**МИНИСТЕРСТВО ОБРАЗОВАНИЯ И МОЛОДЁЖНОЙ ПОЛИТИКИ СТАВРОПОЛЬСКОГО КРАЯ**

**ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ПРОФЕСССИОНАЛЬНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ**

**«СТАВРОПОЛЬСКИЙ СТРОИТЕЛЬНЫЙ ТЕХНИКУМ»**

**Учебно-методическое пособие по дисциплине «Иностранный язык» (Английский язык)**

**для студентов 3 курса**

**специальности 08.02.05 Строительство и эксплуатация автомобильных дорог и аэродромов**

**Ставрополь, 2016**

**Разработчик:**

И.М. Халебская,

преподаватель комиссии

общих гуманитарных и социальных дисциплин

Учебно-методическое пособие по дисциплине «Иностранный язык».

ГБПОУ «Ставропольский строительный техникум», 2016г. – 39с.

 Методическое пособие направлено на формирование лексических навыков профессиональной тематики, развитие навыков чтения и перевода текстов строительной тематики, умение практически использовать приобретённые знания в устной и письменной речи.

 В пособие включены тексты по специальным учебным дисциплинам. Каждый раздел пособия снабжён лексико-грамматическими упражнениями, которые позволят учащимся закрепить изученный ранее материал.

 Изучение лексического материала и текстов строительной тематики обеспечит эффективное достижение общеобразовательных и развивающих целей и создаст большие возможности для дальнейшего поддержания мотивации учащихся.

**Пояснительная записка**

На современном этапе развития образования одной из наиболее актуальных проблем является необходимость улучшения знания иностранного языка. Успешное овладение иностранным языком – необходимое условие получения интересной работы в стране и за её пределами, для профессионального роста, для укрепления дружбы с представителями различных стран.

Настоящее учебно-методическое пособие предназначено для студентов 3 курса специальности 08.02.05 Строительство и эксплуатация автомобильных дорог и аэродромов

 Цель пособия – развить умения и навыки чтения текстов строительной тематики, способствовать развитию умения воспринимать информацию и умения выразить в письменной и устной форме собственные суждения о прочитанном, развить стремление к изучению иностранного языка,

создать условия для творческой самореализации учащихся и их личностного развития, привлечь к интеллектуальной и творческой деятельности.

Тематика пособия ориентирована на выбор будущей профессии и продолжение образования. К концу работы над пособием студенты должны овладеть устной и письменной речью на английском языке в пределах пройденной лексики и грамматики. В пособие включены лексико-грамматические упражнения, позволяющие закрепить ранее изученный материал.

 Пособие можно использовать в аудиторной и самостоятельной работе.

**CONTENTS (СОДЕРЖАНИЕ)**

Unit One (1) Road Construction ……………………………………………… 5

Unit Two (2) Construction of Tunnels, Bridges and Dams …………………. 18

Unit Three (3) Materials for Road Construction …………………………….. 24

References …………………………………………………………………… 39

**Unit One**

 **ROAD CONSTRUCTION**

**Part I**

**I. Learn the following words and word combinations:**

multistage **--** многоступенчатыйexternal **--** внешний

coating – покрытие, слой safety -- безопасность

timely **--** своевременныйto enable **--** способствовать

to repair **--** ремонтироватьto reduce **--** уменьшать

to carry out **–** выполнятьterm **--** срок

performance **–** исполнение, работа to pave **--** мостить

wear resistance **--** износостойкостьluxury **--** роскошь

sidewalk **--** тротуарto provide **--** обеспечивать

to lay out a road **–** прокладывать дорогу to traverse **--** пересекать

to keep in mind **--** помнитьpermeable  **--** водонепроницаемый

trial line **–** пробная линия embankment **–** насыпь, набережная

survey **–** геодезическая съёмка route **--** маршрут

stream **--** ручей

**II Read and translate the text.**

 Road work is a necessary and very important part of building of an infrastructure of various objects. Their working life and safety depend on quality of road construction.

On laying out a new road certain general principles have to be kept in mind. A careful survey of two or three trial lines should be made before the route is finally decided on. This involves also an examination of geological features of the district and of streams which have to be crossed by bridges. It all requires a great engineering skill.

It is important to be well acquainted with the nature of the country which is to be traversed. It is equally important to consider the weather conditions. To make tunnels, embankments, foundations for bridges, constructing canals or roads it is necessary to know the character of the rock met with, especially whether hard or soft and whether permeable or not to water.

Road construction is a multistage process that includes excavation works, asphalt coating and timely repair of roads. Each stage should be carried out in a skillful way. External esthetics of roads as well as the safety of all road users, that is the most important thing, depends on it.

Modern machinery enables to reduce considerably terms of work performance. High technologies enable to carry out road building works all year round. Asphalt paving and improvement of territories make life more comfortable and provides high wear resistance. Nowadays a car is not a luxury and good roads and safe sidewalks are especially important.

**III. Answer the following questions.**

1. Is road work a necessary and very important part of building of an infrastructure of various objects?

2. Is it very important to examine geological features of the district before road construction?

3. Does it all require a great engineering skill?

4. What stages does road construction include?

5. In what way should each stage be carried out?

6. What enables to reduce terms of work performance?

7. High technologies enable to carry out road building all year round, don’t they?

**IV. Make up a dialogue according to the questions.**

**V. Give the main idea of the text above.**

**VI. Grammar material. Impersonal Sentences. Именные безличные предложения.**

 Структура английского предложения отличается от русского тем, что в английском предложении всегда есть подлежащее и сказуемое. Поэтому в безличных предложениях, когда нет подлежащего с конкретным предметным значением, используется в качестве формального грамматического подлежащего местоимение **it**, например:

 **It is dark**. **Темно.**

 (подлежащее) (сказуемое)

 Безличные предложения такого типа состоят из местоимения **it**, которое на русский язык не переводится, глагола-связки **to be** в необходимом по смыслу времени и именной части сказуемого, которое может быть выражено именем прилагательным, именем существительным или числительным. Такие безличные предложения называются **именным**и:

 **It is summer** now. Сейчас лето.

 **It was nine o’clock** when we got home.

 Было 9 часов, когда мы пришли домой.

 Очень часто безличные предложения описывают явления природы, состояние погоды, обозначают время и расстояние.

**VII. Read and translate the following sentences into Russian and write them down in the negative form.**

1. It is summer now.

2. It is always cold in January.

3. It was 5 o’clock when I came home.

4. It was difficult to translate that text.

5. It will be warm tomorrow.

6. It is too windy today.

7. It will be autumn very soon.

 **Part II**

**From the History of Road Construction**

**I. Learn the following words:**

ravage **--** разрушитель lime **–** известь, известняк

rapidly **–** быстроto drain **--** осушать

to conquer **--** завоёвыватьswamp **--** болото

to traverse **–** пересекатьsplendid **--** прекрасный

to connect **--** соединятьditch **–** канава, траншея

entire **--** весьto drive piles **–** вбивать сваи

to suppose **–** полагатьrubble **–** щебень, булыжник

amount **--** количествоto ram **--** утрамбовывать

to defy **–** не поддаваться to bind (bound) **--** связывать

pottery **--** керамика to mark out **--** размечать

basis **–** основание, основа

**II. Read and translate the text.**

 The importance of road construction was realized in the far off times. It was realized by the Romans who constructed roads through the territories they administrated. They are the first systematic road builders of which we have got the knowledge of road building.

Road building progressed very rapidly. Every conquered province was soon traversed with connecting roads and the entire Roman road is supposed to have amounted to 5,000 miles. The Romans built so well that their work defied the ravages of time.

 Sometimes, though they drained many of the swamps, their work was such that new swamps originated by thy cutting through the forests. And what had been a forest became on the course of years a deep swamp.

 And yet the Romans left a net of splendid roads. To mark out a road ditches were built parallel to one another. The surface between them was excavated until a firm foundation wasn’t reached. If a foundation was not available, one was constructed by driving in piles.

