

МЭИ

**ГРАММАТИЧЕСКИЙ ПРАКТИКУМ
ПО АНГЛИЙСКОМУ ЯЗЫКУ**

РАЗДЕЛ 1. ПРИЧАСТИЕ

Тема 1.1. Причастия и функции определения

01. The theory of relativity of Einstein explaining the Universe mathematically is a powerful tool of physics.
02. Carbon atoms bound together form a chain.
03. Organic compounds called hydrocarbons have only hydrogen and carbon.
04. Electrical energy produced on board of spacecraft from chemical, nuclear or solar energy is not efficient enough.
05. Synthetic plastics used in machine-building instead of metals are very popular nowadays.
06. Maxwell's theory considering electric charges and electric magnetic waves is the foundation of the science of electricity and magnetism.
07. A man weighed on the moon finds out that his weight is one-sixth of his weight on the Earth.
08. An object pushed or pulled by forces changes its position from the state of rest to the state of motion or from motion to rest.
09. A thermodynamic system defined as a body or a group of bodies receiving or giving out heat or other forms of energy is described by the pressure, the temperature and the volume.
10. Rutherford's discovery of nuclear atom, further developed by Bohr, furnished a detailed explanation of the spectrum of the hydrogen atoms.
11. A detailed discussion of the exact nature of all fundamental particles dealt with physics is unnecessary in his book.
12. The students studying at the universities passed entrance exams in summer.
13. The lecture delivered by our dean was on new methods of technology.
14. An article discussing the new system of education appeared in all newspapers.
15. The results of the experiments discussed yesterday will be published.
16. The subjects studied in the first two years are very important for future engineers.
17. The attention paid to the study of fundamental subjects is great.
18. Students interested in computer engineering enter technological institutes.
19. The man delivering this lecture is our new professor on mathematics.
20. The number of specialists connected with new branches of science and engineering is increasing.
21. Open vessels and those generating steam at atmospheric pressure are not considered to be boilers.
22. The quantity of solar radiation received by the earth's atmosphere on a unit of surface in a unit of time is called the solar constant.
23. The quantity of heat passing through the conductor in a given time is in direct proportion to the area of the conductor.
24. Experimental wires made of niobium and titanium could carry a current of 1000 amperes.
25. The ion of metal losing electrons is no longer electrically neutral, it is positive.
26. Ice in a kettle placed over a fire melts, then gets warmer, and finally boils.
27. The first law of thermodynamics is merely the law of conservation applied to the transformation of heat into work.
28. The applied force changed the state of rest of a body into the state of motion.
29. The kinetic energy obtained by the body depends on its mass.
30. Each body possessing a potential energy can do work.
31. Forces influencing upon the body produce work.

Тема 1.2. Причастия в функции обстоятельства

01. Being converted into heat and wasted, a part of energy delivered to any motor or a generator is lost within the machine itself.
02. Having been carefully tested, the device was put into operation.
03. Having carried out many experiments and tests on this subject, the scientist published a great number of articles.
04. Having constructed the generator of galvanic electricity of unusual size, the Russian investigator Petrov was able to make many discoveries of great importance.
05. Speaking of the types of single-phase motors, one should mention synchronous motors.
06. Working at his new device, the inventor made numerous improvements.
07. Multiplying the mass of a moving body by its velocity, we shall get its momentum.
08. Having been used for a long time, the instrument partly lost its former efficiency.
09. Studying the nature of that new phenomenon, they were not satisfied with the results obtained.
10. Being negatively charged, a radio antenna can receive information transmitted by a laser instead of applying a special receiver for the light.
11. Trying to develop that method, he continued studying the problem.
12. Having written out and learned all the new words, he was able to translate the text easily.
13. Having studied the electronic structure of electricity, we shall now the quantum structure of light on the basis of the photoelectric effect.
14. Having defined the units for length, mass and time, we can express through them the units for all other physical quantities.
15. Using this method, we shall be in a position to corroborate the theory.
16. Studying nuclear reactions, we can find out how these radiations interact as they go through matter.
17. Having finished the test, he put down the results.
18. Having stated the laws of gravity, Newton was able to explain the structure of the Universe.
19. Having published his book about space exploration in 1895, Tsiolkovsky became known all over the world.
20. Speaking of hydraulic turbines, it is interesting to point out that there has been a great increase in size, capacity and output of Russian turbines.
21. Using a computer, you can solve a lot of problems.
22. Using superconductivity in thermonuclear installations, it is possible to make any experiments.
23. Being completed in 1897, Jefferson's building was the largest and costliest library in the world.
24. Though being a school teacher of mathematics all his life, Tsiolkovsky concentrated his attention on man's travel into space.
25. Discussing characteristics of these rays, we are concerned with the problem of identifying them.
26. If compared to today's TV program, the first black-and-white pictures were rather bad.
27. Being a teacher of deaf people, Bell became interested in sound and its transmission.
28. Though discovered, Newton's mistake had no influence on his theory.
29. While working at a new transmitter for deaf people, Bell invented a telephone.
30. If heated to 100°C, water turns into steam.
31. Having made many tests, the experimenter got interesting results.
32. Having been tested under unfavorable conditions, the machine was successfully put into operation.
33. Having been rubbed, many substances become electrified.

Тема 1.3. Независимый причастный оборот в начале предложения

01. A conductor of any kind carrying an electric current, a magnetic field is set up around that conductor.
02. A gas being heated at constant pressure, work is done by the gas while expanding.
03. A gas cooling down, the average speed of its molecules decreases.
04. A magnet being broken into two parts, we get two new smaller magnets.
05. An alternating current flowing through a conductor, its direction reverses at regular intervals.
06. An electric current passing through a conductor, we generally detect it thanks to its various effects.
07. An object losing its potential energy, that energy is turned into kinetic one.
08. It being a holiday, the university was closed.
09. Numerous calculations having been carried out at the research institute, it became possible to put in life the fifth generation airplanes.
10. The resistance being very high, the current in the circuit was low.
11. The voltage being increased, the field becomes strong enough.
12. The problem having excited a great deal of discussion, a series of tests had to be carried out.
13. The oil having been exhausted, the engine stopped.
14. The flow of the current being reduced, the speed of the motor is correspondingly decreased.
15. Copper being a good conductor, we were recommended to use it while carrying on our work.
16. These materials being unsuitable for many reasons, some others must be found to replace them.
17. Radiowave impulses being transmitted and received by radars, the operators can easily detect the location and velocity of planes in the sky.
18. The article being ready, I shall show it to the teacher.
19. The first TV-sets having been shown in 1939, the news about it spread throughout the world.
20. The fluid increasing in temperature, its density decreases.
21. The magnetic lines of force being cut by the wire, an e.m.f is induced in that wire.
22. The molecules or atoms of gas being ionized, an electric current passes through that gas.
23. The plant having offered new high tech micromotors, the modern small-sized appliances appeared at the market for selling.
24. The professor being ill, the lecture was put off.
25. The resistance being very high, the current in the circuit was low at the constant voltage.
26. The temperature being raised, the kinetic energy increases.
27. The young physicist having discovered a mistake in calculations, the experienced specialists corrected it.
28. There being a lot of spare components at the workshop station, we could fit our car.
29. There being no heavy traffic on the road, the driver can maintain a constant high speed.
30. With the current in the circuit of the primary winding increasing, the magnetic flux of the transformer core also increases.
31. An electron leaving the surface, the metal becomes positively charged.
32. The current being created, work has to be spent to maintain it against the resistance of the circuit.
33. The cell being charged, a certain quantity of electricity is passed through it.

Тема 1.4. Независимый причастный оборот в конце предложения

01. A radio transmitter and a radio receiver are not connected by electrical wires, radio waves travelling.
02. An e.m.f. is induced in the coil by the lines of force of its own changing magnetic field, this effect being called self-induction.
03. Different molecules have different speeds, the average speed of all molecules remaining the same as long as the temperature is constant.
04. Electric current can be generated by magnetic action, all of them being based on the principle of cutting magnetic force lines with a conductor.
05. Germanium was predicted by Mendeleev, the German scientist Ninkler discovering it seventeen years later.
06. In radio engineering work it is common to use the term «megohm» instead of large figures amounting to millions of ohms, the prefix «mega» stand-ing for a million.
07. In transistor there are two circuits, one of which contains the emitter and the base, the other containing the collector and the base.
08. Lasers produce intense, directional, pure in colour light beams, the latter being focused by the lens system.
09. Many scientists have tried to cool some gas to the absolute zero, their attempts coming to nothing.
10. Metals are excellent conductors, the best conductors of electricity being also the best conductors of heat.
11. Metals are the best conductors of electricity, non-metals being rather poor ones.
12. Most electricity we receive from electric power plants, portable generators running on petrol being in use as well.
13. People began to use the first steam engines many years ago, the above engines having been built in the 17-th century.
14. The atoms form combinations known as molecules, a molecule being defined as the smallest part of a substance.
15. The direction of vectors can be represented by arrows, the length of the arrows indicating their magnitude.
16. The earth revolves around the sun, the sun moving relatively to the stars.
17. The electric current is the flow of electrons through a metal conductor, these electrons flowing along a wire just like water runs through a pipe.
18. The famous English architect Anthony Panizzi designed the Reading Room of the British Museum in London, the Reading Room being a perfect circle.
19. The inventor demonstrated his new device, the students watching its operation very attentively.
20. The lines of force from the first coil induce a current in the circuit of the second coil, this being another kind of induction.
21. The molecules always collide and change direction, the speed of the molecular motion greatly depending on the temperature.
22. The term "speed" means the rate of motion, the term "velocity" meaning the speed in a definite direction.
23. The unfamiliar at that time substance exposing its magnetic properties was called Magnus after its discoverer, this name having come down to us as "Magnet".
24. The warm air rises, cooler air flowing around the lower part of the stove and warmer air going upward the ceiling.
25. Two insulated conductors were placed side-by-side to form the test specimen, the thickness of paper insulation between the conductors being 1.0 mm.
26. We are quite familiar with two properties of an dlectric currentresistance and self-inductance, the latter properly having been discovered by Faraday.
27. When a liquid boils evaporation takes place, small bubbles of vapour homing within the liquid.
28. Winking at his new device, the inventor made a number of improvements, the latter resulting, from his own experiments.
29. There is always water vapour in the air, the amount depending upon various conditions.
30. Some 100 years ago steam engines were first introduced, the valves being hand-operated.
31. The circuit being completed, the cathode emits electron.
32. The efficiency of the machine is 85%, the rest of the power being lost in the resistance to friction.

