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Английский язык.

Программа, методические указания
и контрольные задания для
студентов – заочников.

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2002 г.

I. Требования к выполнению контрольных заданий и оформлению контрольных работ.

1.Количество контрольных заданий, выполняемых на каждом курсе, устанавливается учебным планом университета.

2. Каждое контрольное задание в данном пособии предлагается в пяти вариантах. Студент должен выполнить один из пяти вариантов в соответствии с последними цифрами студенческого шифра: студенты, шифр которых оканчивается на 1 или 2, выполняют вариант №1; на 3 или 4 – вариант №2; на 5 или 6 – вариант №3; на 7 или 8 – вариант №4; на 9 или 0 – вариант №5.

3. Письменные контрольные работы следует выполнять в отдельной тетради. На обложке тетради следует написать: фамилию, инициалы, шифр, номер контрольной работы, вариант и название учебника, по которому занимается студент, а также адрес студента.

4. Контрольные работы должны выполняться чернилами, аккуратно, чётким почерком; в тетрадях в клетку следует писать через строчку. При выполнении контрольной работы следует оставлять в тетради широкие поля для замечаний, объяснений и указаний рецензента. Необходимо переписывать задания к каждому упражнению и точно их выполнять.

5. Иностранный текст каждого задания нужно переписывать на левой странице тетради, на правой давать его русский перевод.

6. Выполненные контрольные работы направляются в институт для проверки и рецензирования в установленные сроки. Разрешается досрочное выполнение контрольной работы, однако во избежание повторения возможных ошибок, рекомендуется выполнять и высылать на рецензирование одновременно только одну контрольную работу.

7. Работа над ошибками выполняется письменно в этой же тетради.

8. Если работа выполнена не в соответствии с указаниями или не полностью, она возвращается без проверки.

II. Требования к защите контрольных работ.

1. Знать грамматику, рекомендованную для выполнения контрольной работы.

2. Уметь находить и правильно переводить данные грамматические формы в связном тексте.

3. Уметь правильно употреблять данные грамматические формы в письменной и устной речи.

4. Знать необходимый лексический материал.

III. Требования к зачёту.

1. К зачёту допускаются студенты, выполнившие предусмотренное программой количество работ и сдавшие тексты для домашнего чтения, т.е. тексты учебника или учебных пособий по английскому языку. К текстам должен быть составлен словарь, которым можно пользоваться при переводе.
2. Для получения зачёта необходимо:

а) выполнить задания на узнавание и правильный перевод грамматических форм.

б) знать лексический минимум к текстам (30 лексических единиц в семестр).

IV. Требования к экзамену.

1.К экзамену по английскому языку допускаются студенты, имеющие зачёт за I, II и III семестры, выполнившие письменные контрольные работы и сдавшие учебный материал по домашнему чтению за IV семестр.

2. На экзамене проверяются умения:

а) читать и переводить со словарём незнакомый текст, содержащий изученный грамматический материал. (500-600 п. знаков за 0,5 часа подготовки).

б) отвечать на вопросы по содержанию текста.

Примечание: Студенты допускаются к зачёту и экзамену после защиты выполненных контрольных работ.

Контрольные задания.

Контрольное задание №1.

Для того чтобы правильно выполнить задание №1, необходимо усвоить следующие грамматические темы:

1. Имя существительное. Множественное число. Артикли и предлоги как показатели имени существительного. Притяжательный падеж имени существительного. Существительное в функции определения и его перевод на русский язык.
2. Имя прилагательное. Степени сравнения имён прилагательных. Конструкции типа the more … the less.
3. Числительные.
4. Местоимения: личные, притяжательные, вопросительные, указательные, неопределённые и отрицательные.
5. Форма настоящего (Present), прошедшего (Past) и будущего (Future) времени группы Indefinite действительного залога изъявительного наклонения. Спряжение глаголов to be, to have в Present, Past и Future Indefinite. Повелительное наклонение и его отрицательная форма.
6. Простое предложение: прямой порядок слов повествовательного предложения в утвердительной и отрицательной формах; обратный порядок слов вопросительного предложения.
7. Оборот there is (are).
8. Основные случаи словообразования.

Используйте следующие образцы выполнения упражнений.

Образец выполнения 1 (к упр.I).

грамматическая функция окончания -s

1. The students attend lectures and seminars. Студенты посещают лекции и семинары.

students, lectures, seminars } множественное число от имён существит.

a student
a lecture
a seminar

2. He lectures on history. Он читает лекции по истории.

lectures – 3-е лицо единственного числа от глагола to lecture в Present Indefinite.

3. My brother's son is a student. Сын моего брата - студент.
В слове brother's – 's окончание притяжательного падежа имени существительного в единственном числе.

My brothers' sons are students. Сыновья моих братьев - студенты.

Слово brothers' – форма притяжательного падежа имени существительного a brother во множественном числе.

Образец выполнения 2 (к упр.II).
Особенности перевода на русский язык английских имён существительных, употребляющихся в функции определения, стоящего перед определяемым словом.

1.This scientist works at some problems of low temperature physics. Этот ученый работает над некоторыми проблемами физики низких температур.

Образец выполнения 3 (к упр.V).

Lomonosov founded the first Russian University in Moscow. Ломоносов основал первый русский университет в Москве.

Founded – Past Indefinite (Simple) Active от стандартного глагола to found.

Вариант 1.

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием –S и какую функцию это окончание выполняет, т.е. служит ли оно:
а) показателем 3-го лица единственного числа глагола в Present Indefinite;
б) признаком множественного числа имени существительного;
в) показателем притяжательного падежа имени существительного (см. образец выполнения 1).

Переведите предложения на русский язык.
1. The "Big Ben" clock weighs 13,5 tons.
2. Most of London's places of interest are situated to the north of the river Thames.
3. Hyde Park covers 360 acres.

II. Перепишите следующие предложения и переведите их, обращая внимание на особенности перевода на русский язык определений, выраженных именем существительным (см. образец выполнения 2).
1. The bus stop is not far from here.
2. Several Moscow University physicists work at this problem.
3. High speed electronic computers help the engineers to solve many technological problems.

III. Перепишите следующие предложения, содержащие разные формы сравнения, и переведите их на русский язык.
1. A city has wider streets than a village.
2. The longer is the night, the shorter is the day.

3. The worst conditions for growing fruit trees are in the North.

IV. Перепишите и письменно переведите предложения на русский язык, обращая внимание на перевод оборота there + be и неопределенных и отрицательных местоимений.
1. No park in London is as popular as Hyde Park.
2. There are many power stations in our country.
3. There will be a time when people will travel from one planet to another.

V. Перепишите следующие предложения, определите в них видовременные формы глаголов и укажите их инфинитив; переведите предложения на русский язык (см. образец выполнения 3).
1. The Port of London is to the east of the City.
2. In a few days she will leave for Moscow.
3. At the age of 21 Albert Einstein got a job as a clerk in an office.

VI. Прочитайте и устно переведите на русский язык с 1-го по 7-й абзацы текста. Перепишите и письменно переведите 1,2,4 и 7 абзацы.

London.

1. London is the capital of Great Britain, its political, economic and commercial center. It is one of the biggest and busiest ports of Great Britain. It is situated on both sides of the Thames, which is navigable all the year round.
2. London is one of the largest cities in the world. It stretches for nearly thirty miles from east to west and for nearly thirty miles from north to south.
3. London is a very old city. It is more then twenty centuries old. Now the population of London is about ten million. London consists of many parts and they are very different from each other. But the main ones are the City, the East End, the West End and Westminster.
4. The West End is a symbol of wealth and luxury. The best and the most expensive hotels, restaurants, clubs, theatres, cinemas and the richest shops are there. There are splendid houses and lovely gardens there belonging to wealthy people.

Trafalgar Square is the geographical center of London. It was named to commemorate Admiral Nelson's victory at the Battle of Trafalgar.

On the north side of Trafalgar Square is the National Gallery, an art gallery that houses the national collection of pictures and the National Portrait Gallery that houses the national collection of portraits.
5. Westminster Abbey is famous for its architecture, for its historical associations. Westminster Abbey has its world famous Poet's Corner where many of the greatest English writers are buried.
6.The City is the oldest part of London. It covers only about a square mile and few people live there, but over a million people enter the City in the day-time to work. At the end of the day the businessmen, clerks and secretaries go home and the City becomes silent and empty. The City is the financial and business part of London. Numerous banks, offices and trusts are concentrated in this part. There are some ancient buildings within the City, which were built many centuries ago. The Tower of London was built nine centuries ago and used as a royal palace, a fortress and political prison. Now it is a museum.
7. The East End is the poorest district of London. There are many factories, workshops and docks there. The streets are narrow, the houses are poor. It is a densely populated district where working class families live.

VI. Прочитайте 3,5 и 6 абзацы текста и письменно ответьте на вопросы:
1. How old is London?
2. What are the main parts of London?
3. Where are many of the greatest English writers buried?
4. Why does the City become silent and empty at the end of the day?
5. What is the Tower of London nowadays?

Вариант 2.

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием –s и какую функцию это окончание выполняет, т.е. служит ли оно:
а) показателем 3-го лица единственного числа глагола в Present Indefinite;
б) признаком множественного числа имени существительного;
в) показателем притяжательного падежа имени существительного (см. образец выполнения 1).
Переведите предложения на русский язык.
1. Belfast grows very fast.
2. Among other places of interest in Belfast is the Queen's University.
3. The Palm House built in 1850 attracts the visitors' attention.

II. Перепишите следующие предложения и переведите их, обращая внимание на особенности перевода на русский язык определений, выраженных именем существительным (см. образец выполнения 2).
1. Belfast is one of the largest sea trade ports of Northern Ireland.
2. Teams of figure skaters and ice-hockey players undergo intensive training at the Sports Centre.
3. The flexible production line consists of a programmable machine-tool and an electronic control system.

III. Перепишите следующие предложения, содержащие разные формы сравнения и переведите их на русский язык.
1. Lake Baikal is the deepest in the world.
2. The faster the substance burns, the more heat it gives off.
3. The results of his last experiment were worse than of the previous one.

IV. Перепишите и письменно переведите предложения на русский язык, обращая внимание на перевод оборота there + be и неопределённых и отрицательных местоимений.
1. There are several sources of energy, some of them are inexhaustible.
2. Do you know any foreign language?
3. There are 14 protons in the nucleus of a silicon atom.

V. Перепишите следующие предложения, определите в них видовременные формы глаголов и укажите их инфинитив; переведите предложения на русский язык (см. образец выполнения 3).
1. Lomonosov was a great poet and did much for the progress of the Russian language.
2. The student will continue his research in a laboratory.
3. The new workshop houses a new flexible module.

VI. Прочитайте и устно переведите на русский язык с 1-го по 5-ый абзацы текста. Перепишите и письменно переведите 2,3,4 абзацы текста.

Пояснения к тексту:

1. Lagan – р.Лаган
2. Belfast Lough [‘lok] – оз. Белфаст

Belfast.

1. Belfast, a capital of Northern Ireland, is its main administrative, economic and cultural center. It is situated at the mouth of the river Lagan [1], on the shores of Belfast Lough [2].
2. Belfast is one of the youngest capital cities in the world and it grows very fast. Today the city has a population of 400,000, nearly a third of the entire population of Northern Ireland, but in the 17th century it was only a village. Then, during the 19th century, the development of industries like linen, rope-making, engineering and the sea-trade doubled the town’s size every ten years.
3. Nowadays Belfast is an important center of textile manufacture, aircraft production, electrical engineering and ship-building – it was here that the “Titanic” was built and sent out on her fatal voyage. Belfast has the largest in the world shipyard. It built many fine liners, warships and other vessels, which sail the seas of the world. Belfast is also one of the largest seaports of the U.K. It handles most of the overseas trade of Northern Ireland. Its fine harbour welcomes ships from many parts of the world.
4. In the eastern part of Belfast you will see a magnificent Parliament building. This place is called Stormont. Stormont is also the name of the former autonomous Irish parliament, which existed from 1920 till 1972. It consisted of two chambers – the House of Commons and the Senate. The British Parliament has ruled Northern Ireland since 1972.