 On the basis were placed three layers. First 9 inches of rubble followed. Small stones were rammed together and solidly bound with lime. On the top of it followed 6 inches of broken brick, pottery and the whole was again cemented by lime. Lastly on those foundations the Romans built their surfaces of large blocks of the hardest stone they could find carefully fitted in together so they should not lift under the influence of the traffic.

 Many of the old Roman roads were covered by modern roads during the period following 1800. When the English road builders repair their roads it is difficult to imagine that they use the foundation laid by the Romans.

**III. Answer the following questions.**

1. Was the importance of road construction realized in the far off times?

2. Who was the first to realize the importance of road construction?

3. Roman roads defied the ravages of time, didn’t they?

4. What did the Romans do to mark out a road?

5. Did the Romans excavate the surface until a firm foundation wasn’t reached?

6. How many layers were placed on the basis?

7. What was the first layer?

8. What was the second layer?

9. What was the last layer?

**IV. Make up a dialogue according to the questions.**

**V. Give the main idea of the text above.**

**VI. Translate the following sentences into English using Impersonal Sentences.**

1. Вчера было тепло.

2. Зима. Довольно холодно.

3. В комнате темно, не так ли?

4. Сейчас слишком рано обсуждать этот вопрос.

5. Невозможно выучить иностранный язык за два года.

6. Сегодня ветрено, не так ли?

7. Сейчас 6 часов вечера.

**VII. Grammar material. Impersonal Sentences. Глагольные безличные предложения.**

Кроме именных безличных предложений в английском языке есть **глагольные безличные предложения**, которые отличаются от именных тем, чтосказуемое этих предложений – простое глагольное сказуемое, которое выражено безличными глаголами типа **to rain** (идти – о дожде**)**, **to snow** (идти – о снеге).

 **It** often **rains** in autumn. Осенью часто идёт дождь.

 **It snowed** yesterday. Вчера шёл снег.

 В русском языке существует категория безличных глаголов: темнеть, светать и т.д., которые используются для образования безличных предложений, например:

 **It’s getting dark**. Темнеет.

 Причём в русском языке в безличном предложении нет подлежащего, тогда как в английском языке наличие подлежащего обязательно.

 Вопросительная и отрицательная формы глагольных безличных предложений образуются по тем же правилам, что вопросительная и отрицательная форма предложений с обычным глаголом-сказуемым:

 **Is it raining** now? Сейчас идёт дождь?

 **Does it** often **rain** in autumn? Осенью часто идёт дождь?

 **Did it snow** yesterday? Вчера шёл снег?

**VIII. Read and translate the following sentences into Russian and write them down in the negative form.**

1. It was snowing hard.

2. It is going to rain.

3. It often rains in autumn.

4. It rained all day yesterday.

5. It doesn’t rain here very often.

**Part III**

**Evolution of Road Building**

**I. Learn the following words and word combinations:**

evolution **--** эволюция fall **--** падение

workable **–** пригодный, осуществимый shore **--** берег

to provide **--** обеспечивать to pave **--** мостить

to maintain– поддерживать, содержатьto crush **–** размельчать, дробить

to depend on **–** зависеть от shell **–** раковина, ракушка

available **–** имеющийся в наличииto dare **--** осмеливаться

soft **--** мягкийthroughout **–** везде, повсюду

spongy **--** губчатыйto surface **--** покрывать

coach **--** каретаhighway **--** шоссе

to improve **--** улучшать

**II. Read and translate the text.**

Following the fall of the Roman Empire in 400 AD no country was interested in international roads and that aspect of road construction was completely forgotten for a period of almost 1,500 years.

Various countries were trying to find workable methods of providing and maintaining road building. Travelling between towns was by coach, the roads were poor and travelling was very difficult during many months of the years. The roads were so bad that very few people dared to travel over them. Then the roads were improved and mail-coaches started running. This increased the number of travellers.

In the past the kind of roads that were built depended greatly on the building materials available. The easiest highway built in early days was a water route or canal. In Russia wood was highly used for road construction in such regions where forest soils were soft and spongy. Many roads on sea shore were paved with crushed shells. The first improved roads were surfaced with stone, many miles of which were built in Britain and throughout Europe.

**III. Answer the following questions:**

1. Were various countries interested in international roads after the fall of the Roman Empire?

2. Various countries were trying to find workable methods of providing and maintaining road building, weren’t they?

3. Were the roads so bad in the past that very few people dared to travel over them?

4. What did the kind of roads that were built depend on?

5. What was the easiest highway built in early times?

6. What building material was highly used for road construction in Russia?

7. Many roads on sea shore were paved with crushed shells, weren’t they?

8. What were the first improved roads surfaced with?

**IV. Make up a dialogue according to the questions.**

**V. Give the main idea of the text above.**

**VI. Translate the following sentences into English using Impersonal Sentences.**

1. Вчера весь день шёл снег.

2. Сейчас идёт дождь, не так ли?

3. Завтра будет дождь?

4. В ноябре часто идёт снег.

5. На прошлой неделе часто шёл дождь.

**Part IV**

**The Programme of Improved Roads**

**I. Learn the following words:**

to advance **--** продвигаться worn spots **–** изношенные места

chiefly **–** главным образомconsequence **--** следствие

drainage **--** осушениеdurable **--** прочный

contribution **--** вкладsmooth **--** гладкий

improvement **--** улучшение apparent **–** явный, очевидный

self-propelled **--** самоходныйto withstand **--** выдерживать

lorry **--** грузовик scuff **--** трение

cargo truck **--** грузовикrubber **--** резина

severe **--** жёсткийtire **--** шина

gasoline **–** бензин(US) thereafter **–** с того времени

**II. Read and translate the text.**

The programme of improved roads advanced especially after 1770 when Thomas Telford and John Mac Adam introduced improved methods for road

 construction with a surfacing of broken stone.

Mac Adam and Telford applied engineering principles to the design of this broken stone surface providing drainage. They are chiefly famous because of their contribution to highway administration including methods of construction and maintenance that were a great improvement.

 In 1900 the self-propelled lorry had come into limited use and ten years later the gasoline-driven automobile and truck became factors of consequence to road builders. After 1919 the self-propelled vehicle was the dominant factor in highway traffic which required durable road and smooth surfaces. It was apparent

that there was need of highways surfaced with some materials that withstand scuffing of rubber tires and would be smooth to permit high speeds, and strong

enough to carry the weight of the cargo truck.

 Thereafter the requirements for durability in highway surfacing became more severe, imposing serious problems upon the highway engineer. There also appeared roads of concrete which made travelling comfortable and worn spots on such roads are easily repaired.

**III. Answer the following questions:**

1. When did the programme of improved roads advance?

2. Who introduced improved methods for road construction?

3. What methods did these engineers introduce?

4. When had the self-propelled lorry come into limited use?

5. There was need of highways surfaced with some materials that withstand scuffing of rubber tires, wasn’t there?

6. What kind of roads made travelling comfortable?

7. Are worn spots on concrete roads easily repaired?

**IV. Make up a dialogue according to the questions.**

**V. Give the main idea of the text above.**

**VI. Grammar material. The Passive Voice. Страдательный залог.**

В английском языке глаголы имеют два залога: действительный **(the** **Active Voice)** и страдательный **(the Passive Voice**). Глагол-сказуемое в действительном залоге показывает, что действие выполняется лицом или предметом, обозначенным подлежащим. Глагол-сказуемое в страдательном залоге показывает, что подлежащее **является объектом действия** со стороны другого лица или предмета, например:

 Electricity **moves** machines.

 Электричество приводит в движение машины.

 Machines **are moved** by electricity.

 Машины приводятся в движение при помощи электричества.

