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БЕЛОРУССКИЙ НАЦИОНАЛЬНЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ

Кафедра английского языка

АНГЛИЙСКИЙ ЯЗЫК

Методические указания и контрольные работы

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Настоящие методические указания предназначены для студентов I и II курсов всех специальностей БНТУ заочной формы обучения.

Издание содержит пять вариантов четырех контрольных заданий, которые охватывает грамматический и лексический материал, необходимый для овладения умениями и навыками чтения общетехнических текстов.

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ВВЕДЕНИЕ

Данное методическое пособие предназначено для студентов заочников 1 и 2 курсов всех факультетов и специальностей БНТУ. Каждая работа включает в себя 5 вариантов. Студент-заочник должен выполнять контрольные работы согласно учебному плану своего факультета.

Вариант контрольных работ определяется в соответствии с последними цифрами студенческого шифра: студенты, шифр которых оканчивается на 1 или 2, выполняют вариант №1, на 3 или 4 – №2, на 5 или 6 – №3, на 7 или 8 – №4, на 9 или 0 – №5.

Прежде чем приступить к выполнению контрольных работ, необходимо изучить грамматический материал, указанный перед каждой из них. С грамматическим материалом можно ознакомиться или по учебнику для заочных технических вузов (автор Л.Н. Андрианова), или по любой грамматике английского языка.

При выполнении письменных контрольных работ следует соблюдать следующие правила:

1. Выполнять контрольные работы следует в отдельной тетради. На обложке тетради указать свою фамилию, номер и вариант контрольной работы, номер группы и свой шифр.
2. Контрольные работы необходимо выполнять аккуратно, четким почерком, обязательно оставлять поля (не менее 2, 5 см).
3. Необходимо списывать условие выполняемого упражнения; иностранный текст при переводе нужно писать на левой стороне, а на правой – перевод.
4. Если контрольная работа выполнена без соблюдения указаний или не полностью, она возвращается без проверки.

Получив рецензию, студент должен ознакомиться со всеми замечаниями и проработать те правила, на которые допущены ошибки. Все предложения с отмеченными ошибками переписать начисто в конце контрольной работы уже в исправленном виде.

Если рецензент потребует переделать всю работу, то к заново выполненной работе нужно приложить работу с замечаниями рецензента.

Перед зачетом или экзаменом студенту предстоит пройти собеседование по выполненным им контрольным работам во время зачетно-экзаменационной сессии.

КОНТРОЛЬНАЯ РАБОТА №1

Для того чтобы правильно выполнить контрольную работу №1, необходимо усвоить следующие разделы курса английского языка:

1. Имя существительное. Множественное число. Существительное в функции определения и его перевод.
2. Грамматические функции окончания - s.
3. Имя прилагательное. Степени сравнения. Конструкции типа the more ... the less.
4. Местоимения: личные,. притяжательные, вопросительные, указательные, неопределенные и отрицательные.
5. Формы времен группы indefinite действительного залога.
6. Спряжение глаголов to be, to have. Оборот there + to be.

Вариант 1

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, *оформленные окончанием – s*, то есть служит ли оно: а) признаком множественного числа имени существительного; б) показателем 3-го лица единственного числа в Present Indefinite; в) показателем притяжательного падежа имени существительного. Переведите предложения.

1. The word "physics" originates from a Greek word.
2. Many changes take place in nature.
3. Newton's laws of motion are true to this day.

II. Перепишите следующие предложения и переведите их, учитывая особенности передачи на русский язык определений, выраженных именем существительным.

1. Students carry out their laboratory tests in modern laboratories.
2. Industry demands more and more engineers with a thorough knowledge of industry economics.
3. Radio supplies the communication service.

III. Перепишите следующие предложения, содержащие разные степени сравнения, и переведите их на русский язык.

1. They will make many more important discoveries in the near future.
2. The more you study the better you pass your exams.
3. The Square of Independence is the most beautiful square in Minsk.

IV. Перепишите и переведите предложения на русский язык, обращая внимание на перевод неопределенных и отрицательных местоимений.

1. Some centuries ago people did not know anything about electricity.
2. They met nobody at the station.
3. At present any person knows almost everything about this phenomenon.

V. Перепишите следующие предложения, определите в них видо-временные формы глаголов, переведите предложения на русский язык.

1. The academic year begins in September.
2. The scientific conference took place at our Academy last year.
3. We shall solve this problem with the help of this equation.

VI. Прочтите и устно переведите с 1-го по 9-й абзацы текста. Перепишите и письменно переведите 2, 4, 5, 6, 8 абзацы.

LOMONOSOV

1. Lomonosov, a great Russian scientist, was born in 1711 in the Far North in the village of "Denisovka" renamed "Lomonosovo" after our great scientist. From early childhood the boy was fond of studying and reading.

2. In winter of 1730 Lomonosov left his native village and started on foot for Moscow. He reached the city in January 1731. In Moscow he entered the Slavonic-Greek-Latin Academy. It was the only institution of higher education at that time.

3. During that period of his life he lived under very hard conditions for his scholarship amounted to 3 copecks a day. However this peasant boy from the Far North made such a good progress in his studies that together with a group of the best students he was sent to continue his education first to St. Petersburg and afterwards abroad.

4. While abroad Lomonosov successfully studied philosophy, chemistry, mathematics, physics and foreign languages. He returned to St. Petersburg a well-educated man in spring of 1741 and five years later he was already a professor and an academician.

5. Lomonosov wrote several fundamental works on physics. In 1748 the scientist formulated for the first time the law of conservation of matter and movement which is now called "Lomonosov's Law". Besides research work in physics he carried on many investigations in chemistry and chemical technology.

6. Lomonosov was the founder of the first Russian University which was established in 1755; He lectured on physics, taught students and translated the works of various foreign scientists into Russian.

7. Besides his many-sided activities in various fields of science and engineering he was also an outstanding poet.

8. From the very first and to the end of his days Lomonosov paid particular attention to the development of Russian science and culture, to the enlightenment of the people. He set the development of science in Russia on a firm experimental basis.

9. He died on April 4, 1763. Lomonosov, a great Russian scientist, occupies one of the first places among people of whom the whole cultured world is proud.

Вариант 2

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием – s, то есть 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. Переведите предложения.

1. New houses are much more comfortable than the old ones.

2. Our Polytechnical Academy houses both physical and chemical laboratories.
3. He writes an article about this engineer's invention.

II. Перепишите следующие предложения и переведите их, учитывая особенности передачи на русский язык определений, выраженных именами существительными.

1. Construction work on the Minsk Metro does not stop for a single day.
2. He passed his graduation examinations with excellent marks.
3. These engineers deal with cosmic ray studies.

III. Перепишите следующие предложения, содержащие разные степени сравнения, и переведите их.

1. In our days the industrial importance of electric power is still greater than the importance of atomic power.
2. They discussed one of the most important problems of cybernetics.
3. The more often you use English words in speech, the better you remember them.

IV. Перепишите и переведите предложения, обращая особое внимание на перевод неопределенных и отрицательных местоимений.

1. Any student translates this text without a dictionary.
2. No one knew about this discovery.
3. Some two million people live in Minsk.

V. Перепишите следующие предложения, определите в них видо-временные формы глаголов и укажите их инфинитив, переведите предложения.

1. Many great men studied at Cambridge and among them was I. Newton, the world-known English scientist and mathematician.
2. The students of Cambridge University don't attend all lectures.
3. The students will take an active part in the preparation of the conference.

VI. Прочитайте и устно переведите с 1-го по 9-й абзацы текста. Перепишите и письменно переведите 2, 3, 4, 6, 8, 9 абзацы.