РАЗДЕЛ 2. ГЕРУНДИЙ. УСТОЙЧИВЫЕ ВЫРАЖЕНИЯ

Тема 2.1. Герундий: Формы и функции

01. Without understanding the laws of mechanics, it is difficult for the students to take part in research.
02. The method of connecting the armature and field winding of the series motor is exactly the same as for the corresponding generator.
03. Having analyzed received data, they suggested carrying out the experiment again.
04. Before reaching any conclusions, we should discuss everything in detail.
05. It is difficult to solve some of the present day scientific and techno-logical problems without using supercomputers.
06. Due to our working together, we succeeded in finishing the work on time.
07. They have developed a new technique for obtaining this substance.
08. Materials for making plastics can be classified in terms of whether they can be softened or formed only once, or as often as desired.
09. Original scientific thinking is very important for every researcher.
10. In his report he emphasized the complexity of producing these materials in sufficient quantities.
11. By studying Newton's laws of motion, we learn that they are applied not only in engineering but in our daily life as well.
12. Systems for detecting, inspecting, and, if necessary, attacking enemy satellites and space vehicles can be either ground- or space-based.
13. On being, set on a proper orbit completely free from the Earth's gravitation, a satellite keeps on moving forward through space.
14. The second law of motion provides scientists with a means for measuring forces, which is of great importance in planning the orbits for artificial satellites.
15. There are two ways of stating the third law of motion.
16. By repeating experiments one gets addition data which help in arriving at right conclusions.
17. Another interesting device for testing materials at high temperatures and speed is a hypersonic shock tube.
18. Demonstrating the first law of motion on the Earth's surface is rather difficult due to tremendous forces of gravity.
19. Having proved the validity of his theory, he went on working on it.
20. Breaking the circuit causes sparking.
21. Landing on the planets will vary according to atmospheric conditions.
22. Launching a man or a crew into space can be accomplished in several ways.
23. The main point of a transformer is raising or lowering voltage.
24. The advantage of the new equipment is functioning under wide changes of temperature and pressure.
25. The purpose of the satellite was lifting the airborne instrumentation to a vertical distance of 250 miles from the surface of the Earth.
26. Big rockets have been used for launching satellites into the Earth orbit.
27. This article gives a simple method for estimating pressure distribution.
28. By cooling we can turn substances into solids or liquids.
29. On joining the upper ends of the metals with a metal wire, we caused the current to flow through the wire.

Тема 2.2. Герундиальный оборот

01. Newton's having stated his laws of motion is very important for modern science.
02. He insisted on adopting a new plan.
03. Newton's having invented the mathematical machinery needed for proving the validity of the basic laws of mechanics was of great importance.
04. The Principia's having been published brought Newton world fame.
05. Silicon resembles carbon in forming a series of volatile hydrates.
06. There is a constant danger for every spaceship of being burned up because of its having been set on a wrong orbit.
07. Jet engines on account of their being air-breathers require an air supply from the atmosphere for feeding the hot gases.
08. The state of rest or uniform motion of a body is changed after its being acted upon by some external unbalanced force.
09. We know of his having spent more than 20 years of scientific thinking before finally formulating the ideas on paper.
10. We know of any object being prevented from moving at constant speed by air friction.
11. The motion of this body was changed because of its having been acted upon by an external force.
12. Scientists are able to measure the forces of gravitation at any point on the Earth's surface due to Newton's having provided them with the second law of motion.
13. Graphite is used as a moderator in the atomic pile because of its being cheap and its ability to stand high temperatures.
14. The electrons flow to the cathode because of its having lost electrons and being less negative than the negative side of the battery.
15. We know of silver and copper being very good conductors of electricity.
16. Mica is widely used as a dielectric in high grade condensers because of its having high dielectric strength.
17. Marie Sklodowska's having made numerous experiments resulted in isolating two new elements.
18. When a bar of iron is thrust into a fire it becomes heated due to the atoms comprising the bar becoming agitated.
19. The mechanisms by which charged particles in an electronic device are formed nearly always insure their having some residual velocity.
20. The Curies' having discovered radium gave them the possibility of discovering other radioactive elements.
21. We know of Yablochkov's having found a brilliant solution to the difficult problem of using the electric arc for lighting.
22. Most metals being good conductors of heat and electricity made them widely used in industry.
23. Graphite is used as a moderator in the atomic pile because of its being cheap and its ability to stand high temperatures.
24. One cannot carry out experiments without lab technique having been mastered well enough.
25. We know of any object being prevented from moving at constant speed by air friction.
26. We have heard of Newton's having been suggested to put down on paper his ideas, which he did.
27. Newton's having established the law of inertia has provided scientists with a means for setting satellites on proper orbits.
28. The motion of this body was changed because of its having been acted upon by an external force.
29. According to Newton's second law, the motion of a body's is changed as a result of its being acted upon by a force.
30. They insisted on postponing the discussion.
31. The book aims at acquainting the readers with modern achievements in information technologies.
32. Up to the present time, several writers have succeeded in finding exact solution of the fundamental differential equation in certain particular cases.

Тема 2.3. Отличие герундия от причастия

01. Moving a north pole of a bar magnet towards a coil induces a counter-clockwise current in it.
02. Heating the gas increases the speed of the molecules. Students observed the behavior of liquids heating them with regular intervals.
03. As on the surface of the Earth, the magnetic field in space can also be used for determining directions of flight.
04. Reliability of the construction can be improved by using additional elements. Using the new methods of investigation mathematicians obtained quite extraordinary results.
05. The velocities of stars can be determined by examining the spectrogram of the light which comes from them.
06. Having made the experiment, the researcher recorded the data. Newton was interested in making experiments since he was a student at Cambridge.
07. The water boiling in the vessel changes into steam.
08. In electron spectroscopy information is obtained by analyzing the energy spectrum of electrons.
09. Combining hydrogen with oxygen in the proportion of two atoms of hydrogen and one atom of oxygen, we produce water.
10. The forces acting on an airplane in flight are lift, weight, drag and thrust.
11. Going into chemical combinations elements entirely change their properties.
12. Solving the mystery of cosmic acceleration will reveal the destiny of our universe.
13. While heavy atoms can be made to release energy by splitting, light atoms, such as hydrogen, can yield energy by being fused together.
14. One of the ways of producing tremendous energy is imitating on the Earth the process that makes the Sun shine.
15. Bose-Einstein condensation is of fundamental importance in explaining the phenomenon of superfluidity.
16. Using electricity on a large scale opens up great possibilities in various fields of science and everyday life.
17. Solar batteries using the energy of the Sun convert it into electric current, being the source of electric energy for the equipment on spaceships.
18. Launching artificial satellites, we obtain the information about the Sun's radiation, about other planets, etc.
19. Copper is of great value, being a good conductor of electricity.
20. Splitting atoms, scientists have learned to release much energy. Splitting uranium may release neutrons to split more atoms to form a chain reaction.
21. A neutron is a particle having the same mass as a proton but carrying no electric charge.
22. Scientists succeeded in breaking the nucleus of the atom by attacking it with very small particles flying with high speed.
23. Utilizing solar power on a large scale means getting possession of this immense source of power.
24. Applying the method will give the results desired. Applying the method, the technologists will get the results desired.
25. Testing the engine, they found serious defects. Testing engines should be carried out on a special stand.
26. Dividing a unit of distance by a unit of time, we get a unit of speed. Dividing a unit of distance by a unit of time gives a unit of speed.
27. Producing power is dependent mainly on the fuel and machinery available. Producing electricity by means of generators, we get rather low efficiency.
28. The use of cooling medium prevents from overheating.
29. Many substances after being rubbed behave as amber does.

Тема 2.4. Устойчивые выражения и сложные предлоги

01. In order to locate some defects in objects made of wood, rubber or metal, the laboratory assistant X-rays them.
02. In dealing with direct currents any potential difference in excess of five volts should be considered unsafe.
03. As a matter of fact, the methods used in measuring activities depend upon well known equilibrium laws.
04. When an electric charge is in motion, it is referred to as an electric current.
05. The laboratory, just referred to, was provided with the most modern measuring devices.
06. The experirrienter will be able to carry out numerous tests provided he is given all necessary instruments.
07. In case one end of the wire is made positive by removing electrons from it, the shortage of electrons at this end will cause free electrons to be attracted toward it.
08. In a condenser the only useful characteristic is the capacity.
09. Iron is by all means the most important metal, not alone because of its comparative cheapness, but because of the high value of the permeability in most electric apparatus.
10. By no means, can this device be put into operation.
11. In fact, the voltage stress produced by the wave can be considered as resulting from the movement of the magnetic flux of the same wave.
12. A considerable amount of heat is radiated by the body in question.
13. The heavier the substance, the more complicated is the atom.
14. The better the experimental technique, the more reliable are the results.
15. The higher the current flow, due to a higher voltage, the greater is the number of electron collisions per second.
16. The higher the resistance of the wire, the hotter it will get under the flow of a given current.
17. This is the only reasonable suggestion.
18. The efficiency of the machine is 85%, the rest of the power being lost in the resistance to friction.
19. Steam may be passed into an engine to produce mechanical energy. This in its turn may drive a dynamo.
20. In order to prevent corrosion, metals to be used in industry must be covered with special paint.
21. The 'preferential' scattering of radiation arises because of the mutual interaction between the electric and magnetic resonances of the nanosphere.
22. Electrolytes conduct the current owing to the presence of ions both positive and negative.
23. The molecules are held in position due to the rigidity of the crystal.
24. In order to break this glass, a great amount of force must be applied.
25. In the Universe where all is in motion and nothing is fixed, only light always has the same speed, the speed of light being the only constant quality.
26. We must by all means complete this work in time.
27. But for the atmosphere, no life would be possible on the Earth.
28. The only exception to this is hydrogen whose nucleus contains only the proton.
29. This error in calculations is due to numerical integration of the differential equation.
30. A vehicle is considered a sounding rocket provided it rises above the atmosphere out to 4000 miles.
31. Our most accurate knowledge about climate sensitivity, at least so far, is based on empirical data from the earth's history.
32. Iron is allotropic, that is, it exists in different forms.
33. The reprogramming of the equipment in flexible automation is done offline: that is, the programming is accomplished at a computer terminal without using the production equipment itself.
34. Hyperbolic equations are used in mathematics as often as in physics.
35. The speed of the molecules is so small compared with that of the leetron that only a fraction of the current is transformed.
36. The method of connecting the armature and field winding of the series motor is exactly the same as for the corresponding generator.
37. As a matter of fact, most of our knowledge of the nature of atoms has nine from the work of physicists.
38. The question of setting a unit of e.m.f. can be dealt with in the same as for current.
39. When an electric field acts upon the molecules of even a good insulator, there is a motion of electrons due to this field.
40. The possibility of an insulator breakdown which is referred to in the above article was due to high voltage.
41. In fact, the creation of a single photori in an optical circuit has been possible for some years.
42. But for his help, it would have been extremely difficult to deal with such accurate measurements.