 В английском языке страдательный залог образуется с помощью вспомогательного глагола **to be** в соответствующем времени, лице и числе и **причастия прошедшего времени – Participle II (III форма глагола).**

**Present Simple**

 I **am asked** We **are asked**

You **are asked** You **are asked**

He, she, it **is asked** They **are asked**

 **Past Simple**

I **was asked** We **were asked**

You **were asked** You **were asked**

He, she, it **was asked They were asked**

**Future Simple**

I, you, he, she, it we, they **will be asked**

**VII. Read and translate the following sentences into Russian. Determine the grammar tense and voice of the predicate.**

1. When was this house built?

2. Who is the book written by?

3. You are wanted on the telephone.

4. He was shown the way to the Ministry.

5. Houses are built very quickly now.

6. The delegation was met at the station.

7. English is spoken in many countries.

8. I was born in 1999 in a small town.

9. You will be driven to the airport.

10. The coast of the Crimea is washed by the Black Sea.

**Part V**

**Rules of Road Construction**

**I. Learn the following words and word combinations:**

to compact **–** утрамбовывать to expect **–** ожидать

trimming **–** подравнивание ideal **--** идеальный

unsuitable **–** неподходящий to complete **--** завершать

road**-**bed **–** полотно дороги sign **--** знак

to decompose **–** разлагаться crash barricades **–**предохранительные

rock **–** горная порода, камни барьеры

**II. Read and translate the text.**

 Processes during earthwork include excavation, removal of materials that

can be spoiled, filling, compacting, construction and trimming. If rock or other unsuitable material is discovered it is removed. Blasting is not frequently used to excavate the road**-**bed as the rock structure forms an ideal road base.

General fill material should be free of organics. The lower fill generally comprises sand or sand mixture with fine gravel, which prevents the growth of plants or other vegetable matter. The compacted fill also serves as lower stratum drainage. Second fill should be composed of gravel or decomposed rock.

 Geosynthetics such as geotextiles are frequently used in various pavement layers to improve road quality. Geosynthetics perform four main functions in roads: separation, reinforcement, filtration and drainage.

The completed road way is finished by paving or left with a gravel or other natural surface. The type of road surface depends on economic factors and expected usage. Safety traffic signs, crash barricades and other forms of road surface marking are installed.

**III. Answer the following questions:**

1. What do processes during earthwork include?

2. Why is blasting of rock not frequently used?

3. Should general fill material be free of organics?

4. What fill serves as lower stratum drainage?

5. What should second fill be composed of?

6. What materials are frequently used in various pavement layers?

7. What four main functions geosynthetics perform in roads?

8. What does the type of road surface depend on?

9. What signs are installed in road surface marking?

**IV. Make up a dialogue according to the questions.**

**V. Give the main idea of the text above.**

**VI. Translate the following sentences from Russian into English. Determine the grammar tense and voice of the predicate.**

1. Её часто спрашивают на занятиях.

2. Письмо будет отправлено только завтра.

3. Много домов строится в нашем городе сейчас.

4. Эти вопросы обычно обсуждаются после работы.

5. Меня попросили помочь ему закончить эту работу.

6. Мне предложили очень интересную работу.

7. Эти картины написаны знаменитым художником.

**VII. Grammar material. The Passive Voice (continued).**

 **Present Progressive**

I **am being asked** We **are being asked**

You **are being asked** You **are being asked**

He, she, it **is being asked** They **are being masked**

 **Past Progressive**

I **was being asked** We **were being asked**

You **were being asked** You **were being asked**

He, she, it **was being asked** They **were being asked**

 **Future Progressive**

I, you, he, she, it, we, they **will be being asked**

**VIII. Read and translate the following sentences into Russian. Determine the grammar tense and voice of the predicate.**

1. A new shop is being built in our street.

2. The text is not being translated at the moment.

3. The fax was being sent when the director called.

4. Excuse the mess. The house is being painted.

5.When you come home the walls will be being painted.

6. We couldn’t get inside. The floors were being washed.

7. They will be being passed exams at this time tomorrow.

**Part VI**

**Types of Roads**

**I. Learn the following words:**

permanent **--** постоянный carriageway **–** проезжая часть

local **--** местныйproper **–** надлежащий, приличный

rural **–** сельский drainage **–** дренаж, канализация

track **–** тропа, колея favourable **--** благоприятный

speed **--** скорость certain **--** определённый

possible **--** возможный to exist **--** существовать

passable **--** проходимый cart **–** телега, повозка

adequat**e –** отвечающий требованиямfacility **--** приспособление

maintenance **–** уход, содержаниеregulations **--** правила

**II. Read and translate the text.**

 Every kind of road serves its own purpose. According to their technical characteristics roads can be classified as primitive roads, seasonal roads, permanent roads of local transport and permanent motor car roads or motorways.

Primitive roads are natural roads where no road has been made. To these belong the natural rural roads and tracks. Only the lowest speeds are possible here as a rule. Such roads are only passable for a part of the year.

Seasonal roads are roads that have a specially constructed carriageway. In this case proper drainage must be made. In favourable seasons great speeds are possible here. These roads are not passable in certain parts of the year. There exist seasonal cart roads, tractor roads and motor roads.

Permanent roads of local transport have a specially constructed stable carriageway, adequate drainage facilities and adequate road surfacing securing traffic all the year round. With proper maintenance high speeds are possible on these roads.

Permanent motor car roads or motorways have a specially constructed stable carriageway with a road surface of an improved type. These roads are constructed for high speed traffic. They usually cover long distance and constructed according to strict technical regulations. These roads are constantly being improved so as to meet all the requirements of comfortable driving.

**III. Answer the following questions:**

1. What types of roads do you know?

2. What types of roads do we call primitive roads?

3. In what case must proper drainage be made?

4. Are seasonal roads not passable in certain parts of the year?

5. Can permanent roads of local transport secure traffic all the year round?

6. What types of roads constructed for high speed traffic?

7. Permanent car roads are constructed for high speed traffic, don’t they?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. The Passive Voice (continued).**

**Present Perfect**

I **have been asked** We **have been asked**

You **have been asked** You **have been asked**

He, she, it **has been asked** They **have been asked**

 **Past Perfect**

I, you, he, she, it we, they **had been asked**

 **Future Perfect**

I, you, he, she, it, we, they **will have been asked**

**VII. Read and translate the following sentences into Russian. Determine the grammar tense and voice of the predicate.**

1. A new shop has been built in our street.

2. The problem had been discussed by 7 yesterday.

3. The new project has not been finished yet.

4. I have been asked very difficult questions today.

5. Many new houses have been constructed this year.

6. This work will have been done when you come.

7. He has already been told about our problem.

**Part VII**

**ROADS IN JAPAN**

**I. Learn the following words and word combinations:**

highway **--** шоссе toll gate **–** место платы за проезд

network **–** сеть to connect **–** соединять, связывать

expressway **–** скоростная автострадаaccording to **--** согласно

municipal road **–** городская дорогаcrossroads **--** перекрёсток

junction **–** узел, пересечение essentially **–** в сущности

free of charge **–** бесплатныйrepair station **--** мастерская

toll road **–** платная дорогаfuel **–** топливо, горючее

**II. Read and translate the text.**

Highway networks in Japan consist of national expressways, national highways and municipal roads. As a rule, all roads should be free of charge to all users and administrated by national municipal government. But there are also toll roads such as national expressways and other similar roads, constructed and administrated by Japan High Public Corporation, local public corporations and local governments. National highways together with national expressways connect the main industrial areas and other important junctions with each other. According to the long-term plan for road improvement roads must be developed as a whole system. All the national expressways in Japan have been constructed and operated as a toll road primarily for the reason of financing.

 The national expressways, which are fully controlled, must be separated from other crossing roads. Therefore the national expressways are essentially made up of series of embankments, bridges and tunnels which require high construction cost.

 As the national expressways are based upon the toll road system, toll gates have to be installed at about 15 km interval. Also service areas are to be equipped with fuel and repair stations, rest-houses and cafes must be located at about 50 km interval, and parking area at about 20 km.

**III. Answer the following questions:**

1. What types of roads do highway networks in Japan consist of?

2. Should all roads be free of charge to all users?

3. What types of roads are toll roads in Japan?

4. What was the reason that all the national expressways in Japan have been constructed and operated as a toll road?

5. What distance do toll gates have to be installed at?

6. Are service areas to be equipped with fuel and repair stations, rest houses and cafes?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. The Passive Voice (continued).**

 **1.** При изменении глагола из действительного залога в страдательный залог меняется вся конструкция предложения: дополнение предложения в активной форме становится подлежащим предложения в пассивной форме; сказуемое действительного залога становится сказуемым страдательного залога; а подлежащее предложения в активной форме становится предложным дополнением, которое часто вводится предлогом **by**, например:

The boy **fed** the dog. The dog **was fed** by the boy.

