Половинкіна М.О.

Іноземна мова з професійним спрямуванням

Навчальний посібник
(для професії «Електромонтер з ремонту та обслуговування електроустаткування»)

ББК

УДК

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Посібник призначений для проведення уроків позакласного або домашнього читання учнів І-ІІІ курсів ПТНЗ, що навчаються за професією «Електромонтер з ремонту та обслуговування електроустаткування». Матеріал відповідає вимогам чинної програми з англійської мови та є професійно спрямованим.

ЗМІСТ

ПЕРЕДМОВА

Іноземна мова в ПТНЗ має специфічний характер викладання, адже, крім загальноосвітньої мети, є не менш важлива - професійна. Виховання кваліфікованих робітників зі знаннями іноземної професійної термінології непросте завдання, зважаючи на недостатню кількість сучасних посібників з цієї тематики.

Даний посібник містить тексти для позакласного (домашнього) читання з англійської мови для учнів І-ІІІ курсів ПТНЗ, що навчаються за професією «Електромонтер з ремонту та обслуговування електроустаткування» .

Завдання розроблені відповідно до чинної програми з іноземної мови та мають чітке професійне спрямування.

Посібник складається з передмови, основної частини, яка містить 18 текстів (16 з них включені в 16 тем 3-х курсів згідно програми з англійської мови для загальноосвітніх навчальних закладів, 2 тексти альтернативні і можуть бути введені в календарно-тематичне планування за бажанням вчителя). До текстів додаються завдання переважно лексичного характеру, що поступово ускладнюються. В кінці посібника міститься англо-український глосарій професійної термінології та загальновживаної лексики.

Посібник рекомендується для використання як в ПТНЗ, так і в старших класах шкіл, які мають класи з професійно-технічним спрямуванням.

Text 1
TURNING SEWAGE INTO GOLD

Task 1
Read and translate the text:

It isn't polite to talk about, but there is no escaping it Human beings, like all living things, produce bodily waste. Fortunately, thanks to modern plumbing, there is an easy way to flush this sewage out of our homes, after which we never think about it again. Local authorities, however, invest a lot of thought in getting rid of this sewage in ways 5 which will not pollute local water sources. To this end, hundreds of sewage treatment plants have been constructed all over the United States.

The city of Renton, Washington, is taking matters a step further. In what seems as magical as mining straw into gold, it's running a pilot program that turns its sewage into electricity. Why produce electricity from costly oil or coal, resources that will eventually 10 be depleted, when you can make use of a limitless supply of human waste to do this instead?

How does the system work? As in other sewage treatment plants, the process begins by separating liquid from solid waste. The liquid waste is filtered and cleaned, producing water that can be safely poured into the ocean or used for agriculture. The solid waste is 15 placed in large vats, where it is broken down by bacteria. This process reduces the amount of solid waste and also releases methane gas.

In traditional waste treatment plants, this methane gas is burned in order to produce small amounts of electricity. In Renton's plant, however, the methane is sent to a special fuel cell system, which works like a battery. (See inset.) There, the gas is chemically broken 20 down. What eventually emerges from the fuel cell system is water, carbon dioxide and electricity - far more electricity than what is produced by burning methane.

Producing energy with fuel cells offers a great advantage over burning oil or coal to produce electricity. The latter process releases chemicals which produce smog. Fuel cells do not "burn" anything and

therefore do not create these pollutants. And while both 25 processes release carbon dioxide, fuel cells produce only half as much.

Unfortunately, the process still has problems. One is that the fuel cells are unable to meet demands for sudden surges in electricity use. For these, Renton must rely on a traditional electric power 30 plant. Secondly, there is the matter of cost. The fuel cells are expensive, and must be replaced every four years. At present, it is still far cheaper to produce electricity the traditional way. Renton can only afford to run its plant because it is being 35 subsidized by private and government researchers. If researchers ever find a way to make the system more cost-effective, "waste power" may be the trend of the future.

Task 2

Answer the questions:

1. What are the main and secondary purposes of sewage treatment plants according to lines 1-11?

a. The MAIN purpose is to_____

b. The SECONDARY purpose may be to_____

2. Apart from the fact that they cost money, give TWO other reasons why scientists would like to find alternatives to oil and coal. Base your answers on lines 7-25?

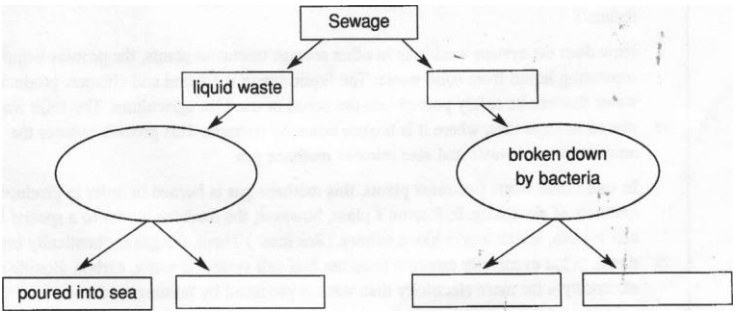
a.

_____

b.

_____

3. What is the process described in the report? Complete the graphic organizer below.



Task 3

Find the words in bold in the text and circle the correct meaning:

A. Often, the meaning of a word can be guessed by looking at the context. Find the words in bold in the text, and circle the correct meaning.

1. thanks to modern **plumbing** (line 2)
a. piping
b. hygiene
2. **To this end,** hundreds of sewage treatment plants have been constructed (line 5)
a. for this purpose
b. in order to finish
3. it's running **a pilot** program (line 8)
a. a flight
b. an experimental
4. sources that will eventually be **depleted** (line 10)
c. expensive
d. used up
5. make use of a **limitless** supply (line 10)
e. endless
f. pointless

6. What **eventually** emerges (line 20)
g. immediately
h. finally
7. it is being **subsidized** by private and government researchers (line 35)
i. paid for
j. criticized

8. portable pack of chemicals (inset)
k. movable
l. heavy

Task 4

Circle the word in each row which doesn't belong:

1.	fortunately	expected	luckily
2.	produce	create	destroy
3.	waste	remains	ruins
4.	invest	discover	spend
5.	pollute	donate	contribute
6.	source	result	origin
7.	construct	build	invent
8.	matter	difference	issue
9.	filter	clean	pour
10.	agriculture	farming	industry
11.	reduce	expand	increase
12.	convert	save	change

Text 2
THE ELECTRICAL PICTURE WAVE

Task 1
Read and translate the text:

Do you remember about the metal caesium?

The tiny silver specks that are in a television camera are covered with the metal caesium. This metal is different from most other metals. It gives off the electrons when light strikes it. The brighter the light that strikes caesium, the more electrons it will give off.

Remember that caesium gives off billions and trillions of electrons, and that the brighter the light striking caesium, the more electrons it will give off.

An electric current is the flow of electrons going from one place to another: the more electrons that pass this place, the stronger will be the current. The strength of the current will depend on the number of electrons passing through it.

You can understand how each tiny speck of silver covered with caesium (on the screen), while giving off electrons, gives off its own tiny current: when the light is very bright, the more electrons leave tiny specks and more current is given off. When the light is weak in the dark places of the picture, less electrons are given off and the current is much weaker.

So the iconoscope screen gives off millions of different tiny electrical currents; those currents may be quite strong when the light is quite bright and they may be weak when the light is quite dark.

When you see an image of a person's face on the screen of your television set you must know that it was transferred from a picture to millions of different electrical currents, or an electric picture wave. This wave was strengthened a million times and then it was sent through space to the screens of your television sets.

Task 2

Answer the questions:

1. Why is caesium different from other metals?
2. What is an electric current?
3. What will the strength of the current depend on?
4. How is an electrical picture wave formed?

Task 3

Give the words with the opposite meanings:

weak -	_____	to strengthen -	_____
bright -	_____	to remember -	_____
more -	_____	different -	_____
to give off -	_____	light -	_____
tiny -	_____	to leave	_____

Task 4

Find the English equivalents to:

електронний відеосигнал - _____
випромінює електрони - _____
зображення людського обличчя - _____
бути персоною з… - _____
срібні крупинки - _____
темні місця - _____
телевізійний пристрій - _____
електрична хвиля - _____
електричний струм - _____
кількість електронів - _____
екрани - _____
проходити крізь - _____
ви повинні знати - _____

Text 3
MAGIC WAVES IN YOUR ROOMS

Task 1
Read and translate the text:

In the room where you live there are hundreds of strange, invisible magic waves. They come into your house through the walls, ceilings and floors and they are there now. They are upstairs and downstairs. They are all over the world, surrounding everything and everyone. Yet no one can ever see or hear them or feel them. But we know they are present. All we have to do to prove it is to turn on our radio and television sets. Then we pick them right out of the air and transform them into music and voice that we can hear, and moving pictures that we can see.

These magic waves come from everywhere. Turn the knob of your radio just a little, and you may hear the latest news. Turn a little more and you can hear a concert. Turn the knob of your television set and with the help of these same waves you will see a film or a play.

All you need to do is to take the set into your room and to turn some little knobs.

When you turn the knobs of your television set, you release sound and light waves and you can both see and hear programmes. When you turn the knob of your radio, you release sound waves and you hear a programme.

How are these waves brought to your radio or television? There is energy working around us all the time. There is the energy in light, heat and sound and it travels in wave. A wave is a single vibration of energy in motion.

Light and heat and radio waves are different from sound waves because they do not need anything that we can see or feel through which to travel. Light and heat and radio waves are called electromagnetic waves. And because they are electric they are surrounded by the magnetic fields that electricity always makes around itself.

All electric current creates a magnetic force, an area around that has the same kind of power that a real magnet has. This magnetic area is called a magnetic field.

Task 2

Answer the questions:

1. How do the magic waves come into your room?
2. What do we have to do to prove they really exist?
3. What do you release when you turn the knobs on your television set?
4. What do you release when you turn the knob of your radio set?
5. What is a wave?
6. Why are light waves different from sound waves?
7. What does electricity make around itself?
8. What is a magnetic field?

Task 3

Give the words with the opposite meanings:

To live - real -

Upstairs - little -

Everything - to be present -

Light - heat -

Always - to make -

Task 4

Find the English equivalents to:

Магнітне поле - _____

Світові хвилі - _____

Почути радіопрограми – _____
Довести їх існування – _____
Той самий вид енергії – _____
Справжній магніт – _____
За допомогою – _____
Увімкніть трохи голосніше – _____
Перетворити на музику – _____
Поодинокі вібрації – _____
Оточені - _____
Називаються - _____

Text 4
A SOUND WAVE RIDES ON A CARRIER WAVE

Task 1
Read and translate the text:

First of all we want to tell you that the sound wave is called audio frequency wave (from "audio" meaning "to hear"). We must remember that the radio waves that come from radio stations are very rapid in their vibrations. They alternate between positive and negative charges from 1 000 000 to 10 000 000 times per second and that is too fast for the loud speaker of our radio sets. Our radio loudspeaker could never receive waves that vibrate as fast as that. The radio waves that come into our sets are produced in the radio stations by alternating current like the spark between your finger and the metal door knob.

