ФЕДЕРАЛЬНОЕ АГЕНТСТВО ЖЕЛЕЗНОДОРОЖНОГО ТРАНСПОРТА

Улан-Удэнский колледж железнодорожного транспорта -
филиал Федерального государственного бюджетного образовательного учреждения
высшего образования «Иркутский государственный университет путей сообщения»
(УУКЖТ ИрГУПС)

О.В. Барская, Е.В. Сороко

УЧЕБНОЕ ПОСОБИЕ

для практических занятий

дисциплины ОГСЭ.03. ИНОСТРАННЫЙ ЯЗЫК (АНГЛИЙСКИЙ)

для специальности

23.02.01 Организация перевозок и управление на транспорте (по видам)
Часть 2

Базовая подготовка

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Очная форма обучения на базе

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Барская О.В, Сороко Е.В

Б **ОГСЭ.03. Иностранный язык (английский)** [Текст]**:** Учебное пособие для практических занятий для обучающихся очной и заочной формы обучения специальности 23.02.01 Организация перевозок и управление на транспорте (по видам) / Барская О.В, Сороко Е.В; Улан-Удэнский колледж железнодорожного транспорта ИрГУПС. – Улан-Удэ: Сектор информационного обеспечения учебного процесса УУКЖТ ИрГУПС, 2022. – 69 с.

Учебное пособие предназначено для обучающихся профессиональных образовательных организаций железнодорожного транспорта. Материал пособия содержит тексты железнодорожной тематики. Упражнения лексического и грамматического характера способствуют формированию у обучающихся общих и профессиональных компетенций, соответствующих специальностям.

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Пояснительная записка

Учебное пособие для практических занятий разработано в соответствии с рабочей учебной программой дисциплины ОГСЭ.03. Иностранный язык (английский) для специальности 23.02.01 Организация перевозок и управление на транспорте (по видам) и требованиями к результатам освоения программы подготовки специалистов среднего звена ФГОС СПО по данной специальности.

Цель учебного пособия: способствовать развитию навыков чтения специальных текстов на английском языке, а также дальнейшему развитию навыков профессиональной коммуникации.

Пособие состоит из двух частей. Первая часть предназначена для студентов 2 курса, вторая часть – для студентов 3-4 курсов. Учебное пособие состоит разделов (Units), которые содержат текстовой материал, заимствованный из оригинальных источников, адаптированный под уровень подготовки обучающихся. Тексты снабжены фотографиями и таблицами. К пособию прилагается диск с аудиозаписями.

Тексты сопровождаются методической разработкой упражнений фонетического, лексического и грамматического характера, что позволяет совершенствовать знания, умения и навыки владения английским языком.

Лексические упражнения направлены на изучение и закрепление активной лексики и терминологии, развитие языковой догадки и на совершенствование работы со словарём.

Грамматические упражнения рассчитаны на повторение и дальнейшее углубление знаний.

Речевые упражнения носят творческий характер, в них присутствует мыслительная задача, стимулирующая развитие навыков монологической речи. В зависимости от уровня подготовки группы преподаватель может усложнять или облегчать требования к выполнению заданий.

Тексты многофункциональны и нацелены на решение нескольких задач одновременно. Их можно использовать для изучающего чтения, развития навыков перевода, работы со словарём, а также могут служить базой для развития навыков говорения по основным темам.

Изучение профессиональных текстов и выполнение практических заданий способствует формированию общих компетенций в соответствии с ФГОС СПО подготовки специалистов среднего звена:

ОК 1. Понимать сущность и социальную значимость своей будущей профессии, проявлять к ней устойчивый интерес.

ОК 2. Организовывать собственную деятельность, выбирать типовые методы и способы выполнения профессиональных задач, оценивать их эффективность и качество.

ОК 3. Принимать решение в стандартных и нестандартных ситуациях и нести за них ответственность.

ОК 4. Осуществлять поиск и использование информации, необходимой для эффективного выполнения профессиональных задач, профессионального и личностного развития.

ОК 5. Использовать информационно - коммуникационные технологии в профессиональной деятельности.

ОК 6. Работать в коллективе и команде, эффективно общаться с коллегами, руководством, потребителями.

ОК 7. Брать на себя ответственность за работу членов команды (подчинённых), за результат выполнения заданий.

ОК 8. Самостоятельно определять задачи профессионального и личностного развития, заниматься самообразованием, осознанно планировать повышение квалификации.

ОК 9. Ориентироваться в условиях частой смены технологий в профессиональной деятельности.

ПК 1.1. Выполнять операции по осуществлению перевозочного процесса с применением современных информационных технологий управления перевозками.

ПК 1.3. Оформлять документы, регламентирующие организацию перевозочного процесса

ПК 3.1. Организовывать работу персонала по обработке перевозочных документов и осуществлению расчетов за услуги, предоставляемые транспортными организациями.

ПК 3.3. Применять в профессиональной деятельности основные положения, регулирующие взаимоотношения пользователей транспорта и перевозчика

Content

Unit 1. Art

Art is filling a space in a beautiful way.
Georgia O'Keeffe (1887–1986),
American painter.

Art is harmony.
Georges Seurat (1859–1891),
French painter.

Do you agree with these quotes? What opinion do you share? What quote do you like? What kinds of art can you name?





1.1 Painting.

1. **Read and translate the underlined words and word combinations. Write down their pronunciation and meaning.**
2. **Read and translate the text.**

Art is as varied as the life from which it springs. Each artist portrays different aspects of the world. A great artist is able to take some aspect of life and give it depth and meaning. To do this he or she will make use of the many devices common to painting. These devices include composition (the arrangement of the objects within a picture), color, form, and texture.

A painter does not always need handsome and attractive subjects. Often an ordinary subject is transformed through artistry some artists use geometric or abstract forms, colours, and textures to create interest and meaning. Most music does not attempt to imitate natural sounds, and there is no reason why painting should always make use of nature. Briefly it may be said that artists paint to discover truth and to create order. They put into their pictures our common hopes, ideals, and passions and show us their meaning and their value. Creators in all the arts make discoveries about the wonders and beauties of nature and the dignity and nobility of man. They give these an order which enables us to see and understand life with greater depth. Beauty generally results from order but as a by-product, not a primary aim. Not all works of art are beautiful. The painter is able to intensify our experiences. By finding new relationships among objects, new forms, and new colors, they show us things in our environment which we overlooked or ignored. They make the world about us become alive, rich, beautiful, and exciting. The subject which an artist selects for a painting depends largely upon the time in which he lives. A painter living in the Middle Ages would probably have picked a religious subject, for that was almost the only kind of topic portrayed at the time. Had he lived in Holland during the 17th century he might have painted portraits, family scenes, or arrangements of dishes, fruits, and flowers, called still-life. Having selected a subject the painter is faced with the problem of giving it form. Will the idea be communicated best by the use of realistic or abstract forms? Should it be done in bright or in dull colors? Should the effect be exciting or restful? The answer depends on what the painter is trying to do. In a good painting everything in it grows out of and develops from the intent of the artist.

3. Answer the questions.

1. What facts do you know before?
2. What information is new for you?

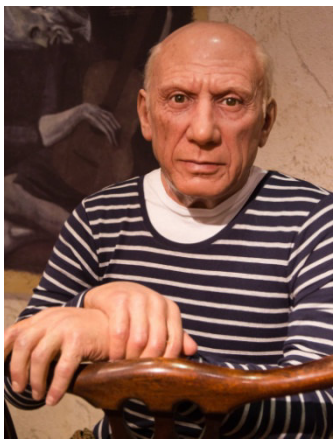
3. What don't you understand?
4. Do you have another ideas or information?

4. Everybody knows that modern painting has got positive and negative aspects. You are divided into 2 teams. The first team should think of disadvantages. The second team will try to find out only advantages.

1. Produce a bright colour.
2. Artists paint to discover truth and to create order.
3. They put into their pictures our common hopes, ideas and passion
4. Creators in all the arts make discoveries about the wonders and beauties of nature and the dignity and nobility of man.
5. They show us their meaning and their value.
6. They understand life with greater depth.
7. They discover new areas of enjoyment.
8. They represent the world around us more beautiful and exciting.
9. Not all works of art are beautiful.
10. Some pictures are difficult to understand.
11. The simple forms might be interpreted in many ways.
12. They focus on the shapes not their personalities.
13.. Some people make money out of nothing.
14. Some people admire the art.
15. Some people follow the fashion visiting art galleries and museums.
16. The art is a profession for some people.
17. there is nothing more beautiful than art in our life. One cannot help admiring painting, sculpture…
18. Beauty matters much. To my mind, our life would be dull without it.
19. It makes our life brighter and spiritually richer.
20. One should surround the life with beautiful things!
21. Beauty is spiritual richness. It inspires people, evokes admiration, joy, delight.
22. Painting enriches our spiritual life. It makes it more expressive and emotional.
23. As for me, I am not interested in painting because I see nothing exciting in it. Maybe I do not understand it.

5. You are going to read about the lives of Pablo Picasso and Ernest Hemingway. Discuss the questions below.

We all know that Art is not truth. Art is a lie that makes us realize truth. Pablo Picasso (1881–1973), Spanish painter.



Pablo Picasso

On 25 October, 1881, a baby boy was born in Malaga, Spain. It was a difficult birth and to help him breathe, cigar smoke was blown into his nose! This baby grew up to be one of the twentieth century's greatest painters - PABLO PICASSO. Picasso showed his genius from a very young age. His first word was lapiz (Spanish for pencil) and he could draw before he could talk. He was the only son in the family, so he was thoroughly spoiled. He hated school and often refused to go unless he was allowed to take one of his father's pet pigeons with him! Apart from pigeons, his great love was art. When In 1891 his father got a job as an art teacher, Pablo went with him to work and watched him paint. Sometimes he was allowed to help. One evening, his father was painting a picture of their pigeons when he had to leave the room. When he returned, Pablo had completed the picture. It was so beautiful and lifelike that he gave his son his palette and brushes and never painted again. Pablo was just thirteen.

His genius as an artist was soon recognized by many people, but others were shocked by his strange and powerful paintings. He is probably best known for his Cubist pictures. His portraits of people were often made up of triangles and squares with their features in the wrong places. One of his most famous portraits was of the American writer Gertrude Stein, who he met after he'd moved to Paris in 1904.

His work changed ideas about around the world, and to millions of people, modern art means the work of Picasso. *Guernica* which he painted in 1937 records the bombing of that small Basque town during the Spanish Civil War and is undoubtedly one of masterpieces of modern painting.

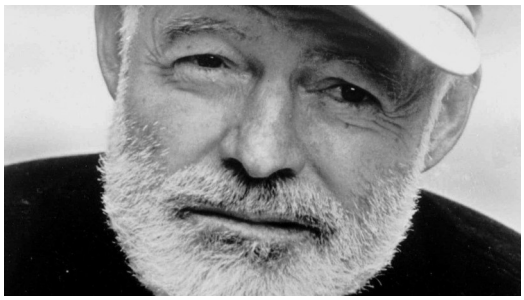
Picasso married twice and also had many mistresses. He had four children. The last, Paloma, was born 1949 when he was 68 years. At the age of 90 he was honoured by an exhibition in the Louvre Paris. He was the first living artist to be shown there.

Picasso created over 6,000 paintings, drawings, and sculptures. Today, Picasso costs millions of pounds. Once, when the French Minister of Culture was

visiting Picasso, the artist accidentally spilled some paint on the Minister's trousers. Picasso apologized and wanted to pay for them to be cleaned, but Minister said, 'Non! Please, Monsieur Picasso, just sign my trousers!

Picasso died of heart failure during an attack of influenza in 1973.

2.2. Literature



1. Read the text and answer the questions.

Ernest Hemingway

ERNEST HEMINGWAY was one of great American writers of the twentieth century. He was born on 21 July 1899, in Oak Park, Illinois, the second of six children. His family was strict and very religious.