ISAAC NEWTON

1. In the little village of Woolthorpe, not far from the old university town of Cambridge, in a farmer's house Isaac Newton was born in 1642.

2. His family wanted him to become a farmer, he did his best to be of use at the farm, but with no success, his mind being always busy with observing various phenomena of nature and reflecting upon them.

3. At the age of 18 he was sent to Cambridge and there he followed the ordinary mathematical courses of his time.

4. Some years after having taken his degree he was appointed professor to the chair of physics and mathematics at Cambridge.

5. The study of light was Newton's favourite study. Having made a number of experiments with lenses, he came to the conclusion that white light consisted of rays of different colours and that each particular kind of coloured ray was differently bent when it fell on a glass surface at the angle. His results formed the basis of modern spectography.

6. The theory of gravity was developed by him when he was only 24, but some twenty years later he returned to this subject.

7. The problem of the paths of the planets, one of the greatest problems of those times, was "what laws could account for the ceaseless motion of the planets round the sun?"

8. Newton deduced and calculated the force of gravity acting between the sun and the planets thus establishing the law of gravitation in its most general form. With the help of this law he found a connecting link between the mechanics of the earth and the mechanics of the heavens.

9. He also discovered the laws of motion which we still consider to be the basis of all calculations concerning the motion.

Newton died in 1727, at the age of 84.

Вариант 3

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием - s, то есть служит ли оно: а) признаком множественного числа имени существительного; б) показателем 3-го лица единственного числа в Present Indefinite; в) по-

казателем притяжательного падежа имени существительного. Переведите предложения.

1. The importance of Popov's investigations in physics is clear to everybody.
2. The results of these observations will be very important.
3. Physics deals with different natural phenomena.

II. Перепишите следующие предложения и переведите их, учитывая особенности передачи на русский язык определений, выраженных - именем существительным.

1. We get weather forecasts every day.
2. The new University building houses many departments.
3. This scientist works at some problems of low temperature physics.

III. Перепишите следующие предложения, содержащие разные степени сравнения, и переведите их.

1. This engineer is one of the best oil experts in oil industry.
2. The longer is the night, the shorter is the day.
3. Football is more popular than basketball.

IV. Перепишите и переведите предложения, обращая внимание на перевод неопределенных и отрицательных местоимений.

1. At some of Minsk Metro stations there are escalators.
2. Any student of our group can speak on the history of Minsk.
3. No park in our city is as popular as Gorky Park.

V. Перепишите следующие предложения, определите в них видо-временные формы глаголов, переведите предложения.

1. Classical mechanics formed the foundation for the further development of that science.
2. Physics is an ancient science.
3. These phenomena will find wide application in physics.

VI. Прочитайте и устно переведите с 1-го по 7-й абзацы текста. Перепишите и письменно переведите 2, 3, 5, 6 абзацы.

POLZUNOV, THE INVENTOR OF THE STEAM ENGINE

1. A steam engine to meet industrial requirements was first put into

operation in a far-away Siberian town, Barnaul, in August 1766. That first steam "fire" engine was invented and constructed by Polzunov, a self-taught men, the son of a Russian soldier.

2. Polzunov was born in 1728, in the Urals, in the city of Ekaterinburg. He began working when be was 14 at a Ural plant and in a short period of time became an outstanding specialist in the metallurgical industry.

3. Polzunov was quite familiar with the technical problems of his day and among them with those of power engineering which was based on water wheels. In spite of the fact that the water wheels constructed by Russian specialists were the best in the world, their use at the time had one great disadvantage. They required water and because of it works and factories had to be built far from raw material sources.

4. Polzunov wanted to put an end to this dependence upon water. He had great experience as well as a good knowledge of theory. As a result of his steady scientific research, Polzunov worked out the design of the first fire-operated machine that could be used instead of the water wheels.

5. The construction of this engine involved difficulties and hardships. Polzunov had to do almost everything with his own hands. He did all the designing and drawing. In addition to it, he created the required instruments and machine parts and made them. Such hard conditions of work completely ruined his health.

6. At last all the parts were assembled and the engine was quite ready to be put into operation. It was a machine working on steam pressure with two cylinders used by Polzunov in order to provide continuous action. The first test proved to be a success. However, Polzunov did not live to see the results of his work. He died in poverty on May 27, 1766.

7. Later on thanks to Janes Watt the steam engine found its further development.

Вариант 4

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием – s, то есть 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.

Переведите предложения.

1. The exhibits of the Geography Museum tell us about the history of the development of the Earth.
2. This foreign firm exhibits new computers.
3. What is your friend's profession?

II. Перепишите следующие предложения и переведите их, учитывая особенности передачи на русский язык определений, выраженных именами существительными.

1. The function of a university library is to supply the students with books and necessary information about them.
2. The International Tchaikovsky Competition and the International Ballet Competition took place in Moscow.
3. This power station equipment is quite new.

III. Перепишите следующие предложения, содержащие разные степени сравнения, и переведите их.

1. This problem was much more important than that one.
2. Winter is the coldest season of the year.
3. The more exercises we do, the better we understand these grammar rules.

IV. Перепишете и переведите предложения, обращая внимание на перевод неопределенных и отрицательных местоимений.

1. Some 20 students took part in sport competition.
2. Any result in our experiment is of great importance for the whole research.
3. Do you go anywhere this morning?

V. Перепишите следующие предложения, определите в них видо-временные формы глаголов, переведите предложения.

1. Neither my friend nor I translated this text.
2. In two years we shall become specialists in the field of automation.

3. This laboratory designs electrical equipment for automatic shops and plants.

VI. Прочитайте и устно переведите о 1-го по 9-й абзацы текста. Перепишите и письменно переведите 1, 3, 5, 6, 7 абзацы.

LODYGIN

1. The creation of the first incandescent lamp is closely connected with the name of the well-known Russian scientist and inventor, Alexander Lodygin.

2. Lodygin created the first incandescent lamp and laid the foundation for the production of the present-day incandescent lamps that are much more economical than the lamps with carbon electrodes. He was the first inventor to discover the advantages of the metal wire filaments in comparison with other filaments.

3. Lodygin was born in Tambov Province in 1847. His parents gave him a military education an they wanted him to join the army. However military service did not interest him at all. So he resigned soon and devoted all his time to the study of engineering and the solving of technical problems.

4. Young Lodygin started working out the design of a flying machine. His design was ready in 1870. At that time France was at war with Germany and the construction and testing of the flying machine had to be carried on there. But France was soon defeated and had no need for any flying machine. Thus, its construction was put off for an indefinite period of time and was never realized.

5. In 1872 Lodygin constructed a number of incandescent lamps. These first lamps consisted of a glass bulb with a carbon rod serving as a filament.

6. In 1873 he produced an improved lamp having two carbon electrodes instead of one and a longer life.

7. Lodygin's study of metal filaments having a high melting point is a work of world importance. It is he who introduced tungsten filaments in a vacuum.

8. Tungsten is still considered to be the very metal that should be used for filament production.

9. Lodygin died in 1923 at the age of 76.

Вариант 5

I. Перепишите следующие предложения. Определите по грамматическим признакам, какой частью речи являются слова, оформленные окончанием – s, то есть 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.

Переведите предложения.

1. The first mention of Minsk dates back to 1067.
2. The doors of the Young People's Theatre are always opened to children of school age.
3. The inhabitants of Minsk are fond of their city.

II. Перепишите следующие предложения и переведите их, учитывая особенности передачи на русский язык определений, выраженных именами существительными.