An alternating current is a current that changes from positive to negative hundreds of thousands of times per second. First it has a positive charge, and then it has a negative charge, and it keeps on alternating from positive to negative so rapidly that you cannot notice the changes. You have just the same thing in the cinema: you see the film but you cannot separate one picture from another, while watching the film. This alternative current is sent up a tall metallic shaft and out in space. Before this current is sent out, it is made very strong with the help of vacuum tubes. As soon as the alternative current enters the shaft it is turned into radio waves.

The alternating current that is sent up the tall shaft out into space usually carries the sound wave which, at this point, is in the form of much slower electrical vibration that we send through the telephone wires. Because of carrying these waves it is called a carrier wave.

Sometimes it carries nothing at all, but most of the time a sound wave is riding on it.

By the time hundreds of different carrier waves reach you radio, they are quite weak and cannot be used.

They cannot be sent into the electromagnet of the loudspeaker because they will produce no effect, i.e. they will create no sound in your loudspeaker. These radio waves can produce sound in the loudspeaker only after we have solved three problems.

First, we must separate them and take only wave frequency second; we have to strengthen greatly these weak waves. And third we must separate the sound wave from the carrier wave. Only after that we can get the same sounds in our loudspeaker as those sent into the microphone at the studio.

Task 2

Answer the questions:

1. How is the sound wave also called?
2. How often do the sound waves alternate?
3. What is an alternative current?
4. Why is a carrier wave called so?
5. What is usually riding on it?
6. Why can't we use different carrier waves by the time they reach our radio?
7. Name the three problems we must solve to produce sound in loudspeakers.

Task 3

Make up sentences with the following expressions:

- to be sent up;
- to be produced;
- to separate smth. from smth.;
- because of;
- with the help of.

Task 4

Find the Ukrainian equivalents to:

The sound wave – _____

Very rapid in their vibrations – _____

Spark between your fingers – _____

Negative charges – _____

The door knob – _____
Thousands of times per second – _____
You cannot notice – _____
Vacuum tubes – _____
Quite weak – _____
The electromagnet of the loudspeaker – _____
Send through the telephone wires – _____
Produce no effect – _____

Text 5
THE TRANSISTOR AND THE COMPUTER THE COMPUTER'S MINIATURIZATION

Task 1

Read and translate the text:

The first wide applications of semiconductor electronics were in telephone industry and then in transistor radios.

Computers began to use transistors in 1955. In that year IBM Company marketed a computer in which 1250 valves had been replaced by 2220 transistors, reducing the power consumption of the computer by ninety - five per cent.

The invention almost at the same time of the stored - program digital computer provided a large potential market for the transistor. The reason is that digital systems require very large numbers of transistor circuits.

The synergy between a new component and a new application generated an explosive growth of both transistor and computer. The historical fact is that early efforts to miniaturize electronic computers were not motivated by computer engineers. Various satellite and missile programs called for complex electronic systems to be installed in equipment in which size, weight and power requirements were severely constrained. So the effort to miniaturize was promoted by space and military agencies.

Task 2

Answer the questions:

1. When was the first wide application of semiconductor electronics?
2. Computers began to use transistors in 1965, didn't they?
3. In what year did IBM Company market a special computer?
4. How was the power consumption of the computer reduced?
5. What was invented almost at the same time with transistors?

6. Why did the invention of the stored - program digital computer provide a large potential market for the transistor?
7. Was the effort to miniaturize promoted by computer engineers?

Task 3

Complete the sentences according to the text:

1. The second wide application of semiconductor electronics was …
2. In 1955 computers began…
3. The reduction was…
4. Digital systems require…
5. Computer engineers didn't …
6. An explosive growth of both transistor and computer happened because…
7. Space and military agencies…

Task 4

Find the English equivalents to:

Широке використання – _____
Транзисторні радіоприймачі – _____
Електронні лампи – _____
Споживання енергії – _____
Вимагає – _____
Дуже велика кількість – _____
Транзисторні схеми – _____
Взаємодія між компонентами – _____
Ранні спроби – _____
Різноманітні супутникові програми – _____
Комплексні електронні системи – _____
Серйозно обмежені – _____
Зменшити – _____
Військові агентства – _____

Text 6

EVERYTHING ABOUT YOUR TELEVISION SET

Task 1
Read and translate the text:

You have learned very many different things and it is rather difficult to remember everything. But there are things that you must remember and know well.

First: The television camera focuses a person in the studio in just the same way as photo camera focuses you when your photo is taken. Just as the image is formed on the photographic plate so the image of a person in the studio is formed on the plate inside the iconoscope.

Second: Each of the million tiny specks covered with cesium on the iconoscope gets a tiny speck of light from the image, and the image is therefore broken up into a million tiny dots. Some of the dots receive a lot of light, while others receive very little light and some have no light at all on them.

It is like a printed photograph in any newspaper when you examine it through a magnifying glass.

Third: With the help of the cathode - ray beam, 25 different "electric pictures" per second are sent over the air, each one a little different from the last. Then you have a moving picture of electric wave which comes into your television sets.

Fourth: But the electric picture that is sent over the air is only one of many thousands. We know that to show a moving picture we must flash 25 slightly different pictures every second on the screen. Our eyes are not fast enough to see each picture but we see the result of the whole film.

So 25 "electric pictures" must be sent over the air every second and it is a cathode - ray beam that helps us to do this.

Fifth: The screen in your set is the top of a very large vacuum tube. It is covered with a chemical that glows when light strikes it. Inside the tube is a cathode - ray beam, the same as the cathode - ray beam in the TV studio. This beam moves in the TV studio. This beam moves in the same way as the beam in the studio does.

It covers the screen in a twenty fifth of a second, and as it does so it becomes stronger or weaker: stronger when the current is strong, weaker when the current is weak. If a tiny speck of cesium in the iconoscope receives a bright light from the image of an actor, its current will be strong, and the beam in your set will immediately receive this strong current and will be bright itself.

It will then make a tiny bright spot on your television screen in the same place as the spot from the image that was made on the screen in the iconoscope. In the next millionth of a second the ray will change and a new speck on your screen close to the first speck will remain dark. All this happens in a twenty - fifth of a second for each picture, and it works in the same way as the "magic paint brush".

A film that goes on in the studio is reproduced on your television screens hundreds of miles away.

Task 2

Answer the questions:

1. How many rules must you remember?
2. What is the first one?
3. What is the second one?
4. What is the third one?
5. What is the fourth one?
6. What is the fifth one?
7. What is a cathode?
8. What happens in a 25^{th} of a second?

Task 3

Give the words with the same or close meanings:

To remember – _____
Difficult – _____
To cover – _____
A moving picture – _____
A top – _____
To remain – _____
To go – _____
To receive – _____

An image – _____
A beam – _____
To change – _____

Task 4
Find the English equivalents to:
Передавати повітряним шляхом – _____
Як тільки зображення сформовано – _____
Вкриті цезієм – _____
Недостатньо швидкі – _____
Трохи відрізняється – _____
25 зображень за секунду – _____
Світловий промінь – _____
Крихітні яскраві плями – _____
Відразу ж отримає – _____
Залишаться темними – _____
Рухається так само – _____
Дуже мало світла – _____
Чарівний пензель для фарби – _____

Text 7
HOW IS SOUND SENT OVER WIRES?

Task 1
Read and translate the text:

Let us speak about the nature of sound. What is sound? You can answer this question in Ukrainian, but you cannot do it in English. So read and remember. Sound is the rapid disturbance of air which affects our ear drums and enables us to hear. These rapid disturbances in the air we call vibrations.

It is air that makes it possible to hear sound, and where there is no air or atmosphere it is impossible to hear anything. You can hear no music, or noise or talking if there is no atmosphere or air around you to carry the sound to your ears.

Whenever a thing vibrates it moves very rapidly: 600 or 700 times every second. In doing this it pushes the air around it and sends out little air waves very much alike the tiny waves on the surface of a pond when you throw some light thing into it. The waves travel in all directions, and they travel very fast.

Edison made his important discovery, when he invented phonograph. He took a thin disc and attached a needle to it. He then talked into the disc and the disc vibrated. The needle scratched on his record, so he recorded the vibrations. When he had finished talking, he put the needle down on the disc and it went over the grooves it had made. The disc talked back to him in his own words and voice.

But how is it possible to send sound hundreds or thousands miles away? You know that sound is sent over wires with the aid of two magnets. One of the magnets is the kind that attracts - needles and never loses its magnetism. The other magnet is a little different. It is simply a piece of iron with wire around it.

The very moment a current is sent through the wire, the iron becomes a magnet, and the moment the current stops, the iron loses all of its magnetism. The piece of iron with the wire around is electromagnet. Many scientists say it is the most important invention of all modern science and culture.

The electromagnet is a magnet when a current flows through the wires, and is not a magnet when the current stops. A thin iron disc, as thin as this page of our book, if placed very close to this magnet, would be pulled very slightly towards the magnet just as often as the current in the magnet was turned on or off.

No matter how fast the current changes, nor how many times in a second it changes from strong to weak, the disc will move just as many times - no more, no less. The disc then vibrates with each tiny change in the current and will produce sound.

Task 2

Answer the questions:

1. What is sound?
2. What makes it possible to hear sound?
3. How quickly does a thing move?
4. What discovery did Edison make when he invented a phonograph?
5. How is it possible to send sound hundreds or thousands miles away?
6. What modern invention do the scientists consider the most important?
7. What is the electromagnet?
8. Does it matter how fast the current change?

Task 3

Give the expressions with the opposite meanings:

Cannot do – _____
Enable to hear – _____
Great noise – _____
Finish talking – _____
Never loses – _____
A little different – _____
On the surface – _____
The most important – _____
Modern science – _____
To turn on – _____

Tiny change – _____
No less – _____

Task 4
Find the English equivalents to:
Давайте поговоримо – _____
Швидке коливання повітря – _____
Неможливо нічого почути – _____
Повітряні хвилі – _____
Зробив важливе відкриття – _____
Залізо стає магнітом – _____
Струм тече по проводах – _____
Тонкий диск – _____
Повільно рухається вперед – _____
Немає різниці як – _____
Від сильного до слабшого – _____
Буде виробляти струм – _____

Text 8
RADIO AND TELEVISION

Task 1
Read and translate the text:

Radio and television occupy one of the leading places among the greatest achievements of engineering in the 20th century. They find greater and greater application in many areas of life.