 **2**. Инфинитив страдательного залога образуется из инфинитива глагола **to** **be** и **III формы глагола** (причастия прошедшего времени).

Инфинитив страдательного глагола можно образовать от любого объектного глагола, например:

 to give – **to be given**

 He can’t **be given** a holiday now.

 Ему нельзя давать отпуск сейчас.

**VII. Read and translate the following sentences into Russian. Find passive constructions.**

1. They can be seen in our library every day.

2. The delegation was met at the airport.

3. The child was often left home alone.

4. The machine is being tested now.

5. His work has already been finished.

**VIII. Read and translate the following sentences into Russian. Change the Active Constructions into Passive.**

1. Bees gather honey from the flowers.

2. They offered her some interesting work.

3. Yesterday we discussed this question.

4. The teacher told us the news.

5. Mass media inform, educate and entertain people.

**Unit Two**

**CONSTRUCTION OF BRIDGES, TUNNELS AND DAMS**

**Part I**

**Bridge Construction**

**I. Learn the following words:**

invention **--** изобретение temporary **--** временный

to undertake (undertook) **--** предпринимать arch **--** арка

self-taught **--** самоучкаmechanic **--** механик

court **--** двор according to **--** согласно

keen **–** острый, страстный span **--** пролёт

device **--** устройствоto dare **--** осмеливаться

to appoint **--** назначатьsingle **--** одинарный

**II. Read and translate the text.**

 The history of Russian science and technique proves that talented Russian people made great inventions and designed engineering constructions which had never been undertaken before.

 Such was Kulibin, one of the most talented self-taught engineers at the court of Catherina II. From his early childhood Kulibin showed a keen interest to all kinds of mechanical devices and liked to build models of different machine details. He realized that in order to master a secret mechanism it was necessary to study mathematics and physics.

 The instruments necessary for his work were not to be got in Nizhniy Novgorod where he lived. He succeeded to get to Petersburg where he was appointed mechanic to the Academy of Science and since then he spent all his free time and all his money on new inventions.

 In Petersburg Kulibin undertook a very difficult engineering problem – to design a bridge across the Neva as there was not a single permanent bridge in the city to provide a crossing at any season of the year. Temporary pontoon bridges had to be taken to pieces at high water.

 Kulibin was the first to think of an arched bridge. According to his plan the bridge was to have a single span leaving free water for ships and barges. Arched bridges of similar construction had not been built before, but no engineer dared even to think of construction a bridge with a three hundred meter span. This was a construction which even now is used in modern bridge building.

**III. Answer the following questions:**

1. What does the history of Russian science and technique prove?

2. What was Kulibin?

3. Why was it necessary for him to study mathematics and physics?

4. What town did Kulibin live?

5. Why did he decide to get to Petersburg?

6. Where did Kulibin work in Petersburg?

7. What did he design?

8. Is Kulibin’s construction used even now in modern bridge building?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. The Construction “Complex Object” after the verbs “to want”, “to expect” and the expression “would like”.**

 Конструкция **«Сложное дополнение»** характерна для английского языка. Она состоит из **имени существительного в именительном падеже** (the child, the boy, the students) или **местоимения в объектном падеже** (me, him, her, it, you, them) и либо **глагола в неопределённой форме** (с частицей **to** или без неё), либо **Participle I** (причастия настоящего времени).

 Вся конструкция выполняет в предложении функцию дополнения и часто переводится на русский язык придаточным дополнительным предложением.

 I want **the boy (him) to understand** me.

 Я хочу, **чтобы мальчик (он) понял** меня.

 We saw **you crossing** the street.

 Мы видели, **как вы переходили** улицу.

 **Complex Object** употребляется после трёх групп глаголов:

 Первая включает глаголы **to want** (хотеть), **to expect** (ожидать)и структуру **would like:**

 I would like **you to help** me.

 Я бы хотел, **чтобы вы** мне **помогли.**

**VII. Read and translate the following sentences into Russian. Find the construction “Complex Object” in each sentence.**

1. Do you want me to help you?

2. They didn’t expect us to come back so soon.

3. I want you to understand me.

4. I would like you to read this book.

5. I expect you to write to me.

6. I want him to go home.

7. What do you want him to do for you?

**VIII. Translate the following sentences into English using Complex Object**

1. Я не хочу, чтобы ты заболела.

2. Мне бы хотелось, чтобы он закончил эту работу.

3. Хотите ли вы, чтобы мы сегодня встретились?

4. Мы не ожидали, что они нас заметят.

5. Мне бы хотелось, чтобы работа была сделана вовремя.

6. Вы хотите, чтобы мы обсудили этот вопрос сегодня?

7. Мы не ожидали, что вы вернётесь так рано.

**Part II**

**Tunnel Construction**

**I. Learn the following words:**

gigantic **--** гигантский rate **–** скорость, темп

dynamite **--** динамит to go ahead **--** продвигаться

to break **–** ломать, разрушатьto accelerate **--** ускорять

rock **--** скалаto obstruct **--** препятствовать

by hand **--** вручнуюobstacle **--** препятствие

gunpowder **--** порох to prove **--** доказывать

to advance **--** продвигаться per hour **–** в час

inch **--** дюйм solution **--** решение

**II. Read and translate the text.**

 The tunnel construction dates back to 1857, when French and Italian engineers undertook the gigantic task of building the Mont Ceris tunnel. It was the main railway line from south-eastern France to north-eastern Italy. The tunnel, nearly 8 miles long, is of great technical interest, because air compressor and rock drills operated by compressed air were first used. It was also the first large project on which dynamite was employed for breaking the rock. But when it was started, drilling was done by hand. Black gunpowder was used for breaking the rock.

 For the first 4 years the tunnel advanced only 9 inches a day on each side and if it had continued at this rate, it would have taken 75 years to complete. With the introduction of compressed air drills and dynamite progress went ahead and was accelerated to 6 foot a day.

When the proposed road or railway is obstructed by a hill, a waterway or some construction, the engineer designing the project has to decide to construct a tunnel through or under the obstacles. In making decision, he has not only to consider the economic aspect, but also weigh up all the constructional advantages and disadvantages of tunneling or the alternative method of passing around or over the obstacle. In practice tunneling proves to be less expensive than any other alternative system.

Should a motorway pass under or over a large waterway? For a narrow waterway it is not a problem, the water is always bridged. The choice often falls on a bridge because it can carry more vehicles per hour. Bridge and tunnel combinations form the best solution for crossings of great length.

 It is easy to predict that in the next decades an increasing number of important tunnels will be built, and that the existing methods of building will be improved and perfected and new techniques will be developed.

**III. Answer the following questions:**

1. What year does the tunnel construction date back?

2. What equipment and methods were used when the main railway line from south-eastern France to north – eastern Italy was being built?

3. What decisions do the engineers make when the proposed road or railway is obstructed by some obstacles?

4. Does tunneling prove to be less expensive than any other alternative system?

5. What forms the best solution for crossing of great length?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. The Construction “Complex Object” after the verbs**

**of sensory perception.**

 После второй группы глаголов, выражающих восприятие посредством органов чувств, например: **to see** (видеть), **to watch** (наблюдать), **to notice** (замечать), **to hear** (слышать), **to feel** (чувствовать) в конструкции **Complex Object** возможно использование как **инфинитива** (неопределённойформы глагола)без частицы **to**, так и **причастия I**:

 I saw **her walk** into the house.

 Я видел, **как она вошла** в дом.

 We saw **you crossing** the street.

 Мы видели, **как вы переходили** улицу.

 В этой группе глаголов инфинитив употребляется для обозначения завершённого действия, а причастие I используется для обозначения действия в процессе:

 I saw **him enter** the house.