РАЗДЕЛ 3. ИНФИНИТИВ

Тема 3.1. Инфинитив: формы и функции

01. They can translate this text without a dictionary.
02. To translate this article is not an easy thing to do.
03. The professor to deliver a lecture at our institute is an outstanding scientist.
04. The experiment to be carried on by our scientific group is described in this article.
05. Can this work be done in our laboratory using new equipment?
06. He was glad to enter the MPEI.
07. This is the device to be used in our experiment.
08. The thermometer is a device to measure the temperature.
09. The generator is a device to change mechanical energy into electrical energy.
10. Our country, was the first to use atomic energy for peaceful purposes.
11. Two types of electricity differ in their ability to serve mankind as well as in their behaviour.
12. The electricity to be obtained by rubbing objects cannot be used to light lamps, to boil water, to run electric trains and so on.
13. Franklin was the first to prove that unlike charges are produced due to rubbing dissimilar objects.
14. To show that the charges are unlike and opposite, Franklin decided to add the charge on the rubber — negative and that on the glass — positive.
15. V.V. Petrov was the first to carry on experiments and observations on electrification of metals by rubbing them one against another.
16. Volta spent the next few years trying to invent a source of continuous current.
17. The function of the boiler is to transfer heat of water in the most efficient manner.
18. To reproduce a thermonuclear reaction lasting half a second, the installation requires the energy produced by a 200 thousand KW power plant.
19. To transform energy from any of its numerous forms into heat is a comparatively simple process.
20. The energy to be expended per candle power is less than half used by carbon lamps.
21. Heat to be absorbed by a liquid causes the liquid to evaporate.
22. A steam engine to meet industrial requirements was first put into operation in a far-away Siberian town, in August, 1766.
23. A load resistor must be used to obtain high amplification of voltage.
24. This problem remains a critical one for scientists to solve it.
25. The steam turbine was the first form of heat engine developed and the latest one to be perfected.
26. To turn a substance from one state to another it is necessary to add or to remove a definite amount of heat.
27. The last principal component of an electric power system to be discussed here is a distribution system.
28. It is necessary that the sample to be analysed would be chemically pure.
29. A diode circuit used to pass one half of a signal is a detector.
30. To analyse this effect, we are to consider all the elements of the circuit. To analyse this effect is to take into consideration all the elements of the circuit.
31. The apparatus to be designed is to be used at the power station.
32. To find out the state of a mass of a gas is quite possible. To find out the state of a mass of a gas, one should know its volume, its pressure and its temperature.
33. To develop the supercomputer, highly developed electronics and new materials were required.
34. One of the best ways to keep the car speed steady is to use a computer.
35. Experiments helped Mendeleev to discover the properties of new chemical elements.
36. Some materials with new useful properties may be produced in space.
37. A special electronic device signals the engine to stop.
38. High temperature alloys, make it possible for jet engines to be operating under severe conditions for a long period of time.
39. To detect objects at a distance such as ships, aircrafts, buildings, mountains, etc. is of great importance for navigation both at sea and in air.
40. Recently a radar to be mounted on cars has been developed.
41. To prevent dangerous changes in the field strength, series motors are sometimes modified.
42. The d.c. generators to supply correspondingly large d.c. motors are driven by a.c. motors, the large d.c. motors driving the mills.

43. To attract the stream of electrons, the plate of the tube is normally connected to a high positive voltage.
44. A relatively low voltage (ac or dc) is connected to the filament or heated to bring the cathode to its proper emitting temperature.
45. Modern ratio receivers use tubes to detect and rectify the incoming signals.
46. One of the greatest potential applications of microprocessors is to control street traffic.
47. Minicomputers are unable to withstand the severe environmental conditions.without major design modifications.
48. Microprocessors are providing information to help humans improve the quality of the earth's environment.

Тема 3.2. Объектный инфинитивный оборот (сложные дополнения)

А. Инфинитив с частицей *to*

01. We consider atom to be the basic particle of any matter.
02. Scientists believe new laser devices to be widely used in medicine.
03. We believe the speed limit to be the key factor of traffic safety.
04. Engineers suppose a new "night vision" system to enable drivers to see better after dark.
05. Scientists expect lasers to solve the problem of controlled thermonuclear reactions.
06. Designers expect dirigibles to be used for exploration of new territories.
07. Scientists in many countries consider propeller engines to be much more economical.
08. Do you think your postgraduates to pass their candidate's exams perfectly?
09. Volta thought electricity to be generated due to the contact of the two dissimilar metals used.
10. We consider the voltaic pile to be the first generator converting chemical energy into electric energy.
11. We assume new energy technologies to hold the promise of profoundly changing the face of energy markets.
12. They assume the given course to help the manufacturers reduce the risk of the equipment damage.
13. The students did not expect the questions at the exam to be too difficult for them to answer in no time.
14. The operator did not want the engine to be turned on without his permission.
15. Designers would like the weight and sizes of the transformer to be reduced a lot.
16. I should like her to look through my report before the scientific conference.
17. People considered dirigibles to be too slow and unreliable, that is why they were not used for a long time.
18. We know propeller planes to fly slower than jet planes, therefore a new ventilator engine with a propeller has been built.
19. We know the transmission lines to be the connecting links between all the generating stations and the distribution systems.
20. We know the field poles to be wound with wire in such direction that the magnetic field strength increases when direct current from the outside source is supplied to the field windings.
21. Democritus thought all substances to be made up of tiny particles or atoms which could not be further divided.
22. We know the electric motor to turn machinery and various appliances.
23. We know small powerful electromagnets to be used by doctors to remove steel particles from the eye.
24. We assume the steel nozzle to be a passage of varying cross-section by means of which the energy of steam is converted into kinetic energy.
25. When liquids are heated, we expect them to expand more than solids do.
26. We know the strength of the current to depend on the resistance of the circuit.
27. We know the copper wire to be used as a conductor.
28. We know distilled water to have high resistivity.
29. Moulton and Chamberlain believed the earth and other planets to have come originally from the sun.
30. Japanese designers believe a new ceramic engine to replace the conventional one.

Тема 3.2. Объектный инфинитивный оборот (сложные дополнения)

Б. Инфинитив без частицы *to*

01. The students heard the professor speak about his last experiments and achievements.
02. Nowadays people watch over television cosmonauts work in space.
03. The protecting circuit worked out and did not let the motor be damaged.
04. The attraction and repulsion between the poles of the rotor magnet and the poles of the field magnet make the rotor turn.
05. At the Paris Exhibition people watched the cargo airplane «Ruslan» carry a great amount of cargo.
06. When you stand near a working engine you feel it vibrate.
07. The unsatisfactory results of Bell's experiments made him change the method of testing.
08. Making experiments with electric telegraph Morse noticed a pencil make a wavy line when connected to an electric wire.
09. The excellent properties of Damascus steel made metallurgists of the whole world look for the lost secret of the steel.
10. Very high temperatures often made certain materials break.
11. Recent discoveries in superconductivity made scientists look for new conducting materials and for practical applications of the phenomenon.
12. The students saw the thermometer mercury fall to the fixed point.
13. The induced voltage let the current flow and rotor revolve.
14. The ohmmeter let the value of resistance be measured.
15. The pressure that makes these atomic particles move, the effects when they encounter opposition and how these forces are controlled are some of the principles of electricity.
16. The chemical effect lets electric current flow through a liquid.
17. A generator does not create electricity, but generates or produces an induced electromotive force, which makes a current flow through a properly insulated system of electrical conductors external to it.
18. A generator is an electric machine which lets mechanical energy be converted into electric energy.
19. When a machine is driven by a source of mechanical power, it makes a generator work and deliver electrical power.
20. We watched the robot perform many operations.
21. The professor made the students repeat the experiment to get better results.
22. We did not see them make this experiment.
23. I saw the workers repair the machine.
24. The discovery of the electron let the scientists make a revolution only in physical science.
25. A laser is a machine which makes light waves concentrate into a very intense beam.
26. We noticed special instruments measuring cosmic radio signals be installed in the observatory.
27. Large-scale applications of electronic technique let technical progress be capable to revolutionize many branches of industry.
28. A Dutch physicist observed a superconducting material return to a normal state when a strong magnetic field was applied.
29. Additional radio transmitters let the pilot make his approach to an airport by watching his flight instruments.

Тема 3.3. Субъектный инфинитивный оборот (сложное подлежащее)

A. С глаголом-сказуемым в страдательном залоге (Passive)

01. A fuse is expected to melt and break the circuit.
02. A method for recording information on crystal by means of a laser is known to have been developed by a Russian researcher.
03. A simple substance is supposed to be formed of small particles, all identical with each other, called the atoms of this element.
04. All material substances are regarded to be constructed from 104 different kinds of atoms.
05. Before 1911 superconductivity was assumed to be impossible.
06. Compounds are assumed to be formed of molecules resulting from the combination of a number of atoms constituting the simple substances.
07. Every chemical compound is known to make up of tiny particles called molecules.
08. Heat is said to be transferred by conduction.
09. Hydrogen constituting a large part of the atoms in the body was found to be the best element for slowing neutrons in a reactor.
10. Intensive research on an optical-electronic computer is said to be going, on in a number of US companies.
11. Light and radio waves are stated to be of similar nature.
12. Optical technology has been found to be cost effective.
13. Propeller planes are known to fly much slower than jet planes.
14. Superconductive wires are known to be used in the coils of the motor.
15. Telegraph systems and telephones, motors and generators, radio sets TV sets, relays as well as electrical measuring instruments are known to contain electromagnets.
16. The annual output of personal computers is expected to reach millions in the near future.
17. The electrical resistivity of a mercury wire was found to disappear when cooled to — 269°C.
18. The current is known to flow when the circuit is closed.
19. The first wave power electrical stations in Scotland were reported to have been developed.
20. The ideal boiler is supposed to be of correct design, to have sufficient steam and water space, and good water circulation.
21. The optical equivalent of a transistor is reported to have been produced.
22. The laser is known to be a device producing an intensive beam of light by amplifying radiation.
23. The Sun was supposed to be composed of highly combustible materials which were burning and emitting heat.
24. The Sun was supposed to be larger and hotter than at present.
25. The substance was found to be composed wholly of carbon, hydrogen, and chlorine.
26. The term "radar" is known to be composed of the first letters of "radio, detection, and ranging".
27. The total energy is assumed to be constant in all these calculations.
28. Today's aircraft is expected to be replaced by a new model of hypersonic aircraft in a few years.
29. This new method of research is expected to be more reliable than other methods.
30. This firm is considered to be a leading company in the production of computer equipment.
31. This type of engine is said to have many disadvantages.
32. Under such conditions laboratory testing is assumed to continue to expand rapidly.
33. This device may be assumed to be the best for converting heat into work.

