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В учебно-методическом пособии даны предусмотренные вузовской программой 4 контрольные работы, которые включают задания по грамматике английского языка и тексты для письменного перевода. Контрольные работы предназначены для проверки знаний студентов.

Предназначено для студентов первого курса инженерных направлений заочной формы обучения.

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ОГЛАВЛЕНИЕ

| | |
|--|----|
| Общие указания к выполнению и оформлению контрольных работ | 4 |
| КОНТРОЛЬНАЯ РАБОТА 1 | 4 |
| Вариант I | 5 |
| Вариант II | 6 |
| Вариант III | 8 |
| Вариант IV | 10 |
| Вариант V | 12 |
| КОНТРОЛЬНАЯ РАБОТА 2 | 14 |
| Вариант I | 14 |
| Вариант II | 16 |
| Вариант III | 18 |
| Вариант IV | 20 |
| Вариант V | 22 |
| КОНТРОЛЬНАЯ РАБОТА 3 | 23 |
| Вариант I | 23 |
| Вариант II | 26 |
| Вариант III | 30 |
| Вариант IV | 33 |
| Вариант V | 35 |
| КОНТРОЛЬНАЯ РАБОТА 4 | 37 |
| Вариант I | 37 |
| Вариант II | 38 |
| Вариант III | 40 |
| Вариант IV | 42 |
| ВАРИАНТ V | 43 |
| Приложение. Тексты для самостоятельного чтения и перевода | 46 |
| LITERATURE | 64 |

ОБЩИЕ УКАЗАНИЯ К ВЫПОЛНЕНИЮ И ОФОРМЛЕНИЮ КОНТРОЛЬНЫХ РАБОТ

Каждая контрольная работа предлагается в пяти вариантах. Вы должны выполнить один из пяти вариантов в соответствии с последними цифрами шифра зачетной книжки: студенты, шифр зачетной книжки которых оканчивается на 1 или 2, выполняют вариант № 1; на 3 или 4 – № 2; на 5 или 6 – № 3; на 7 или 8 – № 4; на 9 или 0 – № 5.

Выполнять контрольные работы следует в печатном виде на листах формата А4. На титульном листе работы укажите свою фамилию, шифр, специальность и номер контрольной работы. Контрольные работы, заверенные печатью деканата, предоставляются на проверку на кафедру иностранных языков для инженерных направлений в течение семестра или во время зачета (экзамена).

Контрольные работы выполняются следующему образцу:

| Задание контрольной работы (полностью) | Выполненное задание |
|--|---------------------|
| | |

Контрольные работы должны быть выполнены в той последовательности, в которой они даны в настоящих методических указаниях.

Выполненные контрольные работы направляйте для проверки и рецензированные в университет в установленные сроки.

Если контрольная работа выполнена без соблюдения указаний или не полностью, она возвращается без проверки.

КОНТРОЛЬНАЯ РАБОТА 1

Для того чтобы правильно выполнить предлагаемые задания, необходимо знать следующие грамматические темы:

1. Имя существительное. Множественное число. Артикли и предлоги как показатели имени существительного. Выражения падежных отношений в английском языке с помощью предлогов и окончания 's. Существительное в функции определения и его перевод на русский язык.

2. Спряжение и функции глаголов to be, to have, to do.

3. Форма настоящего (Present), прошедшего (Past) и будущего (Future) времени Indefinite действительного залога (Active).

4. Простое распространенное предложение: прямой порядок слов повествовательного и побудительного предложений в утвердительной и отрицательной формах; обратный порядок слов вопросительного предложения. Обороты there is, there are.

5. Модальные глаголы: а) выражающие возможность: can (could), may и эквивалент глагола can – to be able; б) выражающие долженствование: must, его эквиваленты to have to и to be to; should.

Вариант I

I. Выберите из предложенного списка имена существительные и запишите их в форме множественного числа с переводом на русском языке.

Language, common, speaker, emigrant, people, dialect, approximately, place, invented, from, country.

II. Выберите нужную форму глагола to be (am, is, are). Переведите предложения на русский язык.

1. The most popular languages ___ Chinese, English, Hindi, Spanish and Russian.
2. There ___ also some other languages.
3. Now the world language ___ English.
4. There ___ also a great amount of English dialects.

III. Раскройте скобки, употребляя глаголы в настоящем, прошедшем или будущем времени группы Indefinite.

1. He (to speak) to us every morning.
2. I (not to play) football.
3. According to the forecast it (to rain) tomorrow.
4. He (to come) home yesterday.

IV. Переведите на английский язык.

1. Что лежит там на столе?
2. В вашем кабинете нет карты.
3. Сколько стульев в нашем классе?
4. В городе есть несколько высших учебных заведений.

V. Из данных предложений выпишите и переведите на русский язык те, в которых есть модальные глаголы или их эквиваленты.

I am a student. I have to attend lectures every day. I shall be able to visit my friend only on Sunday. We shall go to skate.

VI. Прочтите текст.

International Languages and English

There are approximately 5000 different languages and many dialects or local versions of major languages in the world. The oldest written language is Egyptian, but now Egyptian is not a widely spread language.

The most popular languages are Chinese, English, Hindi, Spanish and Russian.

The most difficult languages are North American Indian language of Minnesota and Oregon, Tabassaran, Esqimaux and Chinese.

The simplest language is Esperanto. It was invented by a Polish doctor, Ludwig Lazarus Zamenhof in 1887. This language was invented to be a world language because of its simplicity, but now only 10 million people speak Esperanto.

Now the world language is English. It is one of 7 international languages, one of 6 languages of the United Nations, common language of NATO, aviation language and the first language of international sport. English is an official language of UK, America, Canada, Australia and other English-speaking countries. But English in the UK is not the only language people are speaking. There are a lot of minority languages in the UK. There are about 80,000 Gaelic speakers and over half a million Welsh speakers. There are also some other languages that came with the emigrants. These languages are: Bengali, Turkish, Gujarati, Spanish, Greek, Urdu, Punjabi, Chinese, Italian, Arabic, French and Portuguese.

There is also a great amount of English dialects. There are some idioms connected with languages: Pidgin English – dialect, spoken by people, who came to Great Britain from Papua New Guinea and the Far East for trading; broken English means badly spoken, corrupted language; Queen's English – correct, clear and intelligible English.

VI. Переведите весь текст в письменной форме.

Вариант II

I. Выберите из предложенного списка имена существительные и запишите их в форме множественного числа с переводом на русском языке.

Education, life, educated, person, knows, thing, learn, discovery, pupil, knowledge, subject, school, opportunity, result, process, capacity.

II. Выберите нужную форму глагола to be (am, is, are). Переведите предложения на русский язык.

1. Education ___very important in our life.
2. An educated person ____ one who knows a lot about many things.
3. A more general aim _____ to make our intellectual and cultures.
4. There _____ many reasons why we begin to study foreign languages.

III. Переведите предложения на английский язык.

1. В журнале есть информация о предстоящих выборах.
2. Весной деревья и кустарники в цвету.
3. Фотография моей подруги стоит на столе.
4. В городе находится несколько исторических памятников.

III. Раскройте скобки, употребляя глаголы в настоящем, прошедшем или будущем времени группы Indefinite.

1. She (not to get) letters from her parents last month.
2. What you (to do) yesterday evening?
3. It (to sound) interesting.
4. I (to visit) Paris next month.

IV. Переведите на английский язык.

1. Телевизор находится справа от двери.
2. В стране большие запасы нефти и угля.
3. В том лесу были какие-нибудь грибы и ягоды?
4. В это время на улице не будет автобусов.

V. Из данных предложений выпишите и переведите на русский язык те, в которых есть модальные глаголы или их эквиваленты.

I was busy yesterday. I had to get ready for my seminar. I could do it in the library. I went there just after my classes.

VI. Прочитайте и письменно переведите текст.

Education

Education is very important in our life. An educated person is one who knows a lot about many things. He always tries to learn, find out and discover more about the world around him. He gets knowledge at school, from books, magazines, from TV educational programs. The pupils can get deeper knowledge in different optional courses in different subjects and school offers these opportunities. They can deepen and improve their knowledge by attending different optional courses in different subjects. The result of the educative process is the capacity for further education.

Nowadays the students of secondary schools have opportunities to continue their education by entering gymnasiums, lyceums, colleges. But the road to learning is not easy. There is no royal road to learning. To be successful in studies one must work hard. It's for you to decide to learn and make progress or not to learn lose your time.

The role of foreign languages is also increasing today. Thanks to the knowledge of foreign languages one can read books, magazines in the original, talk to foreigners, translate various technical articles. Moreover, joint ventures which have recently appeared in our country need specialists with profound knowledge of foreign languages like English, German or French. To know foreign languages is absolute necessary for every educated person, for good specialists.

English is a world language. It is the language of progressive science and technology, trade and cultural relations, commerce and business. It's the language of international aviation, shipping and sports. It's also the major language of diplomacy. Geographically it is the most widespread language on earth.

A foreign language is not just a subject learnt in the classrooms. It's something which is used in real life situations. There are many reasons why we begin to study

foreign languages. First of all it's an effective medium of international communication. I'm convinced if we are working in any brunch of science we must read books and magazines in other languages. Learning foreign languages opens up opportunities and career that didn't even exist some years ago. Knowing foreign languages can help us to find a job in such fields as science and technology, foreign trade and banking, international transportation communication, teaching librarian science and others. A more general aim is to make our intellectual and cultures. Learning a foreign language includes learning culture, traditions and mode of thought of different people. Of course speaking and writing in a foreign language is a difficult art and it has to be learned. Needless to say that English has become very popular today. About 350 million people speak English as their first language. About the same number use it as a second language. It's an official language in 44 countries. It's the dominant language of medicine, electronics and space technology, international business and advertising, radio.

Вариант III

I. Выберите из предложенного списка имена существительные и запишите их в форме множественного числа с переводом на русском языке.

Different, hard, language, world, people, year, ago, international, title, global, language, business, culture, science.

II. Выберите нужную форму глагола to be (am, is, are, was). Переведите предложения на русский язык.

1. Many of them ___ "alive" because people use them, but there ___ some "dead" languages, for example Latin.

2. An educated person ___ one who knows a lot about many things.

3. Two thousand years ago, Latin ___ the world's most important international language.

4. There ___ a proverb: "A new language ___ a new world".

III. Раскройте скобки, употребляя глаголы в настоящем, прошедшем или будущем времени группы Indefinite.

1. He (to take part) in a conference last month.

2. Ann (to make) a report next week.

3. Brian (to give a lift) to Mary every morning.

4. This hotel (to contain) five hundred rooms.

IV. Переведите на английский язык.

1. В диктанте содержится несколько ошибок.

2. В городе нет большой гостиницы.

3. Население России составляет сто пятьдесят миллионов человек.

4. Существует несколько способов решения данной проблемы.

V. Из данных предложений выпишите и переведите на русский язык те, в которых есть модальные глаголы или их эквиваленты.

Nick plays chess rather well. He will be able to take part in competitions. Now he is to work much with his trainer.

VI. Прочитайте и письменно переведите текст.

to reflect – отражать

soul – душа

behaviour – образ действий, манеры, поведение

to create – создавать

similar(to) – подобный, похожий, сходный

average – нормальный, обыкновенный, обычный, средний

a mother tongue – родной язык

worth – достойный, заслуживающий

satellite – спутниковый

to apply for – обращаться с просьбой, заявлением (особ, в письменной форме); for – за чем-л.

well-paid job – хорошо оплачиваемая работа

joint venture – совместное предприятие

do without – обходиться без

Why do we Learn English

People began to speak many centuries ago, and since then they have been speaking different languages. Every language reflects the soul, behavior and temperament of each nationality. Peoples created their own alphabets and rules, but they always wanted to communicate with each other, to understand and to know more about each other.

Languages help people to understand each other better, they help them to solve different economic and political problems, which stand before them, and so people learn foreign languages.

All languages are different. Some are very hard, some are easier, some are similar, but there are no identical languages in the whole world. There are more than 2,700 languages in the world. Many of them are "alive" because people use them, but there are some "dead" languages, for example Latin.

Two thousand years ago, Latin was the world's most important international language. Today this title belongs to English. It's a global language of travel, business, pop culture, sport and science.

Over one billion people speak English. That's almost one fifth of the world's population. For over 400 million it's their first language. For the other 600 million it's either a second language or a foreign language.

Today, in fact, over 250 million people are learning English. That's more than the population of the USA.

The average person in Britain has a vocabulary of between 10,000 and 15,000 words. In his plays William Shakespeare used a vocabulary of about 30,000 words. Shakespeare was born over 400 years ago. At that time, only six or seven million people spoke English.

Now English is spoken practically all over the world, it has become the world's most important language in politics, science, trade and cultural relations. It is spoken as a mother tongue in Great Britain, the United States of America, Canada, Australia and New Zealand. Besides, a lot of people speak English in Japan, India, China, Africa and many other countries. English is one of the official languages of the United Nation Organization. Half of the world's scientific literature is in English. It is the language of computer technology.

To my mind English is worth studying. There is a proverb: "A new language is a new world". "Knowledge is a power", one great man said. Speaking a foreign language one can not only read the papers, magazines and original books by outstanding writers, but as well watch satellite programmes, travel easily to different parts of the world. Besides, understanding and speaking a foreign language became necessary while applying for a good and well-paid job.

Now I know that it is a must for XXI century professional no matter what job to choose. The world is getting smaller and international connections tighter. A lot of foreign delegations keep coming to our country, hundreds of joint ventures have appeared in every city of our country recently. So undoubtedly, you can't do without learning this beautiful language.

VII. Письменно ответьте на вопросы:

1. What was the most important international language in the world two thousand years ago?
2. How many people speak English as their first language, a second language or a foreign language?
3. How many languages are there in the world?
4. How large is the vocabulary of the average British person?
5. Where is English spoken?
6. Why do you learn English?

Вариант IV

I. Выберите из предложенного списка имена существительные и запишите их в форме множественного числа с переводом на русском языке.

People, foreign, thousand, year, language, century, country, to study, nobility, different, again, history, widespread, world, approximately, tongue, science, relation.