His father taught his children a love of nature and the outdoor life. Ernest caught his first fish at the age of three, and he was given a shotgun for his twelfth birthday.His mother taught him a love of music and art. At school, he was good at English and wrote for the school newspaper. He graduated in 1917, but he didn't go to college. He went to Kansas City and worked as a journalist for the *Star* newspaper. He learned a lot, but left after only six months to go to war.

Hemingway was fascinated by war. He had wanted to become a soldier, but couldn't because he had poor eyesight. Instead, in the First World War, he became an ambulance driver and was sent to Italy, where he was wounded in 1918. After the war, he went to live in Paris, where he was encouraged in his work by the American writer Gertrude Stein. In the 1930s, he became a war correspondent in the Spanish Civil War and World War II. Many of his books were about war. His most successful book, *For Whom the Bell Tolls,* was written in 1940 and is about the Spanish Civil War. Another novel, A *Farewell to Arms,* is about the futility of war.

Hemingway's success in writing was not mirrored by similar success in his personal life. He married four times. His first wife divorced him in 1927. He immediately married again and moved to Key West, Florida, where he enjoyed hunting, fishing, and drinking, but he also suffered from depression. This wasn't helped when, in 1928, his father committed suicide. Hemingway's health was not good and he had many accidents. Two more marriages failed and he began to drink heavily. In 1954, he survived two plane crashes. In October of the same year he was awarded the Nobel Prize for literature, but he was too ill to receive it in person.

His final years were taken up with health problems and alcohol. He' began to lose his memory and he couldn't write any more. On Sunday, 2 July 1961,

Hemingway killed himself with a shotgun, just as his father had done before him.

6. Answer the questions about your person.

1. Where and when was he born? When and how did he die?
2. Did he have a happy family life?
3. How did his parents play a part in his career?
4. What do you think were the most important events in his early life?
5. When did he move to Paris? Who did he meet there?
6. How did war play a part in his life?
7. How many times was he married?
8. Which of these dates relate to your person? What do they refer to?

1891 1917 1918 1927 1928 1937 1940 1949 1954

7 Find a partner from the other group and go through the questions in exercise 6. What similarities and differences can you find between the two men?

They were both born in the nineteenth century. Picasso was spoiled, but Hemingway's parents were strict.

8. What tense are these verbs? Find more examples in the texts and underline them.

Guernica was painted by Pablo Picasso.

A Farewell to Arms and *For Whom the Bell Tolls* were written by Ernest Hemingway.

9. Complete the sentences with the auxiliaries was, were, or had.

a) Pablo's father left the room. When he returned, Pablo…… completed the picture.

b) Picasso…… given his father's palette and brushes.

c) Both Hemingway and Picasso……living in Paris when they met Gertrude Stein.

d) Both men……. honoured in their lifetime.

Unit 2. Youth Problems

2.1 Youth Problems

1. Young people's problems are a matter of serious concern, aren't they? What is the most important problem for you?

2. Read and translate the underlined words and word combinations. Write down their pronunciation and meaning.

Youth is a period of life which is the most important in the life of a man. First, man's entire life is rooted in his early years. The morals and beliefs, range of interests, education, health and habits are all laid in childhood and youth, the personality is shaped. Second, youth is a time when a person is trying to find his place in the world. This period is usually associated with problems: young people 'struggle' to fit themselves into society. Difficult decisions and adjustments face young people in today's society. There are several problems the young generation face. They are the eternal problems of choosing a career and getting education, the problem of independence and money, the problem of unemployment of young people, the generation gap. Young people have many problems of emotional and personal character which may look silly and unimportant in the eyes of grown-ups but appear to be extremely important to the young. They are the problems of friendship and loneliness, as well as the problem of the first love.

Probably the most vital problem is choosing a career, which is really difficult. One thing that makes it so difficult is the responsibility you have to take on — it is widely known that your future life depends on the choice made early in life when your personal experience is not so great. Sometimes you may even be not quite certain about the field of knowledge you are interested in. The second reason is that to make this choice you have to get some idea of the labour market and job opportunities. Third, there are parents who usually have their own idea of your future career and, in many cases, try to make their child choose the career path they prefer.

Perhaps one of the most fundamental problems faced by young people today is unemployment. Young people today have certain needs and aspirations. Because of the universal downturn in the economy combined with technology when particular jobs and skills are made obsolete, many youths today are experiencing problems in obtaining jobs. Unemployment means financial worries, frustration and discouragement. To solve the problem of unemployment, young people should strive for higher education. Then they would be qualified for skilled labour required by industrialized society.

Another problem facing young people today is the tension which exists between parents and children, or the 'generation gap'. In their eagerness to achieve adult status and live their own life, young people may resent any restrictions. They believe that their parents are overanxious and overprotective, which usually creates tension. The 'generation gap' problem is really inevitable. Firstly, every generation is unique in its experience, and young people have always rejected or at least

questioned the values of their parents. They have always wanted to learn from their own experience, not from their parents' standards. Secondly, every younger generation tends to be more educated and better-informed than the previous one; they grow more quickly and enjoy freedom more. Thirdly, parents tend to aggravate the situation: they try to impose their ideas upon their children. It results in young people's revolt against adult authority. Parents should exercise control over young people, and try to overcome the differences but with sympathy and understanding.

An area which poses a problem for young people and their parents is love and dating. Some parents today are prepared to give their children some freedom, others are overprotective, restricting their children from going out with the opposite sex. Thus many young people today can't get the valuable experience of adjusting to other people.

Many youths may not be mature enough to cope with such problems, that are why they go in the direction of crime, drugs, vandalism, drinking etc. Often young people are forced either consciously or unconsciously to become involved in those antisocial activities by people of their own age group. Moreover, they compensate for their feelings by revolting against society and adult authority.

The second one is the problem of friendship. Youth is the time when a person is vulnerable to opinions of different people, especially to the opinions of his peer group. Another problem is problem of love and dating. Some parents are democratic in this respect, and allow their children considerable freedom in their relations with the opposite sex. Others are overprotective and forbid their teenage children to go out with people they like, which, in my opinion, can result in many psychological problems as they prevent their children from getting an experience of communicating with representatives of the opposite sex, and this can lead to serious family problems later.

Grown-ups should work together with young people to help them solve these problems. We must remember that the young people are the leaders of tomorrow.

For me, the most important and difficult problem is that of friendship. Firstly, in spite of the fact I have some conflicts with my parents, I have always known they love me, and I love them, too, and will always do my best to help them and make them happy. Friends are people whose trust and affection you have to win; friendship is art for me. Secondly, my friends normally are my peers, we have common interests, likes and dislikes, so having friends is of utter importance to me. As to dating and love, I don't think much about it yet. I think I have to solve the problems which seem most important to me at the moment, that is choosing the career and entering the university I have chosen.

3. Translate the following sentences into English

1. Юность имеет первостепенное значение в жизни человека. Мораль и убеждения, круг интересов, образование, здоровье, привычки закладываются в детстве и юности.

2. Молодое поколение сталкивается со многими проблемами, такими, как вечные проблемы выбора карьеры и получения образования, проблемой независимости и денег, безработицы, проблемой отцов и детей, дружбы и одиночества, первой любви и многими другими.

3. Наиболее важной проблемой является выбор карьеры, которая очень трудна, так как человеку приходится брать на себя ответственность, для которой у него недостаточно личного опыта, знания рынка труда и возможности найти работу.

4. Безработица — одна из наиболее фундаментальных проблем, с которыми сталкиваются молодые люди из-за общего кризиса в экономике и развития техники.
5. Безработица означает финансовые проблемы. Молодые люди должны стремиться получить высшее образование и подготовку, необходимую для квалифицированного труда.

6. В своем желании достичь статуса взрослых молодые люди могут отрицать любые ограничения и восставать против авторитета взрослых, отвергая или ставя под сомнение их ценности.

7. Многие родители чересчур опекают своих детей и запрещают им встречаться с представителями противоположного пола.

8. Многие молодые люди не настолько зрелы, чтобы справиться с этими проблемами; они идут на совершение антиобщественных действий, таких, как нарушение закона, употребление наркотиков, вандализм, злоупотребление алкоголем.

9. Самая сложная проблема для меня — это проблема дружбы, поскольку мне приходится завоевывать доверие и любовь друзей. Это очень важно, так как нас объединяют общие интересы и вкусы.

4. Tell about relations among people in your family. How can you characterize them? Try to use the underlined words from the text in your story.

2.2 Youth culture

1. Write the underlined words from the text, find their meaning and pronunciation.

2. Read and translate the text about youth culture, be ready to talk on this problem

Culture — the customs, beliefs, art, music and all the other products of human thought made by a particular group or people at a particular time. Youth culture — the interests and activities of young people (especially the music, films, sports, or other entertainments they enjoy). Besides youth culture is a particular relationship on the part of young people with the whole world of fashion, image, style, music, and dance.

Most young people follow some kind of youth culture — a way for them to express their individuality.

Youth cultures are constantly changing, but it is not only the teenagers themselves who decide what the new culture will be. Politics, economics and technology have all affected teenagers' lifestyles. Since the Second World War youth cultures have been more and more influenced by the power of the music and fashion industries, which promote and recycle youth cultures whenever they can.

Youth culture has changed quite dramatically over the last 20 or 30 years.

What about music? POP is short for "popular" and there has always been popular music. But until 1950s there wasn't a style of music just for young people. That all changed when rock and roll began. Since then, hundreds of styles and stars have come and gone.

One of the first post-war youth cultures was the "Teddy Boys" or "Teds.

50s—was the time when rock and roll began in America. The first big stars of it were black — Chuck Berry, Fat Domino; they brought traditional "rhythm and blues" which was soon copied by white singers like Bill Haley, Jerry Lee Lewis and of course Elvis Presley. He became the real hero of the young, who really enjoyed his rough and dangerous music. In the 1950s records were improved by new technology, radios became smaller, music was everywhere; in 1956 music became business.

In the 60s Rolling Stones introduced hard, aggressive rock and roll. The other

group played a mixture of rock and pop. These were the Beatles (the Fab Four from Liverpool). The Beatles were one of the first British pop groups to write their own music instead of copying American hits. Thanks to Stones and the Beatles pop became Transatlantic.

Suddenly youth culture began fragmenting into many different movements.

Thus appeared different cultural groupings: Rockers — they wore leather jackets, rode motorcycles and listened "rock and roll".

Mod (modernists) — wore cheap Italian suits, rode scooters; they liked a particular type of pop music. They were perhaps the first youth culture group to use drugs.

Later skinheads appeared wearing short hair and huge boots were usually regarded as violent. They were more influenced by football than by music, thus caused trouble at football matches. 1960 was a time of great economic growth in Britain which caused a great generation boom.

In the 70s Abba and the Sex Pistols groups appeared. Sweden's Abba worked with latest technology and their songs were popular with people from 8 to 80. Superstars appeared — Elton John, David Bowie, Rod Stewart, and Queen. Music became a billion-dollar industry.

In the middle of 1970s Britain was in economic recession. Unemployment was high, especially for the young. Some young people felt that society had let them down, and a youth culture emerged to reflect this. Punk rock was designed to shock. The dyed, spiked hair, leather belts and plastic clothes. Punks were a mixture of art rejected conventional styles of dress. They were fans of loud, fast and tuneless music with violent lyrics.

In the early 80s there was a confusing mixture of youth cultures. There was no universal "look". Anything was acceptable. Youth cultures became fragmented, and the different subcultures seemed to accept each other with relative indifference.

In 1980s young people faced a problem — where to go at night. Thus large parties were held at a variety of locations, often in warehouses or empty buildings, where young people could dance all night. The media were saying the parties were full of drug - takers, and police raids became common. These "raves", originally called "acid house parties" continued. The people who went to "raves" were ravens. They developed a "rave" pop-dance culture.

Another part of youth culture is graffiti art, especially popular with young people in GB and the USA. It's aerosol art of scribbling and drawing on the walls.

It takes a number of forms: an individual scribble just the initials of the artists, or something larger, like a mural. For some artists, graft is a reaction, while for others it is a thought out expression. The motivation behind a piece of graft can be

happiness or sadness, frustration or relief. For this reason graft is very close to the hearts of young people.