Тема 3.3. Субъектный инфинитивный оборот (сложное подлежащее)

Б. С глаголом-сказуемым в действительном залоге (Active)

01. A system of Earth satellites appears to have solved the problem of transmitting TV programs to any part of the world.
02. About 50 per cent of Lake Baikal water proved to have been polluted since the Baikal plant has begun its work.
03. Although we see evidence of such diffusion in our data, it does not appear to affect the results seriously.
04. Concerns are certain to be raised over the prospect of electricity shortages and their effects on economic development where these take place.
05. Electricity proved to be able to travel instantly over a long piece of wire.
06. Heavy water proved to freeze at about 4°C and to boil at about 101°C.
07. Landing is certain to be the most difficult part of a flight to Venus, Mars, and Mercury.
08. Lasers appeared to be highly useful for solving the problem of controlled thermonuclear reaction and communication.
09. Lasers are sure to do some jobs better and at much lower cost than other devices.
10. Lasers are unlikely to be used in our everyday life soon.
11. Lightning proved to be a discharge of electricity.
12. M. Faraday supposed a light beam to reverse its polarisation as it passed through a magnetised crystal.
13. Nowadays the principle of radio operation seems to be quite simple.
14. Properties of materials obtained in space prove to be much better than those produced on Earth.
15. She is sure to take a postgraduate course at Moscow Institute of Power Engineering next year.
16. Sound is sure to travel faster through solids than liquids and gases.
17. Superconductivity is certain to bring about new discoveries in science and technology.
18. Superconductors are likely to find applications we don't even think of at present.
19. The data are certain to be investigated in the shortest time possible.
20. The electrolytes appear to change quality when the current passes through them.
21. The engineers are certain to know that alternating voltage can be increased and decreased.
22. The instrument is not likely to be damaged if all rules are followed.
23. The iron filings appear to be drawn to the magnet when being placed in its vicinity.
24. The latest achievements in the field of superconductivity are certain to make a revolution in technology and industry.
25. The operation of this equipment proved to be efficient.
26. The overloading of the line is likely to produce a short circuit.
27. The phenomenon of superconductivity appears to have been discovered as early as 1911.
28. The samples tested last time happen to be quite different from the other ones.
29. The split-phase type motor proved to be the most-widely used of all motor connected to a single-phase sources of supply.
30. The strength of electromagnet with a given core proved to be proportional to the number of ampere turns.
31. The use of helium gas and standard leak detector proved to be an effective technique for measuring the beam properties.
32. There seems to be a lot of alloys and compounds that become superconductors under certain conditions.
33. This laboratory is certain to have solved this problem for a long time.
34. This rather complicated scheme seems to have lost simplicity of our idealized model, but there are good reasons for the complexity.
35. Unfortunately, this general solution does not appear to have a simple explicit form.
36. Vacuum tubes appear to perform such functions as rectification, amplification, detection, modulation and others.
37. Zinc seems to have been known long before the days of the alchemists as one of the constituents of the alloy brass.

РАЗДЕЛ 4. ОПРЕДЕЛЕНИЕ. ПРИДАТОЧНЫЕ ОПРЕДЕЛИТЕЛЬНЫЕ ПРЕДЛОЖЕНИЯ

Тема 4.1. Способы выражения определения

01. Proper translation of passive construction is of great importance for correct understanding of technical texts.
02. In all higher schools theoretical studies are followed by practical training:
03. In two- and four-stroke internal combustion engines the petrol-air mixture is ignited within the engine's cylinders.
04. Newton's well-known law of motion was written in Latin, as Latin was the only written language used in science at that time.
05. For your experiment you may use the materials available in our laboratory.
06. In this paper we survey the possibilities arising from the application of new high-precision instruments.
07. I will give a review of paper covering the most overwhelming problems in the field of the genetic code mechanisms.
08. In this experiment we obtained a large variation of density values ranging from several to tens of thousands of cells per cubic centimeter.
09. The present work is a survey of the electron transfer mechanisms and underlying phenomena occurring in collisional processes.
10. The transformations taking place in such reactions have been listed explicitly in a number of works.
11. All papers concerning biological aspects of space flights will be presented at the panel sessions of the symposium.
12. This conference has brought together a large number of researchers working in the rapidly developing area of high-energy physics.
13. The results presented here add to our knowledge of the ion transport mechanism.
14. The essential point of this talk is to give a unified treatment of the seemingly unrelated data cited above.
15. The literature to be reviewed in connection with this problem should primarily be concerned with theoretical treatments of the electron transfer phenomena.
16. For lack of time many of the important contributions to be considered in this connection will only be mentioned in passing.
17. The problem of introducing this principle in research brings about much difficulty.
18. In his report he emphasized the complexity of producing these materials in sufficient quantities.
19. I have the honor of being present at a meeting of scientists who have made substantial contributions to the ever developing area of magnetism.
20. Let us look at the schematic representation of this process showing quite clearly the starting point of the event.
21. The side effects complicating this picture can be ignored for the time being without making the situation look oversimplified.
22. A glance at the table shown here leads us to the conclusion that the result lies far beyond our expectation.
23. A theoretical treatment of the problem concerned keeps in line with the main purpose of this paper.
24. The attempts to explain the deviation of the experimental findings from calculations to be found in current literature have been inadequate.
25. The best experimental evidence for the correlation to be considered later in more detail comes from the recent work by Hiller and his collaborators.
26. A short version of this paper to be published in "The Journal of Biological Chemistry" will be limited to a brief treatment of the experimental findings.
27. The data to be reported here point to the possibility of a feed-back mechanism, but this is to be checked.
28. The scientific meeting to be organized next year by the Atomic Energy Commission will tackle both experimental and theoretical aspects of research into plasma phenomena.
29. The best way of approaching this problem is to treat it in terms of the newest data.
30. In his talk he drew our attention to the simplicity of performing such observations.
31. The period of collecting statistical information has come to an end.
32. We are having a lot of difficulty in trying to avoid these complications.

Тема 4.2. Придаточные определительные предложения

01. All the knowledge of physics which you have is not sufficient to explain this phenomenon.
02. The variety of purposes which influence the usage of electricity is endless.
03. The two facts which caused great changes in industry will be mentioned in the report.
04. The device which is used for mixing fuel and air is called carburetor.
05. The man who invented the compression-ignition engine was a German engineer, Diesel by name.
06. The usual courses which the undergraduate at every technical institute take are: descriptive geometry, elements of machines, strength of materials and theory of metals.
07. The fuel is injected into the cylinders of the engine by means of injectors that are set in the head of each cylinder.
08. He omitted some minor points, which were necessary to do.
09. The bill that limited the speed of self-propelled vehicles to four miles per hour was issued by government at the time when the first motor-cars appeared in the streets.
10. Rontgen was certain that the discovery that he made would find application in many fields of science.
11. Petrov invented the electric arc long before Volta, whose name is usually connected with this invention.
12. The idea of the atom was first introduced by Democritus, whom we should call the father of the atomic theory of today.
13. The distance that the light travels in the second is 300 thousand kilometers.
14. The great ocean of the air which surrounds the earth is in constant motion.
15. Rubber is a light, elastic, durable and water-resistant material, which is very important in industry.
16. The purposes for which electricity is used are numerous.
17. Strength and elasticity are properties which the durability of a material depends upon.
18. The scientific facts which the newspaper refers to were published only yesterday.
19. Chemistry is the science that deals with the structure of matter and its changes.
20. The laboratory is the place where experiments as well as scientific research may be carried out.
21. Substances can be divided into two classes: electrolytes whose solutions conduct electricity and non-electrolytes whose solutions do not conduct electricity.
22. Most laboratories have small machines which are being used for demonstration purposes.
23. This question will be taken up in Chapter 6 where the whole subject of the measurement will be discussed.
24. Physics is the science which must be concerned with other natural sciences.
25. All familiar concepts which will be involved in our studies are concerned with differential equations of the second order.
26. The motion which will be calculated can be explained in terms of acceleration.
27. The scientist whose discovery was discussed at the last conference is quite a young man.
28. The phenomenon which was discovered by Roentgen is widely used in medicine.
29. In a type of rectifier we are going to discuss the internal resistance of the tube which varies with the power demand upon it.

Тема 4.3. Бессоюзные придаточные определительные предложения

01. The energy a body possesses represents its capacity to do work.
02. A few pounds of uranium can supply a medium-sized town with all the electricity it needs during a whole year.
03. The atomic weight of an atom is the number of protons and neutrons it contains.
04. The phenomenon Roentgen discovered is widely used in medicine.
05. This is a type of reaction you will easily understand.
06. One of the problem Kurchatov worked at was the problem of mastering controlled thermonuclear reactions.
07. The method of cooling this engineer is speaking of will improve the engine's efficiency.
08. We think that the method he is interested in is really good.
09. Tell me something of the work the staff of your laboratory is engaged in.
10. The new devises our laboratory is equipped with were built abroad.
11. Machine parts are often X-rayed to make sure that they are really good for the job they have been constructed for.
12. The results of research they are engaged in depend on proper X-ray examination of the metal the parts of the measuring device are made of.
13. Einstein gave an entirely new idea of the world we live in.
14. The problem we are dealing with is very important for our laboratory.
15. The method of cooling this engineer is speaking of will improve the engine's efficiency.
16. The new devices our laboratory is equipped with have been built at a large instrument-building plant.
17. The cardboard box Rontgen enclosed his cathode ray tube in was lightproof.
18. The molecules every substance is composed of are in a state of constant motion.
19. The number of electrons emitted from the filament in a unit time depends upon the substance it is made of and upon its temperature.
20. The liquid takes up the shape of a vessel it is contained in.
21. The phenomenon we are going to observe is of great practical importance.
22. In the figure are shown the conclusions they arrived at after having studied the problem of current and voltage in phase.
23. It is very important to know the time the current passes the midway between the given points because of its being of great importance for the test in question.
24. The thing one must have in view while dealing with resistance is that it is impossible to construct a circuit "with resistance only".
25. The characteristics we are interested in are shape and size.
26. Every task a computer does must be programmed.
27. The tools you will work with in the shop are in this box.
28. The molecules every substance is composed of are in a state of constant motion.