Among other places of interest in Belfast are the Queen’s University with many fine new buildings, the Cathedral of St. Anne and the Art Gallery.

5. The outskirts of Belfast are rich in beautiful parks. The Botanic Gardens contain a rich collection of rare plants. Some of the tropical plants are 100 years old. The Palm House built in 1850 usually attracts the visitors’ attention.

VII. Прочитайте 1 и 5 абзацы текста и письменно ответьте на вопросы.
1. What is this text about?
2. Is it the main administrative, economic and cultural center?
3. Where is it situated?
4. Where are the beautiful parks situated?
5. What do the Botanic Gardens contain?

Вариант 3.

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием –s и какую функцию это окончание выполняет, т.е. служит ли оно:
а) показателем 3-го лица единственного числа глагола в Present Indefinite;
б) признаком множественного числа имени существительного;
в) показателем притяжательного падежа имени существительного (см. образец выполнения 1).
Переведите предложения на русский язык.
1. Frosts and storms make life hard in the Far North.
2. Professor N. lectures on history.
3. Chicago is the nation’s second largest city.

II. Перепишите следующие предложения и переведите их, обращая внимание на особенности перевода на русский язык определений, выраженных именем существительным (см. образец выполнения 2).
1. Forest areas of our country are very great.
2. Chicago is the world’s largest railroad terminal.

3. The highest population density in Russia is in Chuvashia.

III. Перепишите следующие предложения, содержащие разные формы сравнения, и переведите их на русский язык.
1. The thicker the wire the less its resistance.
2. The weather today is worse than it was yesterday.
3. Moscow is the largest city in our country.

IV. Перепишите и письменно переведите предложения на русский язык, обращая внимание на перевод оборота there + be и неопределённых и отрицательных местоимений.
1. There are more than 100 elements known to science.
2. There appeared some new methods of separating the molecules of polymers.
3. My schoolfriend has no ability to mathematics.

V. Перепишите следующие предложения, определите в них видовременные формы глаголов и укажите их инфинитив; переведите предложения на русский язык (см. образец выполнения 3).
1. The student made no mistakes in his translation.
2. Plasma is the fourth state of matter.
3. We shall investigate the structure of a new substance in our laboratory.

VI. Прочитайте и устно переведите на русский язык с 1-го по 5-ый абзацы текста. Перепишите и письменно переведите 1,2,5 абзацы текста.

Пояснения к тексту:
1. inland – внутрь, вглубь
2. trading post – фактория
3. fur trappers – охотники на пушного зверя

Chicago.

1. Chicago is the nation's second largest city, the most important Great Lakes port and the world's largest railroad terminal. It lies about 800 miles inland [1] from the Atlantic and for centuries was known only to Indians as a small trading post [2] for fur trappers [3]. But after the opening of the Eerie canal in 1825 Chicago soon became a harbour and started to grow rapidly.
2. The construction of railroad in the 1840s still furthered its unprecedented growth. Chicago soon turned into the largest grain and meatmarket of the country. This encouraged the farmer to grow more wheat and raise more cattle. Thus the gigantic transportation system with Chicago at the center helped the conversion of farming into an industry which, in turn, gave impetus to the appearance of countless inventions. In the 35 years between the end of the Civil war and the end of the century, the U.S. Patent Office granted more than half-a-million patents. And so Chicago became a major industrial city with a permanent labour force.
3. After 1850 housing posed the most serious urban problem. The extremely high cost of urban territory spurred the architects to build upward. They tried to find a new form of their buildings. Soon a "race to the skies" was on in all the great cities of America, and the words "skyscraper" and "skyline" entered the language. The first building of this kind was erected in 1883. Thus the skyscraper was Chicago's contribution to American architecture.
4. However, all efforts to relieve radically the overcrowding in Chicago slums practically failed for the population continued to grow rapidly and by 1950 reached 3,620,000.

5. Chicago in our days is not only a major industrial city but also an important cultural center. It has nearly 100 institutions of higher learning as well as a number of interesting museums, picturesque parks, good recreational and sport facilities. Among the famous skyscrapers are the 100 story John Hancock Center and the 110-story Sears Tower, which rank as the world's tallest building.

VII. Прочитайте 3,4 абзацы текста и письменно ответьте на вопросы.
1. What spurred the architects to build upward?
2. What words entered the language after 1850?
3. What was Chicago's contribution to American architecture?
4. Were the efforts to relieve the overcrowding in Chicago a success?
5. What was the population in Chicago in 1950?

Вариант 4.

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием –s и какую функцию это окончание выполняет, т.е. служит ли оно:
а) показателем 3-го лица единственного числа глагола в Present Indefinite;
б) признаком множественного числа имени существительного;
в) показателем притяжательного падежа имени существительного (см. образец выполнения 1).
Переведите предложения на русский язык.
1. He never thinks of other people. He is selfish.
2. Vegetarians do not eat meat.
3. The Moon is the Earth's natural satellite.

II. Перепишите следующие предложения и переведите их, обращая внимание на особенности перевода на русский язык определений, выраженных именем существительным (см. образец выполнения 2).
1. The first generation robots appeared in 1960.
2. Robots can perform complex production operations.
3. The nuclear – rocket engine must be thermally efficient.

III. Перепишите следующие предложения, содержащие разные формы сравнения и переведите их на русский язык.
1. The more experiments we carry out, the more data we obtain.
2. We stayed at the cheapest hotel in the town.
3. Radio waves serve as the most reliable means of communication between the spaceship and the Earth.

IV. Перепишите и письменно переведите предложения на русский язык, обращая внимание на перевод оборота there + be и неопределённых и отрицательных местоимений.
1. There are many houses in the southern regions of our country, which use solar heaters.
2. There were some changes in the properties of the solid under test.
3. Are there any new instruments in your laboratory?

V. Перепишите следующие предложения, определите в них видовременные формы глаголов и укажите их инфинитив; переведите предложения на русский язык (см. образец выполнения 3).
1. Einstein was very fond of music. His violin brought him much joy.

2. Sea and river – going ships discharge no less than 5 million tons of oil into seas and oceans each year.
3. Your experiment will not give good results until you change the speed of reaction.

VI. Прочитайте и устно переведите на русский язык с 1 по 5 абзацы текста. Перепишите и письменно переведите 1 и 4 абзацы текста.
Пояснения к тексту:
1. pacific – тихоокеанский
2. the motion-picture industry – кинематографическая промышленность, кинематография
3. dim-out – затмение
4. single-family housing units – жилые блоки на одну семью
5. derrick – буровая вышка
6. freeway – автострада, автомагистраль
7. outlying – отдалённый, удалённый

Los Angeles.

1. Los Angeles was founded by the Spanish in 1781 and for a long time developed very slowly. In 1847 when the American forces captured Los Angeles its population was only 1,500. It remained a small community until the 1890s when the discovery of huge reserves of oil in the area greatly stimulated its growth. The opening of the Panama Canal in 1914 turned Los Angeles into a major pacific[1] sea-port and brought further expansion.
2. The 1920s saw an unprecendented growth of the motion-picture industry[2], mainly due to an exceptionally favourable climate with a lot of sunny days and very little rainfall. It is also the climatic conditions and exceedingly fertile soil that made Los Angeles the “garden spot” of the United States that produces most of its citrus fruit.
3. During World War II Los Angeles became an important center of the aviation industry and started developing on a gigantic scale. Thousands of newly-built plants discharged smoke, microscopic dust, gases and chemicals. And this smog caused a daylight dim-out[3] one day-September 8, 1943.
4. Los Angeles of our days is the nation’s third most populous city with over 3 million inhabitants in the city itself and about 8 million in the whole metropolitan area. It has one of the largest urban territories in the world. Almost all of this vast area is covered by single –family housing units[4], oil derricks[5] and industrial complexes. Los Angeles is the most “one-storied’ city of the large American cities. Even in the central part there are comparatively few multistoried apartment houses and high-rise buildings. Characteristically, Los Angeles has the heaviest per capita concentration of automobiles in the world and is famous for its vast system of freeways[6] radiating from the center to outlying[7] areas.
5. Thousands of tourists are especially attracted by Disneyland, the children’s fairy-tale park, opened in 1955 and the Hollywood Bowl, a gigantic open-air cinema theatre which every summer houses national musical festivals and where the highest film awards-the Oscars- are presented to film stars and producers.

VII. Прочитайте 2,3 и 5 абзацы текста и письменно ответьте на вопросы.
1. What industry was developed in the 1920-s?
2. What made Los Angeles the “garden spot” of the United States?
3. What happened on September 8, 1943?
4. What was the reason of the daylight dim-out?
5. What is Los Angeles famous for?

Вариант 5.

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием –s и какую функцию это окончание выполняет, т.е. служит ли оно:
а) показателем 3-го лица единственного числа глагола в Present Indefinite;
б) признаком множественного числа имени существительного;
в) показателем притяжательного падежа имени существительного (см. образец выполнения 1).
Переведите предложения на русский язык.
1. The sun rises in the East.
2. Mr. Hall delivers lectures to the students of a technical college.
3. Mazda, Japan's fourth biggest car-maker plans to produce 1500000 cars in Europe.

II. Перепишите следующие предложения и переведите их, обращая внимание на особенности перевода на русский язык определений, выраженных именем существительным (см. образец выполнения 2).
1. The scientists developed new synthetic rubber products.
2. Japan holds the lead in the world in robot production.
3.The first generation robots appeared in 1960.

III. Перепишите следующие предложения, содержащие разные формы сравнения и переведите их на русский язык.
1. Automatic devices make labour safer and easier.
2. The higher we go into the atmosphere, the thinner the air becomes.
3. Wall-Street is one of the oldest and shortest streets in New-York.

IV. Перепишите и письменно переведите предложения на русский язык, обращая внимание на перевод оборота there + be и неопределённых и отрицательных местоимений.
1. There is a tradition in England to hold a rally in which only the oldest cars take part.
2. Even in the central part of Los Angeles there are comparatively few multistoried apartment houses and high-rise buildings.
3. There are many houses in the southern regions of our country, which use solar heaters.

V. Перепишите следующие предложения, определите в них видовременные формы глаголов и укажите их инфинитив; переведите предложения на русский язык (см. образец выполнения 3).
1. Washington is the capital of the United States of America.
2. Before the Civil War Washington grew rather slowly.
3. They will finish their work tomorrow.

VI. Прочитайте и устно переведите на русский язык с 1 по 3 абзацы текста. Перепишите и письменно переведите 1 и 2 абзацы текста.
Пояснения к тексту:
1.influx- приток, наплыв
2.embarkation- погрузка
3.the Pacific- Тихий океан
4.the United Nations Charter- Устав ООН

5.vista- аллея
6.ornate- витиеватый

San Francisco.

1.San Francisco was founded by the Spanish in 1776 but it received its present name only in 1847 when, after the Mexican war, the whole California passed to the United States. With the beginning of the famous “gold rush” of 1848 thousands of fortune-seekers and adventurers flooded the area and the population of San Francisco grew up to 50,00. The steady influx[1] of immigrants from over the world never ceased so that now San Francisco is the most cosmopolitan place in America. Usually the newcomers from one country settled together. In 1906 a terrible earthquake almost completely destroyed the city, but soon it was rebuilt and continued to expand. Another powerful earthquake took place in the fall of 1989 but this time the destructions were minimal due to earthquake-proof construction of buildings. During World War II the city was the major supply and embarkation [2] port for the struggle in the Pacific [3]. The United Nations Charter [4] was drafted here in 1945.