Television has programmes for teenagers, different quiz shows, panel games, pop videos, and foreign movies. Most teenagers spend a lot of time in cafes, discos, and sports clubs. Reading preferences include romance (12 to 16 year-old girls), fantasy, books from TV series; serious novels (on political and social problems); many teenagers enjoy reading classics and comedy books. Youth culture magazines are also booming. There are magazines on pop, style, sport and fashion.

But does the youth culture really exist and who controls it? Teens have different opinions on the problem.

Real youth culture is different — that's the idea and opinions and styles of young people; it is controlled by people under 30.

On the other side it offers too much choice, which can become a real problem. Youth culture puts a lot of pressure on kids...

Youth culture is great as it gives the chance to talk seriously and have fun.

Youth culture has come a long way, it has become completely international. Teenagers all over the world are interested in the environment, peace, famine, pop and politics, fashion and styles, drugs like real and serious members of the society and we say "future belongs to young".

3. Answer the questions using the text:

1. What does "youth culture" include?
2. What was "youth culture" in different years and different countries?
3. Why do young people follow any kind of youth culture?
4. What youth cultures do you know?
5. How did graffiti appear?

4. How do you regard graffiti: an art, vandalism, the way of self-expression or something else?

1. What is like to be a teenager now?
2. What are your main interests?
3. Do you have any opinion on the "youth culture"?

5. Finish up the sentences:

a) Youth culture is a particular relationship with …

b) A subculture is a way to express …

c) … puts a lot of pressure on …

d) It gives a chance to …

e) Teenagers are interested in …

6. Make a short situation about one of youth cultures, pay attention to the following words and phrases.

Unit 3. Computers

3.1 What is a computer?

1. Learn new vocabulary and read the text.

1. characters — символы
2. data — данные
3. decision — решение
4. device — устройство
5. hardware — оборудование
6. instruction — команда
7. intelligence — разум
8. manner — манера, способ
9. microwave — микроволновая
10. procedures — процедуры, операции
11. purpose — цель
12. raw — необработанный, сырой
13. to come to life — оживать
14. to connect — соединять
15. to convert — превращать, преобразовывать
16. to create — создавать
17. to evaluate — оценивать
18. to refer to as — называть что-либо
19. to refine — очищать
20. to respond — отвечать
21. transmission — передача

3. Read and translate the text.

The term computer is used to describe a device made up of a combination of electronic and electromechanical (part electronic and part mechanical) components. Computer has no intelligence by itself and is referred to as hardware. A computer system is a combination of five elements: hardware, software, procedures and data/information.

When one computer system is set up to communicate with another computer system, connectivity becomes the sixth system element. In other words, the manner in which the various individual systems are connected — for example, by phone lines, microwave transmission, or satellite — is an element of the total computer system.

Software is the term used to describe the instructions that tell the hardware how to perform a task. Without software instructions, the hardware doesn't know what to do. People, however, are the most important component of the computer system: they create the computer software instructions and respond to the procedures that those instructions present.

The basic job of the computer is the processing of information. Computers accept information in the form of instruction called a program and characters called data to perform mathematical and logical operations, and then give the results. The data is raw material while information is organized, processed, refined and useful for decision making. Computer is used to convert data into information. Computer is also used to store information in the digital form.

3. Answer the questions.

1) What does the term «computer» describe?
2) Is computer intelligent?
3) What are five components of computer system?
4) What is connectivity?
5) What is software? What's the difference between hardware and software?
6) Why people are the most important component of a computer system?
7) In what way terms «data» and «information» differ?
8) How does computer convert data into information?

4. Make up the plan of the text and retell it.

3.2. Hardware

1. Read and translate the text using about hardware, be ready to answer the questions.

What is hardware? Webster's dictionary gives us the following definition of the hardware — the mechanical, magnetic, electronic, and electrical devices composing a computer system. Computer hardware can be divided into four categories:

1) input hardware
2) processing hardware
3) storage hardware
4) output hardware.

Input hardware

The purpose of the input hardware is to collect data and convert it into a form suitable for computer processing. The most common input device is a keyboard. It looks very much like a typewriter. The mouse is a hand held device connected to the computer by small cable. As the mouse is rolled across the mouse pad, the cursor moves across the screen. When the cursor reaches the desired location, the user usually pushes a button on the mouse once or twice to signal a menu selection or a command to the computer.

The light pen uses a light sensitive photoelectric cell to signal screen position to the computer. Another type of input hardware is optic-electronic scanner that is used to input graphics as well as typeset characters. Microphone and video camera can be also used to input data into the computer. Electronic cameras are becoming very popular among the consumers for their relatively low price and convenience.

Processing hardware

The purpose of processing hardware is retrieve, interpret and direct the execution of software instructions provided to the computer. The most common components of processing hardware are the Central Processing Unit and main memory.

The Central Processing Unit (CPU) is the brain of the computer. It reads and interprets software instructions and coordinates the processing activities that must take place. The design of the CPU affects the processing power and the speed of the computer, as well as the amount of main memory it can use effectively. With a well-designed CPU in your computer, you can perform highly sophisticated tasks in a very short time.

Memory is the system of component of the computer in which information is stored. There are two types of computer memory: RAM and ROM.

RAM (random access memory) is the volatile computer memory, used for creating loading, and running programs and for manipulating and temporarily storing data;

ROM (read only memory) is nonvolatile, non-modifiable computer memory, used to hold programmed instructions to the system.

The more memory you have in your computer, the more operations you can perform.

Storage hardware

The purpose of storage hardware is to store computer instructions and data in a form that is relatively permanent and retrieve when needed for processing. Storage hardware serves the same basic functions as do office filing systems except that it stores data as electromagnetic signals. The most common ways of storing data are hard disk, floppy disk and CD-ROM, USB flash disk

Hard disk is a rigid disk coated with magnetic material, for storing programs and relatively large amounts of data.

CD-ROM (compact disc read only memory) is a compact disc on which a large amount of digitized read-only data can be stored. CD-ROMs are very popular now because of the growing speed which CD-ROM drives can provide nowadays.

Output hardware.

The purpose of output hardware is to provide the user with the means to view information produced by the computer system. Information is output in either hardcopy or softcopy form. Hardcopy output can be held in your hand, such as paper with text (word or numbers) or graphics printed on it. Softcopy output is displayed on a monitor.

Monitor is a component with a display screen for viewing computer data, television programs, etc.

Printer is a computer output device that produces a paper copy of data or graphics.

Modem is an example of communication hardware — an electronic device that makes possible the transmission of data to or from computer via telephone or other communication lines.

Hardware comes in many configurations, depending on what the computer system is designed to do. Hardware can fill several floors of a large office building or can fit on your lap.

2. **Mind the new terms. Write their pronunciation.**

1. amount — количество
2. capacity — вместительность
3. circuitry — эл. схемы

4. CPU, microprocessor — микропроцессор
5. input hardware — устройства ввода данных
6. lap — колени
7. output hardware — выходные устройства отображения информации
8. processing hardware — устройства обработки данных
9. RAM — ОЗУ (оперативное запоминающее устройство)
10. ROM — ПЗУ (постоянное запоминающее устройство)
11. storage hardware — устройства хранения данных
12. tier — ярус
13. to convert — преобразовывать
14. to direct — управлять
15. to execute — выполнять
16. to interpret — переводить
17. to retrieve — извлекать
18. to roll — катать, перекатывать

3. Answer the questions to the text.

1. What is the Webster's dictionary definition of the hardware?
2. What groups of hardware could be defined?
3. What is input hardware? What are the examples of input hardware?
4. What is mouse designed for? What is a light pen?
5. What is processing hardware? What are the basic types of memory used in a PC?
6. What is storage hardware? What is CD-ROM used for? Can a user record his or her data on a CD?
8. What is modem used for?

4. Make up the plan of the text and retell it.

Unit 4. Automation

4.1 Automation and computerization on railways.

1. Read and translate the text.

The term automation is used to describe non-manufacturing systems in which automatic devices can operate independently of human control. Such devices as

automatic pilots, automatic telephone equipment and automated control systems are used to perform various operations much faster and better than could be done by people.

Automated manufacturing had several steps in its development. Mechanization was the first step necessary in the development of automation. The simplification of work made it possible to design and build machines that resembled the motions of the worker. These specialized machines were motorized and they had better production efficiency.

Nowadays one can hardly find fields in human activity where electronic machines or devices are not used. More and more hard and time-consuming operations performed by man some time ago are now transferred to machines.

Complicated calculations, logical operations, weather forecasts and many other jobs are being increasingly performed by computers.

The development of the machines, which can carry out human functions, is well under way in Russia. There are a few examples of using computers on the railways.

The problem of training locomotive drivers has been greatly facilitated by means of the electric technique known as simulation. Under this system the locomotive simulator is equipped with a computer and other electronic devices. The first automatic locomotive driver was designed and successfully tested in Russia. Under this system, the electronic computers installed in the trains start and stop the trains and control their speeds. The program of the computer must provide for emergency situation in order to instruct the driver how to avoid accidents.

Russia is also among the first countries to develop and use the so-called auto-dispatcher. Driverless trains controlled by electric computers are operating at the ore mines. Installed in the mine, the auto dispatcher controls the movement of each vehicle and ensures the optimum efficiency of its operation. A special transmitter is employed to give a sound signal if any fault occurs. Under this system only one dispatcher is required to keep the traffic under control. There is no need to say that the driverless trains described open up great prospects on railways.

Traffic control is not the only job the computers are able to do on railways. They are now widely use to automate sorting yards operations. Some time ago the sorting of goods trains at the stations was a very complicated job and the operators were physically unable to process all the data received by a station. Computers have come to their aid.

2. Answer the following questions:

a) How is the term automation defined in the text?
b) What was the first step in the development of automaton?

c) How are computers used on railways?
d) Why is auto- dispatcher useful on railways?
e) In what country was the first automatic locomotive designed and tested?

3. Translate the following words and word combinations:

a) to carry out calculations-
b) to send impulses if it is necessary-
c) the data provided by the computer-
d) to rely on the information send by the computer

4. Translate the following sentences.

a) The project of a new railway was objected to by most specialists.

b) The economic development of a country is affected by the progress in rail transport.

c) All the reports made at the conference were followed by a heated discussion.

d) The invention of the steam locomotive roused great interests it was much spoken and written about.

5. Write out from the text the sentences in the following tenses:

a) Passive Voice
b) Present Perfect
c) Present Simple

4.2 History of robotics

1. Read and translate the words and phrases in bold type. Write their pronunciation.

2. Read and translate the text. Mind the new technical terms.

The concept of robots **dated back** to ancient times, when some **myths** told of mechanical beings brought to life. Such **automata** also appeared in the clockwork figures of medieval churches, and in the 18th century some clockmakers **gained fame** for the clever **mechanical** figures that they constructed. Today the term **automation** is usually applied to these **handcrafted**, mechanical (rather than electromechanical) devices that **imitate** the motions of **living creatures.** Some of the "robots" used in advertising and entertainment are actually automata, even with the addition of **remote radio control.**

The term **robot** itself **is derived from** the Czech word **robota,** meaning "compulsory labour". It was first used by the Czech novelist and playwright Karel Chapek, to describe a **mechanical device** that looks like a **human** but**, lacking** human sensibility, can **perform** only automatic, **mechanical operations**. Robots as they are known today do not only **imitate** human or other living forms. True robots did not become possible, however, until the invention of the computer in the 1940s and the miniaturization of computer parts. One of the first true robots was an experimental model **designed** by **researchers** at the Stanford Research Institute in the late 1960s. It was capable of arranging blocks into stacks through the use of a television camera as a visual sensor, processing this information in a small computer.

Computers today **are equipped with microprocessors** that can **handle** the data being fed to them by various sensors of the surrounding environment. Making use of the principle of feedback, robots can change their operations to some degree in response to changes in that environment. The commercial use of robots is spreading, with the increasing automation of factories, and they have become **essential** to many **laboratory procedures**. Japan is the most advanced nation **exploring robot technology**. Nowadays robots continue to expand their applications. The **home-made robots** (горничная) available today may be one sign of the future.