РАЗДЕЛ 5. УСЛОВНЫЕ ПРИДАТОЧНЫЕ ПРЕДЛОЖЕНИЯ

Тема 5.1. Условные придаточные предложения первого типа

01. If a short circuit occurs, the generator will be put out of action.
02. If ordinary gases are greatly compressed, they will become liquids.
03. He won't finish his report on time unless he works hard.
04. If there is fuel shortage, the thermal power station will not be able to generate electricity.
05. Provided new composite materials are used, it will be possible to re-duce overall aircraft weight.
06. In case there is no current in a conductor, there will be no electric, field within it.
07. If you mount a step-up transformer in this electrical circuit, you will be able to increase voltage on the load.
08. Unless we further develop our renewable energy sources, we won't be able to achieve higher levels of industrialization.
09. If the steam expands, its velocity and specific volume will both increase.
10. The energy yield will remarkably increase if new equipment is in-stalled at the thermoelectric power station.
11. We will settle the problem if we determine the voltage at which the device causes failure.
12. If you don't simplify the design of the device, this will be very expensive and many companies will not be able to afford it.
13. All students are free to choose their program of study providing they meet the entry-level requirements.
14. In case heat is developed in a transmission line, it is but a waste of electric energy.
15. If the secondary coil has more windings of wire than the primary one, the output voltage will be stepped up.
16. In case the invention relates to electrical engineering, more specifically to electrolytes for galvanic cells, it will be used for converting chemical reaction energy into electric current.
17. An aircraft pilot can get all the information he needs provided he contacts a radio-navigation station.
18. Private electricity producers won't invest in large-scale renewable energy generation if the government doesn't have long-term plans for the construction of long-distance transmission lines to carry new low-carbon energy sources to population centers.
19. If a freely suspended needle is brought near a conductor carrying the current, this needle will tend to place itself at right angles to the conductor.
20. Furnace walls can slag up if flame temperature is excessively high.
21. All the claims of the company will be approved by the commission providing they satisfy the technical requirements as prescribed in the regulations.
22. Photovoltaic cells will enable remote villages to get cheaper electricity if they are introduced there.
23. In case you doubt the result of the test, try more complex and sensitive equipment providing measurements with higher accuracy.
24. If we examine a biological cell, as a rule, biological processes will be accompanied by electric currents of very low voltage.
25. If the drive motors are AC, the drive motor controller will convert the DC power from the fuel cells, batteries, and ultra-capacitors to AC.
26. The device will disconnect the high voltage circuits from the contact system if the leakage current exceeds 3 mA at a line voltage of 600 V DC, or if the leakage voltage exceeds 40 V.
27. If an additional wire is introduced into the circuit, the voltage control and regulation will be carried out directly on the alternator's output terminal.
28. Unless any steps are taken to preserve the rainforests producing oxygen in the nearest future, they will be disappearing at a terrifying rate.
29. If the direction of either the magnetic or electrostatic flux is reversed, the direction of the travel of the radio wave is reversed too.
30. The interests of developing countries won't be promoted or protected unless they are made permanent members of the economic security council.
31. Machinery is damaged by surges and fluctuations of electricity and can not operate at peak efficiency if the electric supply is inadequate.

Тема 5.2. Условные придаточные предложения второго типа

01. If the protective equipment were bad, there would be a lot of accidents.
02. If the turbines and boilers didn't meet our requirements, we would not buy them.
03. If the temperature changed frequently, thermal stresses would cause the pipeline breaking.
04. Unless the wires were properly insulated, there would be a considerable leakage current resulting in heat losses.
05. They would accept this lot of instruments, if they were satisfied with their quality.
06. Furthermore, even if the additional amplifiers were installed, that would not change the performance of the machines.
07. In case that all the necessary equipment and construction materials were brought, complex unique structures would be erected right in due time.
08. If your browser crashed unexpectedly, or if your home page were "hijacked", your computer could be most probably infected with spyware.
09. A number of measures to clear the area would be implemented if the environmental services were strengthened.
10. Provided all the requirements were met, the efficiency of the apparatus would be increased.
11. Plastics could be recycled if they were separated by type and were mostly free of metals and other contaminants.
12. If you pressed this button, electromagnets attached to the armature would be deactivated.
13. Unless the opposing force just balanced the impressed force, a steady state would not be obtained.
14. It is highly likely that there would be suitable access to the valves if they were mounted in a valve chest at the end of the tanker.
15. If free electrons were in a vacuum within the electric field set up between positive and negative electrodes, negatively charged electrons would be attracted to the positive electrode.
16. What would happen if I connected the carbon microcircuit to the silicon microcircuit?
17. This lead in the wires wouldn't be recycled but would be released if the wires or insulation were burned.
18. If the authorities took steps to create centers for the needs of family medicine and furnished them with necessary equipment, this could be useful for people's health.
19. If we received new equipment, we would have to change the standard operational and maintenance procedures.
20. Unless the engineers and scientists solved the disposal problem, nuclear energy would not become a widespread source.
21. It would certainly be disastrous if the recent transformation of the international security were undermined by the growing spread of weapons of mass destruction.
22. If the heat exchanger were installed, it would be capable of controlling the temperature of the diluted exhaust to that specified in the paragraph above.
23. If complete recycling lines were provided in every town, waste plastics from garbage would be crushed, washed, dried, and turned to granules.
24. Faulty transformers are going to be replaced. But it would be far better if they made an effort to fix them.
25. Unless the supply of fuel for electricity generation were insufficient, that would not have a negative impact on industrial activity, the operation of hospitals, and the supply of water to households.
26. If oxygen mixed with a proper amount of water vapor instead of the air were blown into the generator, the exhausted gas would never be formed and the coke would be fully converted into water gas.
27. If the algorithm of the program were effective, it would require less amount of memory and work faster.
28. It would be a real breakthrough in health care if biologists managed to create a cure for cancer.
29. The solar industry wouldn't deliver thousands of megawatts of renewable energy to communities and villages unless there were solar-rich areas in many countries.
30. If the electrical circuit were divided by galvanic isolation, the working voltage would be defined for each divided circuit, respectively.
31. If the decision to destroy weapons found in the region were made, there would be a list including the number and type of items to be destroyed, the method of destruction, and assessment of costs.
32. Providing the usage of fossil fuels were more efficient, that would bring about the situation when appropriate actions would allow to reduce the greenhouse gases emission (particularly carbon dioxide).

Тема 5.3. Условные придаточные предложения третьего типа

01. If we had had more time, we would have considered all the suggestions.
02. We could have delivered the machine last month provided we had received your order in advance.
03. If you had sent us the samples in time, we could have started our tests some days ago.
04. If he had applied the new method, the result would have been much better.
05. Superliners of the first generation could have developed a higher speed provided some special cooling measures had been used.
06. If they had examined the machine more carefully, they would have noticed all the amendments made by the engineers.
07. Provided the wires had been insulated properly, the short circuit wouldn't have occurred.
08. If we had been told about the lecture on reliability in spacecraft production, we would have come by all means.
09. If the rehabilitation of the power stations and transmission lines had been completed, there would have been continuous supply of energy.
10. Provided we had had an optical pyrometer instead of a thermocouple, we should have measured the temperature in the fire chamber.
11. If the tire pressure had been low, that would have resulted in overheating tires at a high speed.
12. Unless better technology with increased efficiency had been provided, that wouldn't have led to decreased emissions and any improvement in air quality.
13. My delegation would have been very satisfied if the General Assembly had adopted a strong resolution in support of the CTBT (Comprehensive Nuclear Test Ban Treaty), as it did last year.
14. Unless they had increased the efficiency of their operation, they wouldn't have coped with emergency situations kept growing without adequate resources.
15. If you had reequipped the shop last year, you would have increased the output of your production.
16. Provided renewable energy project hadn't been introduced, a maximum output capacity equivalent of up to 15 megawatts wouldn't have been achieved.
17. Developing countries would have been able to fulfill their obligations better if any increases in their contributions had been introduced more gradually.
18. Unless those transmission line towers damaged by wind had been repaired, there wouldn't have been any electricity in distant areas of the town.
19. If the designers had intended to create a hybrid electric automobile, it would have had both an internal combustion engine and an electric motor.
20. If that output capacity of the generator had exceeded consumers' needs, it would have been halved.
21. Unless the authorities had stimulated technology innovations, that wouldn't have resulted in increased efficiency and productivity in the industry.
22. If exhaust gas recirculation hadn't been provided in the combustion chamber, more fuel would have been required for the combustion process.
23. If there had been a black out, the computer would have stored the data automatically.
24. If a new coal-fired power plant had been designed in a classic block arrangement consisting of two blocks, it wouldn't have provided an electrical output capacity of 350 MW.
25. If research programs supporting more energy-efficient transportation, including plug-in hybrid electric vehicles had been carried out on a federal level, the positive result would have been seen years ago.
26. Provided the computer net had been infected by a virus, the recovery program wouldn't have done anything, but would have recovered data at the highest speed possible.
27. If people had immediately realized what kind of accident happened at Chernobyl nuclear plant, they could have estimated the full scope and complications of the disaster much earlier.
28. Unless it had been run on home-based technology required whenever possible, the ethanol plant wouldn't have operated successfully for almost 15 years.
29. In case train wheels and axles had been broken or overheated, fixed side temperature sensors for the detection of hot axles and wheels would have prevented fire.

Тема 5.4. Бессоюзные условные предложения

01. Should you use advanced technologies, your profit will be higher.
02. Should the air supply stop, the fuel will stop burning.
03. Should you need any additional materials, feel free to contact us.
04. Should mankind continue to emit greenhouse gases, the global warming will be unavoidable.
05. Should the molecule keep all its electrons, it will remain electrically neutral.
06. Should you study electrical engineering, we will be able to create a short circuit.
07. Should a scientific research be closely linked with practice, the results will be good.
08. Should there be a pressure change in tires, a transmitter will signal to adjust the pressure.
09. Should the satellite speed be less than necessary, it will go down from the orbit and enter the atmosphere.
10. Should any misuse of equipment and materials under monitoring occur, the operator will continue his efforts to determine the reason of it.
11. Had we a digital voltmeter, we would measure the voltage with better accuracy.
12. Could we design an effective non-conventional power station, the problem of fuel shortage would be solved.
13. Were there no friction, we could neither walk, nor stand up in spite of our efforts.
14. Were the temperature increased, the velocity of the molecular motion would also increase.
15. Should the program be exited incorrectly or an operating system failure occur, this recovery system would allow you to restore the data.
16. Were the transmitter more powerful, it could service more remote receiving base stations.
17. Should thermal resistance of covering constructions be increased, the optimum thermal balance would be provided in the building.
18. Should a permanent magnet be moved in and out of a coil of wire, both the magnet and the coil would be used as a simple electric generator.
19. Could we use purification plants of higher quality, the technology would be more environmentally friendly.
20. Should the authorities support energy-efficient technologies, cities would consume less energy and would be on their way to becoming carbon neutral.
21. Had the protection equipment been turned on earlier, the cascading failure would not have developed.
22. Had safety regulations been observed, there wouldn't have been several accidents at atomic power plants.
23. Had there been a really severe storm yesterday, there could have been some damage to transmission lines and some wires could have been out of place.
24. Had the internal combustion engine been invented at the beginning of the 19th century, people would have had more advanced vehicles then.
25. Had the high-tension cable that supplies electricity to the village been cut, the operation of the village hospital would have stopped.
26. Had a less explosive gas been used in dirigibles at the beginning of the century, they would have been in operation since that time.
27. Had that method been perfected last year, the thermal efficiency would have been further improved and the production cost of hydrogen would have been lowered.
28. Had they met the necessary conditions, their request would have been approved and they would have been provided with documents valid for six months.
29. Had the demand for nuclear power increased significantly in those years, the equilibrium in the uranium market could have changed.