2. Today San Francisco is an important financial center of the West. The major industries include food-processing, ship-building, oil-refining and the manufacture of metal products and chemicals. It is also an important cultural center with numerous educational establishments, publishing firms, museums and theaters with symphony, opera and ballet production.

3. Situated along the San Francisco Bay and among the steep hills which give the whole urban skyline a picturesque effect, San Francisco is a colorful city of the lovely vistas [5], beautiful bridges (among these the famous Golden gate Bridge with a 4,200 – meter span), richly decorated private mansions and imposing public buildings. Among the many tourist attraction first and foremost is Chinatown with its ornate [6] Oriental architecture – the largest Chinese community outside China. One of its striking features is that on the street – level it consists almost entirely of shops with dwelling–rooms above or below.

VII. Прочитайте 3 абзац текста и письменно ответьте на вопросы.
1. Where is San Francisco situated?
2. What is the most famous bridge of San Francisco?
3. What is Chinatown?
4. What does Chinatown consist of?
5. What are dwelling-rooms situated?

Контрольное задание №2

Для того чтобы правильно выполнить задание №2 необходимо усвоить следующие разделы курса английского языка по рекомендованному учебнику:

1. Видовременные формы глагола:
   А) активный залог – формы Indefinite (Present, Past, Future); формы Continuous (Present, Past, Future); формы Perfect (Present, Past, Future);
   Б) пассивный залог – формы Indefinite (Present, Past, Future).
Особенности перевода пассивных конструкций на русский язык.
2. Модальные глаголы и их эквиваленты (can, may, must)
3. Простые неличные формы глагола: Participle I, Participle II в функции определения и обстоятельства. Gerund – герундий, простые формы.

Используйте следующие образцы выполнения упражнений.

Образец выполнения 1 (к упр. I)

а) Lobachevsky's geometry had revolutionized mathematics and the philosophy of science.	а) Геометрия Лобачевского произвела коренное изменение в математике и философии науки.

had revolutionized – Past Perfect Active от глагола to revolutionize

б)These data are often referred to.	б) На эти данные часто ссылаются.

are referred to – Present Indefinite Passive от глагола to refer to.

Образец выполнения 2 (к упр. II)

1.The changes affecting the composition of materials are called chemical changes.	Изменения, влияющие на состав материалов, называются химическими изменениями.

Affecting - Participle I, определение.

Called - Participle II, составная часть видовременной формы Present Indefinite Passive от глагола to call.

2.When heated to the boiling point water evaporates.	Когда воду нагревают до точки кипения, она испаряется. (При нагревании до точки кипения вода испаряется).

(When) heated- Participle II, обстоятельство.

Вариант 1

I. Перепишите следующие предложения; подчеркните в каждом из них глагол-сказуемое и определите его видовременную форму и залог. Переведите предложения на русский язык. В разделе (б) обратите внимание на перевод пассивных конструкций.

а.)1. Radio astronomy has given mankind efficient means for penetration into space.
2. The liquid in the tube is boiling.

б.)1. Becquerel's discovery was followed by an intensive research work of Marie and Pierre Curie.
2. Heat energy is transmitted in two different ways.

II. Перепишите следующие предложения; подчеркните Participle I и Participle II и установите функции каждого из них, т.е. укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого. Переведите предложения на русский язык.

1. Nylon was the first synthetic fiber used in clothing.
2. The atoms forming our planet are built of negative electrons, positive protons and ordinary neutrons.
3. This kind of treatment when used makes the metals heat-resistant.
4. When passing through an electroscope, X-rays cause its discharge.

III. Перепишите следующие предложения, подчеркните в каждом из них модальный глагол или его эквивалент. Переведите предложения на русский язык.

1. Man-made satellites had to use solar cells as a source of power.
2. They could easily define the properties of this material.
3. The lecture is to begin at 6 o'clock.
4. Atoms should serve mankind.

IV. Прочитайте и устно переведите с 1-го по 3-й абзацы текста. Перепишите и письменно переведите 2-й и 3-й абзацы.

Пояснения к тексту:

1. Herman Helmholtz- Герман Гельмгольц.
2. celebrated- знаменитый, прославленный.
3. ophthalmoscope- офтальмоскоп.
4. color-blindness- дальтонизм, неспособность глаза различать некоторые цвета.
5. through- из-за, благодаря.
6. vortex motion- вихревое движение.
7. versatile- разносторонний, многосторонний.
8. ultimately- в конечном счёте, в конце концов.

Herman Helmholtz[1] (1821-1894)

1. Herman Helmholtz is celebrated[2] for his contributions to physiology and theoretical physics. A delicate child, Helmholtz early displayed a passion for understanding things, but otherwise developed slowly, and had no marked early talent for mathematics. Although he wished to study physics, he was persuaded by his father to take up the study of medicine, entering the Medical Institute at Berlin in 1838.
2. His researches into physiological optics began about 1850 with the discovery of the ophthalmoscope[3], followed by investigations into colour, including the problem of colour-blindness[4]. He also made fundamental contribution to the understanding of the structure and mechanism of human eye.
3. Helmholtz's first and most celebrated paper in theoretical physics was his article on the conservation of forse. In this paper he proved the conservation of total energy of a system of particles which were interacting through[5] central forces depending only on the masses and separations of the particles. Other important work in theoretical physics included famous paper on vortex motion[6] and the application of the principle of least action to electro dynamical problems.
4. Helmholtz was undoubtedly the most versatile[7] of nineteenth-century scientists. From 1871 onwards he was perhaps more famous as a theoretical physicist than as a physiologist. But it seems probable that apart from his work on the conservation of energy he will ultimately[8] be remembered more for his epoch-making researches in physiological optics and acoustics in which his talents as physiologist, physicist, mathematician and experimentalist of genius were most vividly displayed.

V. Прочитайте 1 абзац текста и письменно ответьте на вопросы.
1. What is Herman Helmholtz celebrated for?
2. What did he early display a passion for?
3. Did he have marked early talent for mathematics?
4. What did his father persuade him to study?
5. Where did he study?

Вариант 2

I. Перепишите следующие предложения, подчеркните в каждом из них глагол-сказуемое и определите его видовременную форму и залог. Переведите предложения на русский язык. В разделе (б) обратите внимание на перевод пассивных конструкций.

а).1. Today scientists are still looking for the substances as a source of energy.
2. The Mendeleyev system has served for almost 100 years as a key to discovering new elements.
б).1. The intensity of this process is influenced by many factors.

2. We were told about the pyramids of Egypt most of which were constructed about 6.000 years ago.

II. Перепишите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, т.е. укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого. Переведите предложения на русский язык.

1. While absorbing the energy of cosmic rays the upper atmosphere becomes radioactive.
2. Unless properly treated the metal must not be applied for space technology
3. A body moving with a certain velocity carries within itself the kinetic energy of motion.
4. Elements placed by Mendeleyev in the same vertical column have similar properties.

III. Перепишите следующие предложения, подчеркните в каждом из них модальный глагол или его эквиваленты. Переведите предложения на русский язык.

1. Energy can exist in many forms and each form can be transformed into the other.
2. The computers should become an integral part of the organization of industrial processes of all types.
3. These metal parts had to be subjected to x-ray examination.
4. There are several kinds of fishes, which are able to generate electricity strong enough to run an electric motor.

IV. Прочитайте и устно переведите с1 по 3-й абзацы текста. Перепишите и письменно переведите 2 и 3-й абзацы.

Пояснения к тексту.

1. honorary board – доска славы, почёта
2. in compiling this – собирая все факты и материалы
3. some sixty in all – всего около шестидесяти
4. verbally – устно.

D.I. Mendeleyev (1834-1907).

1. A Russian name appeared in 1964 on the honorary board[1] of science at Bridgeport University, USA: Mendeleyev was added to the list of the greatest geniuses – Euclid, Archimedes, Copernicus, Galiley, Newton and Lavoisier. D. I. Mendeleyev, the explorer of nature, is the greatest chemist of the world. The Mendeleyev system has served for almost 100 years as a key to discovering new elements and it has retained its key capacity until now.
2. D. I. Mendeleyev was the fourteenth, and last child of the director of the Gymnasium at Tobolsk. At 16 he was taken by his mother to St. Petersburg to seek higher education. He entered the Pedagogical Institute where his father has also studied. In 1856 he took a degree in chemistry and in 1859 he was sent for further training. He returned to St. Petersburg in 1861 as Professor of chemistry.
3. In 1868 Mendeleyev began to write a great text-book of chemistry, known in its English translation as the “Principles of chemistry”. In compiling this[2] he tried to find some system of classifying the elements – some sixty in all[3] then known – whose properties he was describing. This led him to formulate the Periodic Law, which earned him lasting international fame. He presented it verbally[4] to the Russian Chemical Society in October 1868 and published it in February1869.
4. In this paper he set out clearly his discovery that if the elements are arranged in order of their atomic weights, chemically related elements appear at regular intervals. The greatness of Mendeleyev’s achievement lies in the fact that he had discovered a

generalization that not only unified an enormous amount of existing information but pointed the way to further progress.

V. Прочитайте 1 и 4 абзацы текста и письменно ответьте на вопросы.
1. Whose name appeared on the honorary board of science at Bridgeport University, USA, in 1964?
2. What is D. I. Mendeleyev?
3. What purpose has the Mendeleyev system served for almost 100 years?
4. What did Mendeleyev discover?
5. What does the greatness of Mendeleyev's achievement lie in?

Вариант 3

I. Перепишите следующие предложения, подчеркните в каждом из них глагол-сказуемое и определите его видовременную форму и залог. Переведите предложения на русский язык. В разделе (б) обратите внимание на перевод пассивных конструкций.
а) 1. Scientists have found ways of measuring the sizes and positions of bodies in the Universe.
2. The laboratory assistant was writing down all the data during the experiment.
б) 1. The launching of Sputnik 1 was followed by many achievements in science and engineering.
2. Mendeleyev was appointed Rector when he was 35 years old.

II. Перепишите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, т.е. укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого. Переведите предложения на русский язык.
1. These reactions convert hydrogen into helium, giving off a great amount of light and heat.
2. Soils containing too much sand or clay are of less value in agriculture.
3. Plastics articles are often difficult to repair if broken.
4. The amount of heat generated depends on the quality of fuel used.

III. Перепишите следующие предложения, подчеркните в каждом из них модальный глагол или его эквиваленты. Переведите предложения на русский язык.
1. These new materials had to withstand much higher temperatures than metals.
2. Laser light can be used to transmit power of various types.
3. This equipment should be tested in various conditions.
4. The consequences of the pollution of the atmosphere by different products are to be carefully studied.

IV. Прочитайте и устно переведите с1 по 3-й абзацы текста. Перепишите и письменно переведите 2 и 3-й абзацы.

Пояснения к тексту:

1. Meitner - Майтнер
2. doctorate – докторская степень
3. then available – доступные в то время
4. illustrious – прославленный, известный
5. productive – плодотворный.