The first use of radio in Ukraine was mentioned in Pochtovo-Telegraphnyi (Post and Telegraph) Journal in 1902. This was the time when radio telegraph connection began to function between Kherson and the town of Hola Prystan' (English: Bare Pier).

The first regular broadcasts in Ukraine were made in Kharkiv in 1924, when the first radio stations were built. In 1927, radio broadcasts were conducted in Dnipropetrovs'k, Donets'k, Odesa and other large cities. In 1940, there were thousands of radio receivers in all parts of Ukraine.

In late 1930s scientists in Kyiv and Kharkiv began to work on problems connected with the process of transmitting pictures with sound by radio waves. The first experimental television centre started functioning in Kyiv in 1941. And the regular telecasts were begun by the Kyiv Broadcasting Studio in November. 1951.

At present, almost all homes in Ukraine have radio sets, and approximately 90 per cent of homes have TV sets. Radio and television programmes start early in the morning and continue till midnight. Three Ukrainian national channels broadcast about 320 hours of programmes a week. Some people also receive satellite or cable TV. On average people in **Ukraine** watch TV programmes between three or four hours a day. But sometimes they spend even more time watching TV.

The world around us is very diverse and rich. There are all kinds of things-politics, art, science, protection of health, economy, nature, finance. So the main task of television is to try to show us this world. Besides, radio and television offer amusement, pleasure and do lots of other things. Is there something special to television that it offers us?

Clearly there is, otherwise it wouldn't be so popular among small children, teenagers, senior citizens. They enjoy watching all programmes, but their favourite programmes are variety shows, comedy programmes, quiz programmes, crime series, animated cartoons.

Television, with a minimum of efforts turns our living-room into a playhouse, auditorium, a dancing-hall or a stadium.

Already some people say that with their television and radio sets at home, they no longer need theatre or cinema and do not care whether they live or die.

What do you think of it?

Unfortunately, unlike the USA and some other countries we do not have special channels for weather forecasts, sports events, crime series, popular-science films, discussions, general education. In the centre of New York, in Manhattan, you can watch TV programmes on thirty-six channels. For example, on Channel 27, you will hear only news and commentaries. There is a weather channel, too. On this channel you can hear the weather forecasts, you can learn about the weather in your town, in neighbouring towns and states, in other countries. Some channels are devoted to sports events, and there are a lot of channels showing only animated cartoons, science-popular films or crime series. Yet people wouldn't be against a dozen more channels. They believe that sooner or later TV will become world-wide and they will be able to watch regular programmes from other countries.

Do you think it may be true?

Task 2

Complete the sentences according to the text:

1. Television find greater and greater…
2. This was the time when…
3. … were made in Kharkiv in 1924.
4. In 1940, there were…
5. … in Kyiv in 1941.
6. People watch all programmes, but their favourite ones are…

7. The regular telecast was begun…
8. The main task of television is…
9. Television offers…

Task 3

Match the words with their definitions:

Broadcast	join, put together, unite;
Mention	apparatus for receiving broadcast signals;
Connect	thing that can be heard;
Application	speak or write about something briefly;
Connection	situated next to somebody (something);
Transmit	send out signals, programmes by radio waves;
Receiver	of different kind, varied;
Sound	act, operate;
Wave	place or point where two things are connected;
Neighbouring	send out programmes by television or radio;
Diverse	act of putting a theory, discovery into practical use;
Function	motion by which electricity, radio, etc. is spread

Task 4

Find the English equivalents to:

Інженерне мистецтво – _____
Прогноз погоди – _____
Кримінальний серіал – _____
КВК, радіо вікторина – _____
Естрадна вистава, вар'єте – _____
Передавати по радіо – _____
Сусідський, суміжний – _____

З’єднувати, пов’язувати – _____
Діяти, функціонувати – _____
Застосування – _____
Радіоприймач – _____
Сполучення, зв'язок – _____

Text 9
CYBERNETICS

Task 1

Read and translate the text:

The study of control processes in electronic, mechanical, and biological systems is known cybernetics. The word was coined in 1948 by the American mathematician Norbert Wiener from Greek word meaning pilot or steersman. Cybernetics is concerned with the analysis of the flow information in both living organisms and machines, but it is particularly concerned with systems are capable of regulating their own operations without human control.

Automatic regulation is accomplished by using information about the state of the end product is fed back to the regulating device, causing it to modify or correct production procedures if necessary. The concept of feedback is at the very heart of cybernetics and is what makes a system automatic a self-regulating. A simple example of a self-regulating machine is a thermostat, which reacts continual feedback about the outside temperature and responds accordingly to achieve temperature that has been programmed into it.

The applications of cybernetics are wide reaching, appearing in science, engineering, technology sociology, economics, education, and medicine. Computers can keep a patient alive during a surge operation, making instantaneous modifications based on a constant flow of information. In education, teaching machines use cybernetic principles to instruct students on an individual basis. In the home, automation is present in such everyday products as refrigerators, coffee makers, and dishwashers. In industry, automation is increasing its applications, although it is currently applied primarily to the large-scale production of single units. In industries in which a break in the flow of production can ruin the product, automatic controls are invaluable. Chemical and petroleum plants are now almost complete automatic, as are industries involved in the production of chemicals and atomic energy. Automat has become the answer when human safety is the number one priority.

Task 2
Choose the right answer:

1. Cybernetics is the study of control processes in all of the systems EXCEPT
(A) ecological
(B) biological
(C) mechanical
(D) electronic
2. According to the passage, the word "cybernetics" was coined from the Greek word meaning
(A) information
(B) automatic
(C) pilot
(D) regulator
3. According to the passage, cybernetics is primarily concerned with systems that
(A) are controlled by humans
(B) analyze flows of information
(C) are self-regulating
(D) have wide-reaching applications
4. According to the passage, how is a regulation accomplished?
(A) By modifying and correcting production procedures
(B) By -feeding information to the regulatory device
(C) By analyzing the flow of information to the organism
(D) By making modifications in cybernetic principles
5. Which of the following is NOT mentioned as an area in which cybernetics has applications?
(A) Technology
(B) Engineering
(C) Philosophy
(D) Education
6. According to the passage, automation in industry is primarily used in producing:
(E) large quantities of a single unit

(F) everyday household products
(G) small amounts of many different products
(H) high-tech surgical instrument
7. According to the passage, automation is extremely important when the top priority is
(I) efficiency
(J) speed
(K) convenience
(L) safety

Task 3
Give the English equivalents to:
Має справу з – _____
Без людського контролювання – _____
Здійснюється – _____
Кінцевий продукт – _____
Саморегулююча машина – _____
Реагує відповідно – _____
Застосування кібернетики – _____
Хірургічна операція – _____
Постійний потік інформації –_____
На індивідуальній основі – _____
Холодильник та посудомийка – _____
Хімічні заводи – _____
Атомна енергія – _____
Першочерговий пріоритет – _____

Task 4
Fill in the letters:
Acc…mplish;
…nstantan…ous;
Me……anical;
……ilosophy;
Ed…cation;
C…berneti…s;

Mat…emati…ian;
Mod…fi…ation;
Pr…n…iples;
…nvaluable;
……tomat;
S…stem.

Text 10
ATOMIC POWER STATIONS

Task 1
Read and translate the text:

An atomic power station is similar to **conventional** power stations, the only difference being the **furnace,** that is to say, instead of a coal burning furnace it has a nuclear furnace. This means that heat is produced by nuclear fission in a reactor.

The experience that has been accumulated shows that atomic power stations are reliable and safe. At the same time the best design for an atomic power station has to be found.

There is a large number of variants of projects for using atomic fuel for the output of electric power. Mention should be made that the electricity generated by atomic power stations still **costs** more less than that obtained from thermal power stations, **to say nothing of** the electricity produced by hydropower stations.

In spite of this there is great need for developing the best types of atomic power stations. As yet, scientists in different countries failed in developing the best type of atomic power stations.

In some areas of the world there is a **shortage** of fuel and water power necessary for the development of electrification. To supply these areas fuel has to be transported over long distances. Fuel, even high-grade fuel, **contains** only an insignificant quantity of power. For example, a ton of oil if fully burnt yields approximately 12,000 kilowatt hours of electricity, coal giving even less than that — only 8,000 kilowatt hours. Yet, as little as he a gram of uranium can produce **as much as**10, 000 kilowatt hours of electricity.

For that reason atomic power stations are being built in industrially developed areas with poor power resources. It is believed that atomic power stations will be built in **permafrost** regions too. It is known that use is made of different reactors nowadays. Mention should be made that work has been started to utilize the energy of the atom not through the conventional steam turbine generator **scheme** but through the conversion of atomic power directly into electricity.

Reactors operating on fast moving neutrons being studied by the scientists, it is planned to install such reactors in future industrial atomic power stations. There is a great future in the nuclear synthesis of light nuclei of thermonuclear reactions which is a source of inexhaustible energy.

The scientists are working on the problem turning nuclear reactions into power, there being no doubt that this problem will be successfully solved.

Task 2

Answer the questions to the text:

What is the difference between the atomic power station and the conventional power station?

Atomic power stations are reliable and safe, aren't they?

What kind of electricity generation is the cheapest?

Did scientists in different countries succeed in developing the best types of atomic power stations?

What shortage is there in some parts of the world?

How many kilowatt hours of electricity does a ton of oil if fully burnt yield?

Why are power stations being built in industrially developed areas with poor power resources?

What kinds of reactors are planned to install in future industrial atomic power stations?

What is a source of inexhaustible energy?

Task 3
Give the Ukrainian equivalents to the words in bold.

Task 4
Complete the word-combinations:

1. A power … _____
2. A nuclear… _____
3. A …region _____
4. Kilowatt … _____
5. Developed … _____
6. Thermonuclear … _____
7. A gram of … _____
8. A coal burning … _____
9. A shortage of … _____
10. A source of … _____
11. A … generator_____
12. Will be … solved_____

Text 11
ELECTRICITY AND ELECTRONICS

Task 1
Read and translate the text:

It is very difficult to separate the meaning of the two words - "electricity" and "electronics". The field of electricity is usually thought of as electricity that is used in magnets, generators, motors, **lights** and heaters.

The field of electronics is usually thought of as electricity that is used in radio, television, and other equipment where electron **tubes** and transistors are needed.

Basically **electronics** is not so much a new subject as a new **way of looking** at electricity. All electrical **effects** are really electronic because all electric currents **result** from the movements of electrons, and all electric **charges** are due to the accumulation of electrons.