3. Answer the questions using the content of the text:

a) When did the word "robot" appear for the first time?
b) Who was the author of this term?

c) Where are robots used?
d) Will robots find their application in the future?

4.3 Automation in industry

1. Read and translate the text, write down the underlined words. Find and write their pronunciation and meaning.

Assembly operations have traditionally been performed manually, either at single assembly workstations or on assembly lines with multiple stations. Owing to high labour content and high cost of manual labour, greater attention has been given in recent years to the use of automation for assembly work. Assembly operations can be automated using production line principles if the quantities are large, the product is small, and the design is simple (mechanical pencils, pens, cigarette lighters). For products that do not satisfy these conditions, manual assembly is generally required.

Automated assembly machines have been developed that operate in a manner similar to machining transfer lines, with the difference being that assembly operations instead of machining are performed at the workstations. A typical assembly machine consists of several stations, each equipped with a supply of components and a mechanism for delivering the components into position for assembly. A workhead at each station performs the actual attachment of the component. Typical workheads include automatic screwdrivers, welding heads and other joining devices. A new component is added to the partially completes product at each workstation, thus building up the product gradually as it proceeds through the line. Assembly machines of this type are considered to be examples of fixed automation, because they are generally configured for a particular product made in high volume. Programmable assembly machines are represented by component-insertion machines employed in the electronic industry.

We are now continuously getting nearer to all-machine age. Electronic computers are being introduced for making time-tables and schedules, calculating wages, designing locomotives and cars, controlling production processes, train movement and so on. Now specialists have designed new better and quicker electronic computers, which ought to be applied to all spheres of railroad engineering. It is their wide use on transport that is to turn our railways into the most reliable and efficient means of communication.

2. Translate the following words and phrases into English:

Сложная проблема, передавать информацию, управлять устройством, эффективное и надёжное транспортное средство, составлять расписание, контролировать движение поездов, обрабатывать данные, специальный передатчик, подавать сигнал, сортировочные станции, грузовые поезда, работы по сборке, устанавливать компьютеры, неисправность.

3. Make a short situation concerning the automation and computerization in industry. Use words and word combinations to the theme.

Unit 5. Europe on rails

1. Translate the following words and phrases:

a) ancestors-
b) railway corporation-
c) standard gauge –
d) standard coupling –
e) radial steering wheel sets
f) electronic data system -
g) rolling stock -
h) braking system -
i) hard-hitting freight transport market
j) to tilt in curves

2. Find English equivalents to the following phrases:

a) создать единую европейскую сеть дорог –
b) взаимодействовать с высокоскоростными поездами –
c) соединить страны –
d) системы электронных данных –
e)

3. Read and translate the text.

For the railways, frontiers fade. Our ancestors long ago agreed upon the standard gauge, a standard braking system, standard coupling – even for the construction of rolling stock. Present efforts are aimed at creating a unified European railway network.

Fourteen national railway corporations (those of the European Community, Austria and Switzerland) presently serve 336 million people. The single European market will augment the mobility of those people enormously. For this reason, the railway corporation is working to build a high-speed pan-European railway.

Between now and 1995-1998, the railways hope to connect the high-speed network of France, West Germany and Benelux countries. This will entail the construction or upgrading of 30000km of track during the next 30 years to cope with European high-speed trains.

And Switzerland? The plans for Rails and Bus 2000 will integrate perfectly with European high speed railway concept. By its firm resolve to complete the new Trans-Alpine Railway, and double Piggyback corridor, Switzerland is clearly stating its intention of remaining at the centre of European rail routes.

The European railways do not limit their cooperation to the establishment of high-speed lines and the acquiring of state-of-the-art rolling stock. They also cooperate in the hard-hitting freight transport market and especially on the creation of a European combined-transport system.

They are currently concentrating on optimizing the use of their largely interconnected national electronic data systems.

For the railways, national frontiers are becoming ever more ephemeral!

The Spanish hotel-train "Pablo Casals" has been running between Barcelona and Berne since 1989. Some of its comfortable compartments are equipped with showers and there are a restaurant car and a bar to ensure that the twelve hours of its journey pass congenially. The train features radial steering wheel sets which are also adjustable for running both on the broad gauge on the Iberian Peninsula and the standard gauge in the rest of Europe as well as a system, which allows the car, bodies to tilt in curves. As of 1990 "Pablo Casals" runs as far as Zurich.

The European railway corporations are examining the establishment of overnight hotel-trains services between the major European centres. Such trains may run between Basel and Vienna and between Zurich and Hamburg as early as 1992. The advent of high-speed railway lines could make an even better hotel-train service possible in the near future.

In Germany the "Intercity Express" (ICE) – running at speeds of 250 km/h – will commence operations in 1991. The Karlsruhe – Basel line is already being modernized and upgraded for 200-250 km/h with the view to having a Hamburg – Basel ICE – train by 1995.

Switzerland is the first country to have regular TGV (Train Grand Vitesse) – the French high – speed train services. The Paris – Geneva route opened in 1981, Paris – Lausanne in 1984 and Paris – Neuchatel – Berne in 1987. On parts of the new Paris – Lion route, the TGV reaches speeds of 270 km/h. of course; it travels as normal speeds on traditional rail routes. The French and Swiss railways are presently examining the feasibility of cutting almost one hour off traveling time between Paris and Geneva.

Piggyback corridor – контрейлерные перевозки

5. Answer the questions according to the text:

a) Why do European countries make a unified railway system?
b) What role does Switzerland play in the corporation?
c) What does the word *Benelux* mean?
f) What is the Spanish hotel-train equipped with?
g) How do German trains differ from other ones in the world?
h) How are Swiss lines called?

6. Agree or disagree with the statements:

a) The single European market will augment the mobility of people.
b) European corporation intends to build only a high speed railway.
c) National frontiers are becoming more and more evident.
d) Every country in Europe wants to create its own electronic data systems.
e) The European railway cooperate on the creation of the European combined-transport system.

7. Make up the sentences using the words.

To examine, to modernize, to run on … gauge, to equip with, pass congenially, to make better services, to cut time, to reach speeds of.

8. Make a short story (5-6 sentences) about a unified railway network in Europe.

9. Define the tense of the following sentences:

a) The European railway corporations are examining the establishment of the services.
b) The Paris – Geneva route was opened in 1981.
c) As of 1990 “Pablo Casals” runs as far as Zurich.
d) In Germany the “Intercity Express” will commence operations in 1991.
(***подчеркните глагол- сказуемое в каждом предложении)***

5.1. The Pendolino Tilting Train I

1. Find Russian equivalents to the following words and phrases:

Equipment, further innovations, safety standards, traction unit, technology, vehicle, advantages, enlargement, reorganization, aggressiveness, different gauges, chopper inverter, on curves.

2. Read and translate the text.

The Pendolino has been conceived as EMU (Electrical Multiple Unit) to keep axle load to an extremely low level in order to allow the train to run on curves with speed increasing by up to 35% compared with conventional Intercity train sets (loco plus trailers) at the same time minimizing aggressiveness of the wheel on the track.

The ETR 460 is the third generation of the PENDOLINO train in service on the Italian State Railway network since 1988. In addition to the special characteristics of the second generation, ETR 450, it features all the improvements made possible by the latest developments in technology, together with further innovations acquired from operational experience. The electrical traction equipment, with continuous power of 6000 kW, includes a GTO chopper – inverter and asynchronous motors.

The tilting system is the bogie, located entirely under the body, and has permitted the reorganization and enlargement of vestibules and passenger compartment areas. The bogie – body connection is extremely simple, with clear advantages for what concerns maintenance costs.

The body, shall exploiting large aluminium extrusion technology, has substantial modularity and allows for extremely low axle weight, whilst fully respecting the most stringent safety standards, and allows the best exploitation of the space with different gauges.

The train for F.S. (Italian State Railways) is composed of 9 vehicles, 3 traction units with one chopper inverter and 4 motors. The end vehicles of the train set are provided with an aerodynamic driving cab; one of the trailer coaches features a bar (restaurant).

3. Match the words:

axle	колесо
wheel	вытеснение

bogie	на кривых
whilst	наклоняться, наклон
trailer coach	тележка
extrusion	пока, в то время как
on curves	прицепной вагон
tilt	ось

4. Find verbs - infinitives to the following words, translate them into Russian.

Increasing, operational, driving, reorganization, addition, enlargement, minimizing, exploiting, improvements, development, provided different.

5. Translate into English.

Снабжены чем-либо, состоит из …, технология вытеснения, находиться под …, касаться чего-либо.

5.2 The Pendolino Tilting Train II

1. Read and translate the text.

An increase in the speed of railway systems can be achieved either by constructing dedicated lines or by making substantial modifications to already existing lines: both of these solutions would however require considerable investment, and would also involve long implementation schedules and environmental damage.

The tilting train represents an alternative to both of these options and can run on existing lines without any need for modifications to the infrastructure: in other words the “PENDOLINO” train.

Pendolino is a registered name identifying all active tilting train sets produced by Fiat Ferroriaria. All data stated hereafter are referred to the ETR 460, the last Pendolino developed for the Italian State Railways.

Fiat Ferroviaria, whose commercial success in the rail industry started with the introduction of its first diesel engines for trains back in the 1930’s, has developed the idea of a tilting train so that passengers can travel in greater comfort at high speeds.

The idea which originated at the end of the 1960’s, has been thoroughly tested in Italy, a country whose mountainous geography means roads and railway

tracks often have to follow rather tortuous routes. The first prototype of the train, the Y0160 built in 1967, quickly earned the nickname "Pendolino" which has struck ever since.

The Pendolino's top, straight-line speed is 250 km/h whilst this is not as high as the 300 km\h or so reached by the French TGV and the Italian ETR 500, for which Fiat Ferroviaria designed and built the carriages, it is still far faster than traditional trains. The Pendolino also has the advantage of being able to run on standard tracks.

Just like aircraft cabins, the carriages are pressurized to eliminate the irritating changes in pressure, this occurs when two trains pass each other or when a train goes through a tunnel.

Future research projects will look into developments, which will further improve weight reduction and increase speed.

2. Read and translate the text, write down and translate the following words and phrases.

Modification, irritating change, weight reduction, eliminate, advantage, standard track, occur, go through a tunnel, tortuous routes, mountainous geography.

3. Agree or disagree with these statements.

a) "Pendolino Train" is a train that needs modifications of infrastructure and reconstruction of the existing lines.
b) Traveling by "Pendolino" people feel comfort and speed.
c) "Pendolino" is not going to develop its construction in the future.

4. Answer the questions to the text.

a) Why was Fiat Ferroviaria a success in the rail industry?
b) Why was it necessary to build the tilting train in Italy?
c) What are the advantages of "Pendolino Train"?

5. Find and write out from the text sentences in:

a) Past Simple d) Passive Voice
b) Present Perfect c) Future Simple

6. Describe advantages of the "Pendolino" Tilting Train using the texts.

7. Fill in the table.

Train	*Country*	*Year (put into service)*	*Speed*
ICE			
TGV			
Pendolino			

5.3 The SBB (Swiss Railways) I

1. Find Russian equivalents of the following words and phrases:

High-speed lines (trains), routes, shareholding, economic and touristic centres, double-tracked, narrow gauge, renovation works, unconventional methods, to resort, to freeze the loose and wet ground, to dig the new tunnel, the cut-and-cover method.

1. Read and translate the text.

In Switzerland, distances are too short for the construction of new high-speed lines. Despite this, connections with high-speed trains are offered daily to the different European regions: TGV Paris-Geneva, Paris-Lausanne, and Paris-Berne-Zurich. The Intercity Express ITC Hamburg-Berne-Interlaken and Zurich-Basel-Hamburg. The "Pendolino" Milan-Geneva, Milan-Berne-Basel and Milan-Zurich-Stuttgart.