РАЗДЕЛ 6. СЛОЖНОПОДЧИНЁННЫЕ ПРЕДЛОЖЕНИЯ

Тема 6.1. Придаточные предложения подлежащие

01. How the process of evaporation was accelerated was described in the scientific report.
02. That the laboratory isn't well-equipped makes it useless.
03. Who will be sent to the factory to check the equipment isn't clear yet.
04. That there has been an increase in the number of staff available to serve all aspects of their activities is essential to a trouble-free operation of the whole system.
05. How these DC stator windings induce magnetic fields with the aid of semiconductor control valves was demonstrated in the experiment.
06. That mankind has achieved great advances in genetic engineering provides us with invaluable knowledge.
07. Whether the invention relates to electric machines and can be used in the design and manufacture of induction motors hasn't been confirmed in practice yet.
08. It is strange that their research has been postponed because of the lack of finance.
09. What measures can reduce environmental pollution and help to sustain natural resources is being currently discussed in scientific society.
10. That the level of noise emitted by the rotating induction motor has been reduced is the technical result of the utility model.
11. That Mendeleev had brilliantly combined elements' atomic weights and properties into one universal understanding of all the elements enabled him to lay down his famous Periodic Law.
12. Why the transmission lines were extended and conventional transformers were replaced was explained in an annual report on energy issues.
13. Which of these two methods the researchers are going to give priority is difficult to say.
14. That the scientific group used radioactivity measuring devices in making surveys around one of the lightning conductors led them to some in-teresting conclusions.
15. How and where the headquarter is going to be established will be decided through negotiations.
16. That the use of variable frequency inverters on induction motors set up in engineering systems reduces electricity consumption seems very promising.
17. Whether this machine is capable to generate electricity in sea conditions ranging from almost calm to severe storm is uncertain yet.
18. That there has been rapid development and deployment of the beneficial uses of nuclear energy seems very promising.
19. Where a recycling plant to turn garbage into fuel for reactors generating electricity will be constructed depends on environmental factors.
20. What complex devices in our digital age will be used for communication in fifty years from now is hard to imagine.
21. When efforts to combat cancer will result in finding an effective cure is uncertain yet, but we hope this will be done in the nearest future.
22. Whose project will be prioritized with respect to more specific selection criteria will be chosen in the second stage.
23. That Europe needs to move towards a fully integrated and flexible European electricity network and market is generally recognized.
24. That balancing energy storage can improve the capacity factors of power plants is reflected in optimizing the energy flows between demand and supply.
25. Whether the knowledge and skills of undergraduate students can be measured and compared internationally will be assessed by the international educational organization.
26. How introducing automated control mechanisms increases the savings of electricity consumption to 50% was discussed at the meeting.
27. That the steam is directed first against the blades of the first disc and gives up part of its energy to the latter is a well-known fact.
28. As it makes a great difference to the result obtained, it seems essential that the friction effect in resisting the flow and drying the steam must be taking into account in the design of the nozzle.

Тема 6.2. Придаточные предложения сказуемые

01. That is what has been discovered after numerous experiments.
02. That is where the money for investigations comes from.
03. The problem was what kind of practical work had to follow the study of general engineering subjects.
04. The main point was where the researchers could find available and reliable data for the further analysis.
05. The investigation of the interaction of electromagnetic energy with a substance was what made it possible to control the behavior of atoms.
06. The question is whether and how these phenomena depend on interrelated processes of thermodynamics, chemical kinetics, fluid flow, heat and mass transfer.
07. The reliance on fossil fuel is not what can be changed in the foreseeable future.
08. The objections to nuclear power we often hear is there is no solution to the problem of nuclear waste disposal.
09. It looks as if we are going to need some extra-budgetary resources to create an electronic distance-learning program.
10. The unique public concern about nuclear safety has been how the probability for severe accidents involving the release of substantial quantities of the radionuclides can be reduced.
11. One of the problems about school mathematics is it doesn't look at how mathematics is embedded in the world we live in.
12. The engineer's suggestion was that all the delivered equipment should be protected from power supply failures.
13. In addition, the fact remains that the lack of affordable and reliable energy services, especially in rural areas of developing countries, amplifies the problem as a key barrier to their development.
14. What we wanted to know was what our competitors in the market would do in response to the increased demand for technical advisory services.
15. It seems as if they didn't have any sustainable solution to which both parties could agree.
16. Another thing preventing technicians from achieving their goal was they couldn't find a suitable valve to be installed in the air-supply piping.
17. Using alternate technologies such as direct conversion of solar radiation and wind power to electricity is how fossil fuels are expected to be replaced.
18. Advanced as well as ecologically sustainable combustion technologies is where research and design development should be continued.
19. The advantage of higher education in our country is that it is available to all people independently on their income and place of birth.
20. Fossil fuel utilization, primarily in the form of combustion transformations, has been what we call the backbone of worldwide development for about two centuries.
21. One of the issues discussed at the Trade Union Assembly was whether they would be able to reduce unemployment rate and guarantee freedom of peaceful demonstrations.
22. It looks as if we could just use the cheap and simple solution to accelerate a chemical reaction by adding alkali into the liquid solution.
23. The thing to be discussed in scientific society now is how long it will take to make hydrogen join electricity as an important energy carrier.
24. The importance of preserving the rainforests is that as these trees and grasses grow, they remove carbon dioxide — a major greenhouse gas — from the atmosphere.
25. The main disadvantage about bioenergy is as long as it costs less to make electricity, transportation fuels, and products from fossil fuels than it does to make them from biomass.
26. The short answer is because many of the measures being taken by the authorities actually undermine the progressive realization of this category of human rights.
27. The production of electricity from landfill is what can make a significant contribution to both reducing consumption of fossil fuels and reducing the emissions of greenhouse gases.

Тема 6.3. Дополнительные придаточные предложения

01. They told us that the teacher was disappointed by his answer.
02. We cannot imagine what people would do without modern technologies.
03. While doing the experiment we were wondering whether there will be enough evidence to form a hypothesis.
04. The group of investigators concluded that more technical assistance should be required from international organizations.
05. We must therefore insist that serious consideration be given to necessary measures in this regard.
06. The operation of the whole system depends on which is essentially four microchips attached, each chip detecting pressure changes that may occur.
07. While realizing I didn't have any special equipment, I wished I had brought all the necessary measuring meters with me from the lab.
08. A car's instrumental panel displays how far the car can drive on the fuel left in the tank, and what speed it has averaged since turning on the ignition.
09. Having summed all the information, the computer detects whether possible dangers like cascading failures may occur.
10. One delegation recommended that UNICEF strengthen its fundraising for humanitarian crisis situations.
11. At this energy system level the manufacturers realize that the leadacid battery should present the dominant technology in commercial, industrial, and automotive applications.
12. I have always wished I knew more about space explorations.
13. They made a suggestion that the article be distributed as an official document and be discussed on a large scale.
14. Any electrochemical cell is characterized by an electromotive force which depends on how high the electrode potential difference is.
15. Scientists should be aware that the construction or possession of mechanisms designed to use biological agents or toxins for hostile purposes is prohibited by the Biological and Toxin Weapons Convention.
16. The economists suggest that electricity storage should offer a technological solution that maximizes the usage and benefit of renewable energy production.
17. In their analysis the researchers have concluded what part of worldwide energy needs is provided by combustion of hydrocarbon fuels.
18. The "real" scientists were aware of the incremental nature of the work, and questioned whether the Venter group had created a "synthetic cell", while the social scientists tended to exaggerate the results of the work.
19. We know that in the future scientists engaged in development of combustion technologies will be confronted with complex phenomena that depend on interrelated processes of thermodynamics, turbulence, and chemical kinetics.
20. We are aware that this Conference in the present circumstances is facing difficult challenges.
21. We know known that nuclei possess their own periods of electromagnetic oscillations and are able to absorb the incoming external electromagnetic energy of the same period.
22. Scientists nowadays can predict how the future energy needs will be satisfied with the help of bioenergy and the technologies for making electricity, heat, and fuels from biomass.
23. However, some automobile experts suggested that the system was simplified as it is too complicated and costly in its present state.
24. The manufacturers have recommended that the Voice Warning system to announce a low fuel warning for any present gas tank level be installed in every car.
25. We must be confident that the system is comprehensive in its coverage of all the needs to be monitored.
26. Ever since the first self-propelled road vehicle was invented, we know the petrol engine, fuel-injected engines, and antilock brakes have been given to the users.
27. The delegates also enquired whether the Government intended to take measures to promote access to higher education for minorities.
28. As long as nuclear weapons exist, we must insist that these safety commitments be honored by every State having nuclear weapons.
29. We are still interested in that there are and will continue to be research, development, and design requirements for advanced as well as sustainable combustion technologies.
30. As long ago as at the beginning of the past century, scientists were aware of the importance of CO₂ (carbon dioxide) in oxygen supply of the body and the brain.

Тема 6.4. Неполные обстоятельственные придаточные предложения

01. Iron becomes magnetized if placed in a strong magnetic field.
02. While studying at University, he also worked as a sales freelancer.
03. A liquid becomes hotter, boils, and finally evaporates when heated.
04. Globalization, although not a panacea, would undoubtedly promote an international exchange of technologies.
05. When connecting the two ends of a conductor to two points at different potentials, they say that there is an electric current in the conductor.
06. In vehicles with the pneumatic braking system, when compressed, the air is discharged from the pneumatic valves after the actuation of brakes.
07. Although a great technical achievement for its time, the electric candle was not an efficient source of power.
08. When in doubt about which approach to apply in writing your thesis, consult you tutor.
09. Information exchange requires modern information technology, which, although costly, is efficient and, especially in emergency situations, can save many lives.
10. If suspended so that it can rotate freely, the solenoid points north and south when current flows.
11. All statements and technical notes referred to the subject in question, if provided in writing, are posted in the conference papers.
12. According to the equilibrium conditions, the hydrogen gas and oxygen gas when mixed should react to form water again.
13. Hydrodynamic calculations that once took hours on then-fastest super computers may now be performed on a personal computer in the same time, especially when connected with other personal computers in a network.
14. Some reported data also appear unreasonable in the light of expert knowledge or when compared to other data sources.
15. Amplifier tubes act as amplifiers when operated with alternating current on their cathodes.
16. Although effective as a preventive safety measure, total separation of traffic may not be necessary if an optimized timetable could prevent passen-gers' and freight trains from passing through a tunnel at the same time.
17. A great number of motors having a small horse-power rating are designed to operate when connected to a single-phase source.
18. Conductors used for making lamp filaments when heated soon become so hot that they radiate a white light.
19. Where necessary, it is possible to transmit a given amount of power with a lower current by raising the voltage.
20. If compared to the steam turbine, the gas turbine has the same principal parts as the steam one.
21. While accelerating to supersonic speeds, ordinary aircrafts will have problems with their windows and skin as their structure is too week to withstand the stresses at such a speed.
22. Though minimized, water erosion of steel strongly depends on maintaining an alkaline condition of the boiler.
23. The flow through the connector at a pressure difference of 30 kPa will be at least 60 liters/min if tested with water.
24. When burnt, fossil fuels emit greenhouse gases effecting harmfully the atmosphere and causing global warming.
25. Additional information on the progress made in the study will be circulated when available.
26. There are no dramatic changes in the percentages when compared to previous figures.
27. Although harmful in the absorption of thermal neutrons in the body, gamma rays can be used in brain surgery.