II. Выберите нужную форму глагола to be (am, is, are, was). Переведите предложения на русский язык.

1. Nowadays, the English language ___ the most widespread in the world.
2. An educated person ___ one who knows a lot about many things.
3. Two thousand years ago, Latin ___ the world's most important international language.
4. Half of the world scientific journals ___ in English.

III. Раскройте скобки, употребляя глаголы в настоящем, прошедшем или будущем времени группы Indefinite.

1. Mary (to teach) mathematics at school next year.
2. Bad news (to travel) fast.
3. Yesterday I (to look) out of the window and (to see) that the weather (to be) bad.
4. It (to take) me an hour to cook breakfast.

IV. Переведите на английский язык.

1. Работа моего брата очень интересная.
2. Тебе нравится цвет этого пальто?
3. Ты знаешь телефон Билла?
4. Когда день рождения твоей мамы?

V. Из данных предложений выпишите и переведите на русский язык те, в которых есть модальные глаголы или их эквиваленты.

You can go to the museum by bus. It will take you 15 minutes to get there. Be quick and you may be there in time.

VI. Прочитайте и письменно переведите текст.

What do we need foreign languages for?

It is known that people have been learning foreign languages for thousands of years. The ancient Egyptians learned the Greek language 2.5 thousand years ago. In the 12-th century the French language was learnt in many countries of Europe. In the 16-th century Europe begins to study the German language. In the 19-th century the nobility of different countries communicated in French again. Throughout the history of the mankind people needed some second language to understand each other.

Nowadays, the English language is the most widespread in the world. Approximately 400 million people speak English as a mother tongue. The English language has become a world language in politics, science, trade and cultural relations. It is the language of computer technology. Half of the world scientific journals are in English.

It is absolutely necessary for a good specialist in any country to be able at least to read English. If you know English, you can talk to people of any nationality, and can get necessary information anywhere in the world.

Besides, the English language is the language of the great literature. William Shakespeare, Charles Dickens, Oscar Wilde and George Bernard Show, they all wrote their books in English. A lot of modern literature and many new films in English come out every year. If you know English, you can understand them without translation.

No wonder that most educated people speak English fluently. Today, one person in seven of the world's population either knows English or learns it.

Вариант V

I. Выберите из предложенного списка имена существительные и запишите их в форме множественного числа с переводом на русском языке.

Variant, language, standard, peculiarity, system, by, norm, official, school, university, press, educated, people, it, form, substantially, acceptable, wherever.

II. Выберите нужную форму глагола to be (am, is, are). Переведите предложения на русский язык.

1. And some differences ___ obvious.
2. Variants of a language ___ regional varieties of standard literary language.
3. Standard English ___ the official language of Great Britain.
4. Half of the world scientific journals ___ in English.

III. а) Перевиде следующие предложения на английский язык:

1. Каждый язык имеет различные варианты.
2. Некоторые различия очевидны.
3. Английский – государственный язык Уэльса, Шотландии, Ирландии и государственный язык острова Мальта.
4. Стандартный английский язык является официальным языком Великобритании.

б) Напишите предложения из упражнения III. а) в форме Past Simple и Future Simple действительного залога (Active).

V. Из данных предложений выпишите и переведите на русский язык те, в которых есть модальные глаголы или их эквиваленты.

Last week my sister had a test. She had to translate sentences from Russian into English. She might use a dictionary. The test was not difficult for her.

VI. Прочитайте и письменно переведите текст.

obvious – очевидный

stylistic variation – стилистический вариант

to reflect – отражать

notwithstanding – несмотря на
local dialects – местные диалекты
minor peculiarities – незначительные отличительные особенности
sound system – звуковая система
substantially – в основном, в большем количестве случаев
acceptable – приемлемый

English Language

Every language has different kinds of variants: geographical or territorial, perhaps the most obvious; stylistic variation reflects the differences between the written and the spoken form of the standard national language in the given region and others.

Notwithstanding, English is the national and state language of England, the USA, Australia, New Zealand, Canada, South Africa and some African countries; in those countries, except England, this language appears in its different variants. And some differences are obvious, especially from the grammatical and phonetic points of view.

It is the official language of Wales, Scotland and Ireland and on the island of Malta.

Modern linguistics distinguishes territorial variants of a national language and local dialects. Variants of a language are regional varieties of standard literary language, characterized by some minor peculiarities in the sound system, vocabulary and grammar and by their own literary norms.

Standard English is the official language of Great Britain, taught at schools and universities, used by the press, radio and television and spoken by educated people. It may be defined as current and literary form of English and acceptable wherever English is spoken or understood.

VII. Запишите следующие предложения на английском языке:

1. Каждый язык имеет различные варианты.
2. Некоторые различия очевидны.
3. Английский – государственный язык Уэльса, Шотландии, Ирландии и государственный язык острова Мальта.
4. Стандартный английский язык является официальным языком Великобритании.
5. На нем говорят образованные люди.

VIII. Ответьте на следующие вопросы в письменной форме:

1. What kinds of English language variants do you know?
2. What countries have English as the national and state language?
3. Do they speak Standard English in the USA, Canada and New Zealand?
4. What is the regional variant of a language?

КОНТРОЛЬНАЯ РАБОТА 2

Для того чтобы правильно выполнить задания, необходимо проработать по учебнику следующие разделы грамматики:

1. Видовременные формы глагола группы Continuous (Present, Past, Future) действительного залога (Active).
2. Видовременные формы глагола группы Perfect (Present, Past, Future) действительного залога (Active).

Вариант I

I. Переведите следующие предложения на русский язык, обращая внимание на перевод Perfect и Perfect Continuous.

1. I have been doing a Nursery Teacher's course this year.
2. He was a very careful driver. He had never had an accident.
3. I have come here for holidays since I was a child.
4. I am completely tired. I have been doing an exam all morning.

II. Перепишите предложения, выбрав правильную форму глаголов. Переведите предложения на русский язык.

1. For the past six months I work / am working / have been working / had been working / in a department store.
2. I speak French and English fluently and I learn / am learning / will be learning / have been learning / German since I left school, so I speak some German too.
3. He forgets / will forget / has forgotten / this map. We'll have to go back for it.

III. Поставьте глагол в скобках в Present Perfect или в Present Perfect Continuous. Переведите предложения на русский язык.

1. I (to be) to the country for weeks.
2. My hands are dirty. I (to repair) the car.
3. It's nice to see you again. What (to do) you since we last met?
4. How long you (to read) that book?

IV. Переведите предложения на английский язык.

1. Где ключ? Я не знаю. Я его потерял.
2. Я учу английский язык всю свою жизнь.

3. Я уже посетила все достопримечательности Лондона.

4. Когда я приехала в Париж, она уже уехала в Москву.

V. Прочитайте и письменно переведите текст.

isle – остров

island – остров

to separate – разделять

European – европейский

the English Channel – Ла-Манш

to be washed by – омываться

to border on – граничить с...

to consist of – состоять из...

mountainous peninsula – гористый полуостров

to stretch – простираться

estuary – устье реки

deposits – залежи

iron ore – железная руда

to discover – обнаруживать

current – течение

severely- чрезвычайно

decade – десятилетие

monarchy – монархия

Great Britain

The full name of the country is the United Kingdom of Great Britain and Northern Ireland. The United Kingdom is situated on the British Isles. The British Isles consist of two large islands, Great Britain and Ireland, and a great number of small islands. Their total area is over 314 000 sq. km. The British Isles are separated from the European continent by the North Sea and the English Channel. The western coast of Great Britain is washed by the Atlantic Ocean and the Irish Sea. Northern Ireland occupies one third of the island of Ireland. It borders on the Irish Republic in the south. The island of Great Britain consists of three main parts: England (the southern and middle part of the island), Wales (a mountainous peninsula in the West) and Scotland (the northern part of the island).

There are no high mountains in Great Britain. In the north the Cheviots separate England from Scotland, the Pennines stretch down North England along its middle, the Cambrian Mountains occupy the greater part of Wales and the Highlands of Scotland are the tallest of the British mountains. There is very little flat country except in the region known as East Anglia. Most of the rivers flow into the North Sea. The Thames is the deepest and the longest of the British rivers. Some of the British greatest ports are situated in the estuaries of the Thames, Mersey, Trent, T Clyde and Bristol Avon. Great Britain is not very rich in mineral resources, it has some deposits of coal and iron ore and vast deposits of oil and gas that were discovered in the North Sea.

The warm currents of the Atlantic Ocean influence the climate of Great Britain. Winters are not severely cold and summers are rarely hot. The population of the United Kingdom is over 58 million people. The main nationalities are: English, Welsh, Scottish and Irish. In Great Britain there are a lot of immigrants from former British Asian and African colonies. Great Britain is a highly industrialized country. New industries have been developed in the last three decades. The main industrial centres are London, Birmingham, Manchester, Leeds, Liverpool, Glasgow and Bristol. The capital of the country is London. The United Kingdom is a parliamentary monarchy.

VI. Письменно ответьте на вопросы:

1. Where is the United Kingdom situated?
2. What islands do the British Isles consist of?
3. What ocean and seas are the British Isles washed by?
4. How many parts does the Island of Great Britain consist of and what are they called?
5. What country does Northern Ireland border on?
6. Are there any high mountains in Great Britain?
7. What sea do most of the rivers flow into?
8. What mineral resources is Great Britain rich in?
9. What is the climate like in Great Britain?
10. What is the population of Great Britain?
11. What city is the capital of the U. K.?
12. What kind of state is Great Britain?

Вариант II

I. Переведите следующие предложения на русский язык, обращая внимание на Perfect и Perfect Continuous.

1. We haven't been to a concert for over a year.
2. I haven't been swimming since we were in Spain.
3. Mary was sitting on the ground. She was out of breath. She had been running.
4. Ann had just got home when I phoned. She had been in London.

II. Перепишите предложения, выбрав правильную форму глаголов. Переведите предложения на русский язык.

1. She is / was / will have been / has been / rather friendly recently.
2. Since my last birthday, I skate / was skating / have been skating / every day.
3. We have moved / had moved / have been moving / to a new flat recently.

III. Поставьте глагол в скобках в Present Perfect или в Present Perfect Continuous. Переведите предложения на русский язык.

1. I (to play) tennis since 2 o'clock.
2. Somebody (to smoke) all my cigarettes. The packet is empty.
3. Mary is still writing letters. She (to write) letters all day.
4. Look! Somebody (to break) that window.

IV. Переведите предложения на английский язык.

1. Мы купили новую машину.
2. Она интересуется медициной с детства.
3. Дождь идёт с утра.
4. Он всё ещё смотрит телевизор.

V. Прочитайте и письменно переведите текст.

famous – знаменитый
to measure – измерять
cathedral – собор
fort – форт
camp – лагерь
medieval – средневековый
conquered – завоеванный
college – колледж

England

England is the largest and the richest country of Great Britain. The capital of England is London but there are other large industrial cities, such as Birmingham, Liverpool, Manchester and other famous and interesting cities such as York, Chester, Oxford and Cambridge. Stonehenge is one of the most famous prehistoric places in the world. This ancient circle of stones stands in Southwest England. It measures 80 metres across and made with massive blocks of stone up to four metres high. Why it was built is a mystery.

Not far from Stonehenge stands Salisbury Cathedral. It is a splendid example of an English Gothic Cathedral; inside there is one of four copies of Magna Charta and the oldest clock in England. Chester is very important town in the north-west of England. In the past it used to be a Roman fort; its name comes from the Latin word castra, meaning "fortified camp". In Chester there is a famous museum which contains over 5000 ancient and modern toys.

Oxford is the home of the oldest university of England. The most famous college is Christ Church. It has a great hall which was built during the reign of Henry VIII and its chapel has become the Cathedral of Oxford. Cambridge is the home of Britain's second oldest university. York was the capital of Northern England. It is one of the best preserved medieval cities of Europe. It was built by

Romans, conquered by Anglo-Saxons and ruled by the Vikings. Birmingham is often called the "City of 1,500 trades" because of the great variety of its industries.

VI. Письменно ответьте на вопросы:

1. What are large industrial cities of England?
2. What is one of the most famous prehistoric places in the world?
3. Where are the oldest clock in England and a copy of Magna Charta now?
4. What is Chester interesting for?
5. What are two oldest universities in England?
6. What was the capital of Northern England?
7. Why is Birmingham called the "City of 1,500 trades"?

Вариант III

I. Переведите следующие предложения на русский язык, обращая внимание на Perfect и Perfect Continuous.

1. He has been to the doctor twice, but he is still not better.
2. Why are you staring at me? I suppose you haven't seen a woman on a motorbike before.
3. Tom hasn't gone to the party.
4. When I got home, everybody had gone to bed.

II. Перепишите предложения, выбрав правильную форму глаголов. Переведите предложения на русский язык.

1. I have left / have been leaving / a note to you here.
2. Oh, dear. What can we do? I'm sure something dreadful happens / is happening / has happened.
3. I met Jim a few days ago. He comes / came / has come / had come / from holiday.

III. Поставьте глагол в скобках в Present Perfect или в Present Perfect Continuous. Переведите предложения на русский язык.

1. You look tired. You (to work) hard?
2. My brother is an actor. He (to appear) in several films.
3. I (to read) the book you lent me, so you can have it back now.
4. He (to play) tennis since he was ten.

IV. Переведите предложения на английский язык.

1. Мы везде искали его последние полчаса.
2. Земля мокрая. Шел дождь.
3. Сегодня я выпил четыре чашки кофе.

4. Он никогда не водил машину.

V. Прочитайте и письменно переведите текст.

tower – башня

tomb – могила

battle – битва

in conclusion – в заключение

London

London is the capital of Great Britain, its political, economic and cultural centre. It's one of the largest cities in the world. Its population is more than million people. London is situated on the river Thames. The city is very old and beautiful. It was founded more than two thousand years ago. Traditionally London is divided into several parts: the City, the West End, the East End and Westminster. The City is the oldest part of London, its financial and business centre. The heart of the City is the Stock Exchange. Westminster is the most important part of the capital. It's the administrative centre. The Houses of Parliament, the seat of the British Government, are there. It's a very beautiful building with two towers and a very big clock called Big Ben. Big Ben is really the bell which strikes every quarter of an hour. Opposite the Houses of Parliament is Westminster Abbey. It's a very beautiful church built over 900 years ago. The tombs of many great statesmen, scientists and writers are there.