1. There are only daylight lamps in this room.
2. Not long ago our family moved into a large three-room flat.
3. The scientists developed new synthetic rubber products.

III. Перепишите следующие предложения, содержащие разные степени сравнения, и переведите их.

1. Automatic devices make labour safer and easier.
2. Your translation is the best in the group.
3. The nearer is the summer, the longer are the days.

IV. Перепишите и переведите следующие предложения, обращая внимание на перевод неопределенных и отрицательных местоимений.

1. Does he know any foreign language?
2. Any exhibit of this museum is valuable.
3. No student of this group studies Spanish.

V. Перепишите следующие предложения, определите в них видо-временные формы глаголов, переведите предложения:

1. Force depends upon the mass of the body.
2. Last century most countries accepted the kg as the unit of force.
3. In some years all the countries will use the kg as the unit of forces.

VI. Прочитайте и устно переведите с 1-го по 9-й абзацы, текста. Перепишите и письменно переведите 2, 4, 5, 6, 7, 9 абзацы.

BENJAMIN FRANKLIN

1. Benjamin Franklin is the founder of the theory of atmospheric electricity. He proved the lightning to be an electrical phenomenon.

2. Franklin developed a new theory of electricity that he called positive and negative. He invented a means of protection against the disastrous effects of lightning - the lightning rod.

3. Franklin's theory of atmospheric electricity at first seemed to be misunderstood both in his country and in some countries abroad. It is known to have been severely attacked by the leader of French scientists abbé Nollet, who either did not believe it or was envious of the discovery.

4. In Russia Franklin's work was received in an entirely different manner.

5. The newspaper published by the Russian Academy of Sciences wrote about "the important invention made in the North American city of Philadelphia by Mr. Benjamin Franklin who wishes to extract from the atmosphere the terrible fire which frequently destroys vast stretches of land."

6. Franklin is known and respected all over the world not only as a scientist but also as a citizen who did as much as he could for the good of his country.

7. In his early youth he worked as an apprentice and then as a printer in a newspaper. Later on, he become an editor himself, his newspaper enjoying a great popularity with his countrymen as far as he remained at the head of it.

8. Coming out in defence of the American negroes, Franklin declared slavery to be not only an evil from the moral point of view, but also as an obstacle to the social interests of America.

9. Franklin is one of the broadest as well as one of the most creative

minds of his time.

КОНТРОЛЬНАЯ РАБОТА №2

Для того, чтобы правильно выполнить контрольную работу №2, необходимо усвоить следующие разделы курса английского языка:

1. Видо-временные 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:
   а) выражающие возможность:
   can (could), may и эквивалент глагола can – to be able to;
   б) выражающие долженствование:
   must, его эквиваленты to have to и to be to; should.
3. Простые неличные формы глагола:
   Participle I (Present Participle), Participle II (Past Participle) в функциях определения и обстоятельства;
   Gerund – герундий, простые формы.

Вариант 1

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

а)

1. The development of many sciences depends on the knowledge of physical phenomena.
2. The force of friction has stopped the bodies motion.
3. In the course of motion along a curve the direction of displacement is changing all the time.

4. These two forces acted in the same direction in our experiment.

б)

1. Newton's Laws of Motion are often referred to at the lectures on Mechanics.
2. This problem is discussed in the book published two years ago.

II. Перепишите и переведите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, то есть укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого.

1. The formulated law is applied in many fields of science.
2. When cooled a substance can be converted from the liquid state into the solid.
3. The amount of heat generated depended on the quality of the fuel used.
4. The problem being considered in this paper is of great significance.

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

1. They were to give the results of their experimental work as soon as possible.
2. Your investigation must attract attention of all the scientists.
3. Motion may be defined as continuous change of position.
4. A number of substances can absorb considerable amount of gases.

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

MOTION

1. Never before motion has been so important as it is today. In our everyday life we have observed many cases when bodies act upon each other. When it is acted upon some force a body begins to move, stops or changes the direction of its motion. However in some cases a body is acted upon by some other body but its state does not change. Then we say that the body is in equilibrium.

2. Motion may be defined as a continuous change in place or position with respect to the position of some other object or objects if they are at rest. Because no object is really quite motionless.

If houses are at rest relative to the earth's surface, the earth itself is not motionless. It revolves about its axis and around the sun; the sun, in its turn, moves relative the stars which are also in a state of motion.

A man sitting in a tram may seem motionless to his passengers. In reality all are moving rapidly with respect to any man in the street.

3. The motion of bodies may be divided into three classes: 1) translation; 2) rotation; 3) vibration or oscillation. A body has a motion of translation when it moves continuously in the same direction. If a body instead of travelling forward turns on a fixed axis, it has a motion of rotation. The drive wheels of locomotive are moving forward and are at the same time rotating. Therefore they have two motions, one of rotation and the other of translation. Some bodies reverse their motions from time to time and return at regular intervals to their original positions. Such bodies have a motion of vibration or oscillation.

4. Whenever any movement occurs at a constant speed the forces which tend to cause it are balanced by other forces which tend to stop it. If the forces cause motion they are greater than the forces that oppose it. Thus, every body continues to remain in its state of rest or uniform motion unless it is acted upon some force. Any change of the direction of motion requires a force just a change of speed does.

5. When we speak of movement and speed it is necessary to mention the Unit of Speed in the metre - kllogram - second (MKS) system and in the old English system of units. The Unit of Speed in the MKS system is one metre per second (m/s). The corresponding unit in the English system of units is one foot per second (ft/s).

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

а)

1. Today scientists are still looking for the substance as a source of energy.
2. The direction of motion has changed but the body continues its motion.
3. The development of physics resulted in the appearance of today's cinema, television, radio and so on.
4. These forces will cause the motion of a body.

б)

1. Heat energy is transmitted in two different ways.
2. The discovery of electron was followed by the investigation of its properties.

II. Перепишите и переведите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, то есть укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого.

1. The forces of two bodies acting on one another are always equal in magnitude and opposite in direction.
2. The plant equipped with modern machinery overfulfilled its plan last month.
3. When placed in a vessel a gas fills it completely.
4. A computer solving a lot of problems was designed by a group of students.

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

1. Energy can exist in many forms and each form can be transformed

into the other.

2. A force may cause a change in the size or shape of a body.
3. You have to define the direction of a force.
4. Everybody must know the temperature measuring devices.

IV. Прочитайте и устно переведите с 1-го по 6-й абзацы текста. Перепишите и письменно переведите 1, 3, 4 и 6 абзацы.

WORK, FORCE, POWER AND ENERGY

1. In the language of science such words as "work", "energy" "force" and "power" have definite meanings, they differ from the meanings that are often given to them in everyday life.

2. In physics energy is defined as the ability to do work. When a body is capable to perform work, it possesses energy. It is quite clear that the more work a body can do, the more energy it possesses. You use energy when you walk. It takes energy to carry something, You can do nothing without using energy. There are numerous forms of energy such as: electrical, chemical, mechanical, heat energy and so on. All they are useful to us. We use heat energy to heat our homes, electrical energy changes to light and sound.

3. Mechanical energy, in its turn, can be potential and kinetic. The kinetic energy of a body is the energy of motion. The potential energy of a body is the energy of position. It is quite possible to transform one form of energy into another. Energy is measured in the same units as work and like work is a scalar quantity.

4. Work and energy are closely connected. Work is both an everyday word and a scientific term. In mechanics work is defined as the scalar product of a force multiplied by the distance through which that force acts. In other words, work is a product of force and displacement in the direction of force. Work is done when a force is acting over a distance. In this case time is not taken into account.