РАЗДЕЛ 7. БЕЗЛИЧНЫЕ КОНСТРУКЦИИ

Тема 7.1. Конструкции с местоимением *it*

01. A computer cannot think for itself, it only operates at a high speed according to the instruction it has been given.
02. It is the voltmeter that an instrument to be used for measuring the potential difference between any two points in a circuit.
03. It was not until 2015 that their suggestion has been substantiated.
04. It was pointed out that projected exhaust emission levels are difficult to establish as it is difficult to predict future trends.
05. It is only when the bar magnet is moving that the magnetic lines of force are being cut by the wire and e.m.f is indicated on the voltmeter.
06. It is expected that these batteries will be used in systems that have to operate on weak signals, in particular, in super-long-distance space communications and minute cybernetic instruments.
07. It wasn't James Watt who actually invented the steam engine, he just re-fined it.
08. It was in 1698 when Thomas Savery, an engineer and inventor, patented a machine (in fact, the first steam engine) that could effectively draw water from flooded mines using steam pressure.
09. It will be appreciated that different circuits will possess some resistance, although it may be only a small fraction of an ohm.
10. The essential feature of higher education in our country is that it combines theory with practice.
11. It is impossible to solve economic problems without using the achievements of the scientific and technological revolution.
12. It is the basic research in the physics of the atomic nucleus and elementary particles that made possible to create a nuclear reactor.
13. It is obvious that provided the magnetic field is produced by a coil of several turns, its intensity is much greater than if only one turn were used.
14. At low speeds the engine can use the turbines for compressing the air before mixing it with fuel in the combustion chamber.
15. It is the step-up transformer that should be used to raise the voltage of alternating-current generators.
16. It is known that spontaneous combustion occurs when the rate of heat production exceeds the rate of heat loss.
17. It is this very insulation system that will compensate heat loss in our buildings through the walls, floor, roof, gates, etc.
18. It is impossible for the molecules in one layer to vibrate without causing the molecules in the neighboring layers to get into the state of vibration.
19. With regard to this policy, it should be mentioned that it originated from the need to protect both the employer and the employee.
20. It is the Internet that, like the steam engine, is a technological breakthrough that changed the world.
21. The fuel cell is a battery that does not wear out rapidly, does not need recharging and weighs much less, and, moreover, it is noiseless and can withstand great overloads.
22. It was not until recently that many people believed that there were distinct advantages to the transmission of power at high voltage by direct current.
23. It was reported that the astronomical objective of the mission is to study the physics and chemistry of interstellar space by searching for water and oxygen molecules.
24. It may be desirable to limit operating current densities to the levels at which the winding could act to limit magnetic to kinetic energy conversion.
25. It is known that since 2006 there has been some improvement in air quality as better technology and increased efficiency have led to decreased emissions.
26. It is the final permissible maximum temperature of conductor wires and permissible voltage drop that should be taken into account while calculating the cross-section of conductor wires.
27. If a short circuit occurred, it is obvious that the circuit concerned should be automatically switched off and repaired as soon as possible.
28. A little chemical energy is wasted in a cell since it is there that chemical energy is converted into electricity in a single process.
29. At the Seventh NPT Review Conference, it became obvious that some nuclear Powers States still lack the

political will needed to reach the objective of eliminating and prohibiting nuclear weapons once and for all.

30. It is important that the tunnel cross section should provide sufficient space for necessary traffic installations and technical equipment.

31. It is the rectangular wire design that offers stability which cannot be achieved with a round cross-section wire.

32. In Madagascar, it was found that with increased living standards, people continued to rely on wood fuel and charcoal.

33. It is really cost-effective that the use of variable frequency inverters on induction motors set up in engineering systems reduces electricity consumption by 30%.

34. It is necessary that the strategy of total modernizing the plant should retain some flexibility in that respect.

35. It is the induction motor in which an annular excitation winding may be located on a stator.

36. It was by the time Nicola Tesla was 30 when he had already invented the induction motor.

37. It is clear that thermal and kinetic energy stored in the oceans represents a considerable opportunity for producing energy, particularly in nearshore areas.

Тема 7.2. Конструкции с местоимением *one*

01. One property of an electric current is resistance and the other one is self-induction.
02. One has to be very careful while solving complex problems of designing electrical installations.
03. The new technologies that are being developed must be connected with traditional ones.
04. When one period of history ends, another one begins.
05. To understand this evolution, one must understand its origin.
06. A part of the energy delivered to any motor, if one is turned on, is lost within the machine itself being converted into heat and wasted.
07. One must also know that the study of environmental problems with the help of satellites is becoming international.
08. The injection pressure of fuel is one of the key parameters relating to emissions from diesel engines.
09. The method that we had adopted was the one that you mentioned.
10. One knows that electrons flow to the cathode because of its having lost electrons and being less negative than the negative side of the battery.
11. With respect to the efficiency of the machines, consideration might also be given to the models other than the ones mentioned in the article.
12. There are various reasons for this recession, the main one being the lack of an effective economic stimulating mechanism.
13. Almost one half of the total electric supply of the world comes from water power.
14. One may notice those differences between substances derived from organic compounds and those derived from inorganic compounds.
15. The size and weight of the gas turbine plant compared with the steam power one are low.
16. Each of the semiconductor elements consists of two parts which are spaced apart from one another and are connected to one another by a metallic conductor.
17. Most short circuits occur in overloaded circuits, and we will also have one unless the voltage is reduced.
18. There are a lot of significant achievements of recent decades, one relates to rapid development of nanotechnology.
19. One should distinguish between an electromotive force and a potential difference.
20. Only about half of energy striking our atmosphere reaches the earth's surface, the rest one being reflected and absorbed.
21. The amendment is the one which is commonly made in such types of alternators to increase their capacity.
22. Among different types of generators, there is likely to be one suitable, meeting our requirements.
23. The factors that create poverty cannot be separated from one another.
24. If we increase the voltage, one can be sure that overheating the wires will be unavoidable.
25. The water power may be obtained from small dams in rivers or from enormous sources of water power like those ones to be found in Russia.
26. Modernizing industrial furnaces such as the ones mentioned above remains a challenge.
27. Cooperation between countries in scientific issues could include participation in one another's events, joint research or providing inputs to one another's research.
28. One may distinguish universal and particular (detailed) criteria.
29. And now not so many small steam engines are being built anymore, only large ones for big operations.
30. One solution is to increase regional cooperation between countries in comparable circumstances.
31. "Dual-fuel engine" means an engine system that is designed to simultaneously operate with a diesel fuel and a gaseous fuel where the consumed amount of one of the fuels one may vary depending on the operation.
32. One must understand that any rise in unemployment that is due to a rise in imports cannot be permanent.

Тема 7.2. Конструкции с местоимением *we, you, they*

01. We know the electric motor to drive machinery and various appliances.
02. To utilize the generated energy, you need the machine that will reconvert electrical energy back into mechanical one.
03. They always say that you can only compare what is comparable.
04. You know that the strength of the current depends on the resistance of the circuit.
05. They report that the plants in question are to be equipped with all the modern installations working under steam pressure at a very high temperature.
06. We know that climate change is a long-term problem for humanity which needs to be addressed with some urgency.
07. Due to friction, we always get less useful work out of a machine than we put into it.
08. We must remember that the less resistance there is in the circuit, the greater the amount of current carried through it.
09. They should consider the needs of countries and respond to them, recognizing that a "one-size-fits-all" approach is not appropriate.
10. You know that the basic assumptions of this theory have been seriously called in question.
11. We know that all material substances are regarded to be constructed from 104 different kinds of atoms.
12. They will introduce papers and provide the seminar with some supplementary information on the topic under consideration.
13. We know the transformer to be an apparatus designed for changing the alternating voltages and currents by means of magnetic induction, the frequency remaining unchanged.
14. You know of the three-phase induction motor successfully being used in industry.
15. However, we know that renewable sources of energy together are vital for sustainable development in all industries.
16. When providing assistance in transferring these technologies, they should consider steps to ensure safe and responsible handling by the user.
17. You know an alternating current to be continually changing by rising, falling, and changing direction.
18. In January they constructed the second factory, expanding the total production capacity up to 6 million units per year.
19. If they ask you to rub an ebonite rod with flannel, you will easily notice that it has acquired the property of attracting light objects.
20. Since we know that in the first periods start-ups do not sell many products, the company isn't expected to get large profits in the nearest future.
21. In the experiment you shall take into account the main variables such as heat, pressure, and specific weight.
22. They should consider the broader collective interests of peaceful coexistence, a peaceful life for the peoples, and stability in the region.
23. In considering this point we must refer to the recent works by Russian scientists.
24. You know the armature windings to cut the magnetic lines of force in order to produce electric current.
25. By reducing tool deterioration they prolong tool life and sometimes greatly improve operational efficiency.
26. We know that air and water pollution by industry is now reaching tremendous proportions.
27. To avoid possible accidents caused by short circuits, they provide special protections.
28. We know that our scientific knowledge and technological advancement make it possible to affect global warming in order to reduce it.
29. We now know that we are able to transfer enormous amount of currents inside superconductors, so we can use them to produce strong magnetic fields such as needed in some machines, particle accelerators and so on.
30. The maintenance of public order and security, as they say, is an important role of peacemakers.
31. Should we weigh the cord, we should find its weight so small as to be negligible in our calculations.
32. They constructed maps similar to those used by meteorologists showing the flow of plasma in the ionosphere.

