of modern mechanisms.

13. _____ electricians, plumbers and gasmen can begin their work.

a) After the final inspection;

b) After the house is built;

c) After the final cleaning the territory.

14. _____ thousands of Belarusian people get flats every year.

a) Thanks to good work of our builders;

b) Thanks to the good usage of modern methods of building;

c) Thanks to special government's programmes.

15. The building industry is paid much attention in our country as _____.

a) it is of great importance for everybody;

b) it gives possibility to get new flats for people;

c) it affects greatly the general level of living.

Vocabulary and grammar

9. Say the same in English.

Уделять много внимания, сборные конструкции, строительный материал, плоская крыша, церкви, жилые и промышленные здания, газобетон, сантехники, электрики, современные удобства, центральное отопление, строительные участки, водоснабжение, уровень жизни, газовики, архитектура, древние египтяне, дворцы, вражеское вторжение, толстые стены, инженеры-строители, армированный бетон.

10. Combine the words with the help of the preposition *of*.

Translate these word combinations.

1	the kind		A	time
2	were made		B	Belarusian people
3	the greater part of		C	prefabricated flats
4	a few		D	wood
5	the Egyptian art		E	precast concrete
6	art		F	house
7	the churches	of	G	our country
8	cathedral		H	the earth
9	the use		I	making columns
10	the National Economy		J	them
11	thousands		K	living
12	the general level		L	St. Sophia
13	blocks		M	building

11. Make up the sentences.

1. Has / man / always / a / been / builder.
2. Parts / in / made of wood / were / of the world / the first houses / many.
3. Roof / Egypt / the / was / flat / in.
4. Egyptian / the / art / building / beautiful / was / very / of.
5. The / industry / building / Belarus / the largest / in / is.
6. Modern / imagined / without / building / can't be / machinery construction.
7. Thousands / every / of / get / Belarusian / flats / people / year.
8. All / flats / nowadays / have / conveniences / modern.

12. Write the derivatives of the following words.

1. _____ pyramids and monuments, sphinxes and palaces arouse our _____ to this day. (EGYPT, WONDERFUL)
2. The churches of that period were strong _____ with thick walls and small windows. (BUILD)
3. In our country _____ flourished for the first time in Kiev Russ. (ARCHITECT)
4. During the Second World War many _____ as well as industrial buildings were destroyed. (RESIDENT)
5. Such _____ materials as stone, brick, wood are in great use as well. (TRADITION)
6. The building industry holds an important place in the _____ Economy of our country. (NATION)

7. Modern construction can't be imagined without building _____. (MACHINE)

8. Thanks to special _____'s programmes thousands of Belarusian people get flats every year. (GOVERN)

13. Choose a word to put into each gap: ***prefabricated structures, fortresses, columns, the bricks, the building industry, precast concrete, wood, unskilled, thick walls, plumbers, cement, civil, building material.***

1. The first houses in many parts of the world were made of _____.
2. In some regions the most convenient _____ was stone.
3. Although houses were built without _____, the remains of a few of them still exist.
4. Having dried _____ in the sun Egyptians put up four walls, and above these they placed a roof.
5. The first lessons in the art of marking _____ were given to the world in ancient Egypt.
6. The churches of the time were strong buildings with _____ and small windows.
7. The churches of that period often had to serve as _____ enemy invasions.
8. A very advanced construction technique today is the use of _____.
9. Many highly-educated _____ engineers, skilled and _____ workers are engaged in construction.
10. _____ are transported by lorries and immediately hoisted into position.
11. After the final inspection, electricians, _____ and gasmen can begin their work.
12. _____ is paid much attention in our country as it affects greatly the general level of living.

14. Fill in the chart using the text.

Building Materials	**Actions**	**Structures**	**Professions**	**Machinery**

Lesson 3

Pre-reading task

1. Read the words and learn them.

A lot – участок земли (амер.)
To check – проверять
To permit – разрешать
Frame – каркас, корпус, станина
Footing – нижняя часть фундамента
To supervise – руководить
To bolt – скреплять, закреплять
Sill – лежень
Joist – брус
Beam – балка, перекладина
Midway – середина расстояния
Plywood – фанера
To nail – прибивать (гвоздями)
Lumber – лесоматериал
Stud – стойка
Plate – пластина, планка
Carpenter – плотник
To brace – скреплять
Sheathing – обшивка, опалубка
Fiberboard – древесно-волокнистая плита (ДВП)
Plasterboard – гипсокартон
To tack – соединять
Tar paper – рубероид
Siding – обшивка, облицовка
Slanted – наклонный, скошенный
Rafter – стропило
Ridgeboard – коньковый брус (на крыше)
Ridge – конек
Shingle – кровельная плитка
Flashing – слив, фартук (элементы кровли)
Chimney – дымоход
Slate – сланец
To insulate – изолировать, защищать
Around which – вокруг которой

To place directly – непосредственно присоединить
About midway – примерно в середине
At the top of smth – на верху чего-то
A building felt – строительный тряпичный картон (войлок)
To prevent smth from smth – предотвращать что-то от чего-то

2. Make up your own sentences with the words given above. Use as many words as possible.

3. These words can be used both as verbs and nouns. Make up your own sentences to show the difference in their usage.

Nail, brace, tack, place, step, check, design, bolt, run, support, lift, weight.