 Я видел, **как он** **вошёл** в дом.

 I saw **him entering** the house.

 Я видел, **как он входил** в дом.

**VII. Open the brackets read and translate the sentences into Russian.**

1. Would you like me (read) now?

2. I want her (learn) foreign languages.

3. I saw him (go) out of the house.

4. The teacher advised us (use) dictionaries.

5. Her father doesn’t allow her (go) to the cinema alone.

6. We expect our basketball team (win) next game.

7. I saw them (open) the window.

**Part III**

**Dam Construction**

**I. Learn the following words and word combinations:**

dam **--** дамбаhydraulic **--** гидравлический

flood **--** наводнениеto ensure **--** обеспечивать

branch **--** отрасльto percolatethrough **-**просачиваться

impressive **–** впечатляющийto overflow **--** разливаться

achievement **--** достижениеspillway **--** водослив

source of power **–** источник энергии to irrigate **–** орошать, поливать

civil engineering **–** гражданское строительство

**II. Read and translate the text.**

 Dams have a history as long as such branches of civil engineering as bridge building, road construction and laying down of canals. Dams represent some of the most impressive achievements of engineering over the centuries. Dams were built to supply water to towns and cities, to irrigate dry lands, to provide a source of power and to control floods.

 In antiquity Romans built very big dams many of which lasted for a very long time. It was a result of their better methods of construction based on better materials, especially hydraulic mortar and concrete. Moreover, great attention was paid to hydraulic problems to ensure that the water could not percolate through the dams and that when it overflowed them, spillways were provided.

**III. Answer the following questions:**

1. Do dams have a long history?

2. What was the reason of dam construction?

3. What materials did the Romans build dams of?

4. Was great attention paid to hydraulic problems?

5. Why were spillways provided?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. The Construction “Complex Object” after the verbs “to let”, “to make”.**

Третья группа включаетглаголы **to let** (позволять), **to make (заставлять),** после которых инфинитив употребляется **без частицы to:**

They let **us watch** the film.

 Они позволили **нам смотреть** фильм.

 What makes **you think** so?

 Что заставляет **вас так думать**?

 В конструкции «Сложное дополнение» после глагола **to make** вторая часть может быть выражена прилагательным, и всё сочетание слов вместе с глаголом **to make** переводится на русский язык **как глагол**, например:

  **to make smb. sorry** – огорчать кого-либо

 **to make smb. angry –** рассердить кого-либо

 **to make smb. happy –** обрадовать кого-либо

 Don’t make **Mother angry**, Kate!

Не серди маму, Кейт!

**VII. Read and translate the following sentences into Russian. Find the construction “Complex Object” in each sentence.**

1. He made me do it all over again.

2. Her father made her learn the lessons.

3. She wouldn’t let the children play in his study.

4. He made us wait for two hours.

5. Please let me know the results of your exam as soon as possible.

**VIII.** **Translate the sentences into English using the construction “Complex Object”**

1. Она заставила его почистить ковёр.

2. Мы заставили его показать нам его рисунки.

3. Не разрешайте ребёнку гулять одному.

4. Я думаю, это заставит вас прочитать книгу снова.

5. Я уверена, это обрадует его.

6. Вы не должны сердить его.

7. Ничто не заставит меня передумать.

**Unit Three**

 **MATERIALS FOR ROAD CONSTRUCTION**

 **Part I**

**Geotextile Materials**

**I. Learn the following words:**

fabric **–** ткань, структураseparation **--** разделение

cloth **–** ткань, тряпкаannual **--** ежегодный

to wrap **--** заворачиватьaddition **--** добавление

to keep **–** хранить, сохранятьisolation **--** изоляция

weed **--** сорнякto suit **--** годиться, подходить

since **–** так какapplication **–** нанесение, применение

erosion **--** эрозия vital **–** жизненно необходимый

recent **–** недавний, современныйresource **--** источник

**II. Read and translate the text.**

 Geotextile fabric is cloth which can be wrapped around drainage pipes for the purpose of keeping the drainage. It is also widely used to control weed growth and to separate layers of different materials.

 Since geotextile fabric provides separation between soil and gravel or other materials, the annual addition of gravel is usually not necessary. Geotextile materials have very good filter isolation best suited for various applications. They are used for reinforcing road covering, strengthening of embankments, and erosive strengthening of soil as these materials combine strength and high durability.

It is only in recent times that the construction industry has started seriously considering geotextile materials as vital ingredients for road construction. Geotextile materials increase the strength and stability of underlying soil in a roadway. They are used as a separating (filtering) layer between soils and fill materials (sand, gravel, etc.) and as a reinforcement layer on flexible soils. It is a complete resource for erosion control.

**III. Answer the following questions.**

1. What is geotextile fabric?

2. Why is it widely used in road construction?

3. What does geotextile fabric provide?

4. Are geotextile materials vital ingredients for road construction?

5. Geotextile materials increase the strength and stability of underlying soil in a roadway, don’t they?

6. They are used as a separating layer between soils and fill materials, aren’t they?

7. Is it a complete resource for erosion control?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. The Construction “Complex Subject”**

Инфинитивная конструкция **«Сложное подлежащее»** состоит из личного местоимения в именительном падеже или существительного в общем падеже и инфинитива, которые вместе образуют сложное подлежащее:

 **He** is expected **to come back** tonight.

Ожидают, что **он вернётся** сегодня вечером.

 Данная конструкция употребляется, когда сказуемое выражено:

**а)** глаголами **to know** (знать)**, to believe** (верить)**, to consider** (считать)**, to expect** (ожидать, полагать)**, to seem** (казаться)**, to suppose** (полагать)**, to** **say** (говорить) и др**.** в форме **Passive Voice:**

  **He** is said **to study** here.

 Говорят, **что** **он** здесь **учится.**

**b)** глаголами **to seem** (казаться)**, to appear** (появляться, казаться)**, to happen** (случаться, происходить)**, to prove** (доказывать, удостоверить)и др**.** в форме **Active Voice:**

 **He** seems **to know** her very well.

Кажется, **что он знает** её очень хорошо.

**c)** глаголом **to be** в сочетании с прилагательными **likely** (вероятный)**, unlikely** (невероятный)**, certain** (определённый, уверенный)**, sure** (уверенный):

 **He** is sure **to come.**

 **Он** обязательно **придёт.**

**VII. Read and translate the following sentences into Russian. Find the construction Complex Subject in each sentence.**

1. This scientist is supposed to deal with this investigation.

2. They seem to have entered this university.

3. You are unlikely to enter this college.

4. She is certain to have prepared a report.

5. He is known to be a good physics.

**Part II**

**Asphalt Coating**

**I. Learn the following words:**

application **–** нанесение, применение to coat **--** покрывать

to heat **–**нагревать homogenous **–** однородный

thorough **–** тщательный aggregate **–** заполнитель

to dictate **–** диктовать bitumen **–** битум

viscosity **–** клейкость, вязкость

**II. Read and translate the text.**

 When an asphalt pavement is reaching the end of its life cycle, it can be overlaid with a new surface using a number of different techniques.

 Which technique to choose depends on a number of factors, including geographical location, available equipment, road depth, road condition, climate, traffic flow, quality of existing materials and some others.

 Hot mix asphalt (HMA) production and application requires materials to be heated to 180**-**1350 C. The temperature is dictated by the viscosity of the bitumen binder and is needed to ensure a homogenous and thorough coating of aggregates by the bitumen.

**III. Answer the following questions.**

1. What happens when an asphalt pavement is reaching the end of its life cycle?

2.What factors influencethe technique of asphalt pavement?

3. To what temperature are required materials to be heated?

4. What is the required temperature dictated by?

5. What coating must be ensured by the bitumen aggregates?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Fill in the blanks to practice the use of the Complex Subject and translate the sentences into Russian. The words in brackets will help you.**

1. He … to come to the conference (несомненно).

2. Their plans … to change in the future (вероятно).

3. They … to agree with you (определённо).

4. She … to give you this book (вряд ли).

5.He … to be right (оказался).