Electronics is the science or practice of using electricity in devices similar to radio tubes so as to get results not possible with **ordinary** electrical equipment.

Although electronics has received greater attention in recent years, we have been using electronic equipment **for half of a century.** Radio, television, **sound pictures,** fluorescent lighting and long-distance telephone calls **owe** their existence to electronics. As most of these familiar equipments serve to carry or give information one may say that communication has been the major purpose of electronics.

Electronics is **closely** connected with a series of discoveries and inventions which have revolutionized the life of man in this twentieth century. In 1883 Thomas A. Edison discovered current conduction through gas in an **incandescent lamp.** This phenomenon known as the Edison effect, marked the birth of electronic science. The Edison effect was followed by the discoveries of electromagnetic waves, X-rays, wireless communication and at last by the invention of two-

electrode **detector** or the **"valve"**. These basic discoveries and a lot of others have produced what is known as electronics.

Nothing can be done in modern research laboratory without the aid of electricity and electronics. Nearly all of the **measuring** devices used in industry and research are electrically operated. Electronics has found broad application in industry as a means of automation, control and inspection, and as a direct means of **fulfilling** such operations as melting, cutting of super hard materials and **welding**.

Task 2

Answer the questions to the text:

1. What is the difference between the meaning of "electricity" and "electronics"?
2. Which one is a newer subject?
3. What kind of science is electronics?
4. How long have we been using electronic equipment?
5. What has been the major purpose of electronics?
6. What phenomenon did Edison discover in 1883?
7. What was the Edison effect followed by?
8. Can anything be done in modern research laboratory without the aid of electricity and electronics?
9. How do people use electronics in industry?
10. Do you use electronics in everyday life? If yes,where?

Task 3

Give the Ukrainian equivalents to the words and word-combinations in bold.

Task 4

Complete the sentences according to the text:

1. The field of electricity is usually thought of as…
2. The field of electronics is usually thought of as…
3. … are really electronic.

4. People have been using … for half of a century.
5. … has been the major purpose of electronics.
6. Thomas A. Edison discovered …in 1883.
7. The Edison effect is… .
8. After the Edison effect were discovered… .
9. Most of measuring devices used in industry and research are … operated.
10. Electronics is a direct means of … .

Text 12
ELECTROMAGNETIC WAVES

Task 1
Read and translate the text:

Radio waves, light, X-rays and some cosmic rays — **they all belong to the same family.**

They travel at the velocity of light.

The wave has both electric and magnetic components which are bound together. At the end of its travel the wave **gives up** energy. The **ether waves** are those we know as **wireless waves.**

When the waves are too long they are "seen" as infrared, when they are too short they are "seen" as ultra-violet. Shorter than the ultra-violet are X-rays and **far shorter than the shortest of these** are the "gamma" rays, and finally the cosmic rays.

The penetrative power of these increases as the wavelength decreases.

To sum up: all these electromagnetic waves travel through the ether at the same enormous speed; the different effect which they produce **depends entirely upon their length.**

Some more words about ultra-violet and X-rays.

Ultra-violet rays **are familiar to most people** as the particular art of sunlight that is "health-giving".

The effect of the ultra-violet rays is to produce in the skin the vitamin that is important **for** the promotion of **bone-growth.** The use of these rays in diagnosis is a powerful weapon of medicine. One of the most valuable uses of ultra-violet rays in industry is the testing of the quality of certain goods. X-raying is very important in metallic weldings.

X-ray were discovered by Roentgen **after whom** the rays are sometimes called. The discovery of X-rays was quickly followed by its application to medicine.

Task 2

Give the Ukrainian equivalents to the words and word-combinations in bold.

Task 3

Write questions to the given answers:

1. Radio waves, light, X-rays and some cosmic rays.
2. The wave gives up energy.
3. The "gamma" rays.
4. The ether waves.
5. Upon their length.
6. To produce in the skin the vitamin that is important **for** the promotion of bone-growth.
7. The testing of the quality of certain goods.
8. Roentgen.
9. The use of these rays in diagnosis.
10. Its application to medicine.

Task 4

Explain the following words in English:

1. To give up – _____
2. To travel – _____
3. An effect – _____
4. Valuable – _____
5. A weapon – _____
6. Goods – _____
7. Important – _____
8. Testing – _____
9. To produce – _____
10. Enormous – _____
11. Welding – _____
12. To discover – _____

Text 13
MAN AND MACHINES

Task 1
Read and translate the text:

Press **a button** on the wall and a dark room is full of light. **Speak into a little instrument** and people thousands of miles away will hear you instantly. Switch on your radio or TV set and you will hear music, the latest news or see **a** play even from **remote** regions of the globe.

Nowadays people move on land much faster than the speediest horses. Powerful motors **drive** cars, diesel and electric engines run trains from one country to another.

Under water sportsmen swim swifter than the **speediest fish.**

In air people fly hundred times faster than **birds. Supersonic planes fly at twice the speed of sound.** People enjoy these achievements thanks to the development of science and engineering.

We live in the age of machinery, i.e. (that is) in the time when highly productive machines and up-to-date devices take the place of men for doing work. In industry and agriculture machines play the most important role. They lighten man's labour and do all the hard work in mills, factories, **mines** and farms.

In a number of shops in up-to-date mills and plants automatic machines entirely **replace** the work of men.

In mining industry conveyors and remote control devices make miner's labour safer and easier. They help to produce more ores, coal, oil and gas.

In fields tractors and **harvester combines** replace labour of hundreds of people and help farmers **to gather rich crops.**

Underwater robots explore the **sea bed** at a depth of more than 4,000 metres. **By means of** remote control devices they **change** tools and lift weights.

Electronic instruments — radars, lasers and masers represent the latest developments of research equipment. They **are of great help** in all forms of scientific work.

Great and rapid changes take place in science and engineering. New branches of science **appear:** atomic physics, cybernetics, radio-astronomy. Big experimental research programmes **are in progress** in all countries. **Mankind is on the eve** of space flights to remote **stellar worlds.**

With the development of science and engineering, with the advancement of progressive ideas a new man will appear — a man who will use his hands less and less, but **employ** his **brains** more and more.

At this stage of development mankind will **seek** new ways that lead to better life, to general **abundance**. All people of the globe will **win** freedom and independence. The triumph of Reason and Progress will bring happiness and universal peace to n human race.

Task 2

Give the Ukrainian equivalents to the words in bold.

Task 3

Correct the false sentences:

1. Nowadays people move on land much slower than the speediest horses.
2. Powerful motors push cars, diesel and electric engines slow down trains.
3. We live in the Medieval Age.
4. Machines don't lighten man's labour.
5. Machines cannot entirely replace the work of men.
6. In forests tractors and harvester combines replace labour of hundreds of people.
7. Underwater robots explore the sea bed at a depth of more than 2,000 metres.
8. There are such electronic instruments as hammers, hacksaws and saws.
9. The branches of medicine are: atomic physics, cybernetics, radio-astronomy.
10. Different research programmes are in regress in all countries.

11. We are on the eve of flights to remote countries.
12. A future man will use his hands more and more, but employ his brains less and less.

Task 4

Give the expressions with the opposite meanings:

1. To switch on – _____
2. Remote – _____
3. Faster – _____
4. Rich – _____
5. Great – _____
6. To lift – _____
7. To enjoy – _____
8. New – _____
9. To appear – _____
10. Different – _____
11. Development – _____
12. Progressive – _____

Text 14
THE NATURE OF SOUND

Task 1
Read and translate the text:

All the time we hear sounds from all sides. We hear sounds through our ears which are **special receivers** for sound just as our eyes are special receivers for light.

Where there is sound there is movement, i.e. all sounds are produced by something that vibrates.

Hearing is a very complicated process in which the ears and the brain cooperate.

The ears act as detectors, amplifiers and converters. They **detect sounds** by **picking up vibrations** in the air. They amplify the sound by changing small pressures into larger ones. Then they convert it into electrical signals being carried to the brain. The brain **performs the job of interpreting the signal.**

Being made at a distance from us the sound has to travel across that distance to our ears. It is the air that is actually the carrier that brings the sound to our ears. **Air is not the only medium** that carry sound. Any gas, liquid or solid can serve as the material medium through which sound can pass.

But the sounds being heard by our ears are not the only ones that there exist. There are also sounds that we cannot hear. They are called ultrasonic sounds. Although we do not hear them we have learned how to make them and detect them. The study of sound has grown into two new areas — **ultrasonics and supersonics** the prefix "ultra" means beyond. In ultrasonics it refers to the fact that we study and use sounds that have frequencies beyond those we can detect with our ears.

The prefix "super" means above. In supersonics it points to the fact which deals with speeds above the speed of sound.

Task 2

Answer the questions:

1. How do we hear sound?
2. How are sounds produced?
3. What parts of our body cooperate in hearing process?
4. What is the role of the earsin this process?
5. What kind of job does the brain perform?
6. What serves as the carrier that brings the sound to our ears?
7. Name the material medium through which sound can pass.
8. Are there sounds we cannot hear? How are they called?
9. Do we know how to make them and detect them?
10. Which two new areas in the study of sound do you know?
11. What does the prefix "super" mean?
12. What does the prefix "ultra" mean?

Task 3

Give the Ukrainian equivalents to the words in bold.

Task 4

Give the synonyms to the words and word-combinations:

1. All the time – _____
2. Through – _____
3. To perform – _____
4. To convert – _____
5. Ultra – _____
6. Super – _____
7. Job – _____
8. Complicated – _____
9. To carry – _____
10. Solid – _____
11. To point – _____
12. To deal with – _____

Text 15
HOW ELECTRICAL ENERGY IS PRODUCED

Task 1
Read and translate the text:

There are several methods of producing electricity for practical purposes. The battery of a **pocket torch** may be contrasted with the source of enormous energy represented by a % larger **power-station.** Both are examples of the application of electrical energy to a particular purpose, and in general the purpose determines the **nature of the method** used to produce the energy.

Practical methods of producing electricity may be enumerated as follows:

Chemical, as represented by the various types of batteries or **primary cells** in which the electricity is produced **by purely chemical actions.**

Electromagnetic, forming the basis of operation of rotating generators in which the electricity is produced by conductors **moving through a magnetic field.** This is the method employed in practice for generators of various sizes.

Thermoelectric, in which the heating of the junction between two different metals produces a very small voltage which may be used for purposes of temperature measurement and as a source of power.

Piezoelectric, in which a very small voltage is produced **across certain faces of a crystal** by application of mechanical pressure. This effect is used, for example, as a means of frequency control in radio oscillators but it is not suitable for power supply.