To the west of Westminster is West End. Here we find most of the big shops, hotels, museums, art galleries, theatres and concert halls. Picadilly Circus is the heart of London's West End. In the West End there are wide streets with beautiful houses and many parks, gardens and squares. To the east of Westminster is the East End, an industrial district of the capital. There are no parks or gardens in the East End and you can't see many fine houses there. Most of the plants and factories are situated there. London has many places of interest. One of them is Buckingham Palace. It's the residence of the Queen. The English are proud of Trafalgar Square, which was named so in memory of the victory at the battle. There in 1805 the English fleet defeated the fleet of France and Spain. The last place of interest I should like to mention, is the British Museum, the biggest museum in London. The museum is famous for its library -one of the richest in the world.

All London's long-past history is told by its streets. There are many streets in London which are known all over the" world. Among them Oxford Street, Downing Street and a lot of others can be mentioned. And tourists are usually attracted not only by the places of interest but by the streets too. In conclusion I

should say if you are lucky enough to find yourself in London some day you will have a lot to see and enjoy there.

VI. Письменно ответьте на вопросы:

1. When was London founded?
2. Into which parts is London divided?
3. What is the heart of the City?
4. Do you know any places of interest in London?
5. All London's history is told by its streets, isn't it?

Вариант IV

I. Переведите следующие предложения на русский язык, обращая внимание на Perfect и Perfect Continuous.

1. I have been to the finance department this morning.
2. My father has been asleep in bed all day.
3. We are late. The film will already have started by the time we get to the cinema.
4. When their first child was born, they had been married for three years.

II. Перепишите предложения, выбрав правильную форму глаголов. Переведите предложения на русский язык.

1. Have you written / were you writing / to your parents?
2. This short period of time see / has seen / enormous changes in education.
3. I don't read / haven't read / wasn't reading / a newspaper today.

III. Поставьте глагол в скобках в Present Perfect или в Present Perfect Continuous. Переведите предложения на русский язык.

1. I (to learn) English for a long time.
2. The ceiling was white. Now it is blue. She (to paint) it.
3. The ground is wet. It (to rain).
4. She (to work) overtime since last Monday.

IV. Переведите предложения на английский язык.

1. Мария устала. Она работала всю неделю сверхурочно.
2. Она ушла на работу в 8.30 утра, поэтому её не будет дома в 9 часов. Она уже уйдёт на работу.
3. Мы были хорошими друзьями с детства.
4. Я вас жду уже 20 минут.

V. Прочитайте и письменно переведите текст.
development – развитие

to hold – держать
leading – ведущий
powerful – могущественный, мощный
coast – побережье
to consist – состоять
to be washed by – омываться
separate – отдельный
dominance – преобладание
branch – ветвь, отрасль
to divide – разделять
legislative – законодательный
executive – исполнительный
judicial – судебный
to represent – представлять

The United States of America

After 350 years of development the United States of America still holds the leading position in the western world. The USA is the most powerful and highly developed country of the world. The United States of America lies in the central part of North American continent. Its western coast is washed by the Pacific Ocean. Its eastern coast is washed by the Atlantic Ocean and the Gulf of Mexico.

The USA consists of three separate parts. They are the Hawaiian Islands, Alaska and the rest major part of the USA. There are fifty states and districts of Columbia. The states differ very much in size, population and economical development. The population of the United States is about 250 million people.

What makes the USA the leader of the western world is its economical, political and military dominance over other countries.

The United States is a federal republic. The Government is divided into three branches: legislative (the US Congress), executive (the President and his Administration) and judicial (the US Supreme Court).

There are two main political parties in the USA: the Democratic and the Republican.

The flag of the USA is called "Stars and Stripes". The 50 stars – white on a blue field – represent the 50 states, 18 stripes represent 13 original English colonies, which in 1776 became independent of England.

The capital of the United States is Washington. It was named in honour of the first president whose name was George Washington. The biggest cities of the USA are New York, San Francisco, Los Angeles, Chicago and others.

VI. Письменно ответьте на вопросы:

1. Where is the US situated?
2. What are the major political parties?
3. Who is the US president now?

4. How many States are there in the country?
5. What is the US population?
6. What is the political structure in the country?
7. What is the capital of the USA?
8. What is the name of American flag?

Вариант V

I. Переведите следующие предложения на русский язык, обращая внимание на Perfect и Perfect Continuous.

1. The dentist has asked us to wait for a few minutes.
2. The Prime Minister hasn't been abroad since January.
3. Yesterday Ann had a phone call. She was very surprised. She had written to him many times but he had never replied to her letters.
4. I have sold my car.

II. Перепишите предложения, выбрав правильную форму глаголов. Переведите предложения на русский язык.

1. I tried to phone Tom this morning but there was no answer. He goes / is going / had gone / will have gone / out.
2. When I arrived to the party, Paul goes / has gone / had gone / home.
3. Sarah lives / lived / will have lived / has lived / in London since 1985.

III. Поставьте глагол в скобках в Present Perfect или в Present Perfect Continuous. Переведите предложения на русский язык.

1. I (not to see) Tom since Monday.
2. It (to rain) since I got up this morning.
3. I (to know) Max since my childhood.
4. I (to lose) my address book. You (to see) it anywhere?

IV. Переведите предложения на английский язык.

1. Я искал тебя всё утро. Где ты был?
2. Я играю в шахматы с десяти лет.
3. Я еще не закончила читать книгу, которую ты мне дала.
4. Смотрите! Кто-то разбил окно.

V. Прочитайте и письменно переведите текст.

Outstanding Events from the History of America

The first voyages along the coast of modern South and Central America were made by Amerigo Vespucci. That is why, in the 16th century German cartographer named this fourth part of the world after the explorer. At the

beginning of the 17th century European colonies were founded on the territory of the modern USA.

In 1620 first colonists landed at Plymouth Rock. They came from England on board the "Mayflower". Most of them were Puritans or former Anglicans who were called pilgrims. Their hopes were connected with the promises of the Bible about the land "of honey and milk", and America was thought to be this land. Later on Dutch, Spanish and Swedish colonies appeared.

People who came to America were mostly farmers, who wanted to exploit new lands. The development of trade, industry and agriculture in the colonies constantly conflicted with the economic policy of Britain. After constant pressure on the colonies on July 4, 1776, the Second Congress declared the Colonies to be independent of Great Britain.

The new state was called the United States of America and July 4 became its national holiday. The Congress adopted the Declaration of Independence. The Battle at Saratoga in 1777 when the Americans forced a large British army to capitulate, was a turning point in the long War for Independence. In this war the Americans were supported by France.

In 1783 Britain finally recognized American independence. At the beginning of 1861 the Southern states left the Union and founded the Confederation. That was the beginning of the war between the South and the North. The results of the war were the abolishing of slavery and establishment of "Indivisible union of indivisible states" The states lost their right to leave the union.

The 1930s were the years of Great Depression in the USA. Franklin Roosevelt set up government organizations called agencies. They found work for people, gave money to help the unemployed and homeless and helped the nation to recover from the Depression.

КОНТРОЛЬНАЯ РАБОТА 3

Для того чтобы правильно выполнить задания, необходимо проработать по учебнику следующие разделы грамматики:

1. Страдательный залог (Passive Voice) – формы Indefinite, Continuous, Perfect (Present, Past, Future).
2. Страдательный залог (Passive Voice) – формы Continuous (Present, Past); Perfect (Present, Past, Future).
3. Имя прилагательное. Степени сравнения имён прилагательных. Конструкции типа the more...the less, much more interesting.

Вариант I

I. Раскройте скобки. Употребите Present Simple Passive. Переведите предложения на русский язык.

1. English (to speak) all over the world.
2. Volkswagen cars (to make) in Germany.
3. We feed our cats twice a day. But the dogs (to feed) just once a day.
4. These reports (to translate) from Russian into English.

II. Выпишите предложения, в которых используется Present Continuous Passive, переведите их на русский язык.

1. I'll have to go to work by bus. My car is being serviced today.
2. This room is usually used for big meetings. But today it is being used for a party.
3. Tom is listening to the teacher. He's studying to be an engineer.
4. This little town grows very quickly. Some new houses are being built.

III. Выпишите предложения, в которых используется Passive Voice, переведите их на русский язык.

1. Every hour the planet Earth travels 66.620 miles around the sun.
2. Every day eleven earthquakes are felt somewhere in the world.
3. The money is being used to provide new computers for the Academy.

IV. Закончите предложения, употребив подходящие по смыслу прилагательные в сравнительной степени (older /more important, etc).

Пример: It's too noisy here. Can we go somewhere quieter?

1. This coffee is very weak. I like it a bit _____.
2. The hotel was surprisingly big. I expected it to be _____.
3. The weather is too cold in this country. I'd like to live somewhere _____.
4. My job is a bit boring sometimes. I'd like to do something _____.

V. Заполните пропуски словосочетаниями с прилагательными в превосходной степени (the ___ - est; the most___).

Пример: It's a very nice room. It's the nicest room in the hotel.

1. It's a very cheap restaurant. It'sthe town.
2. It was a very happy day. It wasmy life.
3. She's a very intelligent student. She isthe class.

VI. Прочитайте и устно переведите текст. Переведите абзацы 1, 2, 4, 6, 9, 12, 14 письменно.

The Seven Wonders of Russia

1. Art, architecture and culture join with virgin wilderness and sun-splashed beaches, making Russia truly an adventurous travellers' wonderland.

From the volcanoes and geysers of Kamchatka, through the Siberian taiga to the mineral spas around the Black Sea coast, it cannot be said Russia has nothing to offer the average tourist.

2. But figures cited by tourism experts showed that 70-80 percent of 3.5 million foreign tourists that came to the country last year rarely ventured farther than Moscow, St. Petersburg and perhaps the Golden Ring. They don't realize they could be taking a cruise along the waters of Volga, bathing in hot springs surrounded by volcanoes in Kamchatka or taking a boat over the crystal-clear waters of Lake Baikal.

3. Alternative Seven Wonders of the World could easily be unearthed on Russia's territory, if only tourists were willing to dig them out.

4. Considering the heart of Russia, Moscow is described as a place where ancient Russia meets the Soviet Union and capitalism – illustrated by the golden onion domes of the Kremlin's Orthodox churches, which look out past Lenin's mausoleum and over the massive GUM shopping complex.

5. St. Petersburg, on the other hand, is considered to be a more European capital. The creation of Peter the Great, it is best known for its palaces of the 18th- and 19th-centuries; the Peter and Paul fortress, the former prison, the Hermitage Museum, and the White Nights.

6. The Golden Ring is a group of towns and cities – including Suzdal, Vladimir, Yaroslavl, Kostroma and others. They offer a host of restored and abandoned churches, monasteries and fortresses, rich museums and preserved wooden villages.

7. Set on the Black Sea coast against the backdrop of the snow-capped Caucasus, the beach resort town Sochi has been a place to spend a vacation for a long time, with its subtropical climate, warm seas, arboretum and gardens. Most tourists visit Sochi to relax on the beaches, swim in the sea and partake of its favourable climate; but its mineral spas and sanatoriums make it an ideal health resort.

8. For those who are seeking a natural height, Russia's best attractions may be the Altai and Caucasus mountains.

9. Untouched, unharmed and largely undiscovered by Western tourists, so-called golden mountains of the republic of Altai are noted for being among the most beautiful and primordial parts of Siberia. The Altai mountain chain is set in a rich and diverse landscape of steppe, taiga and semi-desert, and stretches about 2,000 kilometres from Mongolia's Gobi Desert to the West Siberian Plain, through Chinese, Mongolian, Russian and Kazak territory.

10. Areas of the Caucasus mountains, which rise dramatically above the Black Sea coast and run down to the Caspian Sea, are also noted for their plant diversity, subalpine pastures grazed by wild animals and lack of human disturbance. Here, one can go skiing, scale Europe's highest peak – the 5,642-meter Mount Elbrus – and relax at the spas of Mineralniye Vody.

11. Travellers can visit Kamchatka to see its hot springs and view its wildlife and spectacular sunsets. Kamchatka, a more than 1,000-kilometer-long peninsula dividing the Sea of Okhotsk from the Pacific Ocean, is said to be one of the least explored

regions on Earth. The most amazing attraction is the Valley of the Geysers in Kronotsky National Park, which was only discovered in the 1940s. Its 180 or more volcanoes, thermal activity, hot springs, heated rivers and geysers should be enough to attract any tourist. Inhabited by less than one person per square kilometre, the peninsula boasts at least 14,000 rivers, 10,000 lakes, thousands of brown bears and sable, and hundreds of bird and plant species indigenous to the area.

12. A holiday pursuit popular among Russians but rarely tried by foreigners is to take the pulse of the country by plying its main artery, the Volga. The 3,700-kilometer-long river winds its way past republics and cities with varied environments, religions and economies, but all of which hold the Volga as something central to their cultural heritage.

13. But among the best waters to ply are the crystal-clear depths of the pearl of Siberia – Lake Baikal – one of the genuine Seven Natural Wonders of the World. An impressive spectacle near the border of Russia and Mongolia, Lake Baikal is 636 kilometres long and 80 kilometres wide – and is the world's deepest lake. Surrounded by forests and mountain peaks, the waters are transparent to a depth of 40 meters in the summer, and freeze over so thick in the winter that the Trans-Siberian Railway once ran over its surface. The lake has more than 2,000 recorded plant and animal species – bears, elk, lynx, sables, freshwater seal, trout, salmon and sturgeon. It is fed by 336 rivers, with only one river feeding out.

14. One of the most famous ways to explore Siberia's vast expanse – and probably the dream of many a foreigner – is the mythical Trans-Siberian Railroad. The Trans-Siberian Railway is now the longest continuous rail line on earth. Lake Baikal, Ulan Ude in Buryatia and Vladivostok, Far East, are all along the journey.