5. An action of one body upon another which changes the state of rest or motion of the body acted upon is called force. The term force is a general term for any push or pull. A force is always exerted on a body by another body. There are three elements of determining a force, namely, the direction of a force, its magnitude and point of its application. Forces are vector quantities.

6. When we are speaking of power, time is taken into account, Power means the rate at which work is done in a unit of time. Power is related

to both work and energy. The English unit of power is called the horsepower.

Вариант 3

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

а)

1. The reactor is fast becoming a major source of heat and electricity.
2. This young scientist makes great contribution to mathematics.
3. The scientist has published the fundamental principles of his investigations.
4. He started his investigations of the properties of a new compound.

б)

1. The law of gravitation was discovered by Newton.
2. A lot of industrial machines will be made of various plastics.

II. Перепишите и переведите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, то есть укажите, *является ли оно определением*, обстоятельством или частью сказуемого.

1. Physios is the science studying the various phenomena in nature.
2. The substances investigated showed quite interesting properties.
3. When heated a magnet loses some of its magnetism.
4. The elements predicted by Mendeleyev were later discovered by scientists from different countries.

III. Перепишите и переведите следующие предложения, подчеркните в каждом из них модальный глагол или его эквивалент.

1. These new materials had to withstand much higher temperatures than metals.

2. We must use new methods in our research work.
3. He could not complete his research in time as he worked very slowly.
4. This power station will have to supply us with all necessary energy.

IV. Прочтите и устно переведите с 1-го по 6-й абзацы текста. Перепишите и письменно переведите 1, 3, 4 и 6 абзацы.

MECHANICS

1. Mechanics is a branch of physics. Mechanics deals with the motion and equilibrium of bodies. It also establishes mathematical equations which describe motion in terms of distance and time. The principles of mechanics are required by engineers in the construction of a motor-car, a building, an aeroplane, etc.

2. The word "mechanics" implies a connection with machinery, It deals with the laws of mechanical motion. When a body changes its position in respect to other bodies, we say it is in motion. We call this relative change in position of a body mechanical motion. Motion takes place in space and in time, therefore space and time are inseparable from matter in motion.

3. Mechanics studies a variety of problems associated with motion as well as with force. It consists of two main parts: kinematics and kinetics, The latter, in its turn, is divided into statics and dynamics.

4. Kinematics determines the trajectory which the points of a moving body describe, the position of any one of its points in its trajectory, its speed, acceleration, etc., in short, the relationship between the geometric elements of motion and time, independent of the forces that act on the body in motion. Engineers solve many problems, such as the setting of a lathe and other machine-tools through kinematics. Kinematics studies the nature of motion of a body and the forces that act on the body, or in other words, determines the forces that cause the motion.

5. Dynamics deals with the motions of bodies. Motion is connected with the ideas of length and time. The force is the agent which causes bodies to change their direction or speed of motion. Dynamics is the study of the forces which keeps an airplane in flight. It also studies such concepts as work, power energy and therefore it is of great use in many branches of engineering.

6. Statics is that part of kinetics which studies bodies in a state of

equilibrium. In statics we investigate the conditions under which the forces that act on a body come into equilibrium and the consequent state of rest. This part of mechanics is of great use in different branches of engineering especially in civil engineering, for, if engineers know these conditions, they can ensure rigidity and strength to the structures they design and build.

Вариант 4

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

а)

1. After the engineer had made all the necessary calculations he began to work at the new project.
2. During some decades of the last century scientists were making a close study of the structure of natural rubber.
3. This plant will produce a new type of machines.
4. The development of machine-tools accelerated the industrial revolution.

б)

1. His scientific paper will be spoken about at the end of the discussion.
2. Much attention was also paid to the interior of the house.

II. Перепишите и переведите следующее предложения, подчеркните Participle I и Participle II и установите функции каждого из них, то есть укажите, является ли оно определением, обстоятельством или частью глагола-сказуемого.

1. Matter composed of any chemical combination of elements is called a compound.
2. The smallest particle having all the characteristics of an element is called an atom.
3. The translated article is devoted to electrical furnaces.

4. Speaking about the new methods of work the engineer told us many interesting details.

III. Перепишите и переведите следующие предложения, подчеркните в каждом из них модальный глагол или его эквивалент.

1. Heat can be divided into three different types.
2. A great number of plastics should find their applications in the electrical industry.
3. An electronic machine has to be used to make these calculations.
4. Both elements were to be used in this experiment.

IV. Прочитайте и устно переведите с 1-го по 6-й абзацы текста. Перепишите и письменно переведите 1, 3, 4, 6 абзацы.

PHYSICS

1. Physics is one of the most ancient sciences about nature. It is the science studying various phenomena. All the changes that take place in nature are natural phenomena. Its object is to determine exact relations between physical phenomena.

In physics we call every object a physical body or simply a body. Bodies consist of matter but can differ in materials and in the quantity.

2. Modern physics is the science of motion of bodies, energy and different sound, thermal, electric, magnetic, light, optical phenomena. We study all these phenomena in the following branches of physics: mechanics, sound, heat, electricity and magnetism, light, atomic and nuclear physics.

3. Physios is divided into two great branches: experimental and theoretical physics. The task of the former is to make observations and carry out experiments. On the basis of the experimental facts theoretical physics is to formulate laws and predict the behaviour of natural phenomena. Every law is based on experiments, therefore, it is important for the experiments to be done very accurately.

It was the study of natural phenomena that made it possible to formulate various laws.

4. Physics has a long history. The history of this science begins with Galileo. He introduced the two principles that made mathematical physics possible: the law of inertia and parallelogram law. The law of inertia,

now familiar as Newton's first law of motion made it possible to calculate the motions of matter by means of the law of dynamics alone.

5. After Newton the first novelty in physics was Plank's introduction of the quantum constant h. Another novelty followed in 1905, when Einstein published his theory of relativity.

6. Physics is one of the main sciences about nature and the development of many other sciences depends on the knowledge of physical phenomena. Physics together with mathematics and chemistry forms the foundation for all branches of engineering.

Discoveries in physics are very important for engineering. They resulted in the appearance of today's cinema, television, radio, various machines and mechanisms, artificial earth satelites and spaceships.

Вариант 5

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

а)

1. Astronomers have measured the exact length of the day.
2. Newton gathered the results of the experiments which had been made by many other scientists and investigators.
3. The boiling point of water depends upon the pressure in the vessel in which the water is boiling.
4. This plant was making various kinds of instruments during last five years.

б)

1. They are given the data illustrating friction.
2. His works and investigations in the field of theoretical mechanics are always referred to.

II. Перепишите и переведите следующие предложения, подчеркните Participle I и Participle II и установите функции каждого из них, то есть укажите, является ли оно определением, об-

стоятельством или частью глагола-сказуемого.

1. Matter consists of one or a number of basic elements accruing nature.
2. When heated to a certain temperature, this alloy increases in volume.
3. The atoms form combinations known as molecules.
4. Reading English technical papers one can meet various abbreviations.

III. Перепишите и переведите следующие предложения, подчеркните в каждом из них модальный глагол или его эквивалент.

1. A computer should solve complicated problems many millions of times faster than a mathematician.
2. New types of plastics had to be obtained for space technology.
3. A moving body can do work by virtue of its speed.
4. These students will be allowed to perform this work by the end of this month.