Electronic, characterized by the flow of electrons **through evacuated or gas-filled tubes,** and having the following forms:

1. Thermionic emission, in which the electrons are produced by the heating of special materials.

2. Photoelectric emission, in which electrons **are liberated at the surface** of certain substances **by the action of light.**

Task 2

Answer the questions to the text:

1. Give some examples of the application of electrical energy to a particular purpose.
2. What practical methods of producing electricity do you know?
3. In which method is the electricity produced by purely chemical actions?
4. In which one is the electricity produced by conductors moving through a magnetic field?
5. Describe piezoelectric method.
6. What is electronic method characterized by?
7. How many forms does electronic method have? What are they?
8. How are the electrons produced during thermionic emission?
9. How are the electrons produced during photoelectric emission?

Task 3

Give the Ukrainian equivalents to the words and word-combinations in bold.

Task 4

Make up sentences with the following expressions:

- for practical purposes;
- to be contrasted with;
- to be produced ;
- to be suitable for;
- by application of;
- by doing smth.

Text 16
ULTRASONICS

Task 1
Read and translate the text:

We distinguish **audible** and **inaudible** sounds, that is, sounds that can be heard and sounds that cannot be detected by the human ear. The former are called sonic, the latter ultrasonic sounds. The range of sounds audible to the human ear is from 20 to 20,000 vibrations per second.

Ultrasonics are factors of great importance in nature. It is a well-known fact that **bats,** though almost blind, never fail to catch small **insects** in the air. This interesting phenomenon has long been studied by scientists. Now the problem is solved. Due to its large ears a bat can hear sounds inaudible to man. Moreover, bats themselves can **utter** ultrasonic sounds which help them to find their way and to locate all kinds of obstacles.

Having sent its ultrasonic signal the bat waits for the **echo,** which is heard as soon **as** the sound has been reflected from the obstacle; it helps the bat to avoid **collision,** the time of the interval for the return of the echo locating the obstacle.

The source of the ultrasonic sound is called a **transducer.** One of the transducers is **a quartz crystal.** This is a solid body whose property is to change its dimensions under the influence of electricity.

High-frequency sound offers a convenient means to produce **pulsed** signals. These signals have been used to perform different kinds of work, such as to mix liquids, to detect various defects in a metal and many others.

A quartz crystal is pressed against the surface of the metal to be tested. An electric current of ultrasonic frequency is applied to the crystal to make it vibrate with the same frequency. From the crystal a short **burst** of sound travels into the specimen. If it **comes across** an **air bubble,** a **crack** or some other defect it is reflected from that region, thus locating the defect. If the specimen has no defects the

signal is not reflected back until it reaches the **opposite** surface of the specimen.

Ultrasonic method is applied to study the ocean bottom, to locate shoals of fish or to detect some danger to navigation. People might have avoided many accidents if ultrasonic methods had been known before.

Task 2

Give the Ukrainian equivalents to the words and word-combinations in bold.

Task 3

Answer the questions to the text:

1. What kinds of sound do we distinguish? How else are they called?
2. What is the range of sounds audible to the human ear?
3. How can a bat hear sounds inaudible to man?
4. What else can a bat do to find its way and locate all kinds of obstacles?
5. What helps the bat to avoid collision?
6. What is a transducer?
7. What is the property of a quartz crystal?
8. What kinds of signals are used to mix liquids or to detect various defects in a metal?
9. What is the purpose of ultrasonic method?
10. What would have happened if we had known ultrasonic methods before?

Task 4

Get ready to retell the text according to the plan:

1. Audible and inaudible sounds.
2. Ultrasonic signals and the bat.
3. Transducers.
4. A quartz crystal and its usage.
5. The advantage of ultrasonic method.

Text 17
LASER

Task 1
Read and translate the text:

Laser is an acronym for light amplification by stimulated emission of radiation. Stimulated emission is a variation of spontaneous emission, a process that occurs in atoms when an electron in a ground, or unexcited state, is knocked into a higher state when energy is applied to the system. As the electron drops back into ground state, a photon, or particle of light, is released. As de-excitation occurs in millions of atoms, photons are released in a random fashion and light is emitted in every direction.

Stimulated emission, however, causes an increase in the number of photons traveling in a particular direction. An optical cavity, the space formed by two reflective surfaces facing each other, is used to control the direction of the beam. There are solid-state, gas, and liquid lasers, and by subjecting lasing materials to various types of energy—electrical, magnetic, or sonic—scientists have been able to control the laser output to suit various functions and applications.

In industry, the laser has proven to be a very versatile tool, particularly for cutting and welding. Lasers are now also used in high-speed printing and in the creation of three-dimensional images, called holograms. Laser tracking and ranging systems have been developed, using light signals to measure distance rather than the radio signals of radar. The use of the laser in biological and medical applications is also rapidly expanding, and the laser is already being used with great success in certain surgical procedures.

In the field of communications the laser, used in conjunction with fiber optic networks, is capable of carrying much more information than conventional wires and is setting the stage for the "electronic superhighway" of the near future.

Task 2

Answer the questions:

1. What is laser?
2. What is stimulated emission?
3. What types of energy do you know?
4. How is laser used in industry?
5. What is the other name for a three-dimensional image?
6. How is laser used in biology and medicine?
7. How is laser used in communication system?
8. What kinds of lasers do you know?

Task 3

Find the English equivalents in the text:

Спонтанна емісія – _____
Траплятися – _____
У стані спокою – _____
Звільняти енергію – _____
Виділяти світло – _____
Однак – _____
Підходити під різні функції – _____
Різання та зварювання – _____
У промисловості – _____
Трьохвимірне зображення – _____
Хірургічні операції – _____
У поєднанні з – _____

Task 4

Tell what you now know about:

1. The nature of laser.
2. The application of laser.

Text 18
ROBOTS AND OTHER MANUFACTURING USES

Task 1
Read and translate the text:

Computers serve a broad range of manufacturing purposes. For example, if you were a supervisor in a large factory, you might have a computerized control system to help you keep track of continuously running machinery.

Computers are also used to monitor the temperature and pressure of production processes. For example, in a chemical plant or power-generating station, computers may be connected to regulating devices. If the temperature or pressure rises or falls too much, the computer instantly signals the regulating device. The device then makes the needed adjustment — automatically.

In 1983 a new type of phonograph disc reached the marketplace, which showed promise of eventually taking over the recording industry. It was called the compact disc and made use of two technical systems: digital recording and laser beams. All recording until the advent of the compact disc was analog recording, which recorded the vibrations of sound waves on a track. With analog recording, there was always a bit of slippage, which added distortion. Digital recording is a completely different process, one in which the distortion is so small that it can be said to be effectively eliminated. Thus the fidelity of the compact disc is extremely high.

Because the indentations on the compact disc pass under a laser beam, no solid device is in contact with the disc, and therefore there is no friction, and wear is eliminated. With a minimum of care, the compact disc should last indefinitely. This is in contrast to the relatively short life of an analog recording. Another advantage of the compact disc is the system of identifying numbers that allows for random access to any song on the recording with the push of a button.

Because of the improved qualities and advantages of the compact disc, production has increased significantly since its introduction.

Although analog recording continues, it is expected to be relegated to a nostalgic past as the CD becomes the recording format of the future.

Task 2

Choose the appropriate answer:

Why did the author write this passage?

(A) To present the advantages of the compact disc
(B) To compare recent improvements in recording
(C) To criticize analog recording
(D) To support the idea of change in the music industry

The tone of the passage could best be described as

(E) positive
(F) negative
(G) humorous
(H) argumentative

The paragraph that precedes this passage most likely deals with

(I) the other uses of laser beams
(J) nostalgia in the 1990s
(K) major stars in the recording industry
(L) recording methods before 1983

This passage would probably be part of assigned reading in which of the following courses?

(M) Architectural design
(N) Electrical engineering
(O) Music history
(P) Marketing and management

According to the passage, it can be concluded that

(Q) people will eventually stop buying compact discs because they last indefinitely
(R) people didn't enjoy good music until the advent of the compact disc
(S) analog records will eventually be difficult to obtain
(T) compact discs require a lot of special care

Task 3

Read the passage and answer the questions:

One step beyond automated machines is the industrial robot, the heart and brain of which is the microcomputer. Unlike most automated machines, industrial robots can be programmed to do a variety of tasks that are usually accomplished by human factory workers. Like their human counterparts, industrial robots can be switched from one job to another and can be programmed to handle new tasks. Thus far, robots have found their greatest use in assembling mechanical components. However, they are swiftly branching from basic assembly operations to construction and mining, and their most glamorous use of all, the exploration of oceans and outer space.

1. The author's main purpose in writing this passage is to

(A) describe the industrial robot and its uses
(B) narrate a story about the industrial robot
(C) compare the industrial robot to human factory workers
(D) argue the advantages of the industrial robot

2. The author's reaction to an innovative form of transportation, such as the electric car, would most likely be

(E) positive
(F) negative
(G) confusion
(H) surprise

3. The paragraph following this passage would most likely be about

(A) types and uses of automated machines
(B) how industrial robots are used in exploration
(C) the uses of the microcomputer
(D) how robots assemble mechanical components

4. This passage would most likely be found in

(A) an entertainment magazine
(B) a medical journal
(C) a book of short stories
(D) a popular science journal

5. It can be concluded from this passage that

(E) robots will never replace human factory workers

(F) industrial robots are not as versatile as automated machines

(G) the microcomputer will soon be used in automated machines

(H) additional uses will be found for the industrial robot.