VII. Расскажите о местах, которые вы посетили на территории России или хотели бы посетить (8-10 предложений).

Вариант II

I. Раскройте скобки. Используйте Present Simple Passive или Past Simple Passive. Переведите предложения на русский язык.

1. Agatha Christie (to educate) at home. She didn't go to school.
2. The decimal system (to use) by the people for scientific purposes.
3. Dickens's works (to read) by millions of people and his name (to know) to every schoolboy.

II. Выпишите предложения, в которых используется Present Continuous Passive и переведите их на русский язык.

1. The secretary said that they would be called into the room.
2. The engineer is being shown a new type of computer now.
3. This electronic equipment is being designed for speeding up production.

4. People must obtain accurate results from controlled experiments.

III. Выпишите предложения, в которых используется Passive Voice и переведите их на русский язык.

1. The material was very difficult for our students.
2. Several possible solutions will be chosen by the scientists of our department.
3. The delegates were asked if they themselves would select the schools they wanted to visit.
4. This scientific research was carried out many years ago.

IV. Закончите предложения, употребив подходящие по смыслу прилагательные в сравнительной степени (older /more important etc).

Пример. It's too noisy here. Can we go somewhere quieter?

1. The hotel was surprisingly cheap. I expected it to be _____.
2. Your work isn't very good. I'm sure you can do _____.
3. I was surprised how easy it was to use the computer. I thought it would be _____.
4. You hardly ever phone me. Why don't you phone me _____?

Пример. It's a very nice room. It's the nicest room in the hotel.

1. Spring is a very busy time for me. It is _____ in the year.
2. It is a very valuable painting. It is _____ in the gallery.
3. She's a very good player. She's _____ in the team.
4. He's a very dangerous criminal. He's _____ in the country.

V. Прочитайте и устно переведите текст. Переведите абзацы 1, 3, 6, 7 письменно.

VI. Заполните пропуски словосочетаниями с прилагательными в превосходной степени (____ - est; most ____).

to wash – омыывать

the Arctic Ocean – Северный Ледовитый океан

border – граница

vast – обширный, громадный; безбрежный

natural resource – природные ресурсы

self-governing dominion – доминион под самоуправлением

crown – корона

to surpass – превосходить, превышать

notably – весьма, заметно, очень, сильно

neighbour – сосед

slightly – мало, незначительно, слегка

commerce – коммерция, торговля

to vary – изменять(ся), менять(ся); отличаться

temperate – умеренный (о климате и т. п.)

subarctic – субарктический
sparsely – редко, негусто
to inhabit – населять, заселять
to be derived from – происходить от
Iroquoian – ирокезский
to drain – отводить воду, осуществлять дренаж
to empty into – зд. Впадать
the Gulf of Saint Lawrence – залив Святого Лаврентия
the Ottawa – река Оттава
the Saguenay – река Сагеней
affluent – приток (реки)
confederation – конфедерация
to prevail – преобладать, господствовать
makeup – состав, строение
to diversify – разнообразить; изменять
to be composed of – состоять из
origin – происхождение
majority – большинство
to reside – пребывать, находиться
to maintain – поддерживать
bilingual – двуязычный
to increase – возрастать, увеличивать(ся); расти
ancestry – предки, прародители
indigenous – аборигенный, местный, туземный
Roman Catholic – римско-католический; католик
the United Church of Canada – Объединенная церковь Канады
the Anglican Church of Canada – Англиканская церковь Канады
the Baptist – баптисты
Presbyterian – пресвитерианин (представитель пресвитерианства – религиозного течения, являющегося разновидностью кальвинизма в англоязычных странах)
Lutheran – лютеране
Orthodox – релиз, православный
Muslim – мусульманин
Jewish – иудей
adherent – приверженец, сторонник
Buddhist – буддист
Hindus – индус
Sikh – сикх (последователи сикхизма, секты в индуизме)
to claim – заявлять, утверждать

Canada

1. Canada is situated in the north of Northern America, washed by the Atlantic Ocean in the east, the Pacific Ocean in the west, and the Arctic Ocean in the north and by the Baffin Bay and the Davis Strait in the north-east. It is a land of vast distances and rich natural resources. Canada became a self-governing dominion in 1867 while retaining ties to the British crown. Canada's territory is the world's second largest country, surpassed in size only by Russia. It includes many islands, notably the Canadian Arctic Islands, also called Arctic Archipelago in the Arctic Ocean. Economically and technologically the nation has developed in parallel with the US, its neighbour to the south. The total area is about 10 million sq km. Canada is slightly larger than the US. It is an important manufacturer, and its major cities, such as Toronto, Montreal, Vancouver, Ottawa, Edmonton, Calgary and Winnipeg are centres of commerce and industry.

2. The climate of Canada varies from temperate in the south to subarctic and arctic in the north. The highest Canadian point is Mount Logan 5,959 m. The population of Canada is about 32 million people. There are two state languages: English and French. English is spoken by 60 % of population; French is spoken by 23 % of people.

3. Most of Canada's inhabitants live in the southern part of the country and vast areas of the north are sparsely inhabited. The country is divided into ten provinces (Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island, Quebec, Saskatchewan) and three territories (Northwest Territories, Yukon Territory, Nunavut Territory). The third territory called Nunavut, to be carved from the present Northwest Territories, was created in 1999. The name Canada is derived from an Iroquoian term meaning «village».

4. Among the great rivers of Canada there are the Saint Lawrence River, draining the Great Lakes and emptying into the Gulf of Saint Lawrence; the Ottawa and the Saguenay rivers, the principal affluents of the Saint Lawrence River; the Saint John River, emptying into the Bay of Fundy.

5. The government type is confederation with parliamentary democracy. The capital of Canada is Ottawa.

6. Canada became independent from the United Kingdom on July, 1, 1867. Legal system is based on the English common law, except in Quebec, where civil law system based on the French law prevails.

7. The racial and ethnic makeup of the Canadian people is diversified. About 35 percent of the population is composed of people of the British origin. People of the French origin total about 25 percent of the population. The vast majority of French-speaking Canadians reside in Quebec, where they make up about three-fourths of the population; large numbers also live in Ontario and New Brunswick.

8. French-speaking Canadians maintain their language, culture, and traditions, and the federal government follows the policy of a bilingual and bicultural nation. During the 1970s and 1980s the proportion of Asians among the Canadian population increased, and today those who count their ancestry as wholly

Asian make up 8 to 10 percent of the population. More than two-thirds of the Asian immigrants live in Ontario or British Columbia. The remainder of the population is composed of people of various ethnic groups, such as German, Italian, Ukrainian, Netherlands Dutch, Scandinavian, Polish, Hungarian, Greek, and Native American. Blacks have never constituted a major segment of the Canadian population. Indigenous people make up nearly 2 percent of Canada's inhabitants.

9. The largest religious community in Canada is Roman Catholic. Nearly half of Canadians who are Roman Catholic live in Quebec. Of the Protestant denominations in Canada the largest is the United Church of Canada, followed by the Anglican Church of Canada. Other important Protestant groups are the Baptist, Presbyterian and Lutheran. Nearly 2 percent of the population are Orthodox. Muslim and Jewish adherents each number about 1 percent. A substantial number of Buddhists, Hindus and Sikhs have been brought to the country in recent years by immigration. Nearly 13 percent of Canadians claim no religion.

VII. Ответьте на вопросы письменно:

1. Where is Canada situated?
2. When did Canada become an independent dominion?
3. What size does Canada have?
4. What is the highest Canadian point?
5. How many people live in Canada?
6. How many people speak English?
7. How many people speak French?
8. How many provinces are there in Canada?
9. Are there indigenous people in Canada?
10. What is the largest religious community in Canada?

Вариант III

I. Раскройте скобки, употребив Present Simple Passive или Past Simple Passive. Переведите предложения на русский язык.

1. The students (to show) the article from the last journal.
2. The latest methods of control (to use) in industry.
3. A very difficult text (to translate) by the first-year students.

II. Выпишите предложения, в которых используется Perfect Passive, переведите их на русский язык.

1. A lot of measurements have been taken by the engineer in his experiment.
2. Science has made great progress.
3. A good writer makes a thing real to us when he describes it.

4. The material had been collected before the scientist started to write his new work.

III. Выпишите предложения, в которых используется Passive Voice, переведите их на русский язык.

1. By the New Year the number of school-aged children will have decreased.
2. The captain was very kind to me and asked me to tell him about my plans.
3. Much of the data collected will be fed into computers.
4. Mark Twain was acknowledged by the public and became one of the leading journalists of America.

IV. Закончите предложения, употребив подходящие по смыслу прилагательные в сравнительной степени (older /more important etc).

Пример: It's too noisy here. Can we go somewhere quieter?

1. I can't hear you. Can you speak a bit _____?
2. You were a bit depressed yesterday but you look _____ today.
3. Don't worry. The situation isn't so bad. It could be _____.
4. The exam was easy. I expected it to be _____.

V. Заполните пропуски словосочетаниями с прилагательными в превосходной степени (the ___ - est; the most ___).

Пример: It's a very nice room. It's the nicest room in the hotel.

1. He's a very rich man. He's the _____ in the world.
2. It's a very old castle. It's the _____ in Britain.
3. It was a very bad experience. It was the _____ in my life.
4. The dress is very expensive. It's the _____ in the shop.

VI. Прочитайте и письменно переведите текст.

boomerang – бумеранг

kangaroo – кенгуру

vast – обширный

Commonwealth – Содружество наций

to be covered with – быть покрытым чем-либо

eucalyptus – эвкалипт

real roads – наземные дороги

to differ from – отличаться от чего-либо

desert – пустыня

once upon a time – однажды

decade – десятилетие

to disappear – исчезнуть

influence – влияние

prisoner – заключенный

ridiculous – смехотворный, смешной

Australia

When we hear the word Australia, we imagine boomerang, kangaroo, crocodiles, snakes, etc.

Australia is a vast sub-continental land. It is today an independent member of the Commonwealth, self-governing since January 1, 1901. There are 6 states and an island Tasmania: New South Wales, Northern Territory, Queensland, South Australia, Victoria and Western Australia. The capital of the country is Canberra. The biggest city of Australia is Sydney.

It is located in the state of New South Wales. It's the best-known place in Australia. But New South Wales has more than cities. There are, for example, the Blue Mountains. They are covered with forests of blue colored eucalyptus trees. The air above the forest contains millions of microscopic drops of eucalyptus oil. When the sun shines, the air of the Blue Mountains is a real, beautiful blue colour.

South Australia is the driest of all the states. The only big river in this place is the Murray River. In the early of the Australian history, the Murray River was South Australia's main road. Before real roads and railways came, the river carried people and goods from the east up into the country. Some towns on the Murray still keep the old riverboats, and visitors can ride them.

Tasmania is an island in the south of Australia. It's not big. It's the same size as England. It also differs from the other Australian states. There are no deserts in Tasmania. It often rains, both in winter and summer. Only half a million people live in Tasmania, and a large part of the island is still covered with wild, beautiful wild forests. These forests are full of wonderful flowers and interesting animals. Once upon a time, there was living a nation of Tasmanian people. They spoke their own language, had own culture. In a few decades after arrival of white people, they disappeared as a nation.

Talking about the history of Australia, I should add that Australia as a whole has always been within the British sphere of influence. Firstly, it was the big colony for prisoners. It is a ridiculous fact but it is true. Later, it became an ordinary south country.

Every year, thousands of tourists visit Ayers Rock that is located in the Northern Territory and a strange group of huge red stones, which are holy to the aboriginals.

VII. Ответьте на вопросы письменно:

1. What do we imagine when we hear the word Australia?
2. What parts does Australia consist of?
3. What is the capital of the country?
4. Where is Sydney located?
5. What are the Blue Mountains covered with?
6. What is the Murray River known for?
7. Where is Tasmania situated?

8. What is the climate in Tasmania?
9. How many people live in Tasmania?
10. What is a large part of the island still covered with?
11. Why did Tasmanian people disappear as a nation?
12. Who were sent to Australia until it became an ordinary south country?
13. What places do thousands of tourists visit every year?

Вариант IV

I. Раскройте скобки. Используйте Present Simple Passive или Past Simple Passive. Переведите предложения на русский язык.

1. Cheese (to make) from milk.
2. This house is quite old. It (to build) in 1930.
3. A cinema is a place where films (to show).
4. In the United States, elections for President (to hold) every four years.

II. Перепишите предложения, изменив залог сказуемого. Используйте страдательный залог. Переведите предложения на русский язык.

Пример: My father built this house in 1970. – The house was built in 1970.

1. Somebody cleans the room every day.
2. People don't use this road very often.
3. The company employed two hundred people.
4. Somebody has painted the room.

III. Выпишите предложения, в которых используется Passive Voice и переведите их на русский язык.

1. A scientist beginning some experiment should be very careful and attentive.
2. A new computer will be used for all types of data processing.
3. The effects of radiation have been analyzed by our research group.
4. A lot of money was stolen in the robbery.

IV. Закончите предложения, употребив подходящие по смыслу прилагательные в сравнительной степени (older /more important etc).

Пример: It's too noisy here. Can we go somewhere quieter?

1. In some parts of the country, prices are _____ than in others.
2. I want a _____ flat. We don't have enough space here.
3. Unfortunately her illness was _____ than we thought at first.

V. Заполните пропуски словосочетаниями с прилагательными в превосходной степени (the ___ - est; the most ___).

Приме: It's a very nice room. It's the nicest room in the hotel.