Lise Meitner[1]

1. In 1938, an Australian physicist named Lise Meitner announced the splitting of the atom in the laboratory. That announcement confirmed once again the beginning of the Atomic Age. At that time Lise Meitner was one of the few persons in the world who had a thorough understanding of atomic energy and the uses which could be made of this great power.
2. Lise Meitner, the daughter of a lawyer, was born in Vienna on the 17th of November 1878. She grew interested in science when she read of the Curies discovery of radium. The example of Marie Curie showed that a woman was able to achieve something in science. Lise Meitner became the first woman in the history of the University of Vienna who earned her doctorate[2] in physics.
3. In 1906 she went to the University of Berlin to continue her studies by attending the theoretical lectures of Max Planck and by doing experimental work. Then she began her research in the new field of radioactivity. She focused her attention on the behavior of beta radiation from radioactive elements, experimenting with the primitive methods then available[3] for measuring and analyzing radioactivity.
4. In 1938 she left Germany for Sweden. Lise Meitner declined to work on the development of the atom bomb remaining in Sweden throughout the war. She was concerned with the properties of new radioactive isotopes, produced by the cyclotron. Her career was illustrious[4] and productive[5] (she published more than 135 scientific papers), but throughout her life she remained a shy person, with a deep interest in music. Her devotion to science had been total. She never married. In 1960 she moved to Cambridge, England, where she died in 1968.

V. Прочитайте 1 и 4 абзацы текста и письменно ответьте на вопросы.

1. What was Lise Meitner?
2. What did she do in 1938?
3. Did she work on the development of atom bomb?
4. What was she concerned with?
5. What kind of person was she?

Вариант 4

I. Перепишите следующие предложения, подчеркните в каждом из них глагол-сказуемое и определите его видовременную форму и залог. Переведите предложения на русский язык. В разделе (б) обратите внимание на перевод пассивных конструкций.

а) 1. Quantum mechanics has greatly influenced the nuclear theory.
2. The workers were mounting the new machine-tools from 5 to 7 o'clock.
б) 1. Many compounds can be decomposed when they are acted upon by different forms of energy.
2. The engineers were asked to make an experimental model of the device.

II. Перепишите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, т.е. укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого. Переведите предложения на русский язык

1. Natural rubber is a thermoplastic material that becomes soft when heated and hard when cooled.
2. Matter composed of any chemical combination of elements is called a compound.
3. The smallest particle having all the characteristics of an element is called an atom.

4. While bombarding the upper layers of the atmosphere, cosmic rays reach the surface of the earth.

III. Перепишите следующие предложения, подчеркните в каждом из них модальный глагол или его эквиваленты. Переведите предложения на русский язык.

1. A great number of plastics should find their application in the electric industry.
2. Chemical means had to be used for the separation of compounds into their elements.
3. No man is able to do 500.000 sums in one second but a computer can.
4. Any atomic station can be built in any region where its power is to be used.

IV. Прочитайте и устно переведите с1 по 3-й абзацы текста. Перепишите и письменно переведите 2 и 3-й абзацы.

Пояснения к тексту:

1. Raman - Раман
2. pre-eminent – выдающийся, превосходящий других
3. the Civil Service – государственная служба
4. to appoint to a position – назначить на должность
5. to testify to – свидетельствовать о
6. to occupy the chair – возглавлять кафедру, заведовать кафедрой
7. brought – зд. привлёк
8. to emerge – зд. проявить себя.

Ch. Raman[1](1888-1970)

1. Raman was an Indian Physicist, pre-eminent[1] in molecular spectroscopy and acoustics. He created the Indian Academy of sciences in 1934 and was its president until his death in 1970. He was justly considered the father of Indian science and the Indian Government honored him with the first of its National Professorships. In 1957 he became an International Peace Prize Winner.
2. The son of a teacher and lecturer, Raman entered the College in Madras in 1903 and achieved the highest distinctions in the examinations for scientific degrees. As scientific research was at this time almost completely neglected in India, he then entered the CivilService[3] and was appointed to a position in the Finance Department in 1907. He retained this employment for ten years, mostly in Calcutta. When he was eighteen years old he published his first original optical research in the “Philosophical Magazine”. He continued scientific work in his spare time: some thirty papers testified to[5] his ability and energy and helped to make his name familiar to scientists in Europe and America.
3. In 1917 Raman was offered the professorship of physics at the Calcutta University. He occupied the chair[6] from1917 to 1933. Raman brought[7] to Calcutta many talented young Indians to undertake research into optical phenomena, acoustics and other branches of physics.
4. During the years in Calcutta Raman Emerged[8] as a truly international figure. In 1930 he was awarded the Nobel Prize in Physics (for his work on the discovery of the effect named after him). Raman was honored by universities and scientific institutions in Russia, Europe and America as well as in his own country.

V. Прочитайте 1 и 4 абзацы текста и письменно ответьте на вопросы.

1. What was Raman?
2. What did he create?
3. Was he considered the father of Indian science?
4. What was he awarded the Nobel Prize for?

5. What universities and institutions honored him?

Вариант 5

I. Перепишите следующие предложения, подчеркните в каждом из них глагол-сказуемое и определите его видовременную форму и залог. Переведите предложения на русский язык. В разделе (б) обратите внимание на перевод пассивных конструкций.

а) 1. Astronomers have measured the exact length of the day.
2. Astronomers find that the day is increasing by 0.002 seconds each century.
б) 1. As a rule one great discovery is generally followed by numerous others.
2. We were shown a new alloy, which will be used, in modern technology.

II. Перепишите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, т.е. укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого. Переведите предложения на русский

1. Matter consists of one or a number of basic elements occurring in nature.
2. One can use several modern devices while detecting and measuring radioactivity.
3. When heated to a certain temperature this alloy increases in volume.
4. This cloud chamber (камера Вильсона) is one of the devices used to detect the presence of radioactivity.

III. Перепишите следующие предложения, подчеркните в каждом из них модальный глагол или его эквиваленты. Переведите предложения на русский язык.

1. A computer can solve complicated problems many times faster than a mathematician.
2. A new type of plastics had to be obtained for space technology.
3. To measure the vast distances between different planets scientists have to use special instruments.
4. The nuclear-rocket engine should be thermally efficient.

IV. Прочитайте и устно переведите с1 по 3-й абзацы текста. Перепишите и письменно переведите 2 и 3-й абзацы.

Пояснения к тексту:

1. Powell - Пауэлл
2. particle physics – физика элементарных частиц
3. the Pugwush Conferences – Пагуошские конференции
4. were determined – были полны решимости
5. won a scholarship – получил (по конкурсу) стипендию
6. position – должность
7. sub-nuclear particle – субъядерная частица.

C.F. Powell[1] (1903-1969).

1. Powel was a prominent English scientist noted for his techniques and discoveries in particle physics[2]. He was also deeply concerned with problems relating to the social responsibility of scientists. Powell was a leader in the World Federation of Scientific Workers in the mid-1950's and was a founder of the Pugwish Conferences[3] on Science and World Affairs in 1957. As a public man and in his published articles Powell stressed the perils of destructive weapons and the need for international cooperation.
2. Powell was born in December 1903 in England. His parents were poor and they were determined[4] to give their children a good education to increase their opportunities

for a better life. In 1921 Powell won a scholarship[5] of one of the colleges at Cambridge which he graduated in 1925 with first-class honors in science. He started his scientific career at the Cavendish laboratory headed by Ernest Rutherford. After gaining his scientific degree at Cambridge in 1928 Powell accepted a position[6] at the Physics laboratory in the University of Bristol. Powell spent the rest of his career there advancing to professor in 1948 and director of the laboratory in 1964.

3. In 1947 Powell's Bristol group identified a new particle in the cosmic radiation. Powell and other two scientists discovered the π-meson and demonstrated that this sub-nuclear particle[7] was produced directly in nuclear reactions and rapidly decayed in flight, producing the μ-meson. The discovery solved a complicated scientific problem and helped open a new era of particle physics.

4. Powell continued to develop and apply the photographic method of Bristol. His laboratory became the source of new experimental discoveries in meson physics and an international training center for physicists of many countries. In 1950 he was awarded the Nobel Prize for his development of the photographic method and his meson discoveries.

V. Прочитайте 1 и 4 абзацы текста и письменно ответьте на вопросы.

1. What was Powel noted for?
2. What problems was he concerned with?
3. What did he stress in his published articles?
4. Whose laboratory became the source of new experimental discoveries?
5. What was Powel awarded the Noble Prize for?

Контрольное задание 3

Чтобы правильно выполнить задание 3, необходимо усвоить следующие разделы курса английского языка по рекомендованному учебнику:

1. Грамматические функции и значения слов that, one, it.
2. Пассивный залог (the Passive Voice) видовременных форм Indefinite, Continuous, Perfect.
3. Функции глаголов to be, to have, to do.
4. Простые неличные формы глагола.

Инфинитив в функции

а) подлежащего,
б) составной части сказуемого,
в) определения,
г) обстоятельства цели.

5. Бессоюзное подчинение в определительных и дополнительных придаточных предложениях.

Используйте образцы выполнения упражнений.

Образец выполнения 1 (к упр. I)

Present Perfect Passive

The main question has already been discussed.	Главный вопрос уже обсудили.

Present Indefinite Passive

His scientific work is much spoken about.	О его научной работе много говорят.

Образец выполнения 2 (к упр. II)

1. It is necessary to use the latest means of control in industry.	Необходимо использовать в промышленности новейшие средства контроля
2. One should agree that that experiment was of great importance for our research.	Следует согласиться, что тот эксперимент имел большое значение для нашего исследования.
3. It is hydrogen that will be the main source of energy in the car of the future.	Именно водород будет основным источником энергии в автомобиле будущего.

Образец выполнения 3 (к упр. IV)

1. What is the name of the book you are reading?	Как называется книга, которую ты читаешь?
2. The region you must explore possesses great natural wealth.	Район, который мы должны исследовать, обладает огромными природными ресурсами.

Вариант 1.

I. Перепишите следующие предложения, определите в каждом из них видовременную форму и залог глагола-сказуемого (см. образец). Переведите предложения на русский язык.

1. When much materials had been looked through and some problems had been solved, the article was published.
2. Electric cars will be widely used in future.
3. Today plastics are being applied for car bodies (корпус автомобиля).
4. This lecturer is listened to with great interest.

II. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на разные значения слов it, that, one.

1. It is proved that light needs time to travel any distance.
2. One must take part in scientific work.
3. Specialists consider that in future city transport will reject gasoline.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов to be, to have, to do.

1. Scientists had to create new materials for industry.
2. This material does not possess elastic properties.
3. This material has many valuable properties.
4. He was to get these data yesterday.

IV. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на бессоюзное подчинение.

1. We know electricity produces heat.
2. The new materials chemists developed were used in space technology.

V. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на функцию инфинитива.

1. They were to install the new equipment.

2. The metal to be used in the experiment is to be hard.
3. To reinforce the metal engineers use artificial fibers.
4. To operate this complex device is rather difficult.

VI. Прочитайте и переведите с 1 по 3-й абзацы текста. Перепишите и письменно переведите 2, 3 и 4-й абзацы.

Пояснения к тексту:

1. for the most part – большей частью
2. in this respect – в этом отношении
3. as to – что касается
4. by far – несомненно.

Better metals are vital to technological progress.

1. Since the earliest days the preparation of metals for mechanical use was vital to the advance of civilization. Gold, silver and copper were the first to be used by a primitive man, as they were found free in nature. Today we know more than sixty-five metals available in large enough quantities to be used in industry.
2. Metals are mostly solid at ordinary temperature and possess comparatively high melting points with the exception of mercury. They are for the most part[1] good conductors of heat and electricity, and silver is the best in this respect[2]. As to[3] their chemical properties the first point to be mentioned is that they vary widely in degree of chemical activity: some are enormously active and others are inert. The Earth contains a large number of metals useful to man. Of all metals to be utilized in industry iron remains by far[4] the most important. Modern industry needs considerable quantities of this metal either in the form of iron or steel.
3. To get the desirable characteristics in metals or to improve them the art to mix metals and other substances began to develop. The first alloys that were formed in this way were sometimes stronger, tougher, harder and more elastic than the metals of which they were composed. To estimate nowadays how many alloys there exist in the modern world is difficult because their numbers increase daily.
4. To serve special uses modern metals and alloys must be lighter yet stronger, more corrosion-resistant, more suitable for automated fabrication yet less expensive than those available before.
5. Today transformation, communication, construction, farming and manufacturing all depend on the availability of suitable metals and alloys.