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

FRICTION

1. From everyday experience people have learned that the amount of energy which is required to pull a load across a surface depends on the character of the surface. It is much easier to pull a cart over an asphalt road than over road which is cobbled. When an object is moving in respect to another against which it is pressed with a certain force it gives rise to a force which is opposing the motion. This force is called friction. Hence the resistance to the motion of two bodies in contact with one another is determined by friction. Friction may prevent the motion entirely or it may make the relative acceleration of the surfaces less than it otherwise would be.

2. In general, friction can have any direction and its direction at a given moment is such as to oppose the motion of a body or its tendency to motion. At any rate, friction always manifests itself as a force that opposes motion. It causes losses in every engine and machine. Part of the useful mechanical energy is transformed into useless heat because of

friction. In addition to that, it wears away metal in the moving parts, making repairs necessary.

3. Engineering, in its turn, tries to overcome these losses by various means. In order to decrease friction in the working parts of the machines, their fictional surfaces are lubricated and ball bearings or another bearings are introduced. In case it in necessary, a great part of the heat developed due to friction may be carried off by means of circulating water or air blasts.

4. In fact, friction in the moving parts of all mechanical devices brings endless difficulties. In certain cases friction becomes a helpful necessity but not only causes wear and losses. But for friction our world would be strange. Without friction between the tires and the road, a car could not move. It would be impossible to walk, nor even to stand up in spite of all our efforts, to build houses using present-day methods. Nails would fall out, screws and bolts would not hold because they require friction.

5. So friction is a complex physical phenomenon. In some cases friction may be detrimental, in many other cases it is frequently a necessity. There are several types of friction, namely, sliding friction and rolling friction, static and kinetic friction.

КОНТРОЛЬНАЯ РАБОТА №3

Для того, чтобы правильно выполнить контрольную работу №3, необходимо усвоить следующие разделы курса английского языка:

1. Грамматические функции и значения слов that, one, it.
2. Пассивный залог (The Passive Voice) видо-временных 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.

Вариант 1

I. Перепишите и переведите следующие предложения, опреде-

лите в каждом из них видо-временную форму и залог глагола-сказуемого.

1. Electric c rs will be widely used in future.
2. Newton wrote books on laws of motion, gravitation, astronomy, mathematics and optics.
3. The research workers will be making a number of important investigations from January till August next year.
4. A group of engineers and workers had completed the construction of a big mine by the end of the year.

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

1. One can obtain better results if the force is increased.
2. The direction of a body's motion is the same as that of the force acting on it.
3. It is necessary to point out that one and the same word may have different meanings in different branches of science and engineering.

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

1. You have to come to the language laboratory to work at your pronunciation.
2. Various machines do different work in equal intervals of time.
3. Radical changes have taken place in science and education.
4. The point of application of the force is to be changed.
5. The function of this instrument is to control the work of the machines,

IV. Перепишите следующие предложения и переведите их, обращая внимание на функции инфинитива.

1. It is important to train highly qualified research workers for the development of science.
2. Our task is to obtain new mixture with new properties.
3. To increase the productivity of the machine-tool one should know the characteristics of the material to be machined.

4. Gold, silver and copper were the first to be used by a primitive man.
5. Engineers hope to improve greatly the properties of modern metals.

V. Прочитайте и устно переведите с 1-го по 5-й абзацы текста. Перепишите и письменно переведите 2, 3, 5 абзацы.

NEWTON'S LAWS OF MOTION

1. Isaak Newton, the man of powerful mathematical ability, was born in the family of a farmer in 1642. He was to become a professor of physics, a great scientist, a Member of Parliament and President of the Royal Society. Last but not least, Newton discovered universal gravitation, one of the greatest discoveries. However to carry on scientific investigations was not so easy about three hundred years ago. It took him about twenty years to complete his theory of gravitation.

2. He was also the discoverer of the three basic laws of motion which are the foundation of practical mechanics. Newton's laws of motion are based upon his own and Galileo's experiments.

In his monumental work on mechanics Newton accurately related "velocity" and "acceleration" to the idea of "force". According to Newton any body has a certain amount of inertia which can be overcome by some exterior force.

3. Newton's First Law of Motion states that any object remains at rest or continues to move at constant speed in a straight line, unless it is acted upon by some exterior force.

From everyday experience it is known that a change in the direction of motion also requires a force. When the speed or the direction of motion changes we speak of the acceleration. The direction of the acceleration is the same as that of the acting force. The greater the acting force, the greater the acceleration if the mass is the same, and the greater the mass, the smaller the acceleration if the force is the same.

4. Newton's Second Law of Motion expresses the relation bet-ween force, mass and acceleration as follows: the acceleration of the body is directly proportional to the acting force and inversely proportional to the mass of the body.

5. Newton's Third Law of Motion may be expressed as follows: forces always act in pairs and the two forces in a pair are equal and opposite. To every action there is an equal and opposite reaction. It is to be

noted that action and reaction always act on different bodies and never act on the same body. Newton's Third Lew of Motion cannot be applied to force acting at a distance. On the other hand, it holds good for objects at rest and for contact forces.

Our modern conceptions of physics have been built on Newton's clear and wide ideas.

Вариант 2

I. Перепишите и переведите следующие предложения, определите в каждом из них видо-временную форму и залог глагола-сказуемого.

1. When much had been done in the study of ecology by our institute it became an important scientific centre.
2. The research of planets will be developed with the help of cosmic apparatus.
3. Beautiful houses of concrete and glass are being built in our district.
4. Since ancient times people studied nature and natural phenomena.

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

1. It is necessary to find new sources of cheap energy.
2. That part of mechanics we dealt with at our last lesson is known as statics.
3. An elementary substance is the one which consists of only one kind of atoms.

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

1. Man had to learn to obtain electric power directly from the Sun.
2. The task of our scientists is to use atomic energy for peaceful purposes.
3. The coefficient of thermal conductivity of gases does not depend on the pressure.

4. The caloric theory of heat had existed up to the middle of the 19th century.
5. Weight is the force with which a body is attracted by the Earth.

IV. Перепишите следующие предложения и переведите их, обращая внимание на функции инфинитива.

1. To convert nuclear energy into electrical called for expansive research.
2. To carry out research in quantum electronics this scientist will continue his experiments next month.
3. It is hard to overestimate the role of radioelectronics in technical progress.
4. Research to be conducted in the creation of new synthetic materials is of great importance.
5. Modern industry is to make the life of a man more comfortable.

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

FOUR STATES OF MATTER: SOLID, LIQUID, GAS, PLASMA

1. To understand the various states of matter and their connection to each other, we must understand the meaning of the word molecule. We can divide a piece of material into small parts and we shall continue this process of division until the parts become very small. We call these smallest particles atoms. They are fundamental building blocks of all materials and have a definite attraction for each other.

Atoms are combined into molecules and molecules may contain one, two, three and more atoms.

2. Many substances can exist in more than one of the four possible states. That state depends on the substance itself as well as on its volume, temperature and pressure. The molecules of a solid are very close together and have a great attraction for each other. The closer they are together, the heavier is the solid. It is the solid that has both volume and shape. In this state their attraction for each other is very great and it is very difficult to change the shape of a solid. The molecules of solids are able to move only through a limited range. The motion of the molecules of a solid is harmonic in type.

3. If we heat the solid the molecules begin to vibrate more and more

and therefore there is less attraction for each other. The molecules are in a state of continual vibration. A solid expands when we heat it. When the molecules are quite far apart from each other, the solid changes into a liquid. The molecules of liquids are in a state of constant random motion. A given molecule is free to move within the liquid itself but is not likely to leave its surface unless it moves very fast.