1. Our hotel was _____ in the town (cheap).
2. What's _____ river in the world (long)?

3. It was an awful day. It was _____ day of my life (bad).
4. What is _____ sport in your country (popular)?

VI. Прочитайте и письменно переведите текст.

to lie – находиться
is situated – расположена
the North Island – Северный остров
the South Island – Южный остров
dozen – дюжина
capital – столица
official language – государственный язык
Maori – маорийский язык
the Commonwealth of Nations – Содружество
the United Kingdom – Соединенное Королевство
to appoint – назначать
governor general – генерал-губернатор
to represent – представлять
legislation – законодательная власть
prime minister – премьер-министр
Cabinet – кабинет
government – правительство
provision – положение
brown-skinned – с коричневой кожей
to settle – селиться
New Zealander – новозеландец
descendant – потомок
settler – поселенец
to make up – составлять
population – население
standard of living – уровень жизни
agriculture – сельское хозяйство
manufacturing industry – обрабатывающая промышленность
service industry – сфера услуг
trade – торговля

New Zealand

New Zealand is an island country in the Southwest Pacific Ocean. It lies about 1600 km southeast of Australia and about 10 500 km southwest of California. New Zealand belongs to a large island group called Polynesia. The country is situated on two main islands – the North Island and the South Island – and several dozen smaller islands. Most of the smaller islands are hundreds of kilometers from the main ones.

Wellington is the capital of New Zealand and Auckland is the largest city. English is the official language of New Zealand and is spoken throughout the country. Many native people speak their own language» Maori, in addition to English.

The country once belonged to the British empire. Today it is an independent member of the Commonwealth of Nations, an association of Britain and a number of its former colonies.

New Zealand is a constitutional monarchy. The British Monarch, Queen Elizabeth II of the United Kingdom, is the monarch of New Zealand. She appoints a governor general to represent her, but the governor general has little power. The legislation, prime minister, and Cabinet run the national government.

Britain gave New Zealand a constitution in 1852, when it was a British colony. But through the years the New Zealand legislature has changed almost all its provisions. Today, the nation has no written constitution.

The first people who settled in New Zealand were a brown-skinned people called Maoris. They came from Polynesian islands located northeast of New Zealand. The country was discovered by Europeans in 1642, but they did not start to settle in the islands until the late 1700's. Today, most New Zealanders are descendants of the early European settlers. Maoris make up about 12 % of the country's population.

New Zealand has one of the highest standards of living in the world. For many years, the economy of the country depended largely on agriculture. Today agriculture, manufacturing, and service industries are all important to the economy. New Zealand's economy depends on trade with many countries – Australia, Britain, Japan and the United States.

VII. Ответьте на вопросы письменно:

1. Where is New Zealand situated?
2. What city is the capital of New Zealand?
3. What languages do people in New Zealand speak?
4. What is the official language in New Zealand?
5. Who is New Zealand's head of state?
6. Who runs the national government?
7. Who were the first people to live in New Zealand?
8. What are the main industries of the country?

Вариант V

I. Раскройте скобки. Используйте Present Simple Passive или Past Simple Passive. Переведите предложения на русский язык.

1. The telephone (to invent) by Alexander Bell.
2. Many accidents (to cause) by dangerous driving.
3. You (to invite) to the wedding. Why didn't you go?
4. Most of the Earth's surface (to cover) by water.

II. Перепишите предложения, изменив залог сказуемого. Используйте страдательный залог. Переведите предложения на русский язык.

Пример. My father built this house in 1970. – The house was built in 1970.

1. They have postponed the concert.
2. Somebody is using the computer at the moment.
3. Somebody was recording our conversation.
4. They are building a new ring road round the city.

III. Выпишите предложения, в которых используется Passive Voice и переведите их на русский язык.

1. The letter might have been sent to the wrong address.
2. There were some problems at first but they seem to have been solved.
3. The police have found the people they were looking for.
4. The vegetables had been cooked for too long, they didn't taste very good.

IV. Закончите предложения, употребив подходящие по смыслу прилагательные в сравнительной степени (older /more important etc).

Пример. *It's too noisy here. Can we go somewhere quieter?*

1. The instructions were very complicated. They could have been _____.
2. There were a lot of people on the bus. It was _____ than usual.
3. I know him well-probably _____ than anybody else.

V. Заполните пропуски словосочетаниями с прилагательными в превосходной степени (the ___ - est; the most _____).

Пример: *It's a very nice room. It's the nicest room in the hotel.*

1. Everest is _____ mountain in the world (high).
2. We had a great holiday. It was one of the _____ holidays we've ever had (enjoyable).
3. What's _____ way of getting from here to the station (quick)?
4. What's _____ film you've ever seen (good)?

VI. Прочитайте и переведите текст письменно.

Places of Interest in Great Britain

Great Britain is rich in world-famous places. Hyde Park is the London's largest and most fashionable park. It was once a royal hunting forest. There are restaurants and bars at each end of the Serpentine Lake. You can hire a boat there.

Number 10, Downing Street has been the home of the British Prime Minister since 1735.

The official name of the Houses of Parliament is the Palace of Westminster. Most of the building was built in 1840 after the fire of 1834 destroyed the old palace. At the north end of the building, by Westminster Bridge, there is the

famous clock tower, Big Ben. In fact Big Ben is really the name of the bell in the tower, not of the clock.

The Tower of London is the London's oldest building. Since William the Conqueror built it in the 11th century, this castle has been a Royal palace, a prison, a place of execution, a zoo, the Royal Mint, and an observatory. Today it's a museum and houses the Crown Jewels. There is a gift shop.

The Natural Museum is situated in Kensington and is one of London's greatest museums. There is a huge collection of animals and plants, including a quarter of a million butterflies, a blue whale and the famous dinosaur skeletons. There is a cafeteria, a gift shop, and a book shop.

The famous Waxworks Madame Tussaud's Museum has the models of famous people from pop stars to prime ministers, displays of battles and a Chamber of Horror.

The Royal Observatory, Greenwich is situated 10 miles outside London on a hill above the River Thames. The Observatory contains telescopes and displays about astronomy, including Halley's Comet and Black Holes. There is a video theatre and a souvenir shop. You can have a picnic in Greenwich Park. You can take a riverboat to Greenwich from Westminster Bridge.

VII. Устно перескажите текст в 7-8 предложениях.

КОНТРОЛЬНАЯ РАБОТА 4

Для того чтобы правильно выполнить задания, необходимо проработать по учебнику **простые неличные формы глагола**: Participle I (Present Participle), Participle II (Past Participle) в функциях определения, обстоятельства, части сказуемого.

Вариант I

I. Переведите следующие причастия на английский язык:

спрошенный – спрашивающий

посланный – посылающий

забытый – забывающий

проведенный – проводящий

написанный – пишущий

изучаемый – изучающий

II. Переведите предложения на русский язык. Определите функцию Participle I и Participle II.

1. After leaving school, his skilled son went to work at a factory.

2. On hearing the news, the laughing girl jumped with joy.
3. This wonderful church was built two centuries ago.

III. Задайте вопросы к выделенным словам.

1. The person **defending** its freedom is always right.(1)
2. **Travelling** about Siberia, he saw a lot of newly-built towns.(1)
3. Once **when I was walking in the wood**, I found a flower **which I had never seen before**. (2)

IV. Замените придаточные предложения причастным оборотом.

1. Students who read a lot in English know the language better than those who read less.
2. I live in a house which was built more than a hundred years ago.
3. What's the name of the teacher who's examining Group Three?

V. Прочитайте и переведите текст письменно.

Albert Einstein

Albert Einstein (March 14, 1879 – April 18, 1955) was a German-born Jewish theoretical physicist of profound genius, who is widely regarded as the greatest scientist of the 20-th century and one of the greatest scientists of all time. He was awarded the 1921 Nobel Prize for Physics for his explanation of the photoelectric effect in 1905 and "for his services to Theoretical Physics".

After his general theory of relativity was formulated in November 1915, Einstein became world famous, an unusual achievement for a scientist. In his later years, his fame exceeded that of any other scientist in history. In popular culture, his name has become synonymous with great intelligence and even genius.

Einstein himself was deeply concerned with the social impact of scientific discovery. His reverence for all creation, his belief in the grandeur, beauty, and sublimity of the universe (the primary source of inspiration in science), his awe for the scheme that is manifested in the material universe – all of these show through in his work and philosophy.

VI. Перескажите текст в 7–8 предложениях устно.

Вариант II

I. Переведите следующие причастия на английский язык:

приглашенный – приглашающий
проданный – продающий
строящийся- строящий

начатый – начинающийся
купленный – покупающий
читаемый – читающий

II. Переведите предложения на русский язык. Определите функцию Participle I и Participle II.

1. When speaking at the meeting yesterday, I forgot about this fact.
2. Having caught a bad cold, he had to miss a few classes.
3. Thinking that he was out, I decided to go and see him some other time.

III. Задайте вопросы к выделенным словам.

1. **While reading English books**, copy out interesting **expressions**.(2)
2. The student was nervous **when writing** his paper and couldn't stop **worrying** until he had handed it in.(2)
3. Hearing that she had fallen ill, **we** decided to go and see her.(1)

IV. Замените придаточные предложения причастным оборотом.

1. Since I didn't know my friend's new address, I could hardly hope to find him.
2. I always read books which describe the lives of great people with interest.
3. When we discussed this book, we found out a lot of interesting things.

V. Прочитайте и переведите текст письменно.

degree – ученая степень

plague – чума

discovery – открытие

differential calculus – дифференциальное исчисление

law of gravitation – закон всемирного тяготения

rainbow – радуга

to draw – привлекать

perpendicularly – перпендикулярно

sideways – в сторону

upwards – вверх

abbey – аббатство

Isaac Newton

Newton, one of the greatest scientists of all times was born in 1642 in the little village in Lincolnshire, England. His father was a farmer and died before Newton was born. His mother was a clever woman whom he always loved.

After the school, Newton studied mathematics at Cambridge University and received his degree in 1665. Then the university was closed because of the danger of plague and Newton went home for eighteen months. It was most important period in his life when he made his three great discoveries – the discoveries of the differential calculus, the nature of white light, and the law of gravitation.

These discoveries are still important for the modern science. Newton had always been interested in the problems of light. Many people saw colours of a rainbow but only Newton showed, by his experiments, that white light consists of these colours.

It is interesting how he discovered the law gravitation. Once, as he sat at the garden, his attention was drawn by the fall of an apple. Many people saw such a usual thing before.

But it was Newton who asked himself a question: "Why does that apple fall perpendicularly to the ground? Why doesn't it go sideways or upwards?" The answer to this question was the theory of gravitation, discovered by Newton.

Newton died at the age of 84, and was buried in Westminster Abbey, where his monument stands today.

VI. Ответьте на вопросы письменно.

1. When and where was Newton born?
2. Where did he study?
3. What three major discoveries did Newton make?
4. When did Newton make these discoveries?
5. How did the idea which led to the discovery of the law of gravitation first come to him?
6. When did Newton die and where is he buried?

Вариант III

I. Переведите следующие причастия на английский язык:

проданный – продающий

приглашенный – приглашающий

написанный – пишущий

разрезанный – режущий

законченный – заканчивающий

посланный – посылающий

II. Переведите предложения на русский язык. Определите функцию Participle I и Participle II.

1. You must learn all the words given on this page.
2. The question discussed at the meeting was very important.
3. He liked to sit on the sofa smoking a cigarette and watching TV.

III. Задайте вопросы к выделенным словам.

1. He was very **careful** when **crossing the street**. (2)
2. **Working at the translation of this article** I learnt a lot of interesting about the history of English cities.(1)
3. **Being very busy** I couldn't help them.(1)

IV. Замените придаточные предложения причастным оборотом.

1. In this shop you can buy things which are made in different parts of the country.
2. When he was asked the same question, he didn't know what to say.
3. As they were very busy, they couldn't help me.

V. Прочитайте и переведите текст письменно.

Alfred Nobel

Alfred Bernhard Nobel (1833-1896), Swedish inventor and philanthropist, was a man of many contrasts. He was a son of a bankrupt, but became a millionaire; a scientist with a love of literature. He made a large fortune but lived a simple life. He was cheerful in company, and often sad in private. A lover of mankind, he never had a wife or family to love him, a patriotic son of his native land, he died alone on foreign soil.

He discovered a new explosive, dynamite, to improve the peacetime industries of mining and road building, but saw it used as a weapon of war. World-famous for his works he was never personally well-known, for throughout his life he avoided publicity. "I do not see" he once said, "that I have deserved any fame and I have no taste for it", but since his death his name has brought fame and glory to others.

He was born in Stockholm in October 21, 1833 but moved to Russia with his parents in 1842, where his father made a strong position in engineering industry. He made a lot of money for his invention of landmine, but later went bankrupt. Alfred came to Sweden in 1863, and started his own study of explosives in his father's laboratory.

He had never been to school or University but he studied privately and by the time he was twenty he had become a skillful chemist and excellent linguist, speaking Swedish, Russian, German, French and English. Like his father, Alfred Nobel was imaginative and inventive, but he had better luck in business and showed more financial sense.

He was quick to see industrial openings for his scientific inventions and built up over 80 companies in 20 countries. Indeed his greatness laid in his outstanding ability to combine the qualities of an original scientist with those of a forward-looking industrialist.

But Nobel's main concern had never been with making money or even making scientific discoveries. He was always searching for a meaning of life, and from his youth he had taken a serious interest in literature and philosophy. Perhaps, because he could not find ordinary human love – he never married – he came to care deeply about the whole mankind. He was always generous to the poor. His greatest wish, however, was to see an end to wars and he spent much time and money working for this cause until his death in Italy in 1896.

His famous will, in which he left money to provide prizes for outstanding works in physics, chemistry, psychology, medicine, literature and peace, is a memorial to his interests and ideals. And so, the man who felt he should have died at birth time is remembered and respected long after his death.

VI. Перескажите текст в 7-8 предложениях устно.

Вариант IV

I. Переведите следующие причастия на английский язык:

горящий – сгоревший

падающий – упавший

оставляющий – оставленный

выбранный – выбираемый

растущий – выросший

теряющий – потерянный

II. Переведите предложения на русский язык. Определите функцию Participle I и Participle II.

1. Some people don't like plays taken from novels as they believe that a novel can seldom be made into a successful play.
2. All the engineers working at the Ministry of Foreign Trade must know foreign languages.
3. My grandmother sometimes went to sleep while knitting.

III. Задайте вопросы к выделенным словам.

1. **Registering the letters** the secretary **was sending** them down to be posted.(2)
2. **Entering the room** he introduced himself to all those present.(1)
3. **Not knowing his address**, I couldn't visit him. (1)

IV. Замените придаточные предложения причастным оборотом.

1. As I was very hungry, I couldn't get asleep.
2. What's the name of the doctor who's examining that patient?
3. They live in a town which was built not long ago.