In night traffic, passengers can use the comfortable hotel trains of "CityNightLine" on the routes Zurich-Berlin, Leipzig-Dresden, and Zurich-Hamburg. Most of these services are operated by companies in which the SBB own a shareholding. These high-class train offers are completed by a high number of fast trains "EuroCity" and "EuroNight".

The tunnels, some of which are very old, are being inspected regularly connecting the Swiss towns to most economic and touristic centres of Europe.

On the SBB's line network, there are 265 tunnels with an aggregate length of 213 km. Join them together and you have an underground line from Basel to Lugano. The first 76 km of such a line would be double-tracked, the last 3,5 km

narrow gauge. With two single- track bores of 19,8 km each, the Simplon tunnel is, to this day, the longest tunnel in the Alps. SBB's shortest tunnel is 7 m in length. It is situated near Moutier in the Jura Mountains. The oldest of the SBB tunnels passes under the castle at Aurburg and was opened to traffic in 1856. In recent years major renovation works had to be carried out in numerous tunnels, because they were in a bad condition. They are regularly repaired, sealed or rebuilt where necessary.

At present, renovation works are in progress in some tunnels.

Engineers and constructors must resort to unconventional methods. For instance between Zurich Museum Strasse and Stadenhofen they had to freeze the loose and wet ground under the river Limmat in order to dig the new tunnel. The cut-and-cover method is slightly cheaper, but it can be only used to build shallow tunnels. Such a tunnel was dug to Geneva airport, the terminal station for express and intercity trains since 1987.

3. Answer the following questions to the text.

a) Why is there no necessity to build high-speed lines in Switzerland?
b) How can passengers get to European countries from Geneva?
c) Why are there a lot of tunnels in Switzerland?
d) What is the longest tunnel in the Alps?
e) What methods do the workers use to renovate the tunnels?

4. Translate the following sentences paying attention to the Passive Voice.

a) The high-speed trains are offered daily.
b) These services are operated by companies in which the SSB own a shareholding.
c) Some tunnels are very old and they are being inspected regularly.
d) Such tunnel was dug to Geneva airport.

5. Make a short situation about the SBB railways, using the words:

High-speed lines, is situated, to use methods, to renovate, to resort,
(to be) offered daily, are inspected, to dig.

5.4. The SBB (Swiss Railways) II

1. Find Russian equivalents to the following words and phrases:

requirements in regard to comfort, to replace, guarantee a good functioning, armoured concrete, to invest, to be located , to be provided with, are built.

2. Read and translate the text.

The higher requirements in regard to comfort, the higher speeds and the constantly increasing loads call for always more resistant rails. In the course of the past years, the rails of 54 kg\m and 60 kg\m have progressively replaced the old rails of 46 kg\m on 87% of the SBB tracks. Thanks to the use of efficient and elastic rail fastenings, as well as a good knowledge of stability phenomenon, it was possible to weld more than 95% of the rails on the long distances. On the main tracks, equipment for heating the points with automatic lighting devices guarantees a good functioning of the points in winter.

The construction of a railway network in a hilly country with many rivers such as Switzerland requires many bridges. Bridges with a smaller span were built in stone-work. In the 19th century bridges with a wider span were provided with a steel framework. Many of them are still in service to this day. Today the bridges are built in armoured concrete or in compound construction (main elements in steel, the bridge floor in armoured concrete).

In Switzerland, for a business or shops to be located close to a railway station is again regarded as an asset. The SBB are investing heavily in order to make rail stations more attractive, not only for the passengers. As an example, the stations of Morgens and Neuchatel are the first to receive McDonald's restaurants as station buffets. In 26 stations, "Aperto" shops have successfully taken up business. They are open every day, also on Sundays, and in the evenings. With its 102 shops and restaurants, the "Shop-Vile" in the station of Zurich now takes the fifth place of all shopping centres of the country, in terms of turnover.

Additionally it now houses a fitness centre and a medical emergency service. Lucerne's station building also houses the professional school. Thanks to the company "McClean", the public toilets in the stations of Berne, Basel SBB, Geneva and others have been replaced by so-called "centres of hygiene" permanently supervised by the attendants.

3. Answer the questions to the text.

a) How do Swiss Railways try to attract the passengers?

b) Do the railways in Switzerland differ from those in other counties?
c) What do they do to make stations more attractive?
d) How are public toilets called in Geneva and European stations?

4. Agree or disagree with the statements, prove your point of view.

a) To make the railways more reliable they replace the old rails.
b) Today the bridges are built in stone work.
c) In Switzerland shops and business centres are not located near the stations.
d) Switzerland is a hilly country, so there are no many railways.

5. Find and write out from the text sentences in:
a) Present Simple; b) Past Simple; c) Present Perfect; d) Present Progressive; e) Passive Voice.

Unit 6. High-speed railways

6.1 Sapsan I

1. Find Russian equivalents to the following words and word combinations.

To capture, passenger traffic, nocturnal sleepers, a leisurely position, commercial service, to upgrade, to invest, a directive, drainage channels, a culvert.

2. Read and translate the text.

The 650 km Moskva to St.Petersburg railway, forming part of RZD"s Oktyabrskaya Zheleznaya Doroga (OZD) division, is Russia's premier main line, linking the present-day capital with the pre-Revolution (1918) one, which is now the country's second largest city. The line serves a corridor in which live 18% of the Russian population. Passenger traffic is very heavy.

In the past, overnight trains have always captured the lion's share of passenger traffic, in spite of the relatively short distance between the two urban centers. In fact, what happens is that the nocturnal sleepers are timed in quite a leisurely fashion, so that acceptable evening departure and morning arrival times are offered. There are a few fast daytime expresses, too. The pattern is expected to change radically in December 2009 once the Sapsan high speed trains enter commercial service.

With the entire RZD network measuring some 86000 km in length, the Moskva to St.Petersburg line represents a modest 0,7 of it. Nevertheless, huge amounts of money have been invested over the past five years in upgrading the infrastructure. The first directive concerning this was issued by the Ministry for Transport on 28 September 1994. Work actually began in 1995, and the first phase of upgrading lasted until 2001, 23 billion RUB (0,5 billion EUR) being invested in the project.

The work involved the exchange of 1340 km of rails, 300 sets of points were replaced to enable transit at higher speeds, and around 500 km of drainage channels and culverts were repaired or rebuilt, together with 65 bridges. Nine sections of the line which were in poor condition were subjected to major rebuilding. 500 km automatic block signaling cables were renewed, together with 900 km of overhead wire, while ten new electricity substations were provided to cater for the increased power requirements of trains running at high speed.

3. Answer the questions to the text.

a) Why did the government pay attention to the line Moskva-St.Petersburg?
b) When was the work of upgrading the infrastructure begun?
c) What operations were done during the reconstruction?
d) What is the distance between Moskva and St.Petersburg?

4. Make up your own sentences using the following phrases:

… in bad condition
… were repaired
… were renewed
… were provided
…were invested

5. Make up a short story, proving the opinion that it was necessary to build the high speed line between Moscow and St Petersburg.

6.2. Sapsan II

1. Find in the text and translate the following words and phrases.

Long, deep cuttings, high embankments, obstacle, pathing difficulty, independent line, drastic reduction, additional tracks, revise operations.

2. Read and translate the text.

Between Moscow and St.Petersburg there are around 50 stations, and a large number of wayside halts. The line runs through relatively subdued topography. Over 90% of it is straight. The gradients are mostly less than 5%, though there is one 12 km ramp of 8%. For the most part, curves are of very generous radius. The civil engineering work to maintain such standards is quite impressive, with long, deep cuttings and high embankments, especially on the central part of the route.

To ease pathing difficulties for the Sapsan as the new service develops, it will be necessary to revise operations on the line. The high speed trains will still have to contend with local, stopping passenger trains, especially on the first part of the rout south from St. Petersburg and between Tver and Moskva.

Freight trains are the main “obstacle”, and from the start of the 2010 time-table most of these will be re-scheduled to run at night, when they will be compatible with the slow nocturnal passenger services.

Elsewhere in Europe it has been demonstrated that a drastic reduction in journey times by rail between pairs of major centres of population generates more passengers and also prompts a modal shift from air to rail. That phenomenon is likely to occur in the case of the Moskva to St.Petersburg line, and a partial shift

from overnight to daytime rail travel is also likely. In the end, it looks increasingly likely that consideration will once again have to be given to construction of a completely independent high speed line.

On many lines there are also plans to build additional tracks to increase capacity for freights and local passenger trains, so that the express services can run unhindered on their own tracks.

3. Finish up the sentences:

a) To ease the difficulties in the building of Sapsan service it is necessary …
b) To increase the capacity for freight and local trains we must build …
c) The time-table of the most of the freight trains will be rescheduled because …

4. Answer the questions to the text.

a) What is the topography of the line Moskva – St. Petersburg?
b) Why is it necessary to revise operation on the line?
c) Why must freight trains be rescheduled?
d) What is the reason of building the additional tracks on many lines?

5. Write out from the text the sentences in the following tenses:
a) Future Simple.
b) Present Simple

6. Make each of these sentences negative and interrogative.

6.3. Sapsan III

1. Read and translate the text.

The Moskva to St. Petersburg project is regarded as such a prestigious one that during their commissioning phase the Sapsan have been used for a number of high profile publicity events, the most recent of which took place on 30th of July 2009, when a Moskva – St.Petersburg run was made for invited guests. Among these were RZD president, other officials and foreign media representatives.

Speeds of between 160 and 250 km\h were reached, an on-board conference addressed the need for innovation in the evolution of rail transport in

Russia, and 12.00 the train arrived at Metallostroy depot where the new complex for the servicing, examination and maintenance of the new trains was inaugurated.

During testing, the Sapsans have shown how they are brilliant at creating new Russian rail speed records! First 281 km/h on 2nd of May 2009, and more recently 291 km\h – the latter as not yet officially announced by RZD, notched up recently on a test run between Okulovka and Mstinsky Most on the 2nd of July 2009 "our" train ran at a sustained speed in excess of 270 km\h, no problems were encountered, thus, a new official rail speed record is likely in the near future?

It has already been announced that there will be three train pairs daily, morning, lunchtime and evening. The fastest daytime journey time will be slashed from 4h 30 to 4h 45 – less than half the time taken by the overnight services.

RZD now has a plan for the future – the strategy for Developing Rail Transport up to 2030. One of the key tasks will be the development of fast (160 to 200 km/h) and high-speed (up to 350 km/h) rail routes. Existing lines will be upgraded and realigned for the provision of fast services on routes where end-to-end journey time does not exceed seven hours.

At present there are two routs proposed for completely new 350 km/h lines – Moskva to St. Petersburg and Moskva to Adler (to serve Black Sea resorts and winter sport centers).

2. Answer the following questions to the text.

a) When was the first Moskva – St. Petersburg run made for invited guests?
b) What speed was reached during this demonstration?
c) What is the strategy of RZD for Developing Rail Transport?
d) When and where was the upper speed shown by Sapsan?

3. Find in the text sentences in Past Simple and Passive Voice.

4. Make your own sentences using the following words and phrases.

a prestigious project, evolution of transport, to reach, sustained speed
key task, to upgrade, to realign, strategy

5. Agree or disagree with these statements, prove your point of view.

a) It is necessary to renew the rail transport in Russia.
b) During the testing it became clear that Sapsan couldn't reach high speed.

c) Existing lines won't be upgraded and realigned for the provision of fast services.
d) Nowadays there are several routs proposed new 350 km\h lines.
e) One of the main tasks is to develop speed about 100 km\h.

6. Describe Sapsan using the information you've got from the texts.

Unit 7. Railways of the future

7.1. Monorail transport: from the drawing boards to reality

1. Match the columns:

1. air-cushioned transport	a) как средство регулярных перевозок
2. as means of regular transport	b) небольшой двигатель
3. the noiseless engine	c) бесшумный двигатель
4. military vehicle	d) транспорт на воздушной подушке
5. miniature motor	e) транспортное средство для военных

2. Read and translate the text.

One of the new ideas put forward in the last quarter of the 19 century was the idea of a monorail railroad. The idea was laughed at by many but some people believed it was a promising one.