РАЗДЕЛ 8. СТРАДАТЕЛЬНЫЙ ЗАЛОГ

Тема 8.1. Страдательный залог

01. The laboratory should be provided with new equipment.
02. The results of the tests aren't going to be published.
03. The units in which these quantities are expressed have to be defined in terms of their observable effects obtained in experimental work.
04. In the newspapers it is reported that plans have been approved for construction of six floating nuclear power stations.
05. Radio waves can be used to send coded information very fast over long distances including interplanet communications.
06. Today's aircraft is expected to be replaced by a new fifth generation model of hypersonic aircraft.
07. Optical technology including high tech optical generators, amplifiers and fiber-optic cables has been found to be cost effective.
08. The earth is usually taken as an arbitrary zero of potential and the potentials of other bodies are given with reference to it.
09. Since the potential difference tends to cause electricity to flow from one point to the other, it is called electromotive force (c.m.f.).
10. The practical unit of potential difference or e.m.f. is called the volt.
11. An electric current may be produced in a variety of ways.
12. A direct current (d.c.) of unvarying magnitude is obtained from an accumulator.
13. At first small electric stations were built and all the customers were situated within a short distance of the power station.
14. The device was described in some earlier papers.
15. It has been established that this voltage was sufficient.
16. The direct-flow system can be used when lakes, seas and rivers are used as water supply sources.
17. At present a great attention must be paid to combined generation of heat and electricity at heat-and-power plants and to centralized heat supply.
18. The current can be increased by filling the cell with a suitable inert gas.
19. Compounds consist of two or more elements and can be decomposed into these constituent elements.
20. Atomic power is said to be transformed in electric power by means of a steam turbine and becomes steam which can be used to drive a conventional steam engine.
21. The water can be used to drive a conventional steam engine.
22. The transformer is used for changing the electric current from one voltage to another.
23. The Fahrenheit scale is mainly used in English-speaking countries, but it is not used in Russia.
24. Motors are widely employed not only in industry but also in everyday life.
25. Mathematics, strength of materials, mechanics, elements of machines as well as engineering physics are studied at technological institutes.
26. The development of science is closely connected with the development of higher education.
27. Any country must be provided with good specialists in all branches of science and technology for its further development.
28. The scientific and technological progress of a country is determined by the qualification of specialists.
29. Elements of a circuit with a definite value of inductance are coils of wire which are called inductors.
30. The country must be provided with specialists capable of working with the technology of tomorrow effectively.
31. When an insulator is connected to a voltage source, it stores electric charge and a potential is produced on the insulator.
32. A transformer is used to transfer energy, and due to the transformer, electric power may be transferred at a high voltage and reduced at the point where it must be used to any value.
33. The number of cycles per second is called the frequency of the current.
34. Mutual inductance is measured in the same units as inductance, that is in henries.
35. When a wattmeter is used, the readings on its scale show the value of power being used.
36. Each resistor has a maximum temperature to which it may be heated without a trouble.
37. Practical electricity is produced by small atomic particles known as electrons.
38. A dynamo is called a generator when mechanical energy supplied in the form of rotation is converted into

electrical energy.

39. The current flow is detected and measured by any of the effects that it produces.

40. The potential difference must be maintained by some electric source such as electrostatic generator or a battery or a direct current generator.

41. The electrically operated devices are connected to the wall socket by copper wires.

Тема 8.2. Страдательный залог и его особенности

01. This equipment was carefully looked after during the whole period of operation.

02. The new discovery made by our scientists was much spoken about.

03. This important discovery was followed by many others.

04. The data obtained during the latest experiments are often referred to.

05. Three scales of 50, 100 and 250 volts have been decided upon.

06. This machine can be often made use of.

07. The production of alloys is seldom influenced by gravity.

08. Lead is very slightly acted upon by the oxygen of the air.

09. When the delegation arrived the team of designers was sent for.

10. The construction of the machine is paid great attention to.

11. Newton's laws of motion are often referred to.

12. The neutron is not influenced by magnetic field.

13. The safety regulations requirements will be much spoken about at the meeting.

14. The papers presented at the conference were followed by interesting discussions.

15. The experimental model will be followed by mass production of the mechanisms.

16. The works of Tsiolkovsky were followed by a number of very important works in the field of astronautics.

17. The invention of steam engine was followed by the first industrial revolution.

18. The huge automatic unit in the shop is looked after by only a few men.

19. The new model of the device will be worked at in the plant laboratory.

20. The original design of the device was already referred to in some journals.

21. The engineers' measurements and calculations can be relied on.

22. The operation of the turbine will not be influenced by outer factors.

23. The conductivity of metals is very little influenced by temperature.

24. Any flying vehicle is acted upon by aerodynamic forces.

25. International cooperation in the field of space and science may be spoken of as a long-standing tradition.

26. It was seen that light had a constant speed irrespective of the frame of reference.

27. The resistance of an electric circuit can greatly be influenced by certain factors: the size of the wire, its length, and type.

28. In this case, the backslash is followed by at most six hexadecimal digits.

29. Just as they are influenced by falling light, semiconductors are also influenced by all radiation.

30. In addition to the electromotive force and the potential difference electrical flow is influenced by another important factor that greatly, namely, resistance.

31. The difference between the terms "conductors" and "insulators" is expressed by what is called electrical conductivity of the body.

32. Provision for ventilation is made by leaving passageways through the core and frame, through which air is forced by fan vanes mounted on the rotor.

33. In practice the starting of single-phase induction motors is accomplished by three general methods applicable to small-sized motors only.

34. In the split-phase method an auxiliary stator winding is provided for starting purposes only, this winding being displaced from the main stator winding by 90 electrical degrees.

35. A motor with a single-phase winding is not self-starting but must be provided with an auxiliary device of some kind to enable the motor to develop a starting torque.

36. Many years ago the attention of Russian engineers was turned to semiconductors.

РАЗДЕЛ 9. МОДАЛЬНЫЕ ГЛАГОЛЫ И ИХ ЭКВИВАЛЕНТЫ

Тема 9.1. Модальные глаголы *must, to be to, to have to, should, need*

01. They should have no trouble doing the experiment, the equipment has been checked thoroughly.
02. A helium-neon laser must find wide application in medicine, biology and veterinary.
03. To increase the capacity of a gas laser one has to increase the volume and raise the pressure of the gas.
04. A gas laser is to perform numerous jobs in various spheres of our life.
05. Scientists and engineers had to make lots of experiments to develop a laser for medicine.
06. No doubt that the laser has numerous advantages of other applications which we are still to discover.
07. The technician should have repaired the computing equipment two days ago, but it yields wrong information again.
08. These data must have been processed by the digital computer.
09. We must use new methods in our research work.
10. You needn't take all these measurements, because we already know the volume of gas in this tube.
11. We must use the new tools to cut and form this metal part.
12. We have to build special solar stations to convert solar energy into electrical one.
13. In scientific work we must measure in units of the metric system.
14. The engineer will have to improve the accuracy of this machine-tool.
15. All these mechanisms should be protected from corrosion.
16. He had to work hard before he was able to submit his paper to a scientific journal.
17. The control system had to be provided with the most perfect automatic devices.
18. This design was to be worked out by somebody from your laboratory.
19. On receiving wrong results one must repeat the experiment.
20. The experiment must have been done in a wrong way because of the data obtained being in contradiction with Lenz's law.
21. To get better results, another method should be applied.
22. It should be noticed that every atom of matter is charged with minute particles of negative electricity which are called electrons.
23. The screen grid should be at lower potential than that of the plate.
24. The results of the test are to be recorded whether successful or not.
25. In diesel engines high engine speeds are to be reduced by some form of transmission.
26. The electrons in two-element tubes have to go enormous distance before they arrive at the plate.
27. First we should consider the arrangements of atoms in metals, i.e. in substances having high thermal and electrical conductivities, then we should discuss semiconductors.
28. This equipment should be tested in various conditions.
29. Before switching on current for a test the circuit should be thoroughly checked.
30. To produce changes in physical state, a considerable amount of thermal energy must be supplied to metal.
31. They needn't know the exact temperature to make the plot.
32. They should have calculated the distance travelled more accurately.
33. This power station was to supply us with all the necessary energy.
34. Man-made satellites and spaceships are to investigate various types of radiations in space.
35. A power plant of 100,000 kW capacity is to consume about 200 grams of uranium daily.
36. The operator thought that the moving parts of the machine must have been lubricated well.
37. He ought to know that with fixed number of protons there may be associated a varying number of neutrons.

Тема 9.2. Модальные глаголы *can, may, might* и их эквиваленты

01. The reaction could not proceed under such conditions.
02. Can these calculations have been performed in such a short period without a computer?
03. Could the experiment on the determination of the molecular weight of the compound be of any importance for our work?
04. One can shape clay into any form: it may form a square piece or have a round shape.
05. This equipment can produce parts with very high accuracy.
06. They could easily define the properties of this material.
07. Some elements can exhibit metallic properties. Some elements can easily give off their electrons. Some elements can catalyse chemical processes.
08. Some substances can slow down reactions. Some substances can conduct electricity well. Some substances can conduct heat well.
09. Due to the energy of the atom, man can produce electric energy at atomic power stations.
10. He couldn't complete his research in time as he worked very slowly.
11. He had to work much before he was able to complete his research.
12. Nobody was able to understand this mysterious phenomenon.
13. The thermonuclear process of fusion can take place only at extremely high temperatures.
14. Multilayers of different substances may be deposited above one another, and their inter diffusion might be followed with the help of X-rays.
15. The machine can be made to detect the error.
16. With the creation of industrial thermonuclear reactors, energy resources may become inexhaustible.
17. The operator could not state the exact moment that phenomenon occurred.
18. We were sure we would be able to overcome all the difficulties in our research.
19. The nature of the material determines the ease with which electrons are allowed..to pass.
20. The voltage may have been too high, the insulation being broken down.
21. The action of some instruments cannot be much relied upon because of their being not sensitive enough.
22. In case there is no current in a conductor, there can be no electric field within it.
23. Having determined the number of amperes and the number of volts, we can find the resistance of the coil by using Ohm's law.
24. One may say that the relative motion of both the flux and the conductor determines the e.m.f. induced.
25. A line of force is usually a curved line, though in certain special cases it may be straight.
26. A closed circuit may contain several sources of e.m.f.
27. They couldn't have applied that equation. They ought to have proved it mathematically.
28. He can't have explained these phenomena in this way.
29. It is not essential that the surface of the metal should reach its melting point in order that it may be polished.
30. Hardness may be defined as the ability of a substance to resist pene-tration.
31. There is a little danger that the molecules might be broken at these weak bonds.
32. The pressure was allowed to fall.
33. Atomic energy finds such wide applications that our age might be called the age of atom.
34. Problems that might have taken years to solve are solved now within a few months or even weeks.
35. The engineer might have overlooked something that may turn out to be important in carrying out this experiment.