

**МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ
РОССИЙСКОЙ ФЕДЕРАЦИИ**
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Учебное пособие содержит комплекс заданий с учетом профессиональных интересов обучаемых и соблюдением принципов дифференцированного обучения. Выбор тем обуславливается возможностью на их основе формировать в процессе дифференцированного обучения иноязычному общению как общие, так и специальные умения и навыки. Предназначено для развития у обучаемых коммуникативных умений.

Рекомендуется для всех технических специальностей и направлений подготовки бакалавров. Может быть полезно аспирантам, преподавателям иностранного языка и всем интересующимся изучением технического английского языка как одной из профессиональной составляющей.

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Предисловие

Данное учебное пособие предназначено для дифференцированного обучения студентов таких направлений, как 220701.62 “Автоматизация технологических процессов и производств”, 230401.62 “Информационные системы и технологии”, 230701.62 “Прикладная информатика в экономике”, 190709.62 “Технология транспортных процессов”, 080200.62 “Менеджмент”. Оно может быть также полезным всем тем, кто интересуется основами инженерного дела и информационными технологиями и дополнительно изучает иностранный язык.

Целью учебного пособия является научить студентов с разным уровнем знаний, умений и навыков практическому владению профессионально ориентированным иностранным языком, развить (в том числе самостоятельно) навыки как устной, так и письменной речи, расширить активный словарный запас студентов на основе дифференциации.

Структура данного пособия разработана в соответствии с целями и *принципами* дифференцированного обучения, которые *обеспечивают*: сохранение общей цели для всех обучающихся; недопустимость пренебрежения интересами участников процесса обучения; учет индивидуальных возможностей, гибкость социальных групп в учебном процессе, что позволяет преподавателям применять творческий подход.

Пособие состоит из 8 практических разделов: “*Engineering and automation*”, “*Principles of electronics*”, “*Welding*”, “*Computers*” “*Computer viruses*”, “*Money and money market*”. Последние два раздела: “*Telecommunication technology*”, “*On the Road*” предназначены для самостоятельной работы. Завершают пособие Приложения (Supplements), содержащие как материал для обучения, так и проверочные задания на общее понимание каждого раздела учебного пособия, таблицы самооценивания.

Выбор тем коммуникации обуславливался возможностью формирования на их основе навыков и умений профессионально ориентированного иноязычного общения: способность воспринимать возможность иноязычного общения как профессиональную составляющую; планировать и осуществлять самостоятельную работу на основе самоанализа и самооценки;

осуществлять основные речевые функции на основе базовой профессиональной лексики, постепенно переходя на более высокий уровень альтернативных заданий и т. д.

Одной из отличительных особенностей учебного пособия является дифференцированная направленность его структуры. Каждый раздел содержит три уровня заданий (Level A – Advanced, Level B - Upper Intermediate, Level C - Intermediate). Наличие в каждом разделе уровней выполнения заданий дает студентам возможность самостоятельно выбирать один из трех предложенных уровней, руководствуясь самооценкой своих знаний, а также менять выбор уровня в разных разделах пособия. Задания с маркировкой ★ представляют собой или задания повышенного уровня сложности, или творческой направленности, которые могут выполняться самостоятельно одним студентом, объединять нескольких участников образовательного процесса одного и того же уровня, либо с привлечением участников, выполняющих задания на других уровнях.

Таблицы самооценивания каждого раздела, предлагаемые в Приложении 3 (Supplement 3), также подчеркивают дифференцированную направленность данного учебного пособия. Оценка дается с позиций личных и общих результатов, поскольку достигнутый результат “отлично” на уровне C не может соответствовать результату “отлично” на уровне A. Наличие элемента оценочно-самооценочного регламентирования дает возможность студентам понять, что выполненная им работа внутри определенного уровня может являться отличной, но соответствовать удовлетворительному академическому уровню в целом, что стимулирует стремиться к выполнению заданий более высокого уровня, самостоятельно изучать дополнительный материал.

Данная структура предоставления языкового материала должна не только помочь студентам лучше усвоить навыки устной и письменной речи и активно овладеть лексикой по специальности, но и развить навыки самооценки, активизировать учебную деятельность, поддерживать и повышать положительную мотивацию при изучении иностранного языка.