One of the first monorails appeared in 1882 when L. Brennan, an Irishman, built an experimental monorail car. The inventor designed his car as a military vehicle because the speed at which a single rail could be laid made it ideal for military purpose. According to Brennan, those cars could be worked with steam, petrol and electricity.

In 1887, Ippolit Romanov, a Russian engineer, designed a suspended electrical monorail that was successfully demonstrated in St. Petersburg. It was powered by a miniature motor.

There are more than 20 monorails, most of them experimental, operating in the world today. Their successful operation shows that they could be well used as means of regular passenger transport.

The choice of the type of monorail depends upon climatic conditions, topography of the country and the number of passengers.

The high-speed air-cushioned transport is most effective for long distances. High speed is the main advantage of the monorail. Also, monorails can be laid in a comparatively short time because their construction involves little earthwork. Besides, the construction of monorails will be about 30 per cent cheaper than that of the Metro.

Monorail can be utilized for many purposes: it can provide comfortable high-speed communication between the centre of the city and the airports situated some 20-30 km away; it can be used for connecting large cities with their satellite towns and so on.

All that can be a reality in the near future.

Aircraft-type cars 23.6 m long weighing only 20 tons have already been designed. The car accommodates 200 passengers and has 100 comfortable seats. It is designed for a speed of up to 350 km/h. Within city limits these monorail cars will run at a lower speed and with the aid of noiseless engines.

In the future monorails can become as common in our life as railway, air and highway transport.

3. Prove that the following statements are correct.

a) High speed is the main benefit of the monorail.
b**)** The monorail wagon holds more over 150 passengers and has 100 suitable seats.
c) The preference of the kind of monorail depends upon type of volume of traffic and, of course, landscape and climate of the country.

4. Translate the following phrases. Make your own sentences using these phrases.

Can be a reality in the near future, most effective for long distances, was successfully demonstrated, according to, regular passenger transport.

7.2. The flying train – maglev train

1. Match the columns

1. Wheel	a. Ось
2. Axle	b. подвеска
3. Suspension	c. тормоз
4. Damper	d. рельс
5. Brake	e. транспортное средство
6. Rail	f. амортизатор
7. vehicle	g. колесо

2. Scan the text and find English equivalents of the following words and phrases:

Магнитная левитация, наиболее потрясающий вид, обычные поезда, изменять направление, не загрязняет окружающую среду, это делает его трудным для использования, очень дорого для строительства, отталкивать друг друга, привлекать друг друга, есть множество холмов.

3. Read and translate the text.

One of the most exciting new types of the trains is the maglev train. The maglev train is very different from normal trains. It does not have any wheels, axles, suspension, dampers, or brakes. It uses magnetic levitation to float on the rail. It can travel very fast-over 500 km an hour. It is very quiet and it is very clean. Maglev vehicles are light and compact. It doesn't have any wheels or any parts move.

The secret is that it uses magnets in a new type of motor. Have you ever tried to push two magnets together?

If you hold them one way, they attract each other. If you hold them other way, they repel each other. The Maglev train uses magnets in the same way. The motor is very big electromagnet. (An electromagnet is a magnet that only works when there is electricity). The electricity changes direction all the time and the magnet changes from North to South, South to North. There are more electromagnets on the rail and this pushes the train forward.

The train is fast quite and clean. It means that such kind of train is also pollution-free**.** Why don't we see it everywhere now? Part of the answer is that the train can only take people. It cannot carry very heavy things. Also, because the fact is that the rails must be very straight. This makes it difficult to use it on places where there are a lot of hills. But the real answer is because it is very expensive to build. A long rail of electromagnets costs a lot of money. It also uses a lot of electricity.

So, if we want to use the flying train in our country, we need to find a cheaper, cleaner way to make electricity.

4. Answer the questions according to the text.

1. What is maglev train like?
2. How does maglev train work?
3. Is it a fast or a slow train?
4. What is the speed of this train?
5. Do you know any countries where such kind of trains is used?

5. Tell if the information in these sentences is true or false:

1. The maglev train can only go on straight rails.
2. The maglev train can carry very heavy things.
3. There are the maglev trains in China, Japan and Switzerland.
4. The train makes a lot of nose.
5. The biggest problem for the maglev train is that it is too expensive.
6. It is possible to use the maglev train everywhere.
7. The train cannot work when it is raining.

5. What advantages and disadvantages of Maglev train do you know? Fill in the table.

Maglev train

Advantages	***Disadvantages***

6. Make up a short story about maglev train (7-10 sentences).

Unit 8. The development of railways.

8.1 From the history of signaling

1. Read and translate the international words:

Signal, policeman, regulate, practice, indication, system, lamp, flag, semaphore, horizontal, stop, line, interval, telegraph, method, block, principle, section, dispatcher, control, practically, central, automatically, panel.

2. Read and translate the text

On the first days of railways there were no signals and there was no need for signalling. Trains were few and travelled at low speeds. They were expected at definite times and the road was clear for them.

But as trains became more frequent the railways began to employ men known as «policemen» to regulate the traffic. Some years later there appeared fixed signals which could be set to give proper indications.

The London and North Western Railway, for example, used a three - colour system of lamps at night and flags or coloured boards by day.

An important step forward was taken with the introduction of the «semaphore» signal, still most often used type of a signal on British railways today.

With the invention of the electric telegraph a new method known as the «block» system was introduced. The principle of the above mentioned system was that the line was divided into block signalling sections and a space interval was always kept between trains by allowing only one train at a time to enter the section of the line.

In 1843 a central frame from which both points and signals could be operated was introduced. A complete system capable of interlocking points and signals by simultaneous motion was set up by 1858. By that time, practically every major line was already being operated by block signalling.

Track circuits were first used to control signals automatically at the end of the 19th century. Nowadays the operation of a railway would be absolutely impossible without a signalling system. The expression «signalling system» includes the whole of the means and methods with the help of which the movements of trains are controlled.

3. Read the following attributive groups and pay attention to their translation:

traffic signals, railway signals, three colour system, three aspect signal, block system, space interval, block signalling, track circuit, block section, signalling system, block signalling system.

4. Comment the statements; give your point of view on the subject.

a) The train may be controlled automatically.
b) Any new signalling system must be carefully tested.

c) With new automatic block signalling trains can run with safety.

d) Trains should run according to the time-table.

5. Read and translate the sentences, pay attention to the translation of the verb «to be»:

a) Automatic block systems are widely used on railways.
b) Signalling is to provide the safety of traffic.
c) The purpose of signalling is to provide the safety of traffic.
d) Automatic devices were to replace manual controls.
e) The duty of a dispatcher is to control the movement of trains.
f) The block post is near the station building.
g) This new device is an automatic control system unit.

6. Answer the questions to the text:

a) Why were no signals in the early days of railways?
b) What signals did appear on the railways later?
c) What is the principle of the block system?
d) What are the modern means of signaling?
c) What does the expression «signalling system» include?

7. ***Make a project on any of the points: "Early signalling", "Modern means of signaling", "A semaphore", etc.***

8.2. Modern signalling

1. Read and translate the words and word phrases:

railway signalling, railway signalling system, train movement, train movement control, train departure, train arrival, train departure control, semaphore, cab signal, locomotive cab signal, colour light signal, signal indication, block signal, road crossing, shunting operations.

2. Read and translate the text and be ready to work with it

Railway signalling was introduced in Great Britain. Modern Railway systems govern train operation to provide the safety of traffic. They also enable trains to be controlled in such a way that the greatest possible use is made of the existing tracks.

The purpose of signalling is to give the driver accurate information regarding the state of the line ahead and to tell him which route he is to take and with what speed he is to move.

Signals are provided for regulating the arrival and departure of trains from stations, yards for shunting operations, at road crossings and at points where a branch or a siding meets the main track.

Modern railways use different signalling systems: colour light signals, electrical operation of signals and points, track-circuiting, route-setting panel control, automatic train operation, computer-based centralized traffic control (CTC), cab signalling — these are the basic elements of modern signalling.

Colour-light signals are widely used for giving both day and night indications.

Nowadays for signalling purposes, trains are operated automatically by means of «track circuits», first tried in the US in the 1880s.

Low voltage current applied to the rails causes the signal via a series of relays (originally) or electronics (recently) to show a «proceed» aspect. The current flow is interrupted by the presence of the wheels of a train. Such interruption causes the signal protecting that section to show a «stop» command. A «proceed» signal will only be displayed if the current flows. The system is sometimes referred to as «fail safe» or «vital». The method of operating railway lines by CTC was used in the USA in 1927. The principle of it is that at the central point the operator sitting in front of the panel can control the whole line with the help of the diagram showing him where every train is.

Locomotives now are equipped with cab signals. The locomotive cab signal is a small colour-light signal, placed on a panel directly in front of the driver's seat, and it gives the same signal indications that are given by the block signals along the track.

3. Answer the questions to the text

a) What modern signaling systems are used on the railway?
b) What advantage did appear with the introduction of CTC?
c) What is the purpose of signalling on railways?
d) For what purpose are colour light signals used?
e) What is the principle of a cab signal?

4. Translate into Russian, paying attention to the «-ed» forms and define the grammar tense of the sentence:

a) When tested this signalling system showed the desired results.
b) The signalling system tested showed good performance.
c) Signals are to regulate the movement of trains.
d) This new signalling system is shown at our Museum.
e) Signals installed increased the safety of traffic.
f) The improved safety is provided by control systems developed on electronic elements.
h) Many new automatic devices are used on railroads.
i)The improvement of signalling is paid great attention to.

5. Complete the sentences according to the text:

a) The purpose of modern railway signalling systems are the methods ...
b) Signalling enables trains ...
c) Modern signalling is to provide ...
d) Day indications are given by ...
e) Colour light signals are used for ...

7. Tell about signaling system. Find additional information of signals. Make a project on the theme.

8.3. Track circuit

1. Translate these words and word combinations:
circuit, track circuit, track relay, intermediate joints, reliable path, the most reliable method, the most useful means, most of the tracks, most of railways, current-limiting resistor, bond wires, electrically-operated switch, electronic track relay, controlled rectifier principle.

2. Find all international words in the text and translate them

3. Read and translate the text

Probably the most important invention in the history of the railroad signalling was the track circuit concept. The man who created this simple, revolutionary

system was William Robinson. Robinson's system was electric, automatic, efficient, cheap to operate, functional in any kind of weather. The principle of track circuit operation of automatic signals remains the same nowadays.

The purpose of track circuiting is to detect the presence of a train on a section of the line. Therefore the length of each track circuit depends on the length of the section at which the trains are to run. Thus a track circuit usually extends from one stop signal to another.

The track circuit is completed by running low voltage current via the two running rails of a line to a relay, which is energized when the track is not occupied by a train. As soon as a train enters the track-circuited section, its wheels and axis short-circuit the current thus de-energizing the relay. The de-energized relay sets signals to danger and caution at a safe distance behind the train.

When the train leaves the section, the current again energizes the relay, which in its turn changes the aspects of signals to clearance in the right order behind the train. In other words the moving train continuously protects its own rear as it moves along the track-circuited section of the line. Each track circuit is protected from electrical interference by its neighbour through the insertion of insulated fish-plates in the track at each end of it.

The rail joints within the circuit are wire-bonded to reduce the electrical resistance of the circuit, if the track is not long-welded. For continuously- welded track, a system of jointless track-circuiting has now been developed.

4. Find the Russian equivalents for the predicates, define the grammar tense of the sentences and translate them:

a) New types of signalling are introduced on our railroads.
b) Track circuit was introduced for the safety of train movement.
c) Railways have introduced a number of new signalling systems.
d) This automatic train operation device will be introduced for increasing track capacity.
e) A new electronic track relay is being introduced on some railroads now.