V. Прочитайте и переведите текст письменно.

province – губерния

to strive for – стремиться к

Slavic-Greek-Latin Academy – Славяне-греко-латинская академия

chemistry – химия

mining – горное дело

to be engaged in research – заниматься исследованиями

natural sciences – естественные науки

applied sciences – прикладные науки
founder – основоположник

Mikhail Lomonosov

Mikhail Lomonosov was born in 1711 in Archangelsk province. His father was a fisher and young Mikhail liked to help him. He always strove for knowledge and liked reading books.

As he was 19 years old, he decided to study in Moscow. He went there on foot. In Moscow he entered the Slavic- Greek-Latin Academy. After his graduation from Academy he was sent abroad to complete his knowledge in chemistry and mining. After he had returned from abroad, he became the first Russian professor of chemistry in 1745.

At first he was engaged in research in physics and chemistry. Since 1748 he had conducted works in the first Russian chemical research laboratory, which was built at his request.

Since 1753 he was engaged in research in many fields of natural and applied sciences. He wrote works on physics, astronomy, geography, history. Besides scientific works, he wrote poems as well. He is the author of the first scientific grammar of the Russian language.

He founded the factory producing colored glass. He created some mosaics using the glass produced at the factory.

Lomonosov was the founder of the first Russian university. This university is situated in Moscow and still carries his name.

Mikhail Lomonosov died in 1765. But he is still known as the father of the Russian science, an outstanding poet, the founder of Russian literature.

VI. Ответьте на вопросы письменно.

1. When was Lomonosov born?
2. Where did he study?
3. In what fields of science did he write works?
4. What did he write besides scientific works?
5. What university is named after his name?
6. When did he die?

ВАРИАНТ V

I. Переведите следующие причастия на английский язык:

читающий – прочитанный
посланный – посылающий
купленный – покупающий

пишущий – написанный
переводящий – переведенный
проданный – продающий

II. Переведите предложения на русский язык. Определите функцию Participle I и Participle II.

1. Our grandfather sometimes went asleep while watching TV.
2. All of you have to translate the given article by tomorrow.
3. Being very thirsty, we bought three bottles of juice.

III. Задайте вопросы к выделенным словам.

1. Their new car was bought not **long ago** and they **have already broken** it.(2)
2. **Being ill**, he had to consult a doctor and to have **the prescription** made up.(2)
3. **The smiling girl** was standing at the door and watching the man **being embarrassed**. (2)

IV. Замените придаточные предложения причастным оборотом.

1. As I was very tired, I was in no condition to do anything.
2. What's the name of the man who's driving that beautiful car?
3. Suddenly they noticed a car which was sold a week ago.

V. Прочитайте и переведите текст письменно.

marine – морской

terrestrial – сухопутный; наземный

exploration – изучение, исследование; зд. Открытие

around the world – вокруг света

noble – человек благородного происхождения; дворянин

quagmire – болото, трясина

to dismiss – увольнять (за что-л. – for; откуда-л. – from); освобождать от обязанностей, обязательств

papal decree – истор. папский декрет

longitude – геогр. Долгота

authority – власть; полномочие

to explore – исследовать

to sink (прош. вр. – sank; прич. прош. вр. – sunk) – тонуть (о корабле, морском судне)

passage – переправа, проход

latitude – геогр. Широта

to gaze – пристально глядеть (at, on, upon – на); вглядываться; уставиться

starvation – голод; голодание

insular – островной

tribal – племенной, родовой

westward – направленный к западу, движущийся на запад; по направлению к западу

precipice – обрыв, пропасть

edge – край; грань, граница

Ferdinand Magellan

In the sixteenth century, an age of great marine and terrestrial exploration, Ferdinand Magellan led the first expedition to sail around the world.

As a young Portuguese noble, he served the king of Portugal, but he became involved in the quagmire of political intrigue at court and lost the king's favour. After he was dismissed from service to the king of Portugal, he offered to serve the future Emperor Charles V of Spain.

A papal decree of 1493 had assigned all land in the New World west of 50 degrees W longitude to Spain and all the land east of that line to Portugal. Magellan offered to prove that the East Indies fell under Spanish authority.

September 20, 1519, Magellan set sail from Spain with five ships. More than a year later, one of these ships was exploring the topography of South America in search of a water route across the continent. This ship sank, but the remaining four ships searched along the southern peninsula of South America.

Finally they found the passage they sought near latitude of 50 degrees S. Magellan named this passage the Strait of All Saints, but today we know it as the Strait of Magellan.

One ship deserted while in this passage and returned to Spain, so fewer sailors were privileged to gaze at that first panorama of the Pacific Ocean. Those who remained crossed the meridian we now call the International Date Line in the early spring of 1521 after ninety-eight days on the Pacific Ocean. During those long days at sea, many of Magellan's men died of starvation and disease.

Later Magellan became involved in an insular conflict in the Philippines and was killed in a tribal battle.

Only one ship and seventeen sailors under the command of the Basque navigator Elcano survived to complete the westward journey to Spain and thus prove once and for all that the world is round, with no precipice at the edge.

VI. Ответьте на вопросы письменно.

1. Why did Magellan lose the favour of the king of Portugal?
2. What did Ferdinand Magellan do after he was dismissed from service to the king of Portugal?
3. How did the Pope divide New World lands between Spain and Portugal?
4. How was the passage found?
5. When did the ships cross the International Date Line?
6. How long did the voyage across the Pacific Ocean last?
7. Why was Magellan killed?
8. What did Magellan's expedition prove?

ПРИЛОЖЕНИЕ

ТЕКСТЫ ДЛЯ САМОСТОЯТЕЛЬНОГО ЧТЕНИЯ И ПЕРЕВОДА

ИФирЭ

NUCLEAR REACTORS

In order to establish a nuclear chain reaction, it is necessary to set up conditions radically different from those prevailing in the earth's crust. In the crust, although uranium is present and stray neutrons are to be found in the atmosphere, no chain reaction exists, or, as far as we can tell, ever has existed.

The reason for this is that when an atom of uranium undergoes fission (either spontaneously or through absorption of a neutron), the neutrons liberated are absorbed by surrounding atoms. Most of these surrounding atoms are not uranium and are not themselves nudged into fission. The neutrons from fissioning uranium are thus absorbed and no neutrons are re-emitted, so that the potential chain reaction is effectively quenched. There is enough non-uranium material in even the richest natural concentration of uranium to quench any potential chain reaction at once.

What was necessary, then, if a nuclear chain reaction was to have any chance at all, was to make use of pure uranium, in the form of an oxide or even as the metal itself. In the metal, where almost all atoms would be uranium atoms, any neutron liberated by one uranium atom undergoing fission would stand an excellent chance of being absorbed by another uranium atom and therefore of bringing another fission – the next link in the chain.

Shortly after the idea of uranium fission had been accepted Niels Bohr pointed out that on theoretical grounds uranium-235 was much more likely to undergo fission than uranium-238 was. Experiment soon showed Bohr to be right.

To give a nuclear chain reaction a decent chance, uranium would have to be prepared in which uranium-235 was presented in greater, than usual amounts. Such a preparation would involve isotope separation, a difficult task – particularly, if it is to be carried through on a large scale.

ATOMIC PILE

It was soon realized that a nuclear chain reaction could not be set up in a limited number of uranium. Even uranium-235 atoms will not necessarily always absorb a neutron that comes toward the uranium atom. The neutron may merely bounce off, unabsorbed.

If in the process of bouncing from atom to atom the neutron manages to make its way out of the uranium and, into the open air, it is lost. If enough neutrons do so, the nuclear chain reaction will be quenched. To prevent this, one must see to it that the chances of loss of neutrons to the surrounding environment, before absorption

and consequent fission have a chance to take place, are minimized. The simplest way to do this is to increase the size of the uranium core. The larger its size the more bounces a neutron must undergo before reaching the edge of the core and the greater the chance of its absorption.

If the core is just large enough to lose so few neutrons that the nuclear chain reaction may just keep going, it is said to be at critical size. A smaller core, one of "subcritical size" cannot maintain a "self-sustaining nuclear reaction".

Toward the end of 1942, the first attempt was made to set up a self-sustaining nuclear reaction. This took place under the guidance of Enrico Fermi.

At the time, some pure uranium was available in both metallic form and in the form of the oxide. It was not enriched and so the critical size was extraordinarily high. A very large "atomic pile" had to be built, (it was called a "pile" because it was a pile of bricks of uranium, uranium oxide, and graphite.)

When this first nuclear reactor was completed, it was 30 feet wide, 32 feet long and 21 1/2 feet high. It weighed 1400 tons, of which 52 tons were uranium. The uranium, uranium oxide, and graphite were arranged in alternate layers with, here and there, holes into which long rods of cadmium could be fitted.

THE KINETIC THEORY OF GASES

According to the kinetic theory, molecules in a gas fly about in all directions, frequently colliding with each other and with their containing walls. Conceptually simple though it may be, this picture is not something suggested directly by any of our experience with matter in bulk. However, it does account at once for the tendency of a gas to expand without limit. Daniel Bernoulli, a Swiss mathematician, worked out the consequences of the kinetic theory in 1738. His work apparently had no impact whatever on the course of science, being noticed only after James Joule in England, and two German physicists, August Kronig and Rudolph Clausius, had developed the same theory independently in the 1840's and 1850s. In the intervening century Charles and Gay-Lussac had clarified the macroscopic laws of gas behavior, the gas thermometer had been perfected, chemical evidence for the existence of atoms and molecules had become overwhelmingly convincing, the steam engine was utilizing heat energy for mechanical work, thermo-dynamics was well launched as a quantitative theory, caloric had been abandoned, and the general law of energy conservation had been formulated. By the time these strides in the science of temperature and heat had caught up with the forward leap of Bernoulli, he was long dead and this part of his work forgotten. Yet, when the time was ripe the same ideas were regenerated by several scientists in different places at nearly the same time in a more typical pattern of scientific development.

It might seem surprising that any mathematical derivation based on the kinetic theory could be simple. At the submicroscopic level, a gas appears to be an incalculable chaos of flying molecules, no two moving in exactly the same way,

and none moving far between vigorous collisions with its neighbors. Yet from this chaos flows a beautifully simple derivation of the ideal-gas law which illuminates the content of the kinetic theory and, even more important, which establishes the connection between temperature and molecular energy.

FORCE AND PRESSURE

A liquid presses on the sides and on the bottom of the container in which it rests. It exerts a force both sideways and downwards'. The sides of a cardboard carton of milk will often curve outwards, and this is caused by the sideways force exerted by the milk. Wooden barrels and water tanks are usually strengthened with metal bands: they are reinforced to resist the sideways force exerted by the liquid in these containers.

A liquid also exerts a force upwards on any object which is placed in it. If you push a rubber ball or a plastic boat under the surface of the water in a container, you will feel the upward force against the bottom of these objects. A liquid exerts a force in every direction.

When a liquid presses against the container in which it rests, we say that it exerts a force. Force, however, is not the same as pressure.

A block of metal of mass 10 kg resting on a flat surface such as a table exerts a downward force of about 93 Newton. The downward force exerted by an object is the same as its weight and we measure weight in force units called Newton. But the object does not exert a pressure of 93 N. The pressure which is exerted depends on the area of contact between the object and the table. Pressure is measured by the force divided by the area of the surface on which it acts. Let us suppose that the area of one of the surfaces of an oblong block of steel weighing 200 N is 200 cm² (0.02 m²). If the object is placed on a table-top so that this surface is in contact with the surface of the table, the pressure between the object and the table will be 200 N/200 cm², which is 10,000 N/m². If the other surface of the object measures 100 cm² (0.01 m²), and if this makes contact with the table-top, the pressure between the object and the table will be 200 N/100 cm², which equals 20,000 N/m². The force exerted by the object is the same in each case, but the pressure varies. Less pressure is exerted when the area of contact is large, and more pressure is exerted when the area of contact is small.

LIQUID PUMPS

A wide variety of liquids are now being used in chemical plants, and these usually have to be pumped through pipelines. In choosing the type of pump most suitable for any specific operation, a number of problems have to be taken into account. In the first place the quantity of liquid, and the pressure at which it is required to be pumped, must be considered. Neglecting all other considerations, the reciprocating pump is ideal for pumping small quantities of liquid at high pressure,

the amount of fluid delivered depending on the volumetric displacement of the pistons. The delivery however is rather uneven a defect which can only be remedied by compounding a number of cylinders, thus making the machine rather large and expensive.

The viscosity of the liquid is another factor which must be taken into account, in that it largely determines the frictional losses which will occur. Rotary-type pumps are widely used in the handling of highly viscous liquids. They differ from reciprocating pumps in that they deliver an even flow of liquid, but they are unsuitable for pumping liquids of low viscosity, which tend to leak past the tips of the gear teeth. They are mainly used for the pumping of oils and similar liquids of high viscosity, which are less liable to leakage and which moreover provide the necessary lubrication for the moving parts of the pump, thus obviating the need for a separate lubricant. A further consideration involved in the choice of pump is whether or not the liquid is corrosive or contains solid particles in suspension. In such cases, precautions have to be taken to avoid damage to the mechanism. With regard to suspensions, the clearances in the pump must be large enough to permit the particles to pass, and from this point of view, the rotary pump is not suitable, clearances necessarily being small to reduce leakage. The centrifugal type of pump is more commonly used when suspensions are present, since various types of impeller can be fitted, thus enabling the pump to handle a wide variety of liquids, including those with suspensions.

Механико-технологические специальности

SMART MATERIALS

Smart – or shape memory – materials are an invention that has changed the world of engineering. There are two types: metal alloys and plastic polymers. The metal alloys were made first and they are usually an expensive mixture of titanium and nickel.