4. Read these international words and try to guess their meaning.

Architect, construction, horizontal, vertical, metal, aluminium, material, contract, asphalt, person, consult, expert, zone, specification, information, code, skeleton, idea, form, design.

5. Translate the words into Russian.

To build – building; to buy – buyer; to know – knowledge; to construct – construction; to specify – specification; to inform – information; to found – foundation; to insulate – insulation.

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

Text 3

Building a house

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

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

The frame is the skeleton around which the rest of the house is built.

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

The sheathing or inner layer of the outside wall may be wood, fiberboard, or plasterboard nailed to the studs. Sometimes builders tack tar paper to the sheathing before adding the siding or outer layer. Siding may be aluminium, brick, stone, or wood placed directly over the sheathing or tar paper.

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

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

Comprehension

1. Choose the best alternative according to the text.

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

a) he or she must have enough money;

b) he or she must first select some partners;

c) he or she must first select a lot or piece of land.

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

a) The architect fulfils all the documents;

b) The architect designs the house;

c) The lawyer chooses everything necessary.

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

a) agreements for building the house;

b) documents selected by the lawyer;

c) specifications and blue prints.

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

a) size, materials, and how the house is to be built;

b) qualification of the workers who will build the house;

c) money which is necessary to pay.

5. The frame is the skeleton _____.

a) around which all the works are organized;

b) around which the rest of the house is built;

c) which is the main part of the house.

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

a) after the footings and foundation have been formed;

b) after they are asked to do this;

c) before the footings and foundation have been formed.

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

a) 17 inches (41 centimeters) apart;

b) 16 inches (42 centimeters) apart;

c) 16 inches (41 centimeters) apart.

8. A joist runs from one sill and joins with another _____.

a) joist from the nearest sill;

b) plate from the opposite sill;

c) joist from the opposite sill.

9. Floor boards or plywood _____ make the bottom layer of the floor.

a) covered the top of the joists;

b) nailed on the top of the joists;

c) nailed on the bottom of the joists.

10. _____ separately before attaching it to the sill.

a) Carpenters assemble and nail together each wall frame;

b) Carpenters select and paste together each wall frame;

c) Builders assemble and nail together each wall frame.

11. The sheathing or inner layer of the outside wall _____ nailed to the studs.

a) may be wood, fiberboard, or plasterboard;

b) may be cement, fiberboard, or plasterboard;
c) is necessary to be wood, fiberboard, or plasterboard.
12. _____ before adding the siding or outer layer.
a) Obligatory builders tack tar paper to the sheathing;
b) Sometimes builders tack tar paper to the sheathing;
c) Sometimes builders tack clay to the sheathing.
13. Siding may be aluminium, brick, stone, or wood placed _____.
a) directly above the fiberboard or tap paper;
b) directly over the sheathing or tar paper;
c) at the sides of the walls.
14. The roof seals the top of the house, they may be _____.
a) flat, but most are slanted;
b) only slanted;
c) slanted, but most are flat.
15. Slanted roofs are often formed by _____.
a) pieces of plasterboard called sills;
b) plates of tar paper called rafters;
c) pieces of lumber called rafters.
16. Rafters support the weight of the roof just as _____.
a) beams support the weight of the whole house;
b) studs support the weight of the floor;
c) joists support the weight of the floor.
17. After carpenters nail sheathing to the tops of the rafters, _____.
a) they finish their work and declare about it to a master;
b) they add heavy building paper or building felt to it;
c) they add tar paper or shingle to it.
18. Flashings or trips of sheet metal, placed around the chimney and other roof openings, _____.
a) prevent water from leaking into the house;
b) prevent mud and clay from coming into the house;
c) make the roof not dangerous for living.

2. Answer the following questions.

1. What is necessary to do first if you decide to build a house?
2. Whom is necessary to consult with?
3. Why is it necessary to consult with an expert?
4. What protects the buyer in both the present and the future?
5. Who designs the house, according to the buyer's ideas?
6. Why is it important to sign the contract between the builder and the buyer?

7. Who supervises the construction of the house?
8. What is the frame?
9. When do workers bolt wooden sills or base plates to the foundation?
10. What supports the outside walls?
11. What runs from one sill?
12. What is called studs?
13. What do carpenters do?
14. What materials are used sheathing or inner layer of the outside wall?
15. What materials re used for siding?
16. What seals the top of the house?
17. What is the form of the roofs?
18. Where do carpenters nail the bottom ends of the rafters?
19. What supports the weight of the roof and the floor?
20. What is placed around the chimney and other roof openings?

3. Say if the sentences are true or false?

1. If person decides to build a house, it is necessary to have money.
2. The next step is to consult an architect or builder.
3. The architect designs the house, according to the buyer's ideas.
4. The architect also supervises the construction of the house.
5. The sill is the skeleton around which the rest of the house is built.
6. The sills support the outside walls.
7. Carpenters assemble all parts of the house.
8. Sometimes builders tack decorative paper to the sheathing before adding the siding or outer layer.
9. The roof seals the top of the house.
10. Roofs are always flat.
11. Flat roofs are called rafters.
12. Rafters support the weight of the floor.
13. At the end carpenters add the final layer of asphalt or slate shingles, or roofing asphalt.