5. Translate the sentences into Russian. Agree with the statements:

a) Railroads are equipped with track circuits to control signals.
b) It is necessary to introduce electronic track circuits on this section of the line.
c) Modern railways are to be equipped with modern devices to provide automatic signalling.
d) Cab signals to be installed on all locomotives help enginemen to drive trains.

e) To detect the presence of a train on a section of the line is the purpose of a track circuit.
f) Current-limited resistors at one end of the circuit are used to reduce the voltage in the track circuit.
g) Insulating joints to separate the adjacent sections of the track are very important for the operation of a track circuit.

6. Give the definition of a track circuit, a track relay, an insulating joint, an electronic track relay, track circuit resistor. Speak on the principles of track circuit operation.

8.4. The block system

1. Give Russian equivalents for:

block system, block section, railroad track, block signal, track occupancy, manually-controlled block system, double track road, rear-end collision, head-on collision, searchlight signal, rail joint, space interval, broken-rail protection, track current.

2. Read and translate the text

To provide the safety and efficient operation of trains the track is divided into sections known as «block sections».

Each block section is a length of the railroad track of definite limits, the use of the section by trains being controlled by one or more block signals. A block signal is a fixed signal controlling the block occupancy.

Formerly, the block signals controlling the distance between trains were manually operated. Now in all automatic block systems signals are automatically controlled by the trains themselves. A block system is a series of consecutive blocks controlled by block signals. The blocks can be made as short as desired.

Automatic block signals are used to provide definite space intervals between trains. On a double-track road, the automatic block system must maintain a distance between trains running in the same direction over the same route. This distance must be great enough to avoid any danger of rear-end collisions. On a single-track road, the block system must not only protect a train against rear-end collisions but also against head-on collisions, because trains are permitted to run in both directions over the same track. Automatic block signalling also provides the trains with broken-rail protection. That is done with the help of track circuits.

On a railroad having automatic electric signals, the rail joints are all bonded. These bonds carry the track current from rail to rail. At one end of the block the rails are connected with the relay operating the signal by underground wires. At the other end the rails are connected with the battery, which supplies the current for the track circuit. Each block is insulated from the next one. Automatic block signals in common use are of colour-light type, the most recent type being a searchlight signal.

3. Read and translate the sentences paying attention to "as":

a) As automatic block signalling came into general use, train safety increased.
b) As a train passes the block section, it shunts out the relays.
c) As a part of the general program, old signals were replaced by the new ones.
d) As trains run at high speeds they must be automatically controlled.
e) Blocks can be made as short as desired.

4. Pay attention to the translation of the words:

well — хорошо ; as well — также ; as well as — так же, как и ...

a) This automatic block system works well.
b) Automatic control is being introduced on railways but a human operator is necessary as well.

c) Colour-light signals as well as searchlight signals are in use on modern railroads.

4. Complete the sentences according to the text:

a) Each block section is a length of …
b) Automatic block signaling provides the train with …
c) On a single-track road the block system must not only protect …
d) The most recent colour-light signal is …
e) Automatic signals are used to …

5. Answer the questions:

a) What indications does a cab give?
b) Semaphore is considered to be the most common type of a signal, isn't it?
c) For what purpose are automatic signals used?
d) What is the main function of track circuit?
e)) Are there signals done manually on the railway?

6. Give the definition of:

a) a block section; b) a block system; c) a block signal; d) a search-light signal;

8.5. Interlocking signaling

1. Find Russian equivalents for:

Route, lever, interconnection, interlocking, to eliminate

2. Pay attention to the translation of the attributive groups:

Automatic train operation, signal appliance, signalling equipment, various signal devices, switches and signal interconnection, lever combination, machine design, interlocking operation, interlocking plant.

3. Read and translate the text

Where a great number of switches and signals are situated in one locality, as in terminals, yards and other points, it is necessary to develop a safety system which can prevent setting up conflicting routes. Such system was invented in the middle of the 19th century. It was mechanical interlocking of points and signals.

The interlocking was performed by a series of mechanically interacting rods connected to the signal operating levers in the signal box. Later, mechanical interlocking was replaced by the electrical one and lever frames were replaced by push-button control panels. These control panels are of route setting entrance — exit type. They have compact diagrams of all the tracks they control with push-buttons and indicating lamps.

The entire route between any pair of signals is set up by pressing two buttons: one at the entrance to the section, the other at the end of it. The buttons are located on the diagram in such a way as to show the route they control. When one of the entrance buttons on the panel is pressed to initiate a route setting, a light inside it starts to flash if the route is clear. Then the dispatcher selects the appropriate exit button and presses it. Immediately the electrical apparatus resets points as necessary to establish the required route and finally clears the protecting signal.

Then, white lights are illuminated on the diagram showing to the dispatcher that the route was set correctly. Trains report their progress through the dispatcher's territory in two ways. On the control panel, a row of red lights is illuminated in each track-circuited section of the track diagram as the section is occupied by a train. Out on the track, behind the train the signals are set to danger automatically after the train has entered the section.

4. Match the columns:

1) plant	a) централизация
2) interconnection	b) исключать
3) section	c) рычаг
4) route	d) установка
5) to eliminate	e) маршрут
6) lever	f) участок
7) interlocking	g) соединение
8) switch	h) стрелка

5. Mind the translation of the words:

either – каждый, любой.

either … or – или … илиб либо … либо.

a) This interlocking is controlled from either of two machines.

b) Plants may be either electric or electric-pneumatic.

c) Automatic block signals must protect trains operating in either direction on the line.

d) Signals are operated either manually or automatically.

6. Answer the questions:

a) What is interlocking?

b) What does interlocking prevent?

c) What are the levers designed for?

7. Define the tense of the sentences:

a) The new line has automatic block signals for train operation.

b) Engineers have contributed to the progress of railway operation.

c) Interlocking is widely used on railways for it prevents setting of conflicting signals.

d) The towers house the levers for operating the switches and signals.

c) Interlocking is very important for it increases traffic safety.

8. Make up a short situation about the interlocking signaling.

8.6. Centralized traffic control

1. Read and translate the words and word combinations:

Centralized Traffic Control, CTC installation, railroad operation, train traffic, station switches, CTC dispatcher, single-track and double-track lines, radio train communication, power-operated switch, computer-based information processing system.

2. Read and translate the text:

Centralized Traffic Control is a system of railroad operation which is used for controlling the movement of trains by signal indications.

The control of switches and signals is centralized at one dispatcher's office and the train traffic over block sections is regulated by means of automatic signalling.

CTC permits the dispatcher to control both the station switches and the signals at the intermediate sidings throughout the division. The dispatcher also controls all the marshalling operations at stations and there are no station operators on duty any more.

The CTC dispatcher sends special coded orders which operate the switches and signals at the station. Since all train movements are controlled and directed by CTC, the protection established in the signal circuit design must be complete.

CTC is used on single-track and double-track lines. It consists of a combination of automatic blocking and interlockings.

The CTC installations have some special devices, such as: a control panel and equipment at the field location. The former includes: 1. push buttons for the operation of switches and signals. 2. indications showing the position of switches and signals and the occupied or unoccupied condition of sections of the track. 3. the recorder which registers the time of the arrival and departure of trains at different wayside stations.

The latter consists of electrically operated switches, signals and relays.

Radio train communication helps the dispatcher to control the movement of trains more efficiently, especially when the train is late. The radius within which CTC is used depends on the density of railway traffic.

CTC provides a high degree of safety. It also increases both the traffic capacity and the speed of train movement.

3. Match the synonyms:

1) switch	a) register
2) crossover	b) finish
3) operate	c) point
4) complete	d) to contain
5) recorder	e) crossing
6) consist of	f) control

4. Agree or disagree with the following statements, prove your point of view:

a) Signals and switches are installed in order to provide the safety of traffic.
b) Railway men keep the track in order.
c) Earlier trains were operated only by train orders.
d) The dispatcher sends special coded orders which operate the switches.
e) There were a lot of signals on the early railways.
f) Automatic train operation needs no signalmen.
g) The dispatcher controls all train operations but there are operators on duty at each station.

5. Write down the sentences, point out the predicates and define the tense of the sentences.

a) For many years the time interval system was the only method of controlling train movement.
b) All switches and signals are interlocked so that it is impossible for the dispatcher to switch the signals that would admit two trains to the same track.
c) Railways have made great progress due to the use of CTC.
d) Due to the automatic operation the trains arrive and depart in due time.
e) If the driver is warned of the danger the accident will be avoided.

5. Make up a story about the operation of the CTC system. Use all necessary vocabulary.

Unit 9. The organization of a railway.

9.1. Centralized traffic control

1. Read and translate the words and word combinations:

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2. Read and translate the text:

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The CTC installations have some special devices, such as: a control panel and equipment at the field location. The former includes: 1. push buttons for the operation of switches and signals. 2. indications showing the position of switches and signals and the occupied or unoccupied condition of sections of the track. 3. the recorder which registers the time of the arrival and departure of trains at different wayside stations on a tape.

The latter consists of electrically operated switches, signals and relays.

Radio train communication helps the dispatcher to control the movement of trains more efficiently, especially when the train is late. The radius within which CTC is used depends on the density of railway traffic.

CTC provides a high degree of safety. It also increases both the traffic capacity and the speed of train movement.

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c) Railways have made great progress due to the use of CTC.
d) Due to the automatic operation the trains arrive and depart in due time.
e) If the driver is warned of the danger the accident will be avoided.

6. Make up a story about the operation of the CTC system. Use all necessary vocabulary.

9.2 Centralized traffic control

1. **Read and translate the underlined words.**
2. **Read the text and be ready to work with it. Mind the advantages of CTC.**

Originally traffic working was arranged by the local masters. The signalmen played a considerable part in controlling the flow of traffic. Soon it became evident that the signalmen could not perform the effective control over the flow of traffic because they did not know the general traffic position.

In order to simplify the problem of running trains all railroads were divided into divisions. A division superintendent is responsible for train movement.

On every railroad division there is a train dispatcher who is responsible for train movement too.

The most important device for railway operation is CTC – Centralized Traffic Control. It enables the dispatcher to control both the switches and the signals at the intermediate sidings in the division. The dispatcher also controls all the marshaling operations at way-side stations and there is no station operator on duty any more. The CTC dispatcher sends special coded orders that operate the switches and signals at the station.

CTC provides a high degree of safety and reduces the number of sidings. It also increases both the railway capacity and the speed of train movement. All train movements are governed by signal indications. The signals and switches are operated electrically from a large illuminated panel standing in front of the dispatcher's desk. All the tracks are represented on the panel. The locations of all the trains in the given section are seen on the panel. CTC saves much time and prevents train delays. Many railways reduce the number of sidings.

3. Answer the following question to the text:

a) Who arranged the work on the first railways? His work was effective? Wasn't it?

b) Why were the railways divided into divisions?

c) What was the role of the train dispatcher?

d) CTC means …

e) CTC enables the dispatcher to control only marshaling operations. Do you agree?

4. Name the advantages of CTC. Use the following words and phrases:

Control(s)… Save(s) much time… Prevent(s) delays …
Reduce(s) sidings Increase(s) safety and capacity of …

5. Agree or disagree with the statements. Pay attention to the word «to operate". Prove your point of view.

a) The dispatcher operates only his station.
b) The speed of train operation is increased on many railways.
c) CTC operates with great accuracy.
d) The operation of computers is not important.

6. Translate sentences into Russian and define the Grammar Tense.

a) The trains run between these towns regularly.
b) All railroads are divided into divisions.
c) Railroads are developing with great rapidity.
d) The tests are being conducted with CTC.
e) Railway transport will be constantly developing.
f) In the near future trains will operate at speed of 250 km/h.
g) Last year new sidings for defective wagons were provided.
h) Containerization has completely changed the methods of handling and storing.

7. Make up a story about the railway operation. Use as much as possible the vocabulary concerning the theme.

The title of the text is …
The text is devoted to …
According to the text …
It should be mentioned that …

9.3 Marshalling and freight yards

1. Write out from the text the underlined words and word combinations, find their meaning with the help of dictionary.
2. Read and translate the text.