6. He … to be a good researcher (говорят).

7. They … to be well-informed persons (полагают).

**VII. Grammar material. The Gerund. Герундий.**

 Герундий – неличная форма глагола, являющаяся промежуточной формой между глаголом и существительным. По форме герундий совпадает с причастием I **(Participle I).**

 По своим функциям герундий во многом совпадает с инфинитивом:

он может быть в предложении подлежащим, дополнением, определением, составной частью сказуемого и обстоятельством.

**1. Подлежащее**

**To read** is useful. **Читать** полезно.

**Reading** is useful. **Чтение/читать** полезно.

**2. Дополнение**

I like **to read.** Я люблю **читать.**

I like **reading.** Я люблю **читать.**

 **3. Составная часть сказуемого**

We began **to read** this book.Мы начали **читать** эту книгу.

We began **reading** this book. Мы начали **читать** эту книгу.

 **4. Определение**

 This is the book **to be read.** Это книга, **которую нужно прочитать.**

I have the wish **of reading** this book. У меня есть желание **прочитать** эту книгу.

 **5. Обстоятельство**

I can’t explain it **without reading** this book.

Я не могу это объяснить**, не прочитав** эту книгу.

**Part III**

**Aggregates of Asphalt Coating**

**I. Learn the following words:**

to introduce **--** вводитьto facilitate **–** способствовать

to foam **--** пенитьсяrutting **–** образование борозд

to cause **–** являться причинойto reduce **--** уменьшать

via **–** через amount **--** количество

emulsion **–** эмульсия damp **--** сырой

coarse **–** крупныйrecycled **--** переработанный

fine **--** мелкий нагревать to contaminate **--** загрязнять

to dictate **–** диктовать tar **--** дёготь

**II. Read and translate the text.**

 Introducing small (controlled) amounts of water to hot bitumen causes the bitumen to foam and a thorough coating is possible. Water is introduced into the asphalt via damp aggregates (coarse or fine).

The foamed bitumen has a reduced viscosity and greater surface area which facilitates mixing, coating at reduced temperatures. This mix improves resistance to rutting and allow early opening to traffic.

Emulsion**-**based cold mixes also allow a far higher proportion of recycled material than it is possible with hot mixes. And emulsions can also coat surfaces contaminated with tar. Usage of reduced temperature asphalts maximizes the energy savings.

The decision to apply bitumen emulsion is due to the low temperatures during the harsh winters in northern areas. It ensures a higher flexibility of the base course and reduces the possibility of future road damage through cracking.

**III. Answer the following questions.**

1. What causes bitumen to foam?

2. When is a thorough coating possible?

3. What mix improves resistance to rutting and allow early opening to traffic?

4. What maximizes the energy savings?

5. Bitumen emulsion reduces the possibility of future road damage through cracking, doesn’t it?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Read and translate the sentences. State the function of the Gerund.**

1. Talking with you is a real pleasure.

2. She preferred staying at home.

3. I don’t like walking slowly.

4. Stop shouting and sit quietly.

5. We spoke about visiting our friend.

6. Her task was looking after small children.

7. Spending your free time is better in one of the parks of our city.

**Part IV**

**Polyester Asphalt Reinforcement Grids**

**I. Learn the following words:**

geosynthetics **--** геосинтетики bond **--** перевязка

polyester **–** полиэфирный to avoid **--** избегать

reinforcement grid **–** армирующая сетка to investigate **--** исследовать

to claim **–** заявлять reduction **--** уменьшение

grid **–** сетка, решётка simulated **--** имитированный

due to **–**из-за wide **--** широкий

frost**-**dew cycles **–** циклы промерзания width **--** ширина

to propagate **--** распространять expansion **–** увеличение, рост

reflection crack **--**  “зеркальная трещина”to thaw **--** оттаивать

interlayer **–** прослойкаto prevent **--** предотвращать

module **–** коэффициент furthermore **–** кроме того

substantially **–** значительно, существенно

**II. Read and translate the text.**

 The leading manufacturer of geosynthetics and technical textiles, Synthetic Company, claims that polyester reinforcement grids demonstrate effective results in the prevention of cracks in asphalt layers. As a result of daily temperature variations, but especially due to the frost**-**dew cycles, existing cracks in an old asphaltic layer reflect through to the surface of the newly applied layer of asphalt. The existing cracks which propagate very quickly through to the new layer of asphalt are called reflection cracks. By installing a polyester asphalt reinforcement grid, the development of reflection cracks can be substantially slowed down, or even completely avoided.

The Belgium Road Research Center developed a test method at the beginning of 1990s, investigating the effect which asphalt reinforcement influences on the reduction of cracks. For the test, a 65 mm thick layer of asphalt is installed over a pre-cracked surface. The simulated crack is 4mm wide and is widened by 1mm cycle, then returned to a 4 mm width. The opening of the crack by 1mm cycle corresponds to the expansion volume of water which exists in the crack. The widening of the crack is achieved by means of a controlled liquid which freezes and then thaws.

The reinforcement products differ mainly by the choice of the raw material and the use of the bituminous coating. The tested products which are available on the market consist of glass, carbon, polypropylene, steel and polyester.

The asphalt interlayer systems clearly show differences in their effectiveness, completely preventing reflection cracks. The polyester used by manufactures shows that it is the ideal raw material for asphalt reinforcement. It consists of special high module polyester covered with a protective bituminous coating. Furthermore, this special coating ensures a high bond with the surrounding asphalt layers.

**III. Answer the following questions.**

1. What demonstrates effective results in the prevention of cracks in asphalt layers?

2. What is called reflection crack?

3. What helps to slow down or even completely avoid the development of reflection cracks?

4. When did the Belgium Road Research Center develop a test method investigating the effect which asphalt reinforcement influences on the reduction of cracks?

5. How was this test performed?

6. What do the tested products consist of?

7. What is the ideal raw material for asphalt reinforcement?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Translate the following sentences into English paying attention to the usage of the gerund.**

1. Пожалуйста, перестаньте разговаривать.

2. Они начали работать ровно в 9 часов.

3. Невозможно представить Англию без дождя.

4. Он начал писать пьесы в раннем возрасте.

5. Я бы хотела, чтобы вы перестали задавать мне вопросы.

6. Я думаю, что мы можем продолжить обсуждение этого вопроса.

**VII. Grammar material. Sequence of Tenses. Согласование времён в главном и придаточном предложениях.**

 В английском сложноподчинённом предложении с придаточным дополнительным соблюдаются правила согласования времён в главном и придаточном предложениях. Эти правила сводятся к следующему:

 **1.** Если глагол-сказуемое главного предложения стоит **в настоящем или** **будущем времени**, то глагол-сказуемое придаточного дополнительного предложения может стоять **в любой временной форме**, требуемой по смыслу, например:

 He **says** that you **are** right.

 Он **говорит**, что ты **прав**.

He **will tell** us why he **wasn’t** at school yesterd**ay.**

 Он **скажет** нам, почему он **не был** в школе вчера.

 **2.** Если глагол-сказуемое главного предложения стоит **в прошедшем времени** (обычно в **Past Simple**), то и глагол дополнительного придаточного предложения должен стоять в одном из прошедших времён, в том числе – в будущем прошедшем (Future in the Past), например:

He **said** that he **would not go** to school tomorrow.

 Он **сказал**, что **не пойдёт** завтра в школу.

 I **didn’t know** that you **lived** here.

Я **не знал**, что вы здесь **живёте**.

 **3.** Для обозначения действия, предшествующего действию, выраженному сказуемым главного предложения, обычно употребляется **Past Perfect**. На русский язык глагол-сказуемое придаточного предложения в данном случае переводится глаголом в прошедшем времени:

 I **didn't know** that he **had left** for Moscow.

 Я **не знал**, что он **уехал** в Москву.

 **4.** Если в придаточном дополнительном предложении утверждается какая-нибудь **общеизвестная истина**, то, несмотря на прошедшее время главного предложения, в придаточном предложении можно употреблять настоящее время, т.е. в этих случаях **закон согласования времён не действует**:

The teacher **told** us that the earth **moves** round the sun.