SCI-TECH TRANSLATION GLOSSARY

-Aa-

accelerate *v* прискорювати; збільшувати швидкість
accelerator *n* 1) прискорювач*;* 2) хім. каталізатор
accept *v* 1) приймати; 2) допускати
acceptable *adj* 1) прийнятий; 2) підхожий
access *n* 1) доступ; 2) підхід; 3) зростання
accomplish *v* 1) виконувати; 2) завершувати; 3) удосконалювати
account 1. *n* 1) рахунок; розрахунок; 2) значення; 2. v 1) (for) пояснювати; 2) звітувати
accumulation *n* 1) накопичення; акумуляція
accuracy *n* точність, правильність
achieve *v* 1) досягати; 2) успішно виконувати
achievement *n* 1) досягнення, успіх; 2) виконання, завершення
adjust *v* 1) упорядковувати; 2) пристосовувати; 3) регулювати; 4) настроювати
admit *v* допускати, припускати
adopt v 1) приймати; 2) вибирати
aerial *n* 1. *n* антена; 2. *adj* повітряний
affect 1. *n* афект; 2. v 1) впливати; діяти (на щось); 2) вадити, шкодити; 3) удавати
afford *v* 1) мати змогу, дозволяти собі; 2) давати, надавати
affordable *adj* можливий, допустимий
agitate *v* 1) збовтувати, трясти; 2) *тех.* перемішувати; 3) надавати руху
aggregate 1. *n* агрегат; 2. v збирати, складати
allocate *v* 1) призначити, асигнувати; 2) розміщувати; 3) закріпляти
allow *v* 1) дозволяти; 2) допускати; 3) субсидувати; 4) визнавати, приймати
alloy *n* 1) сплав (металів) 2) домішки; 3) проба (дорогоцінного металу)
alternating current *ел.* змінний струм (скор. а. с.)
ambient *adj* що оточує з усіх боків

amount 1. *n* 1) кількість; 2) загальна сума; 2. *v* 1) складати; 2) дорівнювати (чомусь)
ampere *n ел.* ампер
amplification *n* 1) збільшення; 2) рад., ел. підсилення, посилення
appliance *n* 1) пристосування, пристрій; 2) застосування, використання
apply *v* 1) просити; 2) використовувати, вживати, застосовувати
appoint *v* 1) призначати; 2) наказувати; 3) обладнувати, устатковувати
approve *v* 1) схвалювати; 2) затверджувати
approximately *adv* приблизно, майже
arrange *v* 1) упорядковувати; 2) пристосовувати; 3) *тех.* монтувати, установлювати
arrangement *n* 1) упорядкування; 2) розташування (у певному порядку); 3) *тех.* монтаж, установка; 4) пристрій, механізм
artificial *adj* 1) штучний, синтетичний; 2) удаваний, напускний, підробний
assemble *v* 1) скликати, збирати; 2) *тех.* монтувати, складати
assembly *n* 1) збори, асамблея; 2) *тех.* комплект, агрегат; 3) *тех.* монтаж, складання
assembly line *тех.* потокова лінія складання
assign *v* 1) призначати; 2) *тех.* установлювати
associate 1. *n* 1) партнер, колега; 2. *adj* 1) об'єднаний; 3. *v* 1) пов'язувати; 2) сполучати
assume *v* 1) набувати; 2) удавати; 3) вважати, припускати
assumption *n* 1. припущення, допущення
atomic power атомна енергія
attempt 1. *n* 1) спроба; 2. *v* 1) намагання; 2) робити спробу
attend *v* 1) бути присутнім, відвідувати
audible *adj* чутний, виразний
auxiliary 1. *n* 1) помічник; 2. *adj* 1)допоміжний; 2) додатковий
available *adj* 1) придатний, корисний; 2) наявний; 3) дійсний, чинний
average 1. n 1) середнє число; 2. *adj* 1) середній; 2) звичайний; 3. *v* 1) дорівнювати в середньому
avoid *v* 1) уникати; 2) спорожнювати, звільняти

-Bb-

balance 1. *n* 1) ваги; 2) рівновага; 2. v 1) балансування; зрівноважувати
believe *v* 1) вірити; 2) думати, гадати, вважати
beam 1. *n* промінь; **2.** *v* 1) світити**;** 2) випромінювати
benefit 1. n 1) перевага; 2) вигода; 2. v 1) давати користь, допомагати; 2) одержувати користь, здобувати вигоду
beyond 1. *adv* 1) за межами; 2) далі; 3) крім того;
2. *prep* 1) по той бік; 2) над, вище, понад
blank 1. *n* 1) пусте місце; 2) бланк; 3) тире, пропуск; 2. *adj* 1) чистий, неописаний
blast 1. *n* 1) сильний порив вітру; 2) потік, струмінь; 3) вибух; *2. v* 1) підривати 2) руйнувати
boil 1. *n* 1) кипіння (точка); 2) кипляча рідина; 2. v 1) варити(ся); 2) кипіти
bottom 1. *n* 1) нижня частина, дно; 2. *adj* 1) нижній; 2) останній
break-down *n* поломка машини (механізму)
browse *v* перегортати, переглядати
by virtue завдяки чомусь, на підставі чогось
businesses *n* 1) бізнес, справа; 2) фірма, підприємство
burst 1. *n* вибух; 2. *v* (*past* і *p.p.* burst) вибухати

-Cc-

capacity *n* 1) місткість; 2) ємність, об'єм; 3) mex. номінальна потужність, продуктивність; 4) електрична ємність
carbon dioxide *n* вуглекислота, вуглекислий газ
carry 1. *n* перенесення; 2. *v* 1) нести; - out виконувати, завершувати; - on продовжувати
carriage *n* 1) екіпаж; 2) пасажирський вагон; 3) mex. несучий пристрій
cathode-ray tube *фіз.* електронно-променева трубка

cause 1. n 1) причина, підстава, привід; 2. v 1) спричиняти, викликати; 3. *con* тому що, через те що
cave 1. *n* 1) печера; 2. *v* 1) видовбувати, підривати
cell 1. *n* 1) камера, секція; 2) біол.. клітина; 3) *тех.* датчик; 2. v 1) поміщати в клітку
centigrade *adj* стоградусний, по шкалі Цельсія
challenge 1. *n* 1) виклик; 2) сумнів; 2. *v* 1) викликати; 2) вимагати, претендувати (на щось)
character 1. n 1) характер; 2) властивість, ознака; 3) цифра; 4) літера; 2. *v* 1) зображати; 2) характеризувати
charge 1. n 1) навантаження; 2) заряд; 3) податок, збір; 2. v 1) покладати відповідальність; 2) вимагати плату
charitable *adj* 1) добродійний; 2) чуйний
chart 1. *n* схема, план; 2. v 1) креслити; 2) намічати; 3) складати схему
choice 1. *n* вибір; 2. *adj* найкращий, відбірний
circuit 1. *n* 1) обертання; 2) КОЛО, ОКРУЖНІСТЬ; 3) *тех.* схема, система, сітка; 4) *ел.* ланцюг, контур; 2. v обертатися, робити коло
short circuit коротке замикання
circulation *n* 1) циркуляція; 2) кругообіг; 3) обіг; 4) круговий рух
clue 1. *n* 1) ключ до розгадки; 2) доказ; 2. *v* повідомляти про подію
collision *n* зіткнення, сутичка
common 1. *adj* 1) загальний; 2) громадський; 3) звичайний, простий
communication *n* 1) передача; 2) спілкування, зв'язок; 3) сполучення, комунікація
compare 1. *n* порівняння; 2. *v* порівнювати, зіставляти
comparison *n* 1) порівняння; 2) схожість, подібність
competitive *adj* 1) конкуруючий; 2) конкурсний; 3) конкурентоспроможний
complete 1. *adj* 1) повний, закінчений; 2) абсолютний; 3) досконалий; **2.** *v* 1) закінчувати, завершувати
completely *adv* цілком, повністю, абсолютно
complex 1. *n* комплекс, сукупність; 2. *adj* 1) складний, складовий; 2) заплутаний

complicate *v* 1) ускладнювати, заплутувати; 2) ускладнюватися
compose *v* 1) складати, компонувати; 2) *друк.* набирати
compound 1. *n* 1) *фіз., хім.* сполука, суміш, склад; 2. *adj* складний, складений
compress *v* стискувати
concept *n* поняття, загальне уявлення
concern 1. *n* 1) відношення; 2) турбота; 3) фірма, концерн; 2. *v* 1) стосуватися, мати відношення; 3) займатися
conduct 1. n 1) поведінка; 2) керування, ведення; 2. *v* вести; 2) проводити 3) *фіз.* проводити (струм)
conductivity *n фіз.* 1) питома провідність, коефіцієнт провідності; 2) електропровідність
confirm *v* 1) підтверджувати; 2) затверджувати
consider *v* 1) розглядати, обговорювати; 2) вважати, гадати; 3) брати до уваги, враховувати
considerable *adj* 1) значний,великий; 2) важливий, видний
constant 1. *n фіз., мат.* стала величина, константа*; 2. adj* постійний; 2) сталий, незмінний
constantly *adv* постійно, безперервно; незмінно
construct *v* 1) будувати; 2) створювати
consume *v* 1) споживати, витрачати; 2) поглинати
continually *adv* 1) знову й знову, неодноразово; 2) безперервно, весь час
contribute *v* 1) робити внесок, сприяти; 2) співробітничати
convenient *adj* зручний; придатний
convert *v* 1) перетворювати (*на, у*); 2) *фін.* конвертувати
current carrier носій заряду, носій (електричного) струму
cycle 1. n 1) цикл, період; 2) mex.круговий процес, оберт, послідовність; 2. v повторюватися циклічно

-Dd-

damage 1. *n* пошкодження; 2. *v* пошкоджувати, псувати
decrease 1. *n* зменшення; 2. v 1) зменшувати; 2) спадати
deal with *v* 1) займатися (*чимось*); 2) мати справу, спілкуватися; 3) розглядати, обговорювати питання
delay 1. *n* **1)** затримка; **2.** *v* **1)** затримати; **2)** затримуватися

demand 1. *n* 1) вимога; 2) потреба; 3) ек. попит; 2. v 1) вимагати; 2) потребувати; 3) запитувати
dense *adj* густий, цільний; 2) глибокий, цілковитий
destroy *v* 1) руйнувати; 2) псувати, розбивати
determine *v* 1) визначати; 2) вимірювати, обчислювати; 3) спонукати, стимулювати
device *n* 1) пристрій, механізм, прилад, апарат; 2) план, схема
devise 1. *n* винахід, вигадка; 2. *v* 1) придумувати, винаходити, розробляти
devote *v* 1) присвячувати; 2) прирікати, віддавати
digital computer цифровий комп'ютер
direct current *ел.* постійний струм (*скор.d.c.)*
discharge 1. *n* 1) розвантажування; 2) *ел.* розрядка; 3) спускання, спорожнювання 2. *v* 1) розвантажувати; 2) *ел.* розряджати; 3) звільняти **discover** *v* 1) відкривати; 2) виявляти; 3) досліджувати
discovery *n* 1) відкриття; 2) виявлення, знаходження
disrupt *v* розривати, руйнувати
distinguish *v* 1) відрізняти; 2) розділяти; 3) характеризувати; 4) виділяти
due *adj* 1) належний, гідний; ~ to завдяки; через те, що; 2) зобов'язаний, обумовлений
durable *adj* 1) тривалий, довговічний; 2) міцний, надійний