Vocabulary and grammar

4. Give the English equivalents to the following words and word combinations.

План, стоимость дома, договор между застройщиком и покупателем, архитектор, каркас, фанера, кровельная плитка, обшивка, основная опорная балка, дымоход, прибивать, контролирует строительство дома, фундамент, достаточно прочный, конструкция,

верхний край крыши, внешняя стена, рубероид, скошенная крыша, вес пола, вес крыши, кровельный, полосы из листового метала, предотвращают попадание воды в дом, древесина, дюймы, местные законы о зонировании.

5. Combine the words with the help of the preposition *of*. Translate these word combinations.

1	knowledge	of	A	factories
2	the construction		B	the outside wall
3	the value		C	the joists
4	top		D	the roof
5	the bottom layer		E	the floor
6	vertical pieces		F	lumber
7	inner layer		G	the house
8	the bottom ends		H	asphalt
9	the ridge		I	the rafters
10	the weight		J	these codes
11	the final layer		K	sheet metal
12	strips		L	the floor

6. Use the derivatives of the following words.

1. The _____ designs the house, according to the buyer's ideas. (ARCHITECTURE)
2. The expert will check local zoning laws and _____, building and plumbing codes. (ELECTRICITY)
3. _____ of these codes protects the buyer in both the present and the future. (KNOW)
4. The architect makes specifications and blue prints that become the basis for the contract between the builder and the _____. (BUY)
5. All the outside walls are nailed together and braced _____. (PERMANENT)
6. _____, or strips of sheet metal, insulate the roof from the chimney and also prevent water from leaking into the house. (FLASH)
7. The zoning law in the area may permit the _____ of factories near the new house. (CONSTRUCT)
8. Carpenters add the final layer of asphalt or slate shingles, or _____ asphalt. (ROOF)

7. Choose a word to put into each gap.

Insulate frame joists walls prevent solid architect vertical slanted horizontal tar paper roof support

1. The _____ supervises the construction of the house.
2. The _____ is the skeleton around which the rest of the house is built.
3. The sills support the outside _____.
4. The structure is _____ enough to hold the wall frames of the house.
5. Wall frames include _____ pieces of lumber called studs and _____ pieces called plates.
6. Sometimes builders tack _____ to the sheathing before adding the siding or outer layer.
7. The _____ seals the top of the house.
8. _____ roofs are often formed by pieces of lumber called rafters.
9. Rafters _____ the weight of the roof.
10. _____ support the weight of the floor.
11. Flashings _____ the roof from the chimney and also _____ water from leaking into the house.

8. Make the plural.

An inch, a roof, a wall, a house, a piece, an expert, an idea, a worker, a factory, a layer, a beam, a plate, a chimney.

9. Give the missing forms of the verbs. Translate the verbs.

	V_1	**V_2**	**V_3**	**Translation**
1			made	
2		built		
3	support			
4		protected		
5		became		
6	hold			
7			run	
8		met		
9			checked	

UNIT 4

BUILDING CONSTRUCTION

Lesson 1

Pre-reading task

1. Read the words and learn them.

To lean – наклоняться
Sinking – опускание
Unevenly – неравномерно
To topple – падать
To entail – предусматривать
Trial – пробный
Pit – карьер
Undisturbed – цельный, неповрежденный
To forecast – предвидеть
Shift – изменение
Hollow – пустой
Pile – столб
Load – нагрузка
Shaft – шпиндель
To float – поддерживать на поверхности
To grip – крепко держать
To bore – бурить
Ironstone – железная руда, бурый известняк
Flotation – флотация
Plant – установка
Chamber – отсек
Basement – цокольный этаж, подвальное помещение
Slab – плита
Filler – заполнитель
To lay the foundation of smth – заложить фундамент
To press down – прижимать
To begin with – для начала
By examining smth – путем исследования чего-либо
To come to the decision – принять решение
Moistureproof paper – влагонепроницаемая (влагоустойчивая) бумага

2. Make up your own sentences with the words given above. Use as many sentences as possible.

3. Read these international words and try to guess their meaning.

Press, engineer, structure, perpendicular, balance, mechanics, problem, construction, column, garage, granite, bulldozer.

4. These words can be used both as verbs and nouns. Make up your own sentences to show the difference in their usage.

Lean, press, shift, weigh, sink, design, balance, compress, load, bore, study, bear, pit, aim, plant.

5. Read and translate the text and try to explain the problem of foundations.

Foundations

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

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

First construction workers begin excavating, or digging holes or trenches for the footings, the lowest part of the foundation. Trial pits are dug, or holes are bored, in order to collect undisturbed samples of earth from various depths. By examining these, the engineer can forecast the probable shifts in the earth during and after building, according to the sort of foundation he designs. Thus he comes to the most important decision of all in the building's construction: he decides whether the earth is of the type that can best support each column on a separate solid block, or whether he

must aim at lightness and, as it were, "float" the building on hollow foundations.

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

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

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

Only about 40 per cent of the houses, built today, have basements. In many low or damp regions, houses are raised above the ground on concrete piers, or supports.

Sometimes a slab foundation is laid directly on the ground, especially if the earth beneath a house is hard. The ground must first be leveled. Workers then spread a filler, usually stone, and cover it with a moistureproof paper. The filler and the paper prevent moisture from coming through the slab that is made by pouring concrete, about 4 inches (10 centimeters) thick, directly on top of the paper.