4. If we continue to heat the liquid the molecules begin to vibrate so strongly, and move so far apart from each other that they will have very little attraction for each other. Now the liquid becomes a gas which has no definite size. The gas molecules move with an almost perfect freedom. The molecules move rapidly in every direction, colliding with one another expanding to occupy every portion of the container.

Gases have no fixed volume or shape. Their volume and shape depend on the vessel that contains them.

5. The fourth state of matter, the plasma, consists of neutral atoms, ionised atoms and electrons. A gas composed of positive ions and electrons is called a plasma. A plasma differs greatly from ordinary gases because it is composed of charged particles. A plasma is used in the direct conversion of kinetic energy into electric energy. The four states of matter – solid, liquid, gaseous and plasma are very close to each other.

Вариант 3

I. Перепишите и переведите следующие предложения, определите в каждом из них видо-временную форму и залог глагола-сказуемого.

1. Today plastics are being widely used instead of metals.
2. The construction of the factory has been completed this month.
3. A further compression of this gas will require an increase in pressure.
4. The science which deals with the laws of mechanical motion is called mechanics.

II. Перепишите и переведите следующие предложения, 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. Experiments show that evaporation of liquids takes place at any temperature.
3. One cannot speak of the pressure or temperature of one molecule.

III. Перепишите и переведите следующие предложения, обращая внимание на разные значения глаголов to be, to have, to do.

1. Some substances do not conduct heat.
2. Accumulators of solar energy have been discovered comparatively recently.
3. The aim was to evaluate changes in speed using Newton's Second Law of Motion.
4. In this experiment they had to transform steam into water by cooling it.
5. Not all sources of energy are of great value.

IV. Перепишите и переведите следующие предложения, обращая внимание на функцию инфинитива в предложениях.

1. Mercury thermometers are used to measure higher temperatures than alcohol ones.
2. It was rather difficult to maintain the temperature at the same level during the experiment.
3. Elasticity is the property of a body to return to its original form and dimensions.
4. Our laboratory assistant was to explain the methods of temperature measurement.
5. To supply heat to a substance means to raise its temperature.

V. Прочитайте и устно переведите с 1-го по 5-й абзацы текста. Перепишите и письменно переведите 2, 3, 5 абзацы.

NATURE OF HEAT

1. Heat is a general term applied to that branch of physical science which deals with the laws of transference of heat and transformations of heat into other kinds of energy, the effects of heat on material bodies. There were existed many theories explaining the nature of heat. Since the nature of heat was an important problem of natural science of that time, many scientists in different countries turn their attention to this phenomenon. Our great scientist M. V. Lomonosov showed that heat is a

form of motion of molecules and defined the difference in temperature as the difference in the velocity of molecular motion. His theory laid the foundation for the present-day molecular-kinetic theory of heat.

2. At present we know that heat is a form of energy due to the motion of the molecules of a body. When heat, a form of energy, is supplied to a substance it produces a rise of temperature. In other words, heat usually causes an increase in the average kinetic energy of the random motion of the molecules of which the substance is made up. However, heat may also produce a change of state without any temperature change.

3. One can derive heat from work by using mechanical energy from chemical reactions by using chemical energy and from sun by using radiant energy. When we study heat we study changes of energy. Heat may be transferred from a hotter body to a colder one by direct contact. Fast-moving molecules tend to speed up their slower neighbours on collision. This method of heat transfer is called conduction. Some materials are good conductors of heat and others are poor conductors.

4. In gases and liquids another process of heat transfer is very effective, namely, convection. Convection is the transfer of heat by the motion of the hot body itself carrying its heat with it. As heat is absorbed by a body, the temperature of the body generally rises.

5. Nature has provided us with other sources of heat. The sun is the original source of all energies which are stored in fuels. It steadily sends out the greatest amount of radiant energy. The very small portion of that energy falling on the earth is, nevertheless, a tremendous quantity. Most of the radiant energy is dissipated into space and only its minutest part reaches the earth. The effect of heat keeps a human budy at a nearly constant temperature even though that of the air may change widely.

Вариант 4

I. Перепишите и переведите следующие предложения, определите в каждом из них видо-временную форму и залог глагола-сказуемого.

1. The automatic equipment is being installed in our shop.
2. The construction of this house will be completed in a month.
3. The engineer was asked about the new technology used at the plant.

4. Such scientists as Mendeleev, Bohr and others have done much in order to develop the basic laws of science.

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

1. It was Joule who proved experimentally that a definite amount of mechanical energy is always equivalent to a definite amount of heat energy.
2. The new power stations are much more powerful than the old ones.
3. That some force acts on the body is seen from the following example.

III. Перепишите и переведите следующие предложения, обращая внимание на разные значения глаголов to be, to have, to do.

1. The engineers are to study the problem of using solar energy.
2. The chemical industry is one of the leading branches of our national economy.
3. The engineer will have to improve the accuracy of this machine-tool.
4. The force of friction has stopped the body's motion.
5. These scientists do their best to expand their knowledge of different phenomena of nature.

IV. Перепишите и переведите следующие предложения, обращая внимание на функцию инфинитива в предложении.

1. To apply new technology in production we are to have all necessary conditions.
2. To study this phenomenon requires much knowledge.
3. The scientific problem to be solved will help us to explore space.
4. It is hard to overestimate the role of radioelectronics in technical progress.
5. Gold, silver and copper were the first to be used by a primitive man.

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

FROM THE HISTORY OF ELECTRICITY

1. Our age is called the age of electricity, for electricity is now used for most various purposes. Many changes are caused by it both inside and outside our homes.

2. The discovery of electricity cannot be definitely associated with any man's name. For a long time it was the only electrical phenomenon to be observed by man. The Greeks knew how to get electricity by rubbing substances. This electricity cannot be used to light lamps, to boil water, to run electric trains and so on. The Greeks of that time did not experiment. They could neither understand their observations in. the field of electricity nor make any use of them.

3. More than two thousand years had passed before the development of electricity as a science began. The study of electricity has begun with Dr. Gilbert who lived about the same time as Galileo. Ha wrote a book describing experiments in electricity and magnetism.

4. As early as 1753 Franklin made an important contribution to the science of electricity. He was the first to prove that unlike charges are produced due to rubbing dissimilar objects. To show that the charges are unlike and opposite, he decided to call the charge on the rubber - negative and that on the glass -positive. He is acknowledged to be the pioneer of the theory of atmospheric electricity. In his famous kite experiment he demonstrated that atmospheric electricity and static electricity are one and the same thing. He found the ingenious defence against the destructive action of lightning – the lightning rod.

5. Franklin's achievements were analyzed and approved by Lomonosov, who had made his own experiments independently.

The idea of atmospheric electricity greatly interested both Lomonosov and his friend Professor Rihman. Both of them had mads systematic observations and experiments on the subject in question.

I. Перепишите и переведите следующие предложения, определите в каждом из них видо-временную форму и залог глагола-сказуемого.

1. The properties of materials are affected by solar radiation.
2. Scientific and engineering progress opens up wide prospects before man.
3. The driver has changed the direction of the motion of the bus.
4. During the last three months we were studying a number of problems that were associated with motion as well as with force.

II. Перепишите и переведите следующие предложения, обращая внимание на разные значения глаголов to be, to have, to do.

1. A program for the construction of new types of spaceship is to be carried out this year.
2. A change in the direction of motion requires a force just as a change of speed does.
3. We have to build special solar stations to convert solar energy into electrical one.
4. Mathematics is of great importance for engineers.
5. A stone in motion has an ability to do work.