UNIT I

ENGINEERING AND AUTOMATION

Pre-reading

Before studying the material of this unit, read and memorize some basic and important definitions of it.

<i>Engineering</i>	– the discipline, art, skill and profession of acquiring and applying scientific, mathematical, economic, social and practical knowledge, in order to design and build structures, machines, devices, systems, materials and processes that safely realize improvements to the lives of people.
<i>Automation</i>	– use of methods and machines to make industry more and more automatic, especially by means of electronic controls.
<i>Industry</i>	– automated production of material goods; – business of the same type, considered as a whole; – the sector of the economy consisting of large-scale enterprises (in singular).

Words and Expressions to be studied:

advance	– прогресс, достижение
valve	– клапан, вентиль, затвор
sequence	– последовательность
assembly plant	– сборочный завод
nonmanufacturing	– непроизводственный
device	– устройство, прибор
to resemble	– походить
efficiency	– эффективность
flyball governor	– центробежный регулятор
steam engine	– паровоз
household thermostat	– бытовой термостат
to facilitate	– способствовать
punched	– перфорированный

aid	– ПОМОЩЬ
dimension	– измерение, размеры
influence	– влияние
equipment	– оборудование
quantity	– количество
consumer	– потребитель
particular	– особый, личный, индивидуальный

While reading the Text of this Unit, you'll find these words and expressions. They will be given as italicized ones. You may also consult any English-Russian dictionary.

Choose your level and make pre-reading tasks

Level A

I. While reading the text “Industrial Engineering and Automation” find the following English phrases in it and a) give Russian equivalents for them; b) define what parts of speech they are; c) tell what engineering is.

Manufacturing processes, a limited number of operations, to increase productivity, in whole, automatic devices, the simplification of work, known as Detroit automation, to be controlled by, nevertheless, particular production needs.

II. Make nouns from the following verbs.

To apply, to consider, to control, to develop, to manufacture, to move, to produce, to require, to test, to use.

Level B

I. While reading the text “Industrial Engineering and Automation” find the following English phrases in it and a) read them aloud; b) give their Russian equivalents (consult the dictionary if it is necessary); c) tell what automation is.

A major advance, a highly-developed form, to describe processes, refining steel, the sequences of operations, specialized machines, manufacturing processes, the whole factory, to require the same degree of automation, in large quantities.

II. Define what parts of speech are the following words.

Industrial, windmills perform, recently, more, productivity, help, modern, produce, fixed.

Level C

I. While reading the text “Industrial Engineering and Automation” find the following English words in it and a) read them aloud correctly (if you are not sure, consult the dictionary); b) give their translation; c) tell what types of automation are in industry today.

При чтении текста “Промышленная инженерия и автоматизация” найдите в нем следующие английские слова и а) прочитайте эти слова вслух правильно (если Вы не уверены, проконсультируйтесь со словарем); б) дайте их перевод; в) расскажите, какие виды автоматизации существуют в промышленности сегодня.

Automation, computer, device, engineering, industrial, invent, machines, processes, system, technology.

II. Make your own word-combinations of using the words, given above.

Составьте собственные словосочетания, используя слова, данные выше.

Example: *fixed automation, a modern computer, an expensive device etc.*

Reading

Industrial Engineering and Automation

Part I. Industrial Engineering. A major *advance* in the 20-th century manufacturing was the development of mass production techniques. Mass production refers to manufacturing processes in which an assembly line, usually a conveyer belt, moves the product to stations where each worker performs a limited number of operations until the product is assembled. In the automobile *assembly plant* such systems

have reached a highly-developed form. A complex system of conveyer belts and chain drives moves car parts to workers who perform the thousands of necessary assembling tasks.

Mass production increases efficiency and productivity to a point beyond which the monotony of repeating an operation over and over slows down the workers. Many ways have been tried to increase productivity on assembly lines: some of them are as superficial as piping music into the plant or painting the industrial apparatus in bright colors; others entail giving workers more variety in their tasks and more responsibility for the product.

These human factors are important considerations for industrial engineers. Another factor for the industrial engineer to consider is whether each manufacturing process can be automated in whole or in part. Automation is a word coined in the