Shape memory materials are called ‘smart’ because they react to change in their environment, for example:

- plastics that return to their original shape when the temperature changes. One use is in surgery where plastic threads ‘remember’ the shape of a knot, react to the patient’s body temperature and make themselves into stitches;

- metal alloys that have a ‘memory’ and can return to their original shape. They are used in medical implants that are compressed so they can be put inside the patient’s body through a small cut. The implant then expands back to its shape. More everyday uses are for flexible spectacle frames and teeth braces;

- solids that darken in sunlight, like the lenses in some sunglasses;
- liquid crystals that change shape and colour. These have been used in climbing ropes that change colour if there is too much strain and weight on them.

The future of these materials and their possible uses is limited only by human imagination. One clever idea is that if cars were made of smart metal, a minor accident could be repaired by leaving the car in the sun!

EFFICIENCY IN ENGINEERING OPERATION

Unlike the scientist, the engineer is not free to solve problems which interest him. He must solve problems as they arise, his solution must satisfy conflicting requirements. Efficiency costs money, safety adds complexity, performance increases weight. The engineering solution is the optimum solution, taking into account many factors. It may be the cheapest for a given performance, the most reliable for a given weight, the simplest for a given safety, or the most efficient for a given cost. Engineering is optimizing.

To the engineer, efficiency means output divided by input. His job is to secure a maximum output for a given input or to secure a given output with a minimum input. The ratio may be expressed in terms of energy, materials, money, time or men. Efficiency is achieved by using efficient methods, devices, and personnel organizations.

The need for efficiency leads to the large, complex operations which are characteristic of engineering. The processing of the new antibiotics in the test-tube stage belongs in the field of biochemistry. But when great quantities must be produced at low cost, it becomes an engineering problem. It is the need for efficiency and economy that differentiates ceramic engineering from the work of the potter, textile engineering from weaving, and agricultural engineering from farming.

Since output is input minus losses, the engineer must keep losses and waste to a minimum. One way is to develop uses for products which otherwise would be waste. Losses due to friction occur in every machine and in every organization. Efficient functioning depends on good design, careful attention to operating difficulties, and lubrication.

TOWARDS FLEXIBLE PRODUCTION FACILITIES

Present-day industry, in particular engineering, is defined by the fact that its products – machine-tools, devices, instruments, etc. – are normally produced for a very short period of time and replaced by other more advanced products. The range of products is growing and the size of batches is decreasing. The new production environment has brought about new requirements. Thus, for example, earlier functionally "rigid" automatic production lines require considerable changes to be introduced or the line to be fully dismantled when the factory switches to a new product. Unlike the above lines, flexible production lines can be switched over to a new product virtually instantaneously. When operated on a 24-hour basis, these lines need only a minimal team of operators to attend the production.

A set of modules can be combined by a transport-and-storage system and a control system into a production line (or a production area).

The highest level of a flexible production facility, an automatic factory, incorporates several flexible production workshops. Such a factory has both automated equipment and automated services, including computer-aided design of products and processes, and software development for its control systems. Such automated factories are being designed and are expected to become fully operational in the near future. All the industrialized countries are currently making use of flexible modules and workshops.

TWO TYPES OF ENGINEERING

Mechanical Engineering. Engineers in this field design, test, build, and operate machinery of all types; they also work on a variety of manufactured goods and certain kinds of structures. The field is divided into (1) machinery, mechanisms, materials, hydraulics, and pneumatics; and (2) heat as applied to engines, work and energy, heating, ventilating, and air conditioning. The mechanical engineer, therefore, must be trained in mechanisms, hydraulics, and thermodynamics and must know such subjects as metallurgy and machine design. Some mechanical engineers specialize in particular types of machines such as pumps and steam turbines. A mechanical engineer designs not only the machines that make products but the products themselves, and must design for both economy and efficiency. A typical example of modern mechanical engineering is the design of a car or an agricultural machine.

Safety Engineering. This field of engineering has as its object the prevention of accidents. In recent years safety engineering has become a speciality adopted by individuals trained in other branches of engineering. Safety engineers develop methods and procedures to safeguard workers in hazardous occupations. They also assist in designing machinery, factories, ships and roads, suggesting alterations and improvements to reduce the possibility of accident. In the design of machinery, for example, the safety engineers tries to cover all moving parts or keep them from accidental contact with the operator, to put cutoff switches within reach of the operator and to eliminate dangerous sharp parts. In designing roads the safety engineer seeks to avoid such hazards as sharp turns and blind intersections that lead to traffic accidents.

ENGINEERS

The machine-tool is the original source of every object of our industrialized world. Automobiles, airplanes, diesel locomotives, washing machines, electric stoves and radio sets are made by machine-tools. But without the engineer the machine-tool couldn't function.

One engineer seldom deals with every phase of development of a complex mechanism, e.g. a steam turbine. Various specialists take part in its development: a mechanical engineer skilled in the application of thermodynamics, a chemical engineer utilizing all the by-products of the fuel used, an electrical engineer converting the mechanical energy into a conventional form of power, an engineer skilled in the calculation of stresses when designing the turbine blades, a production engineer planning the smooth flow of material into the finished product, as well as the research engineer who conceived the idea in the first place.

After all the components of the turbine have been developed into a complicated mechanism and detailed drawings have been made of all component parts, materials are ordered and routing of the materials is planned. Finally, when the planning engineer has ordered the material, the tool engineer has designed the tools and the design engineer has given specifications on the drawings, production begins.

The finished components are assembled, inspected and moved from the factory to the consumer through a department directed by a sales engineer.

Транспортные специальности

THE IMPORTANCE OF AUTOMOBILE INDUSTRY

Automobiles in India have progressed with a short span of time. In fact, it has become one of the fastest growing sectors in the Indian economy and so this is the popularity of automobiles in India. The competitive nature of the Automobile companies in India has promoted the companies to take up new and original marketing strategies to beat the competition. All automobile industry in India as a part of their marketing strategy offer a wide range of vehicles in the entire segment to make sure that the customer is driving one of their vehicles only.

The industrial automation is growing at a pick level and so is the need of its parts. To experience durable, safe and reliable auto engineering parts, we should use original products. Automobile parts are needed in every sector and so there is an endless need for automobile industry.

Keeping in mind the budgets of every class of end-users, the products are being launched. In the buying process, banks are playing significant roles by providing loans as a support. Only a limited amount of interest has to be paid to finance that amount and it depends upon the various factors such as buyer's credit past, finance amount, loan period and the term and conditions of financial institution.

THE IMPORTANCE OF AUTOMOBILE INDUSTRY

The automobile industry plays a major role in making your business successful and efficient in today's competitive world. The technological advances in

the automobile sector have given unbelievable growth and development to the automobile industry, from over 100 years. Automobile companies in India are progressing with the speed of time.

Basically, automobile technology refers to those technologies which are popularly incorporated in various kinds of automobiles. The emergence of advanced technologies is paving the way for more and more complicated vehicles, with the changing times and increasing competition.

The primary factor for the industrial automation is to increase the productivity in the industry. But, these days the main focus is going towards enhancing the efficiency and quality of the products. Both quality and quantity is achieved finally. In an automated environment it has become feasible to switch from one product to another in a short time.

There are certain technological advancements in the automotive industry which includes the equipments like Fiber Laser Welder, Foot-Operated Weld Mead (Small Pressurization Welding I lead), Pneumatic Head (General Weld Head), which helps greatly in the automobile sector. Due to various technological changes in the industrial sector, advanced automation have gained its due recognition around the globe. And the products like Fiber Laser Welder, Foot-Operated Weld Head (Small Pressurization Welding I lead). Pneumatic I lead (General Weld Head), which helps greatly in the automobile sector, etc. contributes greatly in this sector.

COMMERCIAL VEHICLES

Sales of commercial vehicles were affected as a result of economic problems in Russia. It was predicted that in 2010 sales of commercial transport vehicles would be approximately 250 700 units. This would represent a decline of 5 percent compared to 2012. The transportation of cargo by Russia's carriers is decreasing as companies are reducing production. Even though Russia is a large country, the infrastructure facilitating nationwide transportation remains underdeveloped. The World Bank estimates that the share of cargo transported by trucks in Russia will rise to 41 percent this year. In 1992, only 13 percent of cargo in Russia was hauled by auto transport. In comparison, for the 15 countries of the European Union, the share of cargo transported by roadways was 72.7 percent in 2005. Long-distance shipments are ordinarily done by rail in Russia. The opening of the Trans-Siberian Highway in March of 2004 was a major development in facilitating a transition to greater use of freight trucks. Infrastructural development pushes up the demand for commercial vehicles.

Major limiting factors include reduced availability of commercial vehicles, especially trucks. The global market for commercial vehicles dropped significantly after the recession. In 2009, Daimler estimated that the European market for trucks would fall by 50 percent.

On the bright side, the biggest producer of commercial trucks worldwide wants to expand its presence in Russia. Trucks and trailers made by Russian

domestic manufacturers do not conform to international standards. As a consequence, foreign freight forwarders are able to occupy a larger share of the market than their Russian counterparts. Recognizing the need for foreign-made trucks, the government lowered import duties on trailers to 5 percent and on semis to 10 percent.

AUTOMOBILES

The word "Automobile" has its origins in Greek and Latin and it has become an integral part of every man's life. It has become so indispensable that on an average, a person spends at least 3 hours in his vehicle every day. Automobile was once thought of as a luxury and only a select few could indulge in. Now, the times have changed and automobiles have become a means of transportation catering to the vast majority.

Automobiles, in general, refer to the humble car and the estimates suggest that there is a car for every eleven persons on earth amounting up to 590 million passenger cars. There are various variants of automobiles that cater to every cross section of the population. There are variants that could set you back by a couple of million dollars and other models that cost you a few thousand dollars.

The technological advances in the automobile sector have been tremendous in the last 100 years. The century's greatest invention or advancement should definitely belong to the automobile industry. One of the earliest pioneers of the automobile industry was Ransom Olds from the Oldsmobile factory. In the early 1900's, he introduced the Production Line concept, thus churning out vehicles every few minutes. This idea was greatly revolutionized and implemented by I Henry Ford, who elevated automobile industry to the next level. Ford quickly grew in the first half of 20th century and slowly but steadily spread globally.

MULTI – SPARK

Another advantage of Saab DI is very rapid spark generation. Charging is twenty times faster than in a conventional system. As well as providing a good spark at high engine speeds this allows a whole burst of sparks to be produced instead of single one, e.g. when starting a cold engine. We call this "multispark". This burst of sparks effectively burns off any soot or fuel residue on the spark plug electrodes, providing quick, sure starting every time.

If the engine should, for some reason, fail to start at the first attempt, Saab DI brings a further feature into play. When the ignition key is released from the starting position, the system produces a massive stream of approximately 1000 sparks-on all cylinders at once-to ensure that even the heaviest deposits have been burned off.

Reduces service requirements.

Spark plugs last several times longer than those fitted into conventional ignition systems. This is because Saab DI copes with larger variations in the

spark plug electrode gap. Saab DI has no moving parts and the timing is set once and for all at the B factory, thus minimizing service costs.

Lowers fuel consumption.

In the 2.3 – liter combustion is monitored continuously and in each cylinder by «ionization measurement». Whenever the combustion process deviates from optimum, the air/fuel ratio is adjusted automatically. This constant supervision of each cylinders ensures that energy is extracted from the fuel with the greatest possible efficiency, thus maximizing fuel economy.

Энергетические специальности

VOLTAGE AND CURRENT

Electric power is generated at power stations, but it is usually needed for far-off places. How is the current taken to these far-off places?

Thick wires usually carry it across the country, and steel pylons hold the wires above the ground. The pylons are so high that nobody can touch the wires at the top. The wires are not usually copper wires; they are made of aluminium, and thirty wires together form one thick cable. Aluminium is so light that the pylons can easily hold the cables up.

It would not be cheap to drive very large currents through these cables. Large currents need very thick wires. If thin wires are used, they get hot or melt, and so the currents ought to be as small as possible. Can we send a lot of power if we use a small current? We can do so if the voltage is high. We need a small current and a high voltage; or a large current with a low voltage. The small current is cheaper because the wires need not be thick.

The result is that the voltage has to be very high. The pressure in the aluminium cables may be 132,000 volts, and this is terribly high. The voltage of a small battery which we carry in our pockets is usually between 1 and 9 volts. A car battery has a voltage of 6 or 12 volts. In a house the pressure in the wires may be 230 volts, or something like that.² Even 230 volts is high enough to kill a person, so what would happen if we touched one of the aluminium cables? The high voltage would drive a heavy current through our bodies to the earth.

When the wires lead down to a house or a railway, the voltage is made lower. It can be changed easily; but if the voltage is lower, the current must be higher. If it is not, we shall lose power. So the wires have to be thicker.

The wires must never touch steel pylons. If they did that, the current would escape to the earth through steel. Steel is a good conductor of electricity, so are most metals. We have to separate the wires from the pylon, and we do this with insulators.

NATURE OF ELECTRIC CURRENT

In the modern conception of the constitution of matter it is composed of atoms. The atom is made up of a positive nucleus surrounded by negative charges of electricity, called electrons, which revolve about the nucleus at tremendous speeds. The nucleus consists of a number of protons, each with a single positive charge, and, except for hydrogen, one or more neutrons, which have no charge. The atom is neutral when it contains equal numbers of electrons and protons. A negatively charged body contains more electrons than protons. A positively charged body is one which contains fewer electrons than its normal number.

When the two ends of a conductor are connected to two points at different potentials, such as the terminals of a battery, we say that there is an electric current in the conductor. What actually happens?

The conductor has equal numbers of positive and negative charges in its atoms, and we want to know how the charges can be made to produce a current. The atoms in metals are packed so closely that they overlap to some extent,¹ so that it is comparatively easy for the outer electrons to pass from one atom to another if a small force is applied to them. The battery causes a potential difference between the ends of the wire, and thus provides forces that make the negative electrons in the wire move toward the point of higher potential. This electron flow toward the positive electrode is the electric current. Naturally materials differ considerably in the ease with which electrons can be made to migrate from atom to atom. The current will not flow unless there is an electric circuit. The magnitude of the current depends simply on the rate of flow of electrons along the conductor.

PRACTICAL UNITS

The main units in electrical engineering are those relating to current, pressure or voltage, resistance, power and energy.