III. Перепишите и переведите следующие предложения, обращая внимание на разные значения слов it, that, one.

1. It is necessary to obtain accurate data on the possibility of living and working in space.
2. Scientists had to find new methods of investigation because the old ones were unsatisfactory.
3. Chemists have long believed that chemical reactions are of an electric nature.

IV. Перепишите и переведите следующие предложения, обращая внимание на функции инфинитива в предложении.

1. The main problem of the computers is to solve complex problems quickly.
2. Scientific discoveries to be practically applied in industry and ag-

riculture are paid special attention to.

3. To produce changes in physical state a considerable amount of thermal energy must be supplied to metal.
4. The aim of any research is to enlarge the possibilities which are offered by modern science.
5. To carry on scientific investigations was not so easy about three hundred years ago.

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

THE SUN

1. The diameter of the Sun is about 1, 391, 000 km. It is thousands of times larger than the earth. The Sun represents a mass of condensed gases and vapours. The temperature of the Sun is about 6000°C on the surface and nobody knows what it is in the interior. Most of the radiant energy is dissipated into space and only its minutest part reaches the earth.

2. The radiation reaching the earth from the sun does a great many things besides lightning and warming the earth and its atmosphere. The Sun is the original source of all the energy stored in fuels. We do know that light radiation is made use of by plants and under certain conditions the buried plants are gradually converted into coal.

3. The burning of coal is a simple chemical reaction - the oxidation of coal. The heat is one result of this chemical action. So the plant converted the energy of radiation received from the sun into chemical energy. This energy remained as potential chemical energy through the ages until the coal united with oxygen and this chemical potential energy was transformed again into heat.

4. The sunlight represents both the direct and indirect sources of energy. Solar energy converters equipped with large mirrors have already been used. The development of high-temperature solar energy installations makes it possible to produce steam at exactly the same tempertures end pressures as those obtained with ordinary boilers.

5. The high concentration of sunlight achieved with an installation of this type enables it to produce hot water and steam in quantities measured of kilograms an hour. Thus the sun energy converter can help solving many industrial problems in districts lacking fuel. It is able to supply fuelness energy, enough to meet all their power requirements.

КОНТРОЛЬНАЯ РАБОТА №4

Чтобы правильно выполнить контрольную работу №4, необходимо усвоить следующие разделы курса английского языка:

1. Условные предложения трех типов.
2. Сложные формы инфинитива и причастия.
3. Объектный инфинитивный оборот (complex object); субъектный инфинитивный оборот (complex subject); независимый (самостоятельный) причастный оборот.

Вариант I

I. Перепишите и письменно переведите следующие предложения, обращая внимание на инфинитивные обороты.

1. We know a lazer to be a device that stimulates the electrons of a light producing material to vibrate simultaneously giving off a light with tremendous energy.
2. Lazers are known to have found an application in the printing industry.
3. Light waves are now believed to be due to the motions of electrons themselves within the atoms.
4. Chemical investigations have shown each element to combine with another only in definite proportions.

II. Перепишите и письменно переведите следующие предложения, учитывая различая в переводе зависимого и независимого причастных оборотов.

1. The first lazer having been built in the middle of the XX century, scientists developed several types of lazers.
2. Having developed quantum generators called lazers, scientists are looking for practical use for в new kind of ray which is millions of times brighter than the Sun.
3. Semiconductor lazers are able to transform electric energy directly into light wave energy, this property of semiconductor lazers opening up new possibilities of producing extremely economical sources of light.

III. Перепишите и письменно переведите следующие сложные предложения, содержащие придаточные предложения условия.

1. If the Earth had no atmosphere, its heated surface would quickly radiate back into space all the energy which reaches it from the Sun.
2. If we had tested this material, we should have used it in our construction.

IV. Прочтите и устно переведите с 1-го по 7-й абзацы текста. Перепишите и письменно переведите 2, 5, 6, 7 абзацы.

WHAT CAN THE LAZER DO?

1. The 20-th century has been often called the age of the atom, the age of polymers, or the space age. It is possible to call it the age of the lazer too. The lazer has become a multipurpose tool. It has caused a real revolution in technology and in the nature of productive labour.

2. A lazer is a device for making and concentrating light waves into a very intensive beam. The light made by a lazer is much more intensive than ordinary light. The devices known as lazers serve as generators of radiation. Their main characteristic is that they make use of conversion of atomic or molecular energy to electro-magnetic radiation.

3. The first ruby lazer having been developed in 1960, many new lazer types were discovered. The world's most powerful lazer developed in England has reached an output of 250 kW for one millionth of a second and produced a temperature about 2, 5 million degrees Centigrade.

4. Lazers are now used for many scientific, medical and industrial purposes. They are used in electronics, medicine, engineering, communications, machine building and other fields of economy and science. But the field of Lazer applications is expanding very rapidly.

At present there exist lazers of various sizes, big and rather small, the latter being widely used in various branches of our industry.

5. Great importance is attached today to the use of lazers in medicine. The lazer can cure diseases. It has become indispensable as a means of space communication. Its beam produces a sharp picture on the television screen. Moreover, it can increase the size of the TV screen to that of a modern cinema. The lazer cuts steel, hard alloys and diamonds, and drills holes through them a few microns in diameter. The lazer can do soldering and welding fobs and harden metals. The lazer is now being used in communication lines.

6. Devices generating visible or nearly visible radiation are called optical lazers. Without the lazer beam there could be no optical electronics. Optical electronic instruments for recording, storing and processing information use a lazer beam.

7. Great power in lazers has many important research uses, such as making a plazma, the ionized state of matter which will finally lead to fusion of atoms.

Nevertheless, the lazer no doubt has innumerable other applications which are still to be discovered.

Вариант 2

I. Перепишите и письменно переведите следующие предложения, обращая внимание на инфинитивные обороты.

1. We know the existence of life on the Earth to depend upon the continuous receipt of enormous quantities of energy from the Sun.
2. The Sun is known to be a source of energy.
3. He is expected to be asked to calculate the energy of particles.
4. One cannot expect a complicated problem of using solar energy to be solved in a year or two.

II. Перепишите и письменно переведите следующие предложения, учитывая различия в переводе зависимого и независимого причастных оборотов.

1. The world consists of atoms, atoms possessing potential and kinetic energy.
2. All bodies in nature possess either potential or kinetic energy, most often they possessing both.
3. Having applied this method we solved complex mathematical problems.

III. Перепишите и письменно переведите следующие сложные предложения, содержащие придаточные предложения условия.

1. If you could have obtained the necessary information, you would have carried out these experiments.
2. Unless this material is treated properly it will not be a good insulator.

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

SOLAR ENERGY

1. Most of the energy that we use on the Earth even in some converted form such as coal and oil, stems from the Sun. Indeed, oil, coal, natural gas are fuels that release energy received from the Sun millions of years ago. When we use wood in a fire it is necessary to remember that the Sun supplied the energy for the growth of trees.

2. Hydroelectric energy is known to be electricity produced from the energy of falling water. This is actually stored solar energy, the water being lifted from the sea in the course of the hydrological cycle which is driven by the Sun. Hydroelectric energy has several advantages over other ways of producing electricity. No fuel is required, since the energy comes from the Sun.

3. The Sun is also important to us as a laboratory in which we can study hot gases in a magnetic field. The knowledge we are gathering from the studies of the solar gas enables us to control fusion processes here on Earth.

4. It is clear today that the supply of coal, oil and natural gas will soon become inadequate for our needs. It is natural that scientists began their search for new sources of energy. There is an increasing interest in obtaining energy from the Sun.