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

Comprehension

6. Answer the following questions.

1. Were the foundations of the Tower of Pisa soundly laid?
2. What were the problems of a building's foundations from the earliest times? What was difficult to realize for architects and engineers at that time?
3. What has been done to prevent the Leaning Tower of Pisa from this?
4. Why is it difficult to lay foundation of a tall modern structure?
5. What supports a house?
6. What is most important for the foundation engineer to know?
7. What must engineer learn before deciding what type of foundation is necessary for that soil?
8. What is the most important decision of all in the building's construction?
9. What are the footings made by?
10. Why do workers place the footings below the frost line?
11. What is used for the house's foundation?
12. What are piles?
13. What is a basement?
14. When do the foundations take the form of a vast, hollow concrete box?
15. Why is this box divided into chambers?
16. When a filler is used?
17. What prevents moisture from coming through the slab?

7. Say if the sentences are true or false.

1. The foundation of the Tower of Pisa is very properly done.
2. The Tower of Pisa can topple at any moment.
3. If the earth is stable, laying the foundations of small buildings possess a lot of problems.
4. The foundation engineer has an extremely important job to do if the load is very heavy.
5. First construction workers begin excavating, or digging holes or trenches for the footings, the highest part of the foundation.
6. To collect undisturbed samples of earth from various depths it is necessary to use bulldozers.
7. It is difficult for the engineer to forecast the probable shifts in the earth during and after building.
8. The footings are made by pouring water into iron and steel forms.

9. Footings usually extend from 1 to 8 feet above ground level.

10. Builders generally use cement or cement block for the house's foundation.

11. Piles are light shafts.

12. Each pile supports its load in one or both of two ways.

13. A pile may serve as a support.

14. The area within the foundation below the second story is the basement.

15. Basement is very cheap.

16. When it is a question of floating a building, the foundations take the form of a vast, hollow concrete box.

17. This box is divided into sections.

18. Each section has its own function.

19. Garage and storage space are placed under a building.

20. The best variant for buildings to stand on hard rock like granite or ironstone.

8. Complete the sentences according to the text.

1. The Leaning Tower of Pisa lean because _____.

2. Laying a building's foundation was a problem for _____.

3. _____ the foundations of small buildings possess few problems.

4. First construction workers begin excavating, _____.

5. In order to collect undisturbed samples of earth from various depths it is necessary _____.

6. _____ that workers place below the frost line or the depth to which the ground freezes.

7. Footings usually extend from _____.

8. The foundation engineer may use piles if _____.

9. A pile may stand firm because _____.

10. _____, but they provide extra room.

11. _____ above the ground on concrete piers, or supports.

12. _____ especially if the earth beneath a house is hard.

13. Workers then spread a filler, _____, and cover it with a moistureproof paper.

14. Neither piles nor flotation need to be used if _____.

Vocabulary and Grammar

9. Say the same in English.

Вес здания, предотвратить дальнейшее движение, заложить

фундамент, карьер, высокая современная конструкция, копать ямы и траншеи, цокольный этаж, опоры, плита, самая низкая часть фундамента, чрезвычайно важная работа, гранит, вентиляционные установки, отдельные отсеки, пространство для хранения, оборудование для прачечной, отопительная установка, верхние этажи, устои.

10. Combine the words with the help of the preposition *of*. Translate these words.

1	the weight		A	the upper storeys
2	the possibility		B	the ground
3	14 feet out		C	a heavy structure's sinking
4	the design		D	floating a building
5	one side		E	earth
6	the foundations		F	a building
7	a thorough understanding	of	G	all
8	a scientific study		H	the perpendicular
9	undistributed samples		I	foundation
10	the sort		J	two ways
11	important decision		K	small buildings
12	in one or both		L	a vast, hollow concrete box
13	a question		M	soil mechanics
14	the form		N	the Tower

11. Choose a word to put into each gap: *soil mechanics, above the ground, stable, the footings, hard rock, building, the load, the foundation*.

1. Architects and engineers have not always realized what extent the earth can be pressed down by the weight of _____.
2. If the earth is _____, laying the foundations of small buildings possess few problems.
3. In a tall modern structure _____ may be very heavy indeed.
4. The foundation engineer must have a thorough understanding of _____, which entails a scientific study of the ground to see what load it, can bear without dangerous movement.
5. First construction workers begin excavating, or digging holes or trenches for the footings, the lowest part of _____.
6. _____ are made by pouring concrete into wood or steel forms that workers place below the frost line or the depth to which the ground freezes.