Current is that which flows along the conductors forming the electric circuit. It is measured in amperes. Pressure, potential, voltage, or electromotive force is that which causes a current to flow between two points when they are joined by a conductor. The unit is the volt.

The total pressure generated by a cell or generator is called its electromotive force (e.m.f.). The difference in pressure between any two points in a circuit is simply known as the potential difference, voltage, or pressure of the circuit.

The opposition which a substance offers to the flow of current through it is called its resistance. Substances having a small, resistance, such as metals and most liquids are called conductors, those offering high resistances are called insulators. The unit of resistance is the ohm, represented by the Greek letter Ω . A megohm equals one million ohms.

When resistances are connected in succession to form a circuit, they are said to be connected in series. The total resistance of such a circuit is the sum of all the resistances. Resistances connected to the same terminals are said to be in parallel.

In a circuit in which a steady direct current is flowing there is a direct relation between the current, voltage, and resistance, temperature remaining constant, and this is expressed by what is known as Ohm's law. The law is represented by the following equation: I – current in amperes, R – resistance in ohms, E – voltage in volts

$$I = \frac{E}{R}$$

The power in a d. c. circuit is found from the product of the amperes flowing in it and the pressure at its terminals. The unit of power is the watt. It is the power in a circuit when a current of one ampere flows under a pressure of one volt. The practical unit of electrical energy is the kilowatt-hour (kwh). It is the energy transformed in a circuit when the power is one kilowatt and the time taken is one hour. In general practice this value is spoken of as a unit, and is the basis of charges for electrical energy.

ELECTRIC GENERATORS AND MOTORS

A device for converting mechanical energy into electric energy is called a generator. The function of a motor is just the reverse, that is, it transforms electric energy into mechanical energy. The enormous energy of steam engines, gas engines, and water turbines can now be transformed into electricity and transmitted many miles. The generator has revolutionized modern industry by furnishing cheap electricity.

The essential parts of a generator are: a) the magnetic field, which is produced by permanent magnets or electromagnets; and b) a moving coil of copper wire, called the armature, wound on a drum.

D. c generators are used for electrolytic processes. Large d. c generators are used in certain manufacturing processes, such as steel making. Generators of small capacities are used for various special purposes, such as welding, automobile generators, train lighting, communication systems, etc.

There is a wide variety of d. c. and a. c. motors. There are shunt motors, series motors, synchronous motors, induction motors, single-, two-, and three-phase motors. They are used to drive various machines. A ball-bearing fully-enclosed fan-cooled direct-current motor is shown in Fig. 3.

Direct-current motors are of three principal kinds, and are named according to the manner in which their field coils are connected to the armature. They are named respectively: series, shunt, and compound.

In the series motors the field windings and armature are connected in series with each other. All the current which passes through the armature passes through the field coils. The field windings are therefore composed of a few turns of thick wire.

ELECTRICITY AND MAGNETISM

Much has been learned about electric currents through their effects. We all are familiar with incandescent filament in the ordinary electric lamp bulb (heating effect), with the vibrating hammer of the electric bell when ringing (magnetic effect), with the decomposition of acidulated water into hydrogen and oxygen (chemical effect), and with the mechanical forces acting in the electric motor used for starting an automobile engine (mechanical effect).

Electricity is completely intermingled with magnetism. We must know these fundamental properties of a magnet well:

- a magnet attracts pieces of iron, nickel and cobalt;
- the magnetic property is concentrated more in the poles: if freely hung the magnetic needle sets itself with one pole toward the north;
- like poles repel each other, unlike poles attract each other;
- magnetism can be induced;
- a magnetic line of force is the path along which an independent north pole would tend to move;
- a magnetic field is a space in which there are magnetic lines;
- permeability refers to the ease with which lines of force may be established in any material;
- and reluctance is the resistance which a substance offers to magnetic lines of force, i. e. to magnetic flux.

Many practical applications have resulted from the utilization of the magnetic effects of electric currents. These effects are employed in motors, in most electric meters (ammeters, voltmeters and galvanometers), in electromagnets, and in practically all electromechanical apparatus.

Строительные специальности

GLASS

Industrial art has had no more beautiful and useful material to aid its progress throughout the ages than glass. Many sciences could scarcely have existed or could not have developed far without its assistance. It can be produced either colorless or hued with any hue, and either transparent or opaque. The period of the invention of glass cannot be now traced and how it was discovered is unknown. A fanciful story told by the Roman writer Pliny tells of Phoenician merchants to have discovered the art of glass making. According to this legend as the merchants were returning from Egypt they landed on the coast. Glass is now used extensively in bathrooms, laboratories, and kitchens, in swimming-baths and underground railway stations, and in hospital, wards, corridors and operating theatres. Glass is likewise

used on account of its variety of colour and highly polished surface for decorative features such as wall and ceiling lining, in vestibules, theatres, etc.

Among the countless variety of materials known to man it would be difficult to find one more versatile than glass. Thousand of articles are made of it, using not only properties long known but new ones recently discovered or developed, glass is subjected to what might seem the most extraordinary methods of treatment. It is poured into moulds, stretched into tubes, sheets and fine thread, stamped and rolled like metal, pressed like plastics, molded like clay, sawn and machined, drilled and chopped.

PLASTER

This is the material applied on internal walls and ceilings to provide a smooth, easily decorated surface, external plastering is normally, called rendering. Plaster is a mixture that hardens after application; it is based on a binder (gypsum, cement or lime) and water with or without the addition of aggregates. Depending on the surface being plastered plastering schemes may require the application of either one coat, or undercoats to build up a surface followed by a finishing coat. The main plasters in use are:

1. Gypsum plaster is for internal use. Different grades of gypsum plaster are used according to the surface and coat.

- 2 Cement-sand plaster is used for external-rendering, internal undercoats and water-resisting finishing coats.

3. Lime-sand plaster is used for both under and finishing coats, although lime can be added to other plasters to improve their workability.

The object of plastering is to provide a finish to internal surfaces. The two principal binders are: Portland cement and gypsum plaster. Hydraulic limes are alternatives to Portland cement. In each case sand or lime may be added. Also, there are some special thin wall plasters in use, which consist of finely ground mineral substances with an organic binder such as polyvinyl acetate (PVA). The number of plaster coats applied to a surface may be one, two or three. Undercoats are from about 5 mm thick and final coats about 3 mm thick.

DURABILITY OF CONCRETE

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

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

It is more difficult to secure durable reinforced concrete than mass concrete. This is due to the reinforcing steel and the additional water required making the concrete flow around the steel bars. When moisture reaches the steel, it will rust and the expansion caused by the rust will crack the concrete, resulting in an unsightly structure and necessary repairs. In all structures exposed to the weather reinforcing steel must be carefully placed and well secured so that it cannot be displaced with concreting. No metal should project to the surfaces. Small wires will soon cause rust spots on the surface of the concrete if they are exposed.

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

LIME

Lime is a calcium oxide. It is used in great quantities for mortar and plaster. Lime (quicklime) is a white solid that reacts violently with water to form calcium hydroxide. It is made by heating limestone in a special kind of furnace called a "kiln". Lime must be stored in a dry place, otherwise it will absorb moisture.

Limes may be divided into three distinct classes:

1. Rich limes that contain not more than 6 percent of impurities, slake rapidly, and are entirely dependent on external agents for setting power. These are widely used for interior plasterer's works.

2. Poor limes that contain from 15 percent to 30 percent of useless impurities and possess the general properties of rich limes, only to a lesser degree.

3. Hydraulic limes that contain certain proportions of impurities, which when calcinated, combine with the lime and endow it with the valuable property-of setting under water or without external agents.

Lime is a basic building material extensively used all over the world, but it was not until the later years of the 19th century that a greater appreciation of the fuel-burning problems involved became apparent. Until this time the requirement for lime agricultural and it was produced by farmers or by small builders who used it for making mortar and plaster.

BRICK

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

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

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

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

The brick may be securely handled by placing the hand over the surface of the upper part of a brick and by placing the thumb centrally down the face of the brick with the first joints of the fingers¹ on the opposite face. It is better to protect the thumb and the fingers with leather pads, which also prevent the skin from rough bricks.

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

Архитектурные специальности

ANDREW WYETH

Andrew Wyeth, one of the prominent living American painters, was born in 1917. The son of illustrator N.C. Wyeth, Andrew is the leading member of the dynasty of painters that includes his sisters, their husbands and his own two sons. He won fame at the age of 12 for his illustrations of «Robin Hood». He was 20 years old when he first exhibited his paintings.

Andrew studied with his father and was strongly influenced by him. His father's style of illustration expresses sentimentality and strives for absolute reality. But very early the young artist gravitated away from his teacher. Wyeth's style is both precise and minute in detail; he is a realist influenced by photography.

He painted portraits, landscapes, seascapes and domestic scenery. His favourite media are tempera and water-colour. Wyeth's works are easily recognized by dimly lit and deserted landscapes in tones of grey and brown, which convey feelings of loneliness and solitude. One of the keys to his works is that he creates mysteries that need resolution.

This is apparent in many of his works, such as «Inland Shell» or «Christina's World». In «Inland Shell» he painted a shell above the leafy forest floor. The

contrast between the bright shell and the dark surroundings is stark. How the shell arrived in the forest or why it is there he doesn't explain.

ENGLISH ART IN THE 19TH CENTURY

The 19th century gave birth to a great number of artists and writers in Great Britain. It was a period of Romanticism, of industrial and social revolution, of the railway.

The art of this period was diversified, it depicted the continual changes that took place in the life of the British people. But Romanticism was the leading force in the new art. The desire for understanding and expression of human life in all its aspects led the Romanticism to the past, but by attitude to the present, Romanticism opened the way to realism, which became the most vital force in the 19th-century art. The Romantic artists sought inspiration in their history, they were attracted by exotic – historical surroundings, but they also acquired a growing understanding of contemporary life.

Gothic was considered the true national style. So when the Houses of Parliament were destroyed by fire, Charles Barry rebuilt them in 1837–1867, in the Tudor Gothic style. A Gothic architect William Railton built the Nelson Memorial in 1843.

John Constable and William Turner were the prominent figures in the landscape painting. Another great English painter was Thomas Lawrence, a portrait painter.

English Romanticism was represented in lyric poetry by Shelley and Byron and in fiction by Oscar Wilde. One of the greatest actors of this time was Edmund Kean, who was the greatest tragic actor of his day on the English stage.

The English opera of the time was artificial and romantic.

The most significant composer was Henry Purcell. Gilbert's and Sullivan's operas came to be widely acclaimed. The collaboration of the two talented men recreated genuine English light opera.

FROM THE HISTORY OF CONCRETE

Plain concrete dates from very early days. It was employed by the Egyptians, Romans and Greeks in the construction of aqueducts and bridges, roads and town walls. Romans used it even in under-water structures, some of which have survived till our time. A large part of the Great Chinese Wall (the 3rd century before our era) was also built of concrete.

The concrete remains of the foundations of buildings built several thousand years ago have been found in Mexico. As cement was not known in those times, concrete was made of clay and later of gypsum and lime. The knowledge of the use of natural cement and, consequently, of concrete seems to have been lost during the Middle Ages, and it was not until the 18th century that its value was rediscovered.

The idea of strengthening concrete (reinforcing) was developed in the 19th century. The reinforcing of concrete was first introduced in France in 1861 by Joseph Monier and Francois Coignet. But only 25 years later German and Austrian engineers developed formulas for design.

Between 1880 and 1890 several reinforced concrete buildings were erected in the United States and since 1896 the increase in the amount of construction with this material has been remarkable.

Nowadays concrete is made in up-to-date machinery with very careful regulation of the proportion of the mix.

MARY CASSATT

Mary Cassatt is the most popular woman artist in the USA. She was born in 1845 in a town near Pittsburgh. She began her career at the Pennsylvania Academy of Fine Arts, where she studied from 1861 until 1865. She studied in Paris, too.

Mary Cassatt began her career as a realistic painter. Later she started experimenting with light and colour. In 1877 Degas invited her to join the Impressionists. Mary Cassatt was the only American who exhibited with the French Impressionists. Cassatt took part in four of their exhibitions.

There was something of Manet and Renoir in her works, but she developed her own style. It shows influence of Japanese art.

Cassatt never married, never had children. But she expressed in her work a profound understanding of the mother and child relations. Womanhood and motherhood were her favourite subjects. Her treatment of these themes was characterized by tenderness. Yet her pictures are objective, direct and free from sentimentality. She sees children as individuals. Her famous canvas «Susan comforting the baby» shows a baby with a personality of her own.

Mary Cassatt's achievements are great, if we think of the difficulties faced **by** women artists at the time. Edgar Degas wrote about her: «I am not willing to admit that a woman can draw that well».

THE TRETYAKOV ART GALLERY

One of the famous museums of Moscow is the Tretyakov Art Gallery. It is housed in a two-storey dark-red brick building in Lavrushinsky by-street. The central part of the building was designed at the beginning of the century by the painter Vasnetsov. The Gallery has collections of Russian and Soviet art. The museum was founded in 1856 by Pavel Mikhailovich Tretyakov. He had been collecting pictures for 40 years and had a rich collection of Russian paintings. They included works of Russian art of the 18th and the 19th centuries, outstanding works of his contemporaries. Beginning with the 1860s, he established a gallery of portraits of outstanding Russian scientists, writers and artists by such famous Russian painters as Vassily Perov. Nikolai Ghe, Ivan Kramskoy and Ilya Repin.

In 1872 Tretyakov built a special gallery for his collection, and in 1892 presented it to Moscow. There were 1,000 paintings and 500 drawings in his collection then.

The collection of the gallery reflects the history of Russian art, you can see icons of Rublev, portraits by Repin, Tropinin and Brullov, Russian landscapes by Shishkin, Savrassov and Levitan, genre pictures by Fedotov, Pukirev and Repin, historical canvases by Surikov and many others, as well as sculptures. Outstanding artists of the whole multinational Russia represent rich cultural and art traditions of the country. Recently the gallery has been reconstructed. A lot of visitors can admire its canvases again. The gallery also holds exhibitions of Russian masters in its Exhibition Hall which is popular both among Muscovites and visitors to Moscow.

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