5. There are devices that give off an electrical signal when struck by sunlight. The device employed for converting solar energy into useful power is the solar cell. In the solar cell the junction consists of two different kinds of semiconductors. The cell is energized not by heat but by light. But solar cells are still expensive to use for general commercial purposes. They proved to be an ideal source of power for artificial satellites.

6. There is now considerable research centering on finding ways of converting solar radiation into heat and electricity. Man has learned to obtain electric power directly from the Sun at present. Architects have built houses to be heated by solar radiation due to applying suitably designed roofs and using suitable construction materials, the latter tend to retain heat obtained from the Sun. Under suitable conditions solar radiation can raise the temperature of the air to 300°F.

I. Перепишите и письменно переведите следующие предложения, обращая внимание на инфинитивные обороты.

1. Heavy water has been found by numerous tests to contain a very slight amount of hydrogen atom.
2. The kinetic theory of gases assumes a gas to be made up of particles moving about, with random motion.
3. We know the apparatus used for converting electrical energy from one voltage to another to be called a transformer.
4. The steam engines and turbines are known to be heat engines.

II. Перепишите и письменно переведите следующие предложения, учитывая различия в переводе зависимого и независимого причастных оборотов.

1. In the steam engine the fuel burns slowly, the heat being used to generate steam.
2. Having investigated the effect of temperature the authors mentioned above came to a definite conclusion.
3. The laboratory having been provided with necessary instruments, they could carry out the work successfully.

III. Перепишите и письменно переведите следующие сложные предложения, содержащие придаточные предложения условия.

1. The volume of gas will be proportional to its absolute temperature if its pressure remains constant.
2. Unless the material had been treated properly, it would not have been a good insulator.

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

ENERGY AND THE ENVIRONMENT

1. Many of the most serious environmental 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 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 us well. One major problem of hydro-electric 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.

3. Perhaps, the 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 powerful atomic electric stations are being built. 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 because 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 larger nuclei. However these power plants also contaminate the environment with radioactive elements that are released when the fuel is burnt.

Пояснения к тексту:

result from	- происходить
internal combustion engine	- двигатель внутреннего сгорания
wasted heat	- отработанное тепло
scarcity	- нехватка
thermo-nuclear fusion	- термоядерная реакция

I. Перепишите и письменно переведите следующие предложения, обращая внимание на инфинитивные обороты.

1. Physical, economic and business systems are known to have technical and human aspects.
2. We know many human activities to have played a part in scientific inventions.
3. The epoch of technical revolution is considered to be associated with the rapid development of science.
4. The new electronic device enabled workers to detect the defects inside thick metal parts.

II. Перепишите и письменно переведите следующие предложения, учитывая различия в переводе зависимого и независимого причастных оборотов.

1. Our physicists have made some new discoveries, the latter being commented upon in various magazines.
2. Having investigated the substance under a microscope we came to the conclusion that it was not a pure one.
3. The information being given with respect to the new data, it must be made use of in our research.

III. Перепишите и письменно переведите следующие сложные предложения, содержащие придаточные предложения условия.

1. If scientists use the new methods, they will have better results.
2. If the plant had introduced the latest achievements of science and technology, it would have increased labour productivity.

IV. Прочтите и устно переведите с 1-го по 5-й абзацы текста. Перепишите и письменно переведите 1, 3, 4 абзацы.

ROBOT TECHNOLOGY

1. Robots are machines of special type. They are considered to replace man wherever he is to do hard, monotonous or hazardous work. Robots are sophisticated machines. Many of them are fitted with artificial intellect systems, special programming devices and electronic controllers. Their development required the work of specialists in several

technical fields, together with specialists in biophysics and physiology.

2. The idea of robot technology was born in the forties, when the foundations of atomic power engineering - the basis of technological progress - were laid. The materials the scientists must deal with are radioactive. Besides the equipment used in obtaining and studying them is dangerous for man. At the same time work with radioactive substances, assembly and disassembly of atomic reactors, the servicing of machines and devices in radioactive zones require human effort. Remote-controlled equipment helps to solve this problem.

3. Research into radioactive materials is becoming ever more complicated, new problems arising in atomic power engineering and space technology. This calls for newer manipulators and devices to be handled by an operator. An analysis of these ideas and their solutions show two entirely different approaches. The first one is to bring the operator as close to the object as possible, the other requires remote control. Both approaches have already found practical application not only in atomic power engineering but in underwater exploration as well.

4. Our designers create robots for assembly operations, robots being used today for assembling various electronic circuits. Mention should be made that robots are in wide use for performing welding and painting.

5. Robot technology emerged at the Junction of two sciences - machine mechanics and control theory. Its further progress requires wide application of modern control machines and systems, handled by scientists specializing in the theory of working pro-cesses, biology and physics.

Пояснения к тексту

hazardous work	- опасная работа
sophisticated machines	- сложные машины
power engineering	- энергетика
remote-controlled equipment	- оборудование с дистанционным управлением
call for	- требовать

Вариант 5

I. Перепишите и письменно переведите следующие предложе-

ния, обращая внимание на инфинитивные обороты.

1. Current research is known to be concerned with microsystems.
2. We expected our scientists to convert a computer into an industrial engineering laboratory.
3. The new electronic computers to be employed at our enterprises are considered to influence on the work of the industrial engineer.
4. Modern discoveries allow science and engineering to be developed rapidly.

II. Перепишите и письменно переведите следующие предложения, учитывая различия в переводе зависимого и независимого причастных оборотов.

1. Having been equipped with electronic computers many modern plants use them for controlling various processes.
2. Electronic computers performing both arithmetical and logical operations, it is possible to govern the process under rather complicated conditions.
3. The scientist gave explanations of the observed facts, his report being accompanied by tables and diagrams.

III. Перепишите и письменно переведите следующие сложные предложения, содержащие придаточные предложения условия.

1. If computers had not been worked out, many important problems might not have been solved.
2. If these scientists made the experiment in time, they would get more information about this process.

IV. Прочтите и устно переведите с 1-го по 7-й абзацы текста. Перепишите к письменно переведите 1, 4, 6, 7 абзацы.

USES OF THE COMPUTERS

1. The computer is a universal information processing machine. The installation of computers in certain organizations has already greatly increased the efficiency of these organizations. Computers are a million times faster then humans in performing computing operations.

2. Computers play an increasingly important role in society, particularly in industrially developed countries.

3. The first electronic computers appeared in 1945. In the course of

some dozens of years mathematicians learned to solve problems of great complexity using these machines. Electronic computers can be classified into two general types: general-purpose computers and special-purpose machines.

4. General-purpose computers are electronic machines that do all types of arithmetical computation - add, subtract, multiply, divide, square root and a large number of other operations. A general-purpose computer can be regarded as a data-processing centre. Special-purpose electronic computers are limited either to the type of computations they can make or as to the functions they can perform.

5. Electronic computers cannot replace the judgement of the human brain, but they will release it from mechanical functions.

6. Without computers it would be impossible for engineers to perform the enormous number of calculations needed to solve many advanced technological problems. Computers help in the building of spacecraft, and they assist flight engineers in launching, controlling and tracking the vehicles. Computers also are used to develop equipment for exploring the Moon and planets. They enable architectural and civil engineers to design complicated bridges and other structural units with relative ease.

7. Computers have been of tremendous help to researchers in the biological, physical and social sciences. They also have a major role in the field of information science. It brings together knowledge from many fields of study.

Содержание

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АНГЛИЙСКИЙ ЯЗЫК

Методические указания и контрольные работы
для студентов I-II курсов
заочной формы обучения всех специальностей БНТУ

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