7. In many low or damp regions, houses are _____ on concrete piers, or supports.

8. Luckiest of all are those foundation engineers whose buildings stand on _____ like granite or ironstone.

12. Use the derivatives of the following words.

1. Trial pits are dug in order to collect undisturbed samples of earth from various_____. (DEEP)

2. The engineer comes to the most important decision of all in the building's construction. (DECIDE)

3. Too little _____ has sometimes been made for the _____ of a heavy structure's sinking unevenly. (ALLOW, POSSIBLE)

4. Sometimes a slab foundation is laid _____ on the ground. (DIRECT)

5. The filler and the paper prevent _____ from coming through the slab that is made by pouring concrete. (MOIST)

6. The engineer can forecast the probable shifts in the earth during and after building, according to the sort of _____ he designs. (FOUND)

13. Make up the sentences.

1. The / a / supports / foundation / house.

2. Each / the / support / wall / footings / load.

3. Basements / a /some / have / room / also / recreation.

4. Concrete / builders / use / concrete block / the house's / or / for / generally / foundation.

5. Serve / pile / may / each / column / as / a.

Lesson 2

Pre-reading task

1. Read the words and learn them.

Tongue and groove boards – шпунтовое соединение досок
Lip – фланец, выступ
Groove – выемка
Slot – паз
Tongue – шип, шпунт
Snugly – плотно
Nail head – шляпка гвоздя
Hardwoods – древесина твердых пород
Maple – клен
Oak – дуб

To sand – зачищать, шлифовать шкуркой
To seal – закреплять, покрывать
Filler – уплотнитель
Wax – мастика из воска
Shellac – шеллак (природный лак)
Varnish – лак, мастика, глазурь
Vinyl – виниловый
Tile – керамическая плитка
Covering – покрытие
Partition – перегородка, внутренняя стенка
Girder – балка
Lath – рейка, обшивка
Lumber mill – лесопилка, завод по обработке дерева
Pulley – блок, ролик
Sash – оконная рама (переплет)
Ready-made – готовый (не требующий изготовления)
To swing – открывать (дверь), пролетать
Rug – коврик (небольшой)
Threshold – порог
Outlet – розетка
Appliance – прибор, приспособление
Furnace – котел (центрального отопительного отопления)
Fuse – предохранитель
Circuit breaker – автоматический выключатель, прерыватель
To cut in the proper size – вырезать нужного размера
To be made of – быть сделанным из
Lightweight steel – легковесная сталь
To be high enough – быть достаточно высоким
Water heater – нагреватель воды
Heavy-duty – мощный, сверхмощный

2. Make up your own sentences with the words given above. Use as many words as possible.

3. Read these international words and try to guess their meaning.

Metal, horizontally, finish, plastic, linoleum, asphalt, electrician, standard, volt, centimeter, aluminium, lamp, conditioning system.

4. These words can be used both as verbs and nouns. Make up your own sentences to show the difference in their usage.

Slot, sand, seal, wax, finish, varnish, partition, lath, rug, start, fuse, part.

5. Read and translate the text.

Text 2

Interior construction of a house

Interior construction of the house includes floors, walls, windows, and doors.

Floors have two layers. The lower layer lies at an angle across the floor joists. The upper, finished layer is made from tongue and groove boards. One side of each board has a tongue, or lip, and the other side has a groove or slot. The tongue of one board fits snugly into the groove of another board. Carpenters drive nails through the groove side so that the nail heads can't be seen on the finished floor. Most finished floors are made of hardwoods, such as maple or oak, which have been finely sanded and later sealed with wood filler. The wood may then be finished with wax, shellac, varnish, or plastic. Other floors have such coverings as linoleum or rubber, vinyl or asphalt tile.

Walls. Rooms are made by building inside walls after the outside walls have been attached to the foundation. Inside walls, also called partitions, are really small-sized frames like the outside walls. They have studs and must be supported by plates, joists and girders.

If plaster is to be applied, the interior walls must first be covered with lath, or strips of wood, metal, or plasterboard. The lath is set horizontally about 3 inches (8 centimeters) apart. Wallboard, plasterboard, or plywood may be used in place of plaster.

Windows. Most parts of a window come from a lumber mill, already cut in the proper sizes. Carpenters leave space in the frame for windows and window pulleys, weights and sashes. Window sashes are made of wood or metal, usually either aluminium or lightweight steel.

Doors. Both doors and door frames may usually be bought ready-made. Carpenters attach the doors high enough to swing over rugs or carpets. A threshold fills in the space under an outside door.

Electricity. Electrical wiring provides lighting and furnishes outlets for lamps, washing machines, and other appliances. In some houses, electricity also provides heat. Before construction starts, the builder determines the location and type of wiring. Wires vary in size, depending on the equipment in the house and how far the current must travel. Standard wiring is designed for 110-volt current. But builders often specify heavy-duty, 220-volt wiring if large electrical appliances, such as a stove and a water heater, or an air conditioning system are installed.

Electricians install wiring while carpenters build the frame. Wiring is done in series of circuits. Each set of wires has several outlets. Electricians often place the wiring for a furnace on a separate circuit breaks down.

Wires become hot and can cause fires if they are overloaded, so electricians install a fuse for each electrical. A fuse box usually holds all the fuses. If too much current passes through a circuit, the wire in the fuse melts or 'blows'. Electricians often install another protective device called a circuit breaker, instead of a fuse box. If the circuit becomes overloaded, the circuit breaker automatically cuts off the current.