Marshalling yards are necessary for assembling single wagons into trains. The wagons may start from the yard or they may be received in the form of trains from other yards. Marshalling yards have two functions:

1) the forming into trains the wagons sorted in the yard itself;
2) the forming into trains wagons received from loading centres.

Marshalling yards are usually located near a locomotive depot. If a large industrial centre does not have a marshalling yard, all the traffic has to be dispatched to a yard some distance away.

Marshalling yards can be of two types: flat or hump. Hump yard are of two types:

1) there is a slight slope throughout the whole yard;
2) a hump yard in which wagons are propelled over a hump to run down a steep slope into sorting sidings.

In a hump yard different types of retarders are used. **A** retarder is a device which checks the speed of the train during humping operation.

Trains arriving at a marshalling yard are placed in reception sidings which may be parallel to sorting sidings.

The freight yard is a place where the incoming trains are received. The cars are sorted. Many of them are distributed to industrial sidings and freight houses. The freight yard is also a place where the cars of outbound freight are collected and sent to their destinations.

The work of a freight yard is under the supervision of a yard master. The work of a yard master is very difficult. Cars may come into the yard at all hours, both day and night; they must be sorted and sent on their way. The work of the freight yards is facilitated by the use of radio-telephone system and electronic computers.

3. ***Answer the following questions and be ready to tell about marshaling and freight yards.***

1. What is a marshaling yard?
2. Where are these yards located?
3. What function does a retarder make?
4. Where are arriving trains placed?
5. What is a function of the freight yards?
6. Who is responsible for the work of the freight yards?
7. What do you think about the work of the yard master? Is it easy? If not why?
8. What modern technics are freight yards equipped with?

4. Translate the following sentences, paying attention to Participle I.

a) The wagons rolling down a hump in the marshalling yards stop at the proper place.

b) A freight train usually consists of cars moving to a number of different destinations.

c) Controlling the operation of trains the dispatcher proves the safety of traffic.

d) Having been tested the new CTC system was put into operation.

e) The operator has a diagram showing him where every train is.

f) Being scheduled in the time-table the freight trains is to arrive in proper time.

5. **Translate the sentences paying attention to Participle II.**

a) The goods required can be delivered in a few days.

b) Cars loaded with in bounded freight are distributed to industrial sidings and freight houses.

c) Diesel shunting locomotives are designed to push trains over the hump much quicker than it was done before

d) When tested this sorting system showed the desired results.

e) The sorting system tested showed good operation.

6. Tell about the work of freight and marshalling yards. Use the following phrases:

… is (are) necessary for … … is (are) under the supervision of …
…is (are) sorted and sent … … is facilitated by …

9.4 Containerization

1. Read and find the meaning of the following words and word combinations:

Vehicle, to fulfill, to handle and store, operating procedure, insurance standards, conveyance, commodities, to ventilate, to insulate, to withstand stresses.

2. Read and translate the text.

A big box of standard dimension called a container is one of the most important means of freight transportation. Containers fulfill a very important function for the national and international transportation of goods.

Containerization is a complete system of various methods of handling, storing, operating procedure, safety and insurance standards, road transport regulations and so on. Containers may move by sea, land, road and air and by combination of these modes of transportation.

Containers can be divided into two categories: 1) a large type of containers capable of taking a load of up to five or seven tons; 2) a small one suitable for one ton in weight. Besides, the containers may be of various types designed for particular categories of traffic, including ones for the conveyance of goods and furniture, etc.

Containers may be open and covered. They may be insulated and ventilated for transporting of meat and highly insulated for frozen meat and commodities requiring very low temperature.

Containers are of different types: 1) open top containers. They transport heavy cargoes and machinery; 2) bulk containers are suitable for transporting bulk cargoes; 3) tank containers are used for transporting liquid foodstuffs and chemicals; 4**)** flat rack containers transport steel pipes, timber, machinery, drums, etc.; 5**)** refrigerator containers for vegetables, fruits, fish, meat and etc.

A container has to be watertight being strong enough too to withstand all handling stresses. It is to have an internal lining which can be cleaned easily. It is evident that much depends on the material used for container construction. The transport and handling of goods is a subject that has engaged the close attention of engineers, operators and economists with a view to increasing efficiency and reducing costs of containers. Not all freight is suitable for conveyance by container because of dimensions, character and so on. In these cases traditional means are used. On some routes there may be a need for so-called “flexible-mixed vessels” providing storage for containers.

3. Complete the statements using the text:

a) Container fulfill …
b) Containerization includes the system of …
c) Not all freight may be carried by containers because …

4. Answer the questions to the text:

a) What is the role of containerization?
b) It is a complete system, isn't it?
c) What categories of containers do you know?
d) What problem do engineers and other specialists work at?

5. Express your opinion on the following statements:

a) Containers serve as the best means of goods transportation.
b) Storing and handling of containers is the main problem.
c) There are various types of containers to be designed for particular categories of traffic.
d) The container operator has to foresee commercial problems and understand the complexity of the control problem too.
e) Containerization has a lot of advantages, saving of manpower being one of them.

6. Find in the text sentences in the following tenses. Write down them and point out the predicates.

a) Present Simple
b) Passive Voice
c) Present Perfect

8. Make a project about containerization and containers.

9.5 Passenger and freight operation

1. Read the underlined words in the text and translate them:

2. Read and translate the text.

The main function of railways is to carry freight. But railway also takes part in passenger transportation. One of the main passenger train problems is to run timetable trains to meet the public requirements. There are some basic principles on which passenger trains have to work.

The branch trains often are late on their journey to the main line. This results in delays to expresses. So, close supervision over the running of trains is essential. And it is necessary to supervise the trains at every station at which a passenger train stops.

Suburban services involve special considerations, the chief of which are the development the possible line capacity. In addition to the constant watch on punctuality there must be a watch on the loading of trains. In winter most special trains are run in connection with sports. In spring and summer the railway devote much attention to excursion business.

The arrangement and operation of freight trains have little in common with those of passenger trains. As to the passenger trains working the most important factors are constant. There are no constant factors in freight train operation. Cars are loaded at thousands of different points for thousand different destinations**.** Freight trains may pass from one yard to another in two forms:

1) the cars may be assembled without regard to destination;
2) the cars are marshalled in sections according to the ultimate destination.

It is obvious that the efficiency of work can be obtained if freight trains run at higher speeds for long distances.

3. Finish up the following sentences according to the text:

a) The main function of the railways is …
b) In passenger trains transport there is a problem …
c) … are late on their journey to …
d) It is necessary to … at the stations.
e) Suburban trains have problems of …
f) In winter transportation is devoted to …
g) In spring and … there are a lot of …trains.
h) There are no … factors in freight operation.
i) Freight trains are marshaled with and without …
j) Freight train operation obtains the efficiency if …

4. Answer the questions to the text:

a) What is the main factor in passenger operations?
b) Why are there more trains in summer and winter?
c) Why must freight trains run at higher speeds?
d) What problems do suburban trains have?

5. Translate the following sentences paying attention to modal verbs.

a) Railways can transport liquid freight.

b) The cars can be sorted in flat and hump yards.

c) The booking office should be conveniently placed to the station entrance.

d) Electronic equipment will be able to speed up humping operation.

e) A division may be of different length.

f) Ways of increasing the comfort of passengers are to be constantly developed.

g) The chief controller must have a good view of the whole control panel and has to watch all events on a railway.

h) A great improvement in operation of yards could be made.

i) Trains should run according to the time-table.

j) It is necessary that any large railroad should be cut into divisions.

k) It was clear that containerization would change the methods of handling freight.

6. Make up a story about train and passenger operation.

Unit 10 Choosing a career

1. Read and translate the following words:

To choose, to enter an institute, to start a working career, to go into business, questionnaires, quizzes, to take into consideration, occupation, to support, to make a decision.

2. Read and translate the text and mind the words from exercise above:

Before people leave school, they understand that the time to choose their future profession has already come. It is not an easy task to make a right choice. Someone goes further in his education and enter an institute, university or college. Other can start a working career, go into business.

Choosing a career and getting a job are two things any person passes through in his life. Young people learn about professions in magazines and advertisements. Magazines for teenagers often offer questionnaires, quizzes to help young people to find out their interests and abilities more clearly and to make a decision concerning their future occupation.

While choosing a career one should take into consideration all possibilities that his future profession might provide. The profession must be interesting. One

has to be sure of his future that means that one will be able to find a job after his graduation from the college or university. The profession must be well-paid; otherwise you won't be able to support yourself and your family.

There are many professions in the world, so it is quite difficult to choose and make a decision. Some follow their own choice; some follow parents' advice, because they can help concerning future plans.

It is a great advantage of choosing our future career being a school pupil. It gives us a goal and enables us to choose a right, suitable course of study. It gives us time to be prepared. Also, I'd like to mention that if we don't think about our future, nobody will think, so we just have one way. We must work hard to realize our wishes, because future is purchased by the present.

If you want something be done well, do it yourself, make a right decision.

3. Answer the questions using the text:

a) What do young people do after leaving school?

b) Where can young people learn about professions?

c) What should you take into consideration while choosing a career?

d) Who can help young concerning future plans?

e) What is a great advantage of choosing our future career being a school pupil?

f) What should we do if we want something be done well?

4. Make a short story about your plans for the future?

5.Here are some recommendations of the USA Stony Brook University scientists for job seekers how to behave to get a good job. Read them and translate.

Do's and DON'Ts for job seekers

Do learn ahead of time about the company and its product.
Do apply for a job in person.
Do let as many people as possible to know you are "job hunting"
Do stress your qualification for the job opening.
Do mention any experience you have which is relevant to the job.
Do talk and think as far as possible about the future rather than the past.
Do indicate, where possible, your stability, attendance record and good safety experience.
Do approach the employer with respectful dignity.

Do assume an air of confidence.
Do try to be optimistic in your attitude.
Do maintain your poise and self-control.
Do try to overcome nervousness and shortness of breath.
Do answer the questions honestly.
Do have a good resume.
Do know the importance of getting along with people.
Do recognize your limitations.
Do make plenty of applications.
Do be well-groomed and appropriately dressed.
Do indicate your flexibility and readiness to learn.

Don't keep stressing your need for a job.
Don't discuss past experience which has no application to the job situation.
Don't apologize for your age.
Don't be untidy in appearance.
Don't display "cocksureness".
Don't beg for consideration.
Don't mumble or speak with a mumbled voice.
Don't be one of those who can do everything
Don't hedge in answering questions.
Don't express your ideas on compensation, hours, etc. early in the interview.
Don't hesitate to fill out applications, give references, and take physical examinations or tests on request.
Don't hang around, prolonging the interview, when it should be over.
Don't go to interview without a record of your former employer.
Don't arrive late and breathless for the interview.
Don't be a "know it all" or a person who can't take instructions.
Don't isolate yourself from contacts that might help you find a job.
Don't feel that the world owes you a living.
Don't make claims if you cannot "deliver" on the job.
Don't display a feeling of inferiority.
Don't write incorrect information on your CV to make it look better.

2. What recommendations would you take to find a good job? Mind the following words in your story:

I should … I should't …
I would .. I wouldn't …
I must … I must't …
I can …

Список используемой литературы

1. Бережная О. А., Кубарьков Г. Л., Куриленко Ю. В., Тимощук В. А.
С23 1500. Сборник новых тем современного английского языка. — Ростов-на-Дону: ООО «Издательство «БАРО-ПРЕСС», 2013. - 672 с. ISBN 978-5-94004-387-4

2. Кузьменкова, Ю. Б. Английский язык + CD : учебник и практикум для СПО / Ю. Б. Кузьменкова. — М.: Издательство Юрайт, 2015. — 441 с. — (Профессиональное образование). — ISBN 978-5-9916-5475-3.

3. Кохан, О. В. Английский язык для технических направлений: учебное пособие для СПО / О. В. Кохан. — 2-е изд., испр. и доп. — М.: Издательство Юрайт, 2017. — 185 с. — (Профессиональное образование). — ISBN 978-5-534-00809-8.