VII. Прочитайте 1 и 2-й абзацы текста и ответьте на вопросы письменно.
1. What was vital to the advance of civilization?
2. What metals were the first to be used by a man?
3. Why were they used first?
4. How many metals are available in large quantities today?
5. What do transportation, communication, construction and manufacturing depend on?

Вариант 2

I. Перепишите следующие предложения, определите в каждом из них видовременную форму и залог глагола-сказуемого (см. образец). Переведите предложения на русский язык.
1. When much had been done in the study of ecology by our institute it became an important scientific center.
2. This material is unaffected by solar radiation.
3. During the experiment the air in the laboratory was being purified by two ventilators.
4. Great deposits of coal have been discovered in our region.

II. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на разные значения слов it, that, one.
1. It is necessary to find new sources of cheap energy.
2. It was Einstein who came to the conclusion that the electromagnetic field is influenced by the gravitational field.
3. This metro station was opened last year and that one will be put into operation in two years.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов to be, to have, to do.
1. Man had to learn to obtain electric power directly from the Sun.
2. At present most of the industrial enterprises have their own electric power stations.
3. Specialists do not use solar cells in industry as they are too expensive.
4. The engineers are to study the problem of using cosmic rays.

IV. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на бессоюзное подчинение.
1. The methods we have just described are very effective.
2. The instruments our plant produces help to automate production processes.

V. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на функцию инфинитива.
1. We hope to get new data in a week or two.
2. A number of devices were developed to detect cosmic rays.
3. He spoke about the fuels to be utilized in space research.
4. To operate new flexible line became possible thanks to computers.

VI. Прочитайте и переведите с 1 по 3-й абзацы текста. Перепишите и письменно переведите 2 и 3-й абзацы.

Пояснения к тексту:
1. magneto – heat engine – магнитно-тепловой двигатель
2. inexhaustible – неисчерпаемый, неистощимый.

Sun-driven engine

1. It is common knowledge that certain metals and their alloys are attracted by a magnet. After heating, this property vanishes; it is restored after cooling down. A new magneto-heat engine[1] works on this principle. This invention relates to devices which transform thermal power, for instance, the power of the sun rays, into a mechanical power of rotation.
2. We know solar power is inexhaustible[2] and its use does not harm the environment. That's why such importance is attached to devices which make it possible to apply the idea of direct use of solar power, transforming it into mechanical forms of power. The development of an engine directly driven by a heat source such as solar power, makes it possible to simplify and make power generation considerably cheaper, in comparison to the existing thermal engines we use today.
3. The rotor of the new engine is made of an alloy that loses its magnetic properties at 100^{o}C. If the rotor is heated on one side, the cold side of the rotor will turn toward the magnet. Since heating continues, the rotor goes on rotating too. Thus solar power can be used as a source of heat in this case. The magneto-heat engine can drive pumps in waterless districts, it can also be widely used for watering greenery in cities and settlements.

4. By using thermo-magnetic alloys it is possible to develop a lot of automatic devices, for example, solar clocks, thermometers, etc. Mention should be made that these devices can withstand extreme temperatures. To organize the production of the necessary alloys is simple as there is no need for rare materials or complex technology.

VII. Прочитайте 1 и 2-й абзацы текста и ответьте на вопросы письменно.
1. What property do many metals and their alloys possess?
2. Where are magneto- heat engines used?
3. Where are thermo-magnetic alloys used?
4. What temperatures can these devices withstand?
5. Is it simple or difficult to produce such alloys?

Вариант 3

I. Перепишите следующие предложения, определите в каждом из них видовременную форму и залог глагола-сказуемого (см. образец). Переведите предложения на русский язык.
1. The radar has been used for the automatic control of ground transport.
2. Today plastics are being widely used instead of metals.
3. The construction of the dam has been completed this month.
4. The alloys were experimented upon in our lab.

II. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на разные значения слов it, that, one.
1. It is the number of electrons within the atom that determines the properties of a substance.
2. The territory of Moscow is larger than that of London.
3. In London one must get used to the left-side traffic.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов to be, to have, to do.
1. Some substances do not conduct heat
2. These computers will have to perform millions of operations per second.
3. He was asked to make a report.
4. You are to present the results of your research in a week.

IV. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на бессоюзное подчинение.
1. I think he has made a mistake in his calculations.
2. The heat a body contains is the kinetic energy of its molecules.

V. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на функцию инфинитива.
1. They promised to supply us with the necessary equipment.
2. The experiment to be carried out is of great importance for our research.
3. To convert chemical energy into electrical energy we must use an electrical cell.
4. The task of the computer is to operate flexible line properly.

VI. Прочитайте и переведите с 1 по 4-й абзацы текста. Перепишите и письменно переведите 1 и 2-й абзацы.

Пояснения к тексту:
1. self-taught engineer – инженер самоучка
2. crossing – переправа

3. a span – пролёт, to span – перекрывать

On bridge building

1. The history of Russian bridge building is closely connected with the name of Kulibin, one of the most talented self-taught engineers[1]. From his early childhood Kulibin showed a keen interest in all kinds of mechanical devices. To acquire skill and knowledge became the boy's greatest desire. But books were difficult to obtain in the provincial town where he lived and there was no one to instruct him in mechanics. The difficulties which he had to overcome seemed irresistible. But in spite of all that he succeeded in going to Petersburg where he was appointed mechanic to the Academy of sciences and since then spent all his free time and all his money on new inventions.
2. In Petersburg Kulibin undertook a very difficult engineering problem – to design a bridge across the Neva as there was not a single permanent bridge in this city to provide a crossing[2] at any season of the year. Kulibin was the first to think of spanning[3] the river with an arched bridge. According to his plan the bridge was to have a single span to leave a free water way for ships and barges. It was a daring idea: arched bridges of similar construction had been built before but no engineer dared even to think of constructing a bridge with a three hundred metre span.
3. After the model was completed it had to be submitted to a special commission set up by the Academy of Sciences and invaded by foreign scientists and specialists at the time of Catherine II. They considered themselves to be much superior to Russian people whose intellect and talent they utterly ignored.
4. In spite of general disbelief the testing of the model was a success. No failure resulted even when a weight much greater than the maximum load was applied to the bridge. In spite of the favourable conclusion no practical result followed.

VII. Прочитайте 3 и 4-й абзацы текста и ответьте на вопросы письменно.
1. What commission did the model have to be submitted?
2. What specialists invaded the Academy of sciences at the time of Catherine II?
3. Did they consider themselves much superior to Russian people?
4. Was the testing of the model a success?
5. Did practical result follow?

Вариант 4

I. Перепишите следующие предложения, определите в каждом из них видовременную форму и залог глагола-сказуемого (см. образец). Переведите предложения на русский язык.
1. The automatic equipment is being installed in our shop.
2. Radioactive isotopes have been made in nuclear reactor.
3. The construction of this house will be completed in a month.
4. The engineer was asked about the new technology used at the plant.

II. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на разные значения слов it, that, one.
1. The success in chemistry made it possible to obtain a lot of new materials.
2. One must apply the materials that can be machined easily.
3. It is the energy of falling water that is used to drive turbines.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов to be, to have, to do.
1. The operators dealing with radioisotopes must have protective suits.
2. The engineers are to study the problem of using solar energy.

3. We had to use a computer to make these calculations.
4. One never knows what he can do.

IV. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на бессоюзное подчинение.
1. I think the drawing will be ready by tomorrow.
2. The phenomenon Roentgen discovered is widely used in medicine.

V. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на функцию инфинитива.
1. To design new buildings is the work of an architect.
2. To measure volumes we must know the dimensions of a body.
3. The purpose of this book is to describe certain properties of metals.
4. She is leaving for the conference to be held in Moscow.

VI. Прочитайте и переведите с 1 по 4-й абзацы текста. Перепишите и письменно переведите 1 и 3-й абзацы.

Пояснения к тексту:
1. to propel – приводить в движение
2. self-propelled – самоходный, самодвижущийся
3. engine – машина, двигатель.

The early days of the automobile

1. One of the earliest attempts to propel[1] a vehicle by mechanical power was suggested by Isaac Newton. But the first self-propelled[2] vehicle was constructed by the French military engineer Cugnot in 1763. He built a steam-driven engine[3] which had three wheels, carried two passengers and ran at maximum speed of four miles. The carriage was a great achievement but it was far from perfect and extremely inefficient. The supply of steam lasted only 15 minutes and the carriage had to stop 100 yards to make more steam.
2. From 1800 to 1900 was a period of the application of gasoline engines to motor cars in many countries. The first to perfect gasoline engine was N. Otto who introduced the four-stroke cycle of operation. The cars of that time were very small, two-seated cars with no roof, driven by an engine placed under the seat. Motorists had to carry large cans of fuel and separate spare tyres, for there were no repair or filling stations to serve them.
3. After World War I it became possible to achieve greater reliability of motor cars, brakes became more efficient. Multi-cylinder engines came into use, most commonly used are four-cylinder engines.
4. Like most other great human achievements, the motor car is not the product of any single inventor. Gradually the development of vehicles driven by internal combustion engine-cars, as they had come to be known, caused huge capital flow into the automobile industry. From 1908 to 1924 the number of cars in the world rise from 200 thousand to 20 million; by 1960it had reached 60 million! No other industry had ever developed at such a rate.

VII. Прочитайте 3 и 4-й абзацы текста и ответьте на вопросы письменно.
1. Was the motor car the product of any single inventor?
2. What vehicles were developed gradually?
3. What did the development of these vehicles cause?
4. How many cars were manufactured in 1960?
5. Had other industry ever developed at such a rate?

Вариант 5

I. Перепишите следующие предложения, определите в каждом из них видовременную форму и залог глагола-сказуемого (см. образец). Переведите предложения на русский язык.

1. The sputniks are used for the research of magnetic fields and cosmic rays.
2. The properties of materials are affected by solar radiation.
3. Numerous questions were being discussed by the commission.
4. The experiment has been carried out successfully, and the results will soon be published.

II. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на разные значения слов it, that, one.

1. The peoples know that their joint efforts can secure peace in the whole world.
2. We had to find new methods of investigation because the old ones were unsatisfactory.
3. One may work in this laboratory only observing certain rules.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов to be, to have, to do.

1. We had to change the design of this machine.
2. The speed of electrons is almost the same as that of light.
3. We have introduced a new system of work.
4. He does morning exercises every day.

IV. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на бессоюзное подчинение.

1. We know radio and radar systems play a very important role at any airport.
2. The substance they had to work with had an unpleasant odour.

V. Перепишите следующие предложения и переведите их на русский язык, обращая внимание на функцию инфинитива.

1. The main purpose of the computers is to solve complex problems quickly.
2. To extend the main street they had to destroy some old buildings.
3. The new channel to be constructed here will be the longest in the country.
4. To operate the complex device was rather difficult.