Comprehension

6. Answer the following questions.

1. What does interior construction of a house include?
2. How many layers do floors have?
3. What is the upper, finished layer made from?
4. Who drives nails through the groove side?
5. What are most finished floors made of?
6. What materials are used to finish wood?
7. When are rooms made?
8. What is called partitions?
9. Where do most parts of a window come from?
10. Who attaches the doors high enough to swing over rugs or carpets?
11. What fills in the space under an outside door?
12. What provides lightning and furnishes outlets for lamps, washing machines, and other appliances?
13. Who does this?
14. What does a builder determine before construction starts?
15. Why do builders specify heavy-duty, 220-volt wiring?
16. Who installs wiring?
17. What can cause fires?
18. In what case does the wire in the fuse melt?
19. What do electricians often install instead of a fuse box?

7. Agree or disagree with the following statements.

1. Floors have three layers.
2. The upper, finished layer is made from wood.
3. Most finished floors are made of plastics.
4. Floors have such coverings as paper, plasterboard, or plywood.
5. Inside walls, also called partitions, are really small-sized frames like the outside walls.

6. The interior walls must first be covered with paint or oil.

7. The lath is set vertically about 2 inches (6 centimeters) apart.

8. Most parts of a window come from factories.

9. Window sashes are made of gypsum or cement.

10. Both doors and door frames is necessary to produce in carpenters' workshops.

11. Electricity never provides heat.

12. Before construction starts, the builder determines the location and type of wiring.

13. Standard wiring is designed for 120-volt current.

14. Carpenters install wiring while electricians build the frame.

15. Each set of wires has only one outlet.

16. Electricians often place the wiring for a furnace on the whole circuit.

17. Wires become cold and can cause fires if they are overloaded.

18. It is impossible for electricians to install another protective device called a circuit breaker.

8. Find out from your partner:

✓ if he knows why floors have two layers;

✓ why most finished floors are made of hardwoods.

9. Prove that:

✓ it is necessary to finish floors with covering;

✓ it is convenient when most parts of windows come from a lumber mill.

10. Comment on:

✓ work of a carpenter;

✓ work of an electrician.

Vocabulary and Grammar

11. Give the English equivalents to the following words and word combinations.

Плотники, гвозди, нижний слой, электрики, устанавливать, система кондиционирования, электроприборы, наружные стены, внутренние стены, фанера, фундамент, гипсокартон, горизонтально, дверной проем, достаточно высокие, строитель, штукатурка, электропроводка, стиральные машины, розетка, ток, брус, провода различаются по размеру.

12. Combine the words with the help of the preposition *of*.

Translate these word combinations.

1	the tongue	of	A	a fuse box
2	strips		B	hardwoods
3	place		C	a window
4	most parts		D	wires
5	sashes are made		E	metal or plasterboard
6	floors		F	circuits
7	type		G	one board
8	a series		H	wood or metal
9	each		I	wiring
10	instead		J	plaster

13. Complete the sentences according to the text.

1. The lower layer of a floor lies at _____.
2. _____ into the groove of another board.
3. Carpenters drive nails _____ so that the nail heads _____ on the finished floor.
4. _____ such as maple or oak.
5. The wood may then be finished with _____.
6. Other floors have such coverings as _____.
7. Inside walls, _____, are really small-sized frames _____.
8. They have studs and _____.
9. _____ may be used in place of plaster.
10. Most parts of a window _____, already cut in the proper sizes.
11. _____ of wood or metal.
12. Carpenters attach the doors high enough _____.
13. Electrical wiring provides _____, washing machines, etc.
14. _____ and how far the current must travel.
15. Builders often specify _____ if large electrical appliances, such as _____ are installed.
16. Electricians often place the wiring for _____.
17. Wires become hot and can cause fires if _____.
18. _____, the circuit breaker automatically cuts off the current.

14. Give the three forms of the following verbs. Translate the verbs.

	V_1	V_2	V_3	Translation
1	to apply			
2	to see			
3	to make			
4	to finish			
5	to use			
6	to install			
7	to do			
8	to buy			

15. Use the derivatives of the following words.

1. Interior _____ of the house includes floors, walls, windows, and doors. (CONSTRUCT)
2. The outside walls have been attached to the _____. (FOUND)
3. The lath is set _____ about 3 inches apart. (HORIZON)
4. _____ install wiring. (ELECTRICAL)
5. Wires vary in size, depending on the _____ in the house and how far the current must travel. (EQUIP)
6. Electricians often install another _____ device called a circuit breaker, instead of a fuse box. (PROTECT)
7. The circuit breaker _____ cuts off the current. (AUTOMAT)

Lesson 2

Pre-reading task

1. Read the words and learn them.

Plumber – сантехник (водопроводчик)
Pipe – труба
Disposal pipe – очистная труба
Fixture – приспособление, зажим
Sink – сточная труба
Trap – затвор-ревизия (санитарных приборов)
Sewage – сточные воды, нечистоты
Washbasin – умывальник, раковина
Drain – водосток, спускное отверстие
Tip – штекер

To leak – просачиваться, течь
Cast-iron – чугун
To dissolve – растворять, разжижать
Sludge – отстой, осадок сточной жидкости
Insulation – изолирующий материал
Perlite – перлит (вулканическое стекло)
Fiberglass – стекловолокно
Flaky – пластинчатый, чешуйчатый, хлопьевидный
Vermiculite – вермикулит (теплоизоляционный материал)
Crumb – крошка
Loose – сыпучий, рыхлый
Fan – вентилятор
To hire – нанимать
To preserve – сохранять, оберегать
To carry away waste – избавляться от отходов
To keep out – выводить, выбрасывать
The city sewerage system – городская канализационная система
Dead-air space – застойная зона
To save fuel costs – экономить тепловые затраты
Rock wool – шлаковата
In radiant heating – при радиантной подаче тепла

2. Make up your own sentences with the words given above. Use as many words as possible.

3. Read these international words and try to guess their meaning.

Metal, horizontally, finish, plastic, linoleum, asphalt, electrician, standard, volt, centimetre, aluminium, lamp, conditioning system.