Учитель **сказал** нам, что земля **вращается** вокруг солнца.

 **5.** Указательные местоимения и наречия времени и места заменяются по смыслу следующими словами:

вместо **this, these** может употребляться **that, those**

вместо **here** может употребляться **there**

вместо **now** может употребляться **then**

вместо **yesterday** может употребляться **the day before**

вместо **today** может употребляться **that day**

вместо **tomorrow** может употребляться **next day, the following day**

вместо **last week, last year** может употребляться **the week (the year) before**

**VIII. Put the verbs in brackets into the required tense according to the rules of Sequence of Tenses.**

1. I thought he (to come) in time.

2. We have heard that he (to be) very clever.

3. She told me that in an hour she (to go) for a walk.

4. The boy didn’t know that water (to boil) at 100 C.

5. Last year I skated much better than I (to do) now.

6. The teacher told us that there are 26 letters in the English alphabet.

7. Mark remembered that he (to leave) the cab at the hotel.

**Part V**

**Polymers in Road Construction**

**I. Learn the following words:**

to assume **–** предполагать success **--** успех

rubber **–** каучукin spite of **–** несмотря на

competitive **--** конкурентоспособный fundamental **--** основной

particular **--** особый to base **--** основывать

demand **--** требование suitability **--** пригодность

green product **–** экол. чистый продукт relative **--** относительный

**II. Read and translate the text.**

Polymers have for many years been widely used by people. Back in the year 1500 the Mayan civilization in Central America are assumed to be among the first to find an application for polymers, as their children played with a ball made from local rubber trees.

 Nowadays it is widely used in various forms. In the construction of buildings and in the construction of roads it is considered as fundamental. Usage of polymer products is based on their suitability for soil stabilization. The relative economy of polymers made them competitive with other stabilizing agents. The most frequently used material is cement; however cement soil has low resistance to mechanisms.

 In today’s chemical industry many special polymers have been developed to meet a particular demand. The manufactures of this project have a 15 year history. A representative from the local European distributors of this polymer states that although this product is a success as it is, researches are being done on this polymer in spite of the fact that it is a “green” product, easy to use and competitive.

**III. Answer the following questions.**

1. Polymers have for many years been widely used by people, haven’t they?

2. Who first found an application for polymers?

3. Where is this material considered as fundamental?

4. What made polymer materials competitive with other stabilizing agents?

5. How long are polymer materials used?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Translate the following sentences into English paying attention to the usage of Sequence of Tenses.**

1. Он сказал, что ему нравится эта пьеса.

2. Я знаю, что его отец профессор и живёт в Москве.

3. Он сказал мне вчера, что его отец профессор и живёт в Москве.

4. В прошлом году они думали, что никогда не будут хорошо читать по-английски.

5. Мы решили на прошлой неделе, что будущим летом мы все поедем в Крым.

6. Я никогда не слышал, что ты бывал в Англии.

7. Он сказал мне, что встретит меня в колледже.

 **Part V**

**Way for Flood Protection**

**I. Learn the following words:**

drainage **–** канализация, дренаж volume **--** объем

issue **–** вопрос, сутьto channel **--** направлять

solution **--** решение permeability **--** проницаемость

to try **–** стараться, пробовать pavement **–** дорожное покрытие

to absorb **–** всасывать, поглощать to cleanse **--** очищать

impurity **--** нечистотыtreatment **--** обработка

downpour **–** ливень sponge **--** губка

flooding **--** наводнение rate **–** скорость, уровень, ставка

to ease **–** уменьшать, ослаблять

**II. Read and translate the text.**

Drainage control and effective water management are important issues for industry. One solution is the use of porous asphalt, a method which has been tried and tested but not still widely used. Porous road pavement technology helps to manage the risk of flooding by easing flow rates through the traditional drainage systems and road system.

 Porous pavement can absorb water up to 30% of its volume which can then be channeled into existing drainage system. The system has a permeability designed to cope with up to 10,000 mm of rain per hour. As the rainwater drains through the porous reservoir, it is cleansed of impurities like oil, and sand and enters the drainage system as grey water and can be used without further treatment. This helps to reduce the demand of drinking water supplies.

 Traditional roads are designed to keep rainwater out, and are structured so that the rain drains off the surface when there is a downpour. This porous technology changes the make**-**up of the road surface, making it more like a sponge.

**III. Answer the following questions.**

1. Drainage control and effective water management are important issues for industry, aren’t they?

2. What helps to manage the risk of flooding?

3. How many per cent of water volume can porous pavement absorb?

4. Where is water cleansed of impurities like oil and sand?

5. What helps to reduce the demand of drinking water supplies?

6. How are traditional roads designed?

7. What technology changes the make-up of the road surface?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. Direct and Indirect Speech. Прямая и косвенная речь.**

 Правила согласования времён особенно важны при переводе из прямой речи, непосредственно передающей слова говорящего, в косвенную речь, передающую слова говорящего описательным путём.

**Примеры перевода из прямой речи в косвенную речь**

 **1. Повествовательное предложение**

В повествовательном предложении слова **she said, he repeated** и т.д. служат главным предложением, затем следует дополнительное придаточное предложение, начинающееся с союза **that** или бессоюзное. Глагол придаточного предложения согласуется во времени с глаголом главного предложения по правилам согласования времён. Личные местоимения придаточного предложения соответственно смыслу могут меняться:

 He **said**, “I **was ill**.”

 Он сказал: “Я болел”.

He **said** (that) he **had been ill.**

 Он сказал, что болел.

**2. Вопросительное предложение**

 Когда в косвенной речи надо передать вопрос, употребляется прямой порядок слов. Косвенный вопрос вводится или каким-нибудь соединительным местоимением, или наречием (**what, which, who, when**, **where, why** и т.д.), или союзами **whether, if**, которые равны по значению русской частице **ли**.

 He asked me: “Do you know English?”

 Он спросил меня: “Ты знаешь английский язык?”

 He **asked** me whether I **knew** English.

Он спросил меня, знаю ли я английский язык.

 She asked me: “Where do you live?”

 Она спросила меня: “Где ты живёшь?”

 She **asked** me where I **lived.**

Она спросила меня, где я живу.

**3) Повелительное наклонение**

 При передаче просьбы или приказания в косвенной речи употребляется простое предложение с инфинитивной конструкцией:

 The teacher **said to me**: “Put the book on the table.”

 Учитель сказал мне: “Положи книгу на стол.”

 The teacher **told me to put** the book on the table.

 Учитель сказал мне положить книгу на стол.

 Отрицательная форма повелительного наклонения **don’t** **+ Infinitive** меняется на **not to + Infinitive**:

 She told me: “Don’t be late.”

 Она сказала мне: “Не опаздывай”.

Shetold me **not to be late.**

 Она сказала мне не опаздывать.

**VII. Change the following sentences from Direct into Indirect Speech. Translate the sentences into Russian.**

1. She said: “I will be very glad to see you”.

2. He said: “Who is this man?”

3. I thought: “He is a very clever man.”

4. The teacher said: “Open your books and begin reading the new lesson.”

5. The girl asked: “What is the price of this dress?”

6. I asked Sophy: “Will you help me in my work?”

7. The secretary said: “Please pass me the paper.”

**Part VI**

**Concrete Roads**

**I. Learn the following words:**

pavement **–** дорожное покрытие composite **–** смесь

application **--** применение challenge **–** вызов, испытание

particle **--** частица owner **--** владелец

to embed **--** вделывать rigid **--** жёсткий

probability **–** вероятность durability **--** долговременность

maintenance **–** содержание, обслуживание semi **--** наполовину

to permit **--** позволять flexible **--** гибкий

frequent **--** частыйshare **–** доля, часть

cementation **--** цементирование to permit **--** позволять

performance **–** производительность, высокие эксплуатационные качества

**II. Read and translate the text.**

High performance cementation material (HPCM) is an innovative product which was developed and tested for road surfacing applications. The pavement consists of a layer of concrete, steel fibre-reinforced fine mortar, in which hard resistant aggregate particles are embedded, forming a 10 mm composite layer. Testing showed that HPCM has great strength and durability.