-Ee-

efficient 1. *n* причина; 2. *adj* ефективний; 2) продуктивний; 3) справний (*про механізм*)
electricity *n* електрика
electron tube електронна лампа
eliminate *v* 1) усувати; виключати; 2) *хім.* виділяти; 3) знищувати
emergency 1. *n* 1) КРАЙНЯ НЕОБХІДНІСТЬ; 2) надзвичайні обставини; 3) *adj* допоміжний, аварійний

emmission *n* 1) виділення, випромінювання; 2) *фіз.* емісія електроннів; 3) *фін.* випуск, емісія
emit *v* 1) випускати, випромінювати; 2) *фіз.* випромінювати (*радіо*) 3) викидати, випускати
engine 1. *n* 1) машина, мотор, двигун; 2. *v* установлювати машину (мотор)
engineering 1. *n* 1) техніка; 2) машинобудування; 2. *adj* технічний
enhance *v* 1) збільшувати, посилювати; 2) підвищувати; 3) зростати, збільшуватися
enormous *adj* 1) величезний; 2) жахливий, страхітливий
ensure v 1) забезпечувати; 2) страхувати; 3) запевняти
enterprise 1. n 1) підприємство, завод; 2) справа; 2. v 1) намагатися, пробувати
entirely *adv* 1) цілком, повністю; 2) виключно, тільки, лише
environment *n* навколишнє середовище
error *n* 1) помилка; 2) погрішність, похибка
establishment *n* 1) заснування, створення; 2) установа, заклад, організація
evaluate *v* 1) оцінювати; визначати вартість
evaporate *v* 1) випаровувати; 2) звикати; 3) перетворюватися на пару
eventually *adv* в результаті, зрештою
execution *n* 1) виконання, здійснення; 2) дієвість, ефективність
exist *v* 1) існувати, 2) міститися
expand *v* 1) розширювати; 2) збільшувати; 3) *тех.* розвальцьовувати
expert v 1) чекати; 2) сподіватися; 3) гадати, вважати
extensive adj 1) просторий, широкий; 2) далекосяжний

-Ff-

feature 1. *n* 1) особливість, властивість, ознака; 2. v 1) бути характерною рисою; 2) характеризуватися

flash 1. *n* 1) спалах; 2) мить; 3) *тех.* миттєва дія; 2. v 1) спалахувати; 2) блискати flexibility *n* гнучкість
flow *n* 1) течія; 2) потік, струмінь; 2. *v* 1) тенти; 2) протікати; 3) лити
forbid *v* 1) забороняти, перешкоджати
fragile *adj* 1) крихітний, ламкий; 2) неміцний; недовговічний
frequency *n* 1) частота, частотність
friction 1. *n* тертя; 2. *v* терти, розтирати
fuel 1. *n* пальне, паливо; 2. v 1) заправляти(ся) пальним; 2) запасатися пальним
full 1. *adj* 1) повний; 2) наповнений; 2. *adv* прямо, точно, якраз, дуже
function 1. *n* 1) функція; 2) діяльність; 2. v функціонувати, діяти, працювати

-Gg-

gauge 1. *n* міра, вимірювальний прилад, датчик; 2. *v* вимірювати, перевіряти,
generate *v* 1) спричиняти; 2) створювати, виробляти, генерувати
generator *n* 1) виробник; 2) *тех.* джерело енергії, генератор; 3) датчик
gravity *n* 1) поважність; 2) *фіз.* вага; 4) сила ваги; тяжіння

-Hh-

handle 1. *n* 1) ручка; 2) нагода, привід; *2. v* 1) поводитися; 2) розглядати; 3) регулювати; 4) здійснювати контроль
hard *adj* 1) твердий; 2) сильний; 3) різкий
harmful *adj* шкідливий, небезпечний
heat 1. n 1) жар; 2) *фіз.* теплота; ~capacity теплоємність; 3) *тех.* нагрівання; 2. *v* нагрівати, розжарюватися
hold 1. *n* утримування; 2. *v* тримати, володіти, зберігати

hole 1. *n* діра, отвір; 2. *v* продірявити, просвердлити, пробивати
huge *adj* величезний, колосальний

-Ii-

identify *v* визначати, з`ясовувати
improve *v* 1) поліпшувати(ся), удосконалювати; 2) підвищувати вартість
indivisible 1. *n* щось неподільне; 2. *adj* неподільний
induse *v* 1) спонукати, впливати; 2) спричиняти; 3) *ел.* індукувати
inflammable *adj* легкозаймистий, горючий, запальний
innumerable *adj* незліченний, незчисленний
insert 1. *n* вставка; 2. v 1) укладати; уставляти; 2) *ел.* вмикати
insignificant *adj* 1) незначний, неважливий
inspire *v* 1) надихати, стимулювати; 2) вселяти, збуджувати
install *v* 1) розташовувати; 2) *мех.* встановлювати, монтувати, складати
installment *n* установка, пристрій
instead *adv* замість, натомість
instruction *n* навчання, освіта, інструкції
instrument 1. *n* прилад, пристрій, установка; 2. v обладнувати приладами, практично здійснювати
interaction *n* взаємодія
internal *adj* внутрішній
intervention *n* втручання, участь
investigate *v* досліджувати, вивчати, стежити
invisible 1. *n* невидима річ; 2. *adj* невидимий, непомітний
involve *v* 1) втягувати; 2) містити в собі; 3) бути зайнятим

-Jj-

jet engine *n* реактивний двигун
junction *n* 1) з`єднання; 2) мех. стик; спай; 3) місце, точка з`єднання

-Kk-

key1. *N* 1) ключ; 2) кнопка; 3) розгадка; 4) тех. клин; засув; 5) клавіша
keyboard *n* 1) клавіатура; 2) *ел.* комутатор
kind 1. *N* 1) вид; клас розряд; 2. *adj* 1) добрий; 2) піддатливий; 3) *тех.* що піддається обробці
kinetic *adj фіз.* кінетичний; ~ energy кінетична енергія

-Ll-

laser *n фіз.* лазер, квантовий підсилювач
latter *adj* недавній, останній
layer 1) n шар, пласт; 2. v нашаровувати, класти пластами
leading 1) n управління; 2. adj головний, провідний, передовий
liquid 1) n рідина; 2) adj рідкий, несталий
locate *v* 1) визначати (місце розташування); 2) розташувати
long-term *adj* довгостроковий, тривалий

-Mm-

machinery *n* 1) машини; механізми; 2) деталі машини
magnetic *adj* магнітний
majority *n* більшість
manipulate *v* 1) управляти, керувати, обробляти; 2) впливати
manufacture *n* 1) виробництво, виготовлення; 2) виріб, продукт; 2. *v* виробляти, виготовляти
maser *n фіз*. мазер, мікрохвильовий квантовий генератор
matter 1. n 1) речовина, матеріал; 2) суть, предмет, питання; 3) причина; 2. *v* мати значення
measure 1. n 1) міра; 2) розмір; 3) ступінь; 4) масштаб, критерій; 2. *v* вимірювати, визначати
mention 1. *n* (of) згадування, посилання; 2. *v* згадувати, посилатися
miniaturization *n тех.* мініатюризація (виробів)
mining *n* виконання гірничих робіт, видобування (*корисних копалин*)

mix 1. *n* змішування, суміш; 2. *v* змішувати, сполучати
monitoring *n* контроль, моніторинг
moreover *adj* крім того, більш того, до того ж
motion 1. *n* рух, хід (машини); 2. v показувати жестом (знаком)
movement *n* 1) рух, переміщення; 2) діяльність
multiple 1. *n ел.*багаторазовий ланцюг; 2. *adj* 1) складовий, численний; 2) ел. паралельний
mysterious *adj* таємничий

-Oo-

objective 1. *n* 1) мета, завдання; 2. *adj* об'єктивний, дійсний
obstacles *n* перешкода
obtain *v* 1) одержувати; здобувати; 2) досягати
obvious *adj* 1) явний; 2) зрозумілий; 3) відкритий
occupy *v* займати, заволодівати
occur *v* 1) траплятися; відбуватися; 2) попадатися
offer 1. *n* 1) пропозиція; 2) спроба; 1. *v* пропонувати, намагатися
oscillator *n mex.* генератор коливань; осцилятор
outline 1. *n* 1) контур; 2) ескіз; 3) схема; 2. *v* 1) накреслити контур; 2) окреслювати; 3) зробити начерк
output *n* 1) продукція, випуск, виготовлення; 2) *mex.* продуктивність, потужність; 3) *мат.* вихід
overcome 1 *adj* знесилений; *2. v* подолати, перемогти, перебороти
oxygen *n хім.* кисень

-Pp-

particle *n* частинка
particular 1. *n* подробиця, деталь; 2. adj 1) особливий, специфічний; 2) винятковий; 3) окремий; 4) докладний, ґрунтовний
passage 1. *n* 1) прохід, проїзд; 2) подія, епізод; 2. *v* брати праворуч (ліворуч)
pattern 1. *n* 1) зразок, приклад; 2) модель, форма; 2. *v* виготовляти за зразком, копіювати

penetrate *v* 1) проникати, проходити; 2) просочувати, пронизувати
perform *v* 1) виконувати, здійснювати; 2) проводити
permanent *adj* постійний, незмінний
possess *v* 1) володіти, мати; 2) оволодівати
possibility *n* можливість, імовірність
postpone *v* відкладати, відстрочувати
precaution *n* 1) обережність, передбачливість
predict *v* передбачати, передрікати
prevent *v* 1) запобігати; уберігати; 2) перешкоджати, заважати
probably *adv* мабуть, можливо
process 1. *n* 1) процес; 2) технологічний процес; спосіб; 2. *v* піддавати обробці, обробляти
procedure *n* 1) процедура; 2) *mex.* технологічний процес; 3) методика проведення (*досліду*)
productive *adj* продуктивний, плодотворний
prohibit *v* 1)забороняти; 2) заважати, перешкоджати
project 1. *n* проект, план; 2. *v* 1)планувати, проектувати; 2) викидати, випускати
properly *adv* 1) правильно, як слід; 2) власне; 3) пристойно, належно, належним чином
protect *v* захищати, охороняти, запобігати
protection *n* захист, охорона, захищення
provide *v* 1) постачати, забезпечувати; 2) заготовляти, надавати
pulse of radar *adj* імпульсна радіолокаційна установка
purify *v* очищати(ся), звільняти