4. These words can be used both as verbs and nouns. Make up your own sentences to show the difference in their usage.

Waste, sink, leak, crumb, fan, function, form, paint, step, heat.

5. Translate the words into Russian.

To construct – construction, to fix – fixture, to ventilate – ventilation, to circulate – circulation, to build – building, to heat – heating, to decorate – decoration, to furnish – furnishing.

6. Read the text and get ready to speak about the last steps in finishing the house.

The last steps in finishing a house

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

A cast-iron waste disposal pipe runs from inside the house to about 5 feet (1,5 meters) outside, where it connects with a pipe of another material, usually clay. This pipe connects home-disposal pipe with the sewerage system of the city. In areas without a city sewerage system, a septic tank near the house holds sewage until it dissolves. Water from the sewage flows through pipes into the ground. The sludge, remaining in the tank, must be removed at intervals.

Insulation reduces the amount of heat or cold that passes through walls, floors, and ceilings of a house. When the air around the house is warmer or colder than the air inside, heat passes from the warm air to the cold air. This means that in winter the heat will pass to the outside, and the house will become cold. In summer the heat outside passes into the house. Insulation fills the air spaces in walls, floors and ceilings and creates dead-air space. This helps to prevent heat from passing through. Insulation can save fuel costs in heating a house.

Insulation is made from many materials, including cellulose, rock wool, a glassy lava called perlite, gypsum, certain plastics, fiberglass, and a flaky mineral called vermiculite. Insulation comes as blankets, boards, paper and sheathing. It is also available in a loose, crumb like form. The type of insulation used depends on the climate and on whether it insulates floors, ceilings or walls.

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

Air-conditioning units may be used to cool and heat houses. An air

conditioner takes warm air from the house, cools it, removes moisture, and recirculates cool air. It also may warm cold air, add moisture and recirculate warm air.

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

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

Comprehension

7. Answer the following questions.

1. What do plumbers do during construction?
2. What is necessary to install to keep out sewages?
3. What is the trap used for?
4. When do the traps function properly?
5. Where does a cast-iron waste disposal pipe run from?
6. Where does water from the sewage flow?
7. What is the function of insulation?
8. When does heat pass from the warm air to the cold air?
9. What saves fuel costs in heating a house?
10. What is insulation made from?
11. What supplies heat for the entire house?
12. What passes through radiators that stand throughout the house?
13. When may air-conditioning units be used?
14. Who paints the rooms and finishes the floors?
15. What is the last step in building a house?
16. Why is it important to keep the natural outline of the land?

8. Say if the sentences are true or false.

1. During construction, plumbers install the pipes that will supply heat and ventilation.
2. These pipes carry away cold water.
3. Plumbers also install special cranes to keep out sewages.
4. To function properly, traps must have inside ventilation of the air.
5. A cast-iron waste disposal pipe connects with another pipe made of metal.
6. This pipe connects home-disposal pipe with the sewerage system of the city.

7. In areas without a city sewerage system, a sink near the house holds sewage until it comes into ground.

8. Insulation increases the amount of heat or cold that passes through walls, floors, and ceilings of a house.

9. In winter the cold outside passes into the house.

10. Insulation fills the air spaces in walls, floors, and ceilings and creates dead-air space.

11. Insulation is made from many materials, including cotton, wool, wadding etc.

12. The type of insulation used depends on size of a house.

13. Only some houses have central heating systems.

14. In radiant heating, cold-water pipes run between the walls.

15. In a new house, the builder usually makes all repaired works as a part of the contract with the homeowner.

16. The owners move into a ready flat to live in.

17. The owners of the flats clean themselves the territory near their house.

9. Choose the best alternative according to the text.

1. Plumbers install the pipes that will supply _____.

a) heat and water, and carry away bad smell;

b) gas and water, and carry away waste;

c) gas and heat, and carry out cold air.

2. The trap used for bathroom washbasins, locates _____.

a) directly above the sink;

b) directly below the drain;

c) directly below the sewage system.

3. _____ and prevents sewages from backing tip and leaking into the room.

a) Water settles in the higher part of the pipe;

b) Water settles in the middle part of the pipe;

c) Water settles in the lower part of the pipe.

4. A cast-iron waste disposal pipe runs from _____.

a) inside of the house to about 5 feet outside;

b) the lower ground of the house to about 5 feet to the roof;

c) the basement of the house to about 5 feet outside.

5. _____, a septic tank near the house holds sewage until it dissolves.

a) In areas which are rather far from a city sewerage system;

b) In village areas which have no sewerage system near their houses;

c) In areas without a city sewerage system.