 Maintaining safe, comfortable and durable surfaces on heavy traffic motorways has long been a major challenge to road owners, who manage the construction and maintenance of their roads. Rigid concrete roads are often chosen for roads with heavy traffic as they offer high strength and durability.

 Semi rigid pavements permit the use of flexible surfacing which can meet the requirements for a heavy-duty road, but will require relatively frequent maintenance and repaving in order to provide the safety and comfort required on motorways with high volumes of passenger vehicles at relatively high speeds. Flexible pavements in which the base layer is made of bitumen-bound materials are probably most common pavement type for high traffic roads, despite their problems of deformation under the loads of the heavy vehicle share of the traffic.

**III. Answer the following questions.**

1. What material is an innovating product which was developed and tested for road surfaces applications?

2. What does the pavement consist of?

3. What did testing show?

4. What has long been a major challenge to road owners?

5. Why are rigid concrete roads often chosen for roads with heavy traffic?

6. What do semi rigid pavements permit?

7. What pavements are probably most common pavement types for high traffic roads?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Grammar material. The Subjunctive Mood. Сослагательное наклонение.**

 В английском языке так же как и в русском языке существует три наклонения:

**1) Повелительное наклонение (the Imperative Mood**), которое выражает побуждение к действию (просьбу или приказание).

 **Answer** the question, please. **Ответь** на вопрос, пожалуйста.

**2) Изъявительное наклонение (the Indicative Mood**), которое выражает реальность действия в настоящем, прошедшем или будущем:

 We often **play** tennis. Мы часто играем в теннис.

 If the weather **is** fine he **will go** to the country.

Если погода **будет** хорошей,он **поедет** за город.

 If I **learn** his address **I will write** to him.

Если яузнаюего адрес,я емунапишу.

**3) Сослагательное наклонение (the Subjunctive Mood)**,которое выражает возможность, нереальность или предположительность действия:

 Without the sun there **would be no** light, no heat.

 Без солнца **не было бы** ни света, ни тепла.

 В английском языке существует две формы сослагательного наклонения: **Subjunctive I** и **Subjunctive II.**

 **a) Subjunctive I** выражает **реальные действия**, которые осуществимы лишь **при определённых условиях,** например:

IfI **had** time.Если бы у меня было время.

 If he **were** at home now. Если бы он был дома сейчас.

If I **knew** his address I **would visit** him.

Если бы я зналего адрес,тонавестил быего.

If the weather **were** finewe **would go** to the country.

Если бы погода была хорошей, мы бы поехализа город.

If I **were** you I **would go** to London.

Я бы на твоём месте поехала в Лондон.

 Глагол в придаточном предложении стоитв **Past Simple**, в главном – в форме **Future in the Past.**

 Для глагола **to be** во всех лицах в сослагательном наклонении употребляется форма **were**:

 **b) Subjunctive II** выражает **нереальные, неосуществимые действия** так как **они относятся к прошлому,** например:

 **If I had known** his address **I would have visited** him.

Если бы я знал его адрес (в прошлом), я бы его навестил.

 **If the weather had been fine** yesterday **we would have gone** tothe country.

Если бы погода была вчера хорошей, я бы навестил его.

 В случае, если действие относится к прошедшему времени, в главном предложении используется форма будущего совершённого прошедшего—**Future Perfect in the Past,** а в придаточном – прошедшее совершённое – **Past Perfect.**

**VII Translate the following sentences into Russi**an paying attention to **Subjunctive Mood.**

1. If we were younger!

2. If I could explain everything to you.

3. If I came later I would be late for the lesson.

4. I wish I had known this before the examination.

5. If he had known the time-table he wouldn’t have missed the train.

6. I would have come to you if you had not lived so far away.

7. If I had seen you yesterday I would have given you my text-book.

8. If I were in your place I wouldn’t buy tickets beforehand.

9. If I had known that you needed help I would have helped you.

 **Part VII**

**Hydro Demolition Technique for Removing**

**Damaged Concrete**

**I. Learn the following words:**

demolition **--** снос to remove **--** удалять

pressure **--** давление rough **–** грубый, шероховатый

jet **--** струяrepellent **--** отталкивающий

damage **--** повреждение lining **--** прокладка

crucial **–** решающий, важный in case **–** в случае

restoration **--** реставрация deck **–** настил, покрытие моста

to include **--** включать

**II. Read and translate the text.**

 The popularity of hydro demolition is growing worldwide. This technique, which uses high pressure water jets to remove damaged concrete from various structures, is playing a crucial role in the major restoration of the Central Bridge and Tunnel in the centre of Sweden capital Stockholm.

 The repairs include the removal of the concrete surface from the ceiling and lower parts of the tunnel walls, and removal of the bridge’s damaged concrete deck, followed by applying of fresh concrete.

Robots worked on the tunnel roof removing 10 mm of concrete, leaving a rough and textured crack-free surface for the new fire repellent overlay. Hydro demolition was followed by spraying a 35 mm thick fire resistant concrete lining to complete the restoration. On the prepared tunnel walls about 60 mm thick layer of reinforced concrete was sprayed and then the walls were covered by precast concrete panels, which can be easily replaced in case of any future salt corrosion.

**III. Answer the following questions.**

1. Is the popularity of hydro demolition growing worldwide?

2. What does this technique use?

3. What is this technique used for?

4. What was hydro demolition followed by?

5. The last layer consisted of precast concrete panels, didn’t it?

**IV. Make up a dialogue according to the questions.**

**V. Retell the text given above.**

**VI. Make up sentences according to the models to practice the use of the Subjunctive Mood.**

**a) Model:** Хотелось бы, чтобы новый спектакль понравился вам.

 I **wish** you **liked** the new performance.

1. Хотелось бы, чтобы вы приняли участие в этом спектакле.

2. Хотелось бы, чтобы они посмотрели этот фильм.

3. Хотелось бы, чтобы вы послушали эту песню

4. Хотелось бы, чтобы они приходили на занятия вовремя.

5. Хотелось бы, чтобы они лучше готовились к занятиям.

**b) Model:** If I **saw** this film I **would tell** you about it.

If I **had seen** this film I **would have told** you about it.

1. If you came later you would watch TV.

2. If you investigated this problem you would answer this question.

3. If they knew the facts they would prove it.

4. If I bought a ticket to the cinema I would see this film.

5. If I had a lot of money I would buy a car.

**c) Model:** I **am sorry**.I **don’t know** Mr. Smith.

I **wish** I **knew** Mr. Smith.

1. I am sorry I cannot do this.

2. I am sorry you cannot read this book in the original.

3. I am sorry the play isn’t a success.

4. I am sorry I cannot change it.

5. I am sorry I cannot come in time.

**VII. Express the same in English.**

1. Если бы мы встретили Анну, мы бы её всё рассказали.

2. Жаль, что сейчас не лето.

3. Если бы сегодня было тепло, мы бы поехали на озеро.

4. Если бы я знал французский, я бы мог поговорить с нашим гостем.

5. Если бы мы сейчас были в Москве, мы бы пошли осматривать город.

**REFERENCES**

1. Агабекян И.П. Английский для технических вузов. – Ростов-на Дону: Феникс, 2012

2. Бурлак А.И. и др. Пособие по английскому языку для студентов II-III курсов строительных курсов. – М: Высшая школа, 2011.

3.Бонк Н.А. и др. Учебник английского языка.– М: Деконт, 2013

4. Гарагуля С.И. Английский язык для студентов строительных специальностей. – Ростов-на-Дону: Феникс, 2011

5. Голицинский Ю.Б. Упражнения по грамматике. – М: КАРО, 2011.

6. Луговая А.Л. Английский язык для строительных специальностей. – M: Высшая школа, 2012

7. Полякова Т.Ю. и др. Английский язык для инженеров. – M: Высшая школа, 2011.

8. Поздняков А.А. Англо-русский словарь по строительству и новым технологиям. – М.: русский язык, 2013.