-Rr-

radar *n (скор. від* radio detection ranging) 1) радіолокатор, радар
radiate 1. *v* випромінювання, сяяти; *2. adj* променестий
radiation *n* випромінювання, радіація
radio communication *n* радіозв'язок
radio engineering *n* радіотехніка

radio-astronomy *n* радіоастрономія
raise 1. *n* 1) підвищення; зростання; 2. v 1) піднімати; 2) збільшувати; 3) підвищувати
range 1. *n* 1) сфера, зона; 2) простір, радіус дії; 3) відстань; 2. *v* розташовувати, простягатися, коливатися
rate 1. *n* 1) норма; 2) тариф; 3) інтенсивність; 2. *v* 1) оцінювати; 2) тарифікувати; 3) вважати
ration 1. *n* порція, норма; 2. *v* одержувати, постачати, нормувати
raw 1. *n* сировина; 2. *adj* сирий, необроблений, неочищений
reasonable *adj* 1) розумний; 2) поміркований; 3) допустимий
reduce *v* 1) знижувати, зменшувати; 2) послаблювати, полегшувати
reduction *r* 1) зниження, зменшення; 2) хім. відновлення
reel 1. *n* 1) катушка; 2) барабан; 2. *v* крутитися, хитатися
refer *v 1)* посилати; 2) відносини (*до епохи, класу*); 3) стосуватися (*когось, чогось*)
related *adj* 1) пов'язаний; 2) споріднений
relation *n* 1) відношення, зв'язок, залежність
relative *adj* 1) відносний; 2) умовний; 3) зв'язаний
reinforce *v* 1) посилювати, підкріпляти; 2) *тех.* надавати жорстокості
release 1. *n* 1) звільнення; 2) *тех.* роз'єднання; 3) відокремлення *(ступення ракети);* 2. *v* звільняти, відпускати, випускати
remain *v* залишатися, перебувати
repair 1. *n* ремонт, відновлення, справність; *2.* v 1) ремонтувати; 2) відшкодовувати; 3) виправляти
replace *v* 1) ставити (*на місце*); 2) повертати; 3) заміняти, заміщати
require *v* 1) вимагати; 2) потребувати; 3) залежати, відувати необхідність
requirement *n* вимога, потреба
research 1. *n* 1) дослідження, вивчення; 2) досліджувати
resistance *n* 1) протидія; 2) *ел.* опір
response *n* 1) відповідь; 2) реакція; 3) *тех.* чутливість (приладу)
restore v 1) повертати; 2) відновлювати
restraint *n* 1) стриманість; 2) обмеження

reveal 1. *n* викриття, виявлення; *2.* v 1) відкривати, виявляти; 2) показувати; 3) свідчити
reverse 1. n 1) протилежність; 2) mex. реверс; 2. adj зворотний, протилежний; 3. v перевертати, міняти на протилежний
revolve *v* 1) обертати(ся); 2) періодично повертатися
run 1. n 1) біг; 2) рейс; 3) період; 4) *mex.* хід, робота, дія (машини); 2. *v* 1) бігти, рухатися; 2) водити (про транспорт); 3) працювати (про машину)

-Ss-

safe *adj* 1) безпечний; 2) допустимий; 3) надійний
satellite *n* 1) супутник; 2) штучний супутник
satisfaction *n* задоволення
scope *n* 1) індикатор; 2) (*скор. від* telescope*)* телескоп
search 1. *n* пошуки, шукання; 2. *v* 1) шукати; 2) розглядати (вивчати), досліджувати
seem *v* 1) здаватися; 2) мати певну думку (уявлення)
semiconductor *фіз.* напівпровідник
sensitive *adj mex.* чутливий, що швидко реагує
separate 1. *adj* 1) окремий; 2) відокремлений; 2. *v 1)* відокремлювати, ділити; 2) хім. виділяти з розчину
sequence *n* 1) послідовність; 2) наслідок, результат
set 1. *n* 1) комплект; 2) прилад, апарат; 3) ряд; система; 2. *adj* 1) незмінний; 2) вбудований; 3) *v ставити, класти*
set up *v* розміщати, постачати, монтувати
shifting 1. *n* 1)переміщення; 2. *adj* непостійний, рухомий
short-term *adj* короткостроковий
significant *adj* важливий, значний
slot 1. *n* 1) щілина, проріз; 2. *v* 1) прорізуватися; 3) опускати монету в автомат
solar radiation *adj* сонячне випромінювання
solid 1. *n* 1) *фіз.* тверде тіло; 2. *adj* 1) твердий, суцільний; 3. *adv* повністю, цілком
solution 1. n 1) розчинення; 2) розчин; 3) розчинений стан; 4) розв'язання (проблеми)

spread 1. n 1) поширення, збільшення; 2) відстань; 2. ***v*** поширюватися, розповсюджуватися, розтягувати
statement *n* заява, твердження, формулювання
steam 1. n 1) (водяна) пара; 2) випар; 2. v виділяти пару, випарювати, пітніти
storage system *n* система зберігання
store 1. ***n*** 1) запас; 2) склад; 3) велика кількість; 2. **v** 1) постачати, наповнювати, запасати
straight 1. *adj* прямий, правильний; 2. *v* випрямляти, розпрямляти
stream 1. *n* струмінь, потік, течія; **2.** *v* текти, витікати
stress 1. *n mex.* створювати (викликати) напругу
strive *v* старатися, намагатися
stroke 1. *n mex.* 1) хід (поршня); довжина ходу; 2) удар
sturdy *adj* сильний, стійкий, твердий
subatomic *adj хім.* субатомний
substance ***n*** 1) речовина, матеріал; 2) *філос.* субстанція, матерія
substantial ***adj*** основний, значний
substitute 1. *n* заміна; 2. *v 1)* заміняти*; 2)* заміщати*; 3)* призначати
substracte *n* субстрат, підкладка
supersonics *n* ультраакустика
supply 1. ***n*** 1) постачання, поставка; 2) запас; **2.** *v 1)* постачати, доставляти; 3) *mex.* подавати, підводити
supply parts ***mex.*** запасні частини
surface 1. n 1) поверхня; 2) *mex.* площина; 2. **v** 1) обробляти поверхню
surge 1. n 1) коливання атм. тиску; 2) *ел.* імпульс; 2. v підніматися, наростати

-Tt-

target *n* 1) мішень, ціль; 2) предмет, обєкт
technique *n* 1) техніка; 2) технічний прийом (спосіб, метод), методика
technology *n* 1) техніка**;** 2) технологія

telephone tag *adj* телефонний шнур
temporary *adj* тимчасовий
term 1. *n* строк, період, умови; 2) v висловлювати, виражати
thoroughly 1. *adj* ретельний, детальний; 2. *adv* наскрізь, через, крізь
threat 1. *n* 1) загроза; 2) небезпека; 2. *v* загрожувати
tiny transistor *n рад.* мінітранзистор
tissue *n* 1) тонка дорога тканина; 2) *біол.* тканина
tool *n* 1) інструмент, верстат; 2) знаряддя праці
touch 1. *n* 1) дотик; 2) зв'язок, контакт; 2. *v* 1) доторкатися; 2) сприймати дотиком
track 1. n 1) слід, курс, шлях; 2) дорожка; 3) *тех.* напрямний пристрій; 2. *v* стежити, залишати сліди, наслідити
transfer 1. *n* документ про передачу, трансферт**;** 2. *v* 1) переносити, переміщати**;** 2) переказувати (гроші)
transform *v* змінювати, перетворювати
transmit *v* 1) повідомляти, передавати; 2) посилати, відправляти
transparent *adj* 1) прозорий, що просвічується; 2) ясний, зрозумілий, очевидний
transport 1. *n* транспортування, засоби сполучення; 2. *v* переводити, переміщувати
treat *v* 1) поводитися; 2) розглядати; 3) обробляти, піддавати дії (*чогось*)
tremendous 1. *adj* величезний; 2. *adv* дуже, надзвичайно
turbine ***n*** турбіна
turn on v вмикати *(*радіо, світло*)*
turn off v 1) вимкнути (радіо); 2) звільнити (з роботи)

-Uu-

ultrasonics *n* ультразвукова техніка
ultra-violet *adj* ультрафіолетовий (про проміння)
underground 1**.** *n* 1) метрополітен (the); 2. *adj* підземний, таємний
uniform 1. n 1) форма, уніформа; 2. *adj* 1) сталий, рівний; 2) *тех.* суцільний, рівномірний
unit *n* 1) одиниця, ціле; 2) *тех.* агрегат, секція, вузол, елемент

unlikely 1. *adj* неправдоподібний, неймовірний; 2. *adv* навряд чи, навряд щоб
untimely 1. *adj* невчасний, недоречний; 2. *adv* 1) передчасно, недоречно
uranium *n хім.* уран
urgent *adj* 1) терміновий, негайний; 2) наполегливий; настирний
usable *adj* зручний, практичний
utility 1. *n* практичність, вигідність; *2. adj* 1) допоміжний, практичний; 2) універсальний
utilize *v* утилізувати, використовувати

-Vv-

vacant *adj* 1) пустий; 2) вакантний (про посаду) 2) *тех.* холостий (хід)
vacuum *n фіз.* вакуум, пустота
vacuum-tube *n рад.* електронна лампа
valuable 1. *n* цінності, цінні речі; 2. *adj* 1) цінний; 2) важливий, корисний
value 1. *n* 1) важливість, вартість; 2) значення; 2. *v* оцінювати, цінувати
valve *n* 1) *тех.* Клапан, вентиль; 2. v 1) *рад.* електронна лампа
vapour *n* 1) пара, випар; 2. *v* 1) випаровуватися (тж ~away, ~out, ~up); 2) викидати
variable 1. *n* змінна величина; 2. *adj* змінний, перемінний
variation *n* зміна, переміна, відхилення
vehicle 1. n 1) засіб пересування; 2) літальний апарат;
3) хім. розчинник; 2. *v* перевозити, транспортувати
vibration *n* вібрація, тремтіння
view point *n* точка зору, погляд
violate *v* порушувати, зневажати
visible 1. *n* видимий предмет; 2. *adj* видимий, наявний, реальний
vital *adj* життєвий, необхідний, життєздатний
voltage *n ел.* вольтаж, електрична напруга

-Ww-

wage 1. *n* заробітна плата; 2. *v* наймати, здійснювати
wealth *n* 1) багатство; 2) безліч, велика кількість
web *n* 1) павутина; 2) *перенос.* сітка, мережа World Wide Web (WWW)
weld 1**.** *n mex.* зварювання; 2**.** *v mex.* зварювати(ся)
welding 1. *n mex.* зварка, зварювання
wheel 1. *n* 1) колесо; 2) шестірня; 2. *v* 1) рухатися на колесах; 2) крутитися
wire 1) *n* дріт, провід; 2) *v* зв'язувати (скріпляти) дротом
wrapping *n* 1) обгортка, упаковка

-Yy-

yard *n* ярд (= 3 футам, близько 91,4 cm)
yet 1. *adj* теперішній; 2. *adv* все ще, уже, досі, все-таки, навіть
yield 1. *n* 1) виробіток; вихід (*продукції*); 2) ек. дохід; дохідність; 2. v 1) виробляти; 2) перенос, віддавати

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