6. Water from the sewage flows _____.
a) through pipes into a special septic tank;
b) directly into the ground;
c) through pipes into the ground.
7. Insulation fills _____ and creates dead-air space.
a) the air spaces in walls, floors and ceilings;
b) all spear places in walls, floors and ceilings;
c) the air spaces in floors and ceilings.
8. The type of insulation used depends on _____.
a) the weather and the building materials;
b) the climate and on whether it insulates floors, ceilings or walls;
c) the climate and on whether it insulates doors, windows or walls.
9. One furnace or heating unit, _____.
a) uses for heating a house;
b) supplies heat for only one room;
c) supplies heat for the entire house.
10. In hot-air heating a fan, connected to the furnace, _____.
a) blows cold air through pipes into the kitchen;
b) blows warm air through pipes into the rooms;
c) blows hot air through pipes into the bathroom.
11. An air conditioner _____, and recirculates cool air.
a) takes warm air from the house, cools it, removes moisture;
b) takes hot air from the lower floor, cools it, removes moisture;
c) takes warm air from radiators, cools it, removes moisture.
12. In a new house, builders usually _____.
a) paint the rooms and finish the floors;
b) paper the rooms and paint the floors;
c) buy everything necessary to finish flats.
13. Sometimes the owner hires a professional interior decorator _____.
a) to help him to buy necessary tools for making a repair of a flat;
b) to select, to buy and to arrange the furnishings;
c) to select and to buy new wall papers for his flat.
14. _____ and to preserve different sorts of trees which grow in this place.
a) Professional decorators advise to keep the natural outline of the land;
b) Most builders try to keep the natural outline of the land;
c) Most builders try to clean the territory round the new house.

Vocabulary and grammar

10. Say the same in English.

Потолок, чтобы функционировать правильно, сохранить природный контур земли, система центрального отопления, последний шаг в строительстве дома, нижняя часть трубы, сантехник, стекловолокно, дизайн интерьера, часть договора с домовладельцем, канализационный резервуар (отстойник), котельная, батареи (радиаторы), добавить последние штрихи, благоустройство территории (озеленение), сэкономить расходы на топливо при отоплении дома.

11. Combine the words with the help of the preposition *of*. Translate these words.

1	the lower part	of	A	the land
2	a pipe		B	trees
3	the amount		C	insulation
4	the type		D	the contract
5	part		E	another material
6	the natural outline		F	the city
7	different sorts		G	heat or cold
8	outside ventilation		H	a house
9	the sewerage system		I	the air
10	walls, floors, and ceilings		J	the pipe

12. Choose a word to put into each gap: *furnace, traps, insulation, waste disposal pipe, fixtures and sinks, an air conditioner, perlite, radiant heating, a septic tank, interior decorator, fuel costs, landscaping, a flaky mineral.*

1. Plumbers install bathroom _____ just before other workers add the finishing touches to the house.
2. Plumbers also install _____ to keep out sewages.
3. A cast-iron _____ connects with a pipe of another material, usually clay.
4. In areas without a city sewerage system, _____ near the house holds sewage until it dissolves.
5. _____ fills the air spaces in walls, floors, and ceilings and creates.
6. Insulation can save _____ in heating a house.
7. A glassy lava is called _____.
8. _____ is called vermiculite.
9. One _____ supplies heat for the entire house.

10. In _____, hot-water pipes run under the floors or in the ceilings or walls.

11. _____ takes warm air from the house, cools it, removes moisture, and recirculates cool air.

12. Sometimes the owner hires a professional _____ to select, buy and arrange the furnishings.

13. _____ is the last step in building a house.

13. Make up the sentences.

1. Heating systems / have / houses / central / most.
2. Is / many / insulation / materials / made from.
3. Install / sewages / plumbers / also / to keep out / traps.
4. Is / landscaping / the last / in / step / a house / building.
5. Traps / the air / must / of / have / ventilation / outside.
6. Insulation / a house / can / in heating / save / costs / fuel.

14. Write the derivatives of the following sentences.

1. An air conditioner cold air, add moisture and _____ warm air. (CIRCULATE)

2. Most builders try to keep the _____ outline of the land and to preserve _____ sorts of trees which grow in this place. (NATURE, DIFFER)

3. The trap used for bathroom washbasins locates _____ below the drain. (DIRECT)

4. To function properly, traps must have outside _____ of the air. (VENTILATE)

5. The owner generally selects, buys and arranges the _____. (FURNISH)

6. _____ reduces the amount of heat or cold that passes through walls, floors, and ceilings of a house. (INSULATE)

7. Most houses have central _____ systems. (HEAT)

БИБЛИОГРАФИЧЕСКИЙ СПИСОК

1. Английский язык для инженеров. Учебник / Т.Ю. Полякова, Е.В. Синявская, О.Н. Тынкова и др. – 7-е изд., испр. – М.: Высш. шк., 2010. – 463 с.

2. English for road builders: Учебное пособие для студентов-бакалавров 1 курса / Сост. Д.К. Вахитова, Т.С. Казымова. – Казань: Изд-во Казанск. гос. архитект.-строит. ун-та, 2014. – 191 с.

3. English for builders = Английский для строителей : пособие для студентов строительных специальностей высших учебных заведений. / А.В. Конышева. – Минск : БНТУ, 2015. – 89 с.

4. http://www.wikipedia.org/wiki/Bridges

5. http://www.wikipedia.org/wiki/Tunnels