VI. Прочитайте и переведите с 1 по 3-й абзацы текста. Перепишите и письменно переведите 1 и 2-й абзацы.

Пояснения к тексту:

1. ultrasonics - ультразвук
2. a transducer – датчик
3. quartz – кварц
4. to come across – натолкнуться, встретить
5. proves to be – оказывается

Ultrasonics[1]

1. The source of the ultrasonic sound is called a transducer[2]. One of the transducers is a quartz[3] crystal. This is a solid body whose property is to change its dimensions under the influence of electricity. A quartz crystal is pressed against the surface of the metal to be tested. An electric current of ultrasonic frequency is applied to the crystal to make it vibrate with the same frequency. From the crystal a short burst of sound travels into the

specimen. If it comes across[4] an air bubble, a crack or some other defects it is reflected from that region, thus locating the defect. If the specimen has no defects the signal is not reflected back until it reaches the opposite surface of the specimen.

2. Ultrasonic method is applied to study the ocean bottom, to locate shoals of fish or to detect some danger of navigation. However the early wish to detect icebergs by ultrasonic equipment failed to be realized. The reason for the failure is to be explained by the following acoustic fundamentals – water and ice have nearly the same density and sound travels at nearly the same speed through both. Thus a sound wave passes freely from one medium into the other with only a small amount of reflection.

3. Ultrasonic waves are used in various industries. Ultrasonic cleaning proves to be[5] especially successful in treating metal parts of irregular shape. The cracks which are inaccessible to cleaning by all the usual methods come out clean when treated by ultrasonics. To clean by ultrasonics seems to be very simple. But a physicist knows that in attempting to explain this simple process of ultrasonic cleaning he has to go into the fundamentals of acoustics and thermodynamics.

VII. Прочитайте 3 абзац текста и ответьте на вопросы письменно.

1. Where are ultrasonic waves used?
2. What metal parts are successfully cleaned by ultrasonics?
3. How can cracks in metals be cleaned?
4. Does cleaning by ultrasonic seem to be very simple or very complex?
5. What does a physicist know?

Контрольное задание №4

Чтобы правильно выполнить задание 4, необходимо усвоить следующие разделы курса английского языка по рекомендованному учебнику:

1. Сложные формы инфинитива (Passive Infinitive, Perfect Infinitive). Обороты, равнозначные придаточным предложениям: объектный инфинитивный оборот, субъектный инфинитивный оборот.
2. Причастия (Participle I, II). Независимый (самостоятельный) причастный оборот.
3. Условные предложения.

Используйте образцы выполнения упражнений.

Образец выполнения 1 (к упр.1)

1. A laser beam is known to be widely used in medicine.	Известно, что лазерный луч широко используется в медицине.
2. Specialists believe synthetic fibres to be widely used in different industries.	Специалисты полагают, что синтетические волокна будут широко использоваться в различных отраслях промышленности.
3. The device to be bought must be checked beforehand.	Прибор, который нужно купить, следует предварительно проверить

Образец выполнения 2 (к упр.2)

1. Countries wishing to cooperate with us will always find the necessary understanding.	Страны, желающие сотрудничать с нами, всегда найдут должное понимание.
2. New technological processes having been developed, new types	Когда были разработаны новые технологические процессы, в цех

of equipment have been installed in the shop.	было установлено новое технологическое оборудование.
3. Having read the book I returned it to the library.	Прочитав книгу, я возвратил ее в библиотеку.

Образец выполнения 3 (к упр.3)

1. If the installation is put into operation in time, the economic effect will be greater.	Если установка будет пущена вовремя, экономический эффект возрастет.
2. If the system had been perfected we should have applied it for new calculations.	Если бы система была усовершенствована, мы бы применили ее для новых расчетов.
3. It would be impossible to build spaceships without using new materials and alloys.	Было бы невозможно построить космические корабли без применения новых материалов и сплавов.

Вариант 1.

I. Перепишите и письменно переведите на русский язык следующие предложения. Помните, что объектный и субъектный инфинитивные обороты соответствуют придаточным предложениям (см. образец выполнения 1).

1. Light and radio waves are said to be of similar nature.
2. We know this young man to work in the field of quantum generators.
3. The metal to be poured into a mold for casting may contract or expand on solidifying.

II. Перепишите и письменно переведите на русский язык следующие предложения. Обратите внимание на перевод зависимого и независимого (самостоятельного) причастных оборотов (см. образец выполнения 2).

1. Having done a number of calculations our astronomers have shown that the basic mass of the galaxies is concentrated outside their visible part.
2. The weather permitting, we shall go to the country.
3. The narrow intense beam being produced by the laser travels great distance without spreading.

III. Перепишите и письменно переведите на русский язык следующие сложные предложения. Обратите внимание на перевод условных предложений (см. образец выполнения 3).

1. If biological experiments are continued, the problem of developing the technology for growing plants in space conditions will be solved.
2. The design would have been ready by the end of the year if they had supplied us with all the necessary equipment.
3. It would be impossible to protect metal from corrosion without the films.

IV. Прочитайте и устно переведите с 1-ого по 5-й абзацы текста. Перепишите и письменно переведите 1, 2, 3, 4-й абзацы текста.

Пояснения к тексту.

1. many times- во много раз
2. to combat against- бороться против
3. Russian-made inhibitors- ингибиторы, изготовленные в России

Corrosion

1. During a year almost 200 million tons of metal objects are considered to be destroyed by corrosion. Considering that about 600 million tons of metal a year are produced in the world, it is easy to understand the losses of objects without which our life could not be imagined.
2. The situation is very serious, because not only metal is destroyed but also a great amount of articles, instruments and tools whose cost exceeds many times the cost of the metal used for their manufacture.
3. Combating against the corrosion of metals has now become a key problem in all industrialized countries.

The scientific and technical achievements in the field of raising the corrosion resistance of construction materials are the basis of technical progress in different branches of industry, an indicator of the country's economic potential.

4. A large amount of "anti-corrosion" work is being carried out in Russia. The results are evident: Russian-made inhibitors, varnishes, paint covers are being well known throughout the world. Gas pipelines, metal structures, the bodies of atomic reactors and ships, etc. have been reliably protected against corrosion.
5. Russia also exports special equipment and some kind of technology designed to weaken corrosion. Anti-corrosion varnishes, paints, insulating materials and equipment are sold abroad.

V. Прочитайте 5-й абзац текста и ответьте письменно на следующий вопрос: What materials weakening corrosion does Russia sell?

Вариант 2.

I. Перепишите и письменно переведите на русский язык следующие предложения. Помните, что объектный и субъектный инфинитивные обороты соответствуют придаточным предложениям (см. образец выполнения 1).

1. Samples of semiconductors with improved properties are reported to be obtained on a new installation.
2. Scientists found beta-rays to consist of negative particles.
3. A problem to be solved by digital computer must be expressed in mathematical terms.

II. Перепишите и письменно переведите на русский язык следующие предложения. Обратите внимание на перевод зависимого и независимого (самостоятельного) причастных оборотов (см. образец выполнения 2).

1. Having used a laser beam scientist obtained accurate calculations of Jupiter's temperature.
2. The beam travelled 800,000 km in space, its velocity approaching that of light.
3. Being used in measuring the diffusion of metals isotopes gave much more accurate data.

III. Перепишите и письменно переведите на русский язык следующие сложные предложения. Обратите внимание на перевод условных предложений (см. образец выполнения 3).

1. If the metal had been heated slowly, the first changes in its appearance would have occurred at a temperature of 1,000□ K.
2. If liquids expand upon freezing, an increase of pressure lowers its freezing point.
3. It would be impossible to determine the properties of these materials without intensive studies in our research laboratory.

IV. Прочитайте и устно переведите с 1-ого по 5-й абзацы текста. Перепишите и письменно переведите 1, 2, 3, 4-й абзацы текста.

Пояснения к тексту.

1. the laser- лазер
2. partial mirror- полупрозрачное стекло
3. power supply- источник питания

The laser today and tomorrow

1. The laser has become a multipurpose tool. It has caused a real revolution in technology.

Atoms emit rays of different length, which prevents the forming of an intense beam of light. The laser forces its atoms to emit rays having the same length and travelling in the same direction. The result is a narrow, extremely intense beam of light that spreads out very little and is therefore able to travel very great distances.

2. The most common laser is the helium-neon laser in the laser tube, containing 10 per cent helium gas and 90 per cent neon gas. At the end of the tube there is a mirror, and at the other end there is a partial mirror. The electrons get energy from a power supply and become “excited”, giving off energy as light. This light is reflected by the mirror at one end of the tube. It can only escape through the partial mirror at the other end of the tube.

3. The first laser was built in 1960. Since then scientists have developed several types of the laser which make use of luminescent crystals, luminescent glass, a mixture of various gases and finally semiconductors.

4. Having been developed at The Institute of Physics in 1962, semiconductor quantum generators occupy a special place among the optical generators. While the size of the ruby crystal laser comes to tens of centimeters and that of the gas generator is about a meter long, the semiconductor laser is a few tens of a millimeter long, the density of its radiation being hundreds of thousands of times greater than that of the best ruby laser.

5. But the most interesting thing about semiconductor laser is that it is able to transform electrical energy directly into light wave energy. The semiconductor laser opens up new possibilities of producing extremely economical sources of light.

V. Прочитайте 5-й абзац текста и ответьте письменно на следующий вопрос:
What possibilities does the semiconductor laser open?

Вариант 3.

I. Перепишите и письменно переведите на русский язык следующие предложения. Помните, что объектный и субъектный инфинитивные обороты соответствуют придаточным предложениям (см. образец выполнения 1).

1. The Sun and stars are proved to be able to produce great quantities of energy by means of certain nuclear reactions.
2. For the experiment we need several electrical devices to be connected in series.
3. Lasers are known to have found wide application in medicine.

II. Перепишите и письменно переведите на русский язык следующие предложения. Обратите внимание на перевод зависимого и независимого (самостоятельного) причастных оборотов (см. образец выполнения 2).

1. Measurements of solar radiation reaching the Earth each day make it possible to calculate the surface temperature of the Sun.
2. Having built a new automobile plant, we increased the output of cars and buses.
3. Knowledge being the most valuable wealth of our times, the information theory became of great importance for the national economy.

III. Перепишите и письменно переведите на русский язык следующие сложные предложения. Обратите внимание на перевод условных предложений (см. образец выполнения 3).

1. If the gathered data had been presented in time, the results of the experiments would have been different.
2. If you had answered six questions in the competition, you would have won the first prize.
3. It would be impossible to carry on a careful study of the process without the new device.

IV. Прочитайте и устно переведите с 1-ого по 5-й абзацы текста. Перепишите и письменно переведите 1, 2, 3, 4-й абзацы текста.

Пояснения к тексту.

1. digital - цифровой
2. to result in – заканчиваться, приводить к чему-либо
3. prospects – перспективы

Computers

1. The first machine for mathematical computation was built in 1822 by the mathematician Charles Babbage. From the description of this machine we know him to understand clearly all the fundamental principles of modern digital computers. Babbage was born in England in 1792. He taught himself mathematics so well that when he went to Cambridge he found that he knew algebra better than his teacher. Babbage constructed a model of a computer and devoted the rest of his life to developing an universal computing machine. But he was not understood by his contemporaries.
2. Two generations of engineers worked hard to construct a modern computer. Their attempts resulted in the development of computing machines which transformed the whole course of scientific achievements. If you looked at the machines which people had used up to 1946, you would notice that they were not so perfect as the ones available today.
3. Having invented computers engineers began to use them in industrial automatic processes. They are known to carry out several thousand arithmetic operation in one second. If there had been no computers space flights and many other achievements of modern science and technology would have been impossible.
4. We often hear that the increasing flood of information will be one of the problems of the 21-st century. The computers may help to solve it too.
5. As the electronic computer has opened great prospects for further development of science and technology, it may be spoken of as one of the most important inventions of our time.

V. Прочитайте 5-й абзац текста и ответьте письменно на следующий вопрос:
Why may a computer be spoken of as one of the most important inventions of our time?

Вариант 4

I. Перепишите и письменно переведите на русский язык следующие предложения. Помните, что объектный и субъектный инфинитивные обороты соответствуют придаточным предложениям (см. образец выполнения 1).

1. We know the wave theory of light to be first proposed by the English physicist Robert Hooke in 1665.

2. The crew is reported to have carried out a great deal of scientific experiments.
3. A problem to be solved by a digital computer must be expressed in mathematical terms.

II. Перепишите и письменно переведите на русский язык следующие предложения. Обратите внимание на перевод зависимого и независимого (самостоятельного) причастных оборотов (см. образец выполнения 2).
1. About 100 years ago, a French scientist Pierre Curie subjecting certain crystalline materials to pressure, observed that they produced an electric charge.
2. Having been subjected to high pressure metals become highly conductive.
3. The average height of the Ural mountains is 800 meters, the highest point being 1.500meters above sea level.

III. Перепишите и письменно переведите на русский язык следующие предложения. Обратите внимание на то, как переводятся условные предложения (см. образец выполнения 3).
1. If the service life of the instrument had been prolonged, the economic effect would have been increased many times.
2. Were the temperature increased, the velocity of the molecular motion would also be increased.
3. It would be impossible to ensure the full supply of energy without atomic power stations.

IV. Прочитайте и устно переведите с1-го по 5-й абзацы текста. Перепишите и письменно переведите 1, 2, 3 и 4-й абзацы.

Пояснения к тексту

1. tiny fraction of time – очень короткий период времени
2. data processing system – система обработки информации
3. digital – цифровой.

Today's astonishing computers.

1. Not long ago computers were not very reliable and comparatively slow in operation. Since then, several generations of complex electronic computing equipment have been developed, each being significantly better than the one before it. Almost every day a new use is found for these astonishing devices to help men.
2. We know a computer to be a complex electronic device that can store and process vast quantities of information. Following instructions, computing equipment will perform calculations such as addition, subtraction, multiplication and division and provide the answers to a large variety of problems in a tiny fraction of time[1]. A computer is known to be the "heart" of an electronic data processing system[2], other parts of equipment being auxiliary.
3. There are two types of computing equipment – digital[3] and analogue. They work differently and yield different results. The digital computer is performing a much broader range of functions than the analogue.
4. The analogue computer produces analogues or parallels of the process to be described or the problem to be solved. Both digital and analogue computers must be programmed. This means they must be set up in such a way that they can produce a result from the information fed into them and the information itself must be organized so that it can be handled by the machines. These devices working by electronic impulses perform at fantastic speed and with great precision.
5. Nowadays computer makers are working at the problem of introducing small computers into our life.

V. Прочитайте 5-й абзац текста и ответьте письменно на следующий вопрос: What problem are computer makers working at nowadays?

Вариант 5.

I. Перепишите и письменно переведите на русский язык следующие предложения. Помните, что объектный и субъектный инфинитивные обороты соответствуют придаточным предложениям (см. образец выполнения 1).

1. We know neutrino to have a rest mass (масса покоя) of about 30 electron-volts.
2. Conduction is known to be a process by which heat is transmitted through a substance by molecular activity.
3. All the changes of temperature and changes of state to be discussed are shown by a graph in figure (рисунок) 2.

II. Перепишите и письменно переведите на русский язык следующие предложения. Обратите внимание на перевод зависимого и независимого (самостоятельного) причастных оборотов (см. образец выполнения 2).

1. Working with machines, sharp tools, motors one must be careful.
2. The stream of electrons moving along the conductor is called electric current.
3. Powerful nuclear ice-breakers being built in our country, we began a new chapter in the history of Arctic exploration.

III. Перепишите и письменно переведите на русский язык следующие предложения. Обратите внимание на то, как переводятся условные предложения (см. образец выполнения 3).

1. If you had translated the article, you could have used valuable data in your work.
2. If the quality of the equipment were higher, the results of the experiment would be more accurate.
3. It would be impossible to explain chemical phenomena without using the laws of physics.

IV. Прочитайте и устно переведите с1-го по 5-й абзацы текста. Перепишите и письменно переведите 1, 2, 3 и 4-й абзацы.

Пояснения к тексту

1. to account for - объяснять
2. to put an end – положить конец
3. as early as – ещё.

The moon

1. The moon is the only astronomical body whose distance from the Earth can be measured in thousands of kilometers. Long before the dawn of written history the Moon was paid much attention to by man who was interested and attracted by the presence in the sky of a planet that was so clearly seen from the Earth.
2. In the middle ages the moon was supposed to have a smooth crystalline surface like a mirror and that the dark spots on the Moon were accounted for[1] by the fact that the Earth was reflected on its surface. However, with the help of the first little telescope that was turned by Galileo upon the Moon this conception was put an end[2] to as early as[3] 1609. Galileo thought that he saw mountains and valleys, seas and continents on the Moon.
3. The view of the Moon has been obtained with the help of a series of automatic lunar stations named “Luna”.

4. Having been transmitted by these stations, the photos and panoramas have shown that the surface of the Moon is uneven and rugged, with many hills and cavities like volcanic craters, a few of them measuring some kilometers in diameter. A great number of stones lying on the Moon's surface proved the lunar ground to be firm enough and it would not sink if it were stepped on, walked across or put some heavy weight upon. Man's knowledge of the Moon is rapidly progressing, new data being constantly reported.
5. The mutual attraction of the Moon and the Earth for one another is accounted for by the force of gravitation. American astronauts landed on the Moon and brought specimens of Moon rock and a series of photographs for further study.

V. Прочитайте 5-й абзац текста и ответьте письменно на следующий вопрос:
What is the mutual attraction of the Moon and the Earth accounted for?

Контрольное задание № 5.

Чтобы правильно выполнить задание 5, необходимо повторить следующие разделы курса английского языка по рекомендованному учебнику:
1. Грамматические функции глаголов should, would.
2. Обороты с инфинитивом и причастием, равнозначные придаточным предложениям.
3. Различные значения слов: as, because, because of, due to, for, since, both … and, either … or,
neither … nor.

Образец выполнения (к упр. III).

As

1. As there were many new words in the text I used a dictionary.	Так как в тексте было много новых слов, я пользовался словарём.
2. Electricity is a source of light as well as of heat.	Электричество – это источник света, а также тепла.
3. As to (as for) the computer it can handle enormous quantity of data per second.	Что касается компьютера, то он может в секунду обработать огромное число данных.
4. I have done the work as it was required.	Я сделал работу, как это требовалось.

Because, because of

1. We use these films because they possess superior properties.	Мы используем эти плёнки, так как они обладают превосходными свойствами
2.The engineers prefer electronic devices because of their reliability.	Инженеры предпочитают электронные приборы вследствие их надёжности.

Due to

1. Plastics are in wide use due to their light weight.	Пластики находят широкое применение благодаря их лёгкому весу.

For

1. For a long time wood was being applied for housing construction.	В течение долгого времени дерево использовалось для строительства домов.
2. We could not translate this text for it contained unknown terms.	Мы не смогли перевести этот, так как он содержал неизвестные термины.

Since

1. Man used wood for construction since ancient times.	С древних времён человек использовал древесину для строительства.
2. Since the experiment was finished the students left the lab.	Так как эксперимент был закончен, студенты ушли из лаборатории.

Both … and

1. Electronics helps us to study both the atomic nucleus and elementary particles.	Электроника помогает нам изучить как атомное ядро, так и элементарные частицы.

Either … or

1. Motors run on either direct or alternating current.	Моторы работают или на постоянном или переменном токе.

Neither … nor

1. There is neither oil nor coal in this region.	В этом районе нет ни нефти, ни угля.

Вариант 1.

I. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов should и would.

1. The engineer should know both the advantages and the disadvantages of the materials used.

2. Without mathematics there would be no science, no electronic computers, no conquest of space.

3. If we placed this material in vacuum, its mechanical properties would be changed.

II. Перепишите предложения и переведите их на русский язык, принимая во внимание, что инфинитивные и причастные обороты соответствуют придаточным предложениям.

1. The method used depends on the length to be measured.

2. Silicon is known to be the basic material for electric industry.

3. Any element is characterized by a certain number of protons in the nucleus, this number being the same as the number of electrons in the atom.

4. Unless treated this material must not be used in space technology.

5. We believe Pythagoras to have been the founder of a school to train students in mathematical thinking.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения выделенных слов.

1. Radar is used in airplane and ship navigation as well as in other fields of science and engineering.

2. The transformer is a device used for raising or lowering voltage.

3. The new plastics will be used as insulators both in electrical and electronic circuits.

IV. Прочитайте и устно переведите на русский язык с 1-го по 5-й абзацы текста. Перепишите и письменно переведите 2,4 и 5 абзацы.

Пояснения к тексту:

1. vacuum tube – электронная лампа

2. operating current – рабочий ток

3. transistorized circuitry – цепь, собранная на транзисторах
4. tunnel diode – туннельный диод
5. ring radio set – радиоприёмник, встроенный в кольцо.

Electronics.

1. To separate electronics from the concepts of electricity is extremely difficult. The field of electricity is generally concerned with magnetism, light, heating and the production of electricity by generators and chemical action.
2. Electronics usually deals with the application of electricity in communications, in radio, television and other devices where vacuum tubes[1] and transistors are employed. We know the vacuum tube and the transistor to be major components of various electronic devices.
3. The many disadvantages of vacuum tubes include high cost, bulky construction, high amount of operating current[2], limited life and high operating temperature. However the vacuum tube is ideal in many situations where electrical energy is readily available and where heat is no problem.
4. A more recent invention – the transistor is known to have replaced the vacuum tube in many situations. The transistor operates on a minimum amount of electrical energy, emits very little heat and has a long life. The transistor is tiny compared to the size of the vacuum tube of equivalent energy output. This feature has permitted an electronic circuit to be so small that the electronic technician uses magnifying lenses to aid him in his circuit construction and repair.
5. Later research has revealed a device which has revolutionized the field of transistor, Lew Esaki, discovered a simple semiconductor class of crystal that is even more amazing than the transistor. The tunnel diode[4], as it is called, operates on a negligible amount of electric current, its diameter being some few thousandths of an inch. With such a transistor man will be able to see telephones to be worn on wrists, pocket-size TV sets and ring radio sets[5].
6. Several recent developments in the field of electronics have led to better ways to communicate efficiently over long distances. The maser and the laser permit man to beam extremely coherent and concentrated energy with almost no loss of intensity. Lasers and masers are known to have been used for transmitting power, radio waves and other waves used in communication.

V. Прочитайте 6-ой абзац текста и письменно ответьте на следующий вопрос: Where will lasers and masers be used?

Вариант 2.

I. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов should и would.
1. Mention should be made that during the war the radar was being used for detecting airplanes.
2. Any explanation of how the sun generates heat by fission would have been impossible 60 years ago.
3. If we had used solar energy on a wide scale we should have found a solution to our energy problems.

II. Перепишите предложения и переведите их на русский язык, принимая во внимание, что инфинитивные и причастные обороты соответствуют придаточным предложениям.
1. The atoms are usually combined chemically into groups called molecules, these molecules being in constant motion.

2. In order to calculate the volume of any object you must measure its height, width and depth.
3. The rays passing through the object being examined produce an image on X-ray film.
4. The engineers are interested in plastics because they offer a rare combination of properties found in no other materials.
5. Electrical forces seem to play a very important part in holding crystals together.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения выделенных слов.
1. As to this device it is capable to convert sunlight to another form of energy.
2. Neither plastics nor metals have all the desirable properties that the engineer looks for.
3. The structure of the atom is similar to a planetary system since electrons orbit around a central nucleus.

IV. Прочитайте и устно переведите на русский язык с 1-го по 5-й абзацы текста. Перепишите и письменно переведите 2,3 и 4-й абзацы.

Пояснения к тексту:

1. Crookes tube – трубка Крукса
2. an X-ray film – рентгеновская плёнка
3. forgery - подделка
4. strain – биологический штамм

X-Rays.

1. The modern atomic age which we live in began because of an accidental discovery. In 1895 a German scientists named Wilhelm Roentgen discovered the existence of X-rays. Many scientists had studied these rays but no one had discovered that when these cathode rays struck the glass wall of Crookes tube[1] X-rays were created.
2. Roentgen also revealed that these X-rays could pass through solid matter and expose an X-ray film[2]. This discovery led immediately to the use of X-rays in medicine, the use we are all familiar with.
3. Although Roentgen discovered the properties of X-rays he did not know what rays were. He therefore called them X-rays, the X standing for their unknown nature. Today scientists know X-rays to be electromagnetic radiation of extremely high frequency and therefore of extremely short-wave length. X-rays are considered to be produced whenever rapidly moving electrons bombard any solid material. The greater the atomic weight of the material, the more plentiful the X-rays, the greater the speed of the electrons the higher the frequency of the X-rays.
4. As mentioned above X-rays were in a wide use for diagnostic purposes in medicine since their discovery. Industrial radiology has been discovered later particularly for inspecting welds and castings in the automobile and airplane industries. Flaws and cracks inside the metal are readily revealed due to the use of X-ray techniques. Famous paintings are often X-rayed to determine whether they are the originals or forgeries[3].
5. Using X-rays irradiation the scientists have learnt to change structures of well-known materials such as metals, ceramics, etc. They could obtain materials of greater strength with higher melting point and particular electrical properties.
6. Radiation is known to be a multagenic agent. In microbiology mutations are increased by irradiation. When a large-scale production of penicillin was introduced the best strain[4] yielded 100-200 units of penicillin. Being irradiated with X-rays, the same strain produced more than 1,000 units. Many new uses have been found for this treatment in agriculture.

V. Прочитайте 6-ой абзац текста и письменно ответьте на следующий вопрос: What increase was obtained in the productivity of penicillin being irradiated with X-rays?

Вариант 3.

I. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов should и would.

1. Without progress in the field of electronics it would be impossible to develop either energetics or automation.
2. If we used new plastics materials we should reduce the weight of artificial satellites.
3. You should test the new equipment.

II. Перепишите предложения и переведите их на русский язык, принимая во внимание, что инфинитивные и причастные обороты соответствуют придаточным предложениям.

1. Some materials undergo chemical changes when subjected to heat and pressure.
2. There are still many problems to be solved concerning radio, radar and television.
3. Matter is known to exist in four states- solid, liquid, gaseous and plasma, the latter being a hot ionized gas.
4. The energy being released during the fission of one gramme of uranium is equal to the energy produced by two and a half tons of coal.
5. To make mathematics into a science has been the priviledge of the Greeks.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения выделенных слов.

1. The speed of electrons is almost the same as the speed of light.
2. This metal possesses high strength due to the addition of tungsten.
3. Copper is in a wide use for cables because it is a good conductor of electricity.

IV. Прочитайте и устно переведите на русский язык с 1-го по 6-й абзацы текста. Перепишите и письменно переведите 2,4 и 5-й абзацы.

Пояснения к тексту:

1. to result from- происходить
2. internal combustion engine- двигатель внутреннего сгорания
3. wasted heat- отработанное тепло
4. scarcity- нехватка
5. thermo-nuclear fusion- термоядерная реакция

Energy and the environment

1. Many of the most serious environment problems of the technological nations result from the use of energy. Every form of energy production is known to cause some damage to the surroundings. A large part of urban air pollution is probably caused by emission from internal combustion engines. Other forms of urban air pollution result from the combustion of coal and low grade oil in steam electric plants or central heating plants.
2. Hydroelectric plants are considered to cause serious problems in the environment as well. One major problem of hydroelectric plants is the enormous weight of the water that fills the lake behind the dam rather quickly after the dam is constructed. The added weight places severe stresses on the geological formation, causing earthquakes in the area. The most severe earthquake- 6,5 on the Richter scale- happened as the lake behind the dam in Konga (India) was filled.

3. Perhaps, the most tragic problem created by the Aswan High Dam on the Nile River is the increase of diseases. The still waters behind the dam prove to create a good ground for insects carrying diseases.
4. Another form of environment degradation common to electric power generation is thermal pollution- the dumping of wasted heat into streams of water or the atmosphere. The warmed water is rather quickly mixed with the streams of water in a lake, this having harmful effect upon ecological balance of the lake.
5. In order to obtain enormous amounts of energy we are building powerful atomic electric stations which open up fine prospects in atomic power industry. However nuclear plants are capable of polluting the environment with radioactive atoms of various elements moreover, nuclear reactors of the types now being built will not be widely used as a source of energy became of the scarcity of the isotope “U” which is used as fuel.
6. The largest potential source of nuclear energy is thermo-nuclear fusion by which the nuclei of small atoms are combined to form large nuclei. However these power plants also contaminate the environment with radioactive elements that are released when the fuel is burnt.

V. Прочитайте 6-ой абзац текста и письменно ответьте на следующий вопрос:
What substances do power plants contaminate the environment with?

Вариант 4.

I. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов should и would.
1. It would have been impossible to send up sputniks unless the laws governing the motion of planets had been studied.
2. In 1898 Marie and Pierre Curie discovered that radium sent out rays consisting of particles smaller than the atom.
3. The computer will advise the drivers with which speed they should drive trains on each sector of the route.

II. Перепишите предложения и переведите их на русский язык, принимая во внимание, что инфинитивные и причастные обороты соответствуют придаточным предложениям.
1. The main disadvantage of plastics is likely to be poor resistance to heat.
2. Scientists consider solar energy to be an ideal source of power for artificial satellites.
3. Liquid lubricants evaporating in vacuum, scientists developed solid lubricants for space engineering.
4. Wood was perhaps the first material to be used by man for building purposes.
5. Having been translated into many languages Pushkin’s books became known all over the world.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения выделенных слов.
1. For a long time scientists dreamed to obtain electric power directly from the sun.
2. This plant produces cars and refrigerators as well.
3. Since rubber is a non-conductor of electricity it is used for insulators.

IV. Прочитайте и устно переведите на русский язык с 1-го по 4-й абзацы текста. Перепишите и письменно переведите 2,3,4-й абзацы.

Пояснения к тексту:

1. far side- обратная сторона

2. rock- горная порода
3. mantle- мантия
4. glassy globule- стекловидный шарик
5. melting point- точка плавления

Lunar exploration.

1. The Earth's nearest celestial neighbour- the Moon- is only 384,400 km away from us. That is why, it appears sufficiently large and bright. Lunar exploration began in 1959 when Luna-3 spacecraft was sent around the Moon. It radioed back the first photographs of the Moon's far side. In July 1969 two American astronauts landed on the Moon and carried out a variety of experiments on the surface of the Moon.
2. The kilometers of film exposed by the astronauts, the specimens of rock brought back to the Earth and other data studied by hundreds of scientists from countries all over the Earth have led to new views on several basic problems.
3. Before the Moon landings it was thought that the Moon was a simple body with the same composition throughout. But we now know it to be a body with a metallic core at its centre, a silica- rich mantle and a crust Lunar soils proved to contain a type of structure that is not common on Earth. Small glassy globules were present in the soil.
4. The types of rocks that were encountered on the Moon are familiar to geologists. However, almost all of these rocks have lower proportions of elements with lower melting points than does the Earth. Detailed examinations of the lunar rocks indicate to relatively high proportions of elements with high melting points such as calcium, aluminium and titanium. So the Moon and the Earth seem to be more familiar than had been thought for the last few years. None of the lunar rocks contain any trace of water found inside their minerals. This ends all hope that water and life existed on the Moon at any time in the past.
5. Thus, due to the lunar explorations the scientist were provided with some information about the composition of the solar system, with the information of the Moon and its relationship to the Earth. One day we may be able to use the far side of the Moon as a site for scientific observatories, for optical, ultraviolet or infrared observations. Twenty or thirty years from now we may be able to visit the Moon as researchers or even as tourists.

V. Прочитайте 6-ой абзац текста и письменно ответьте на следующий вопрос: What purpose will the Moon's surface be used in future for?

Вариант 5.

I. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения глаголов should и would.
1. In the future new alloys and synthetic materials should replace the metals we use today.
2. It would be impossible to simplify the production of aluminium without using the electrothermal method.
3. The design would have been ready by the end of the year if they had supplied us with all the necessary equipment.

II. Перепишите предложения и переведите их на русский язык, принимая во внимание, что инфинитивные и причастные обороты соответствуют придаточным предложениям.
1. Architects have designed and built houses to be heated by solar radiation.
2. Rubber is known to have been brought from America.
3. The Egyptians seem to be the first to apply geometry for practical purposes.

4. The search for new sources of energy having been started, the uneconomical waste of fossil fuels will be discontinued.
5. Having done a given number of operations the machine stopped automatically.

III. Перепишите предложения и переведите их на русский язык, обращая внимание на различные значения выделенных слов.
1. Hydroelectric energy requires no fuel for electricity is produced from the energy of falling water.
2. In the field of chemistry lasers are used either for diagnostic purposes or for producing chemical changes.
3. Many important discoveries have been made since the beginning of the 20-th century.

IV. Прочитайте и устно переведите на русский язык с 1-го по 4-й абзацы текста. Перепишите и письменно переведите 1-й и 3-й абзацы.

Пояснения к тексту:

1. sophisticated- усложненный
2. cell- клетка
3. to afflict- страдать
4. despite- несмотря на
5. retina- сетчатка
6. storage capacity- объем памяти

Biochemistry

1. The chemistry of life or biochemistry as chemists call it is an area in which classical fields of chemistry and biology meet. It can be called “molecular biology”. Biochemistry is the study of the structures and reactions of the thousands of compounds involved in life process. Biochemistry is considered to be the most complex area of chemistry.
2. Living things represent the most efficient sophisticated, compact chemical “factories” ever known. How, for example, do cells of the body know when to divide and multiply into new cells having the same characteristics as the original cells? When the body is afflicted by disease or by a wound how does the body protect itself and repair the damage? We know these processes to involve thousands of different chemical compounds.
3. When we compare the nervous system to man-made electronic computers the efficiency and complexity of the biological systems become even more impressive. Despite great advances in computer technology, the greatest computer ever built is almost insignificant being compared to a human brain weighing little more than a kilogram. A computer can perform mathematical operations millions of times faster than a person but what the nervous system can do! For example, it can cause your arm to reach out and touch an object. The brain can translate signals from the retina of the eyes into three dimensional colour images. It can translate a series of frequencies detected by the ear into thoughts whereas a computer can only perform operations being programmed by a person. As to the storage capacity the brain really wins out. The largest computers have storage capacity of about one million “words” but some experts believe the brain to store up all the signals it receives.
4. The chemical processes of our bodies involve enormously complex sequences of reactions, details of these processes being far from complete understanding. Nevertheless the great progress has been made in our understanding of the processes that occur in the body.
5. The first half of this century might be termed the Golden Age of Physics because so many discoveries in understanding the structure of molecules, atoms and nuclei were

made. By the same virtue we may be in the midst of a Golden Age in Biochemistry. The next few years of research may bring much increased understanding of chemical processes in cells.

V. Прочитайте 5-ый абзац текста и письменно ответьте на следующий вопрос: What phenomena are not yet understood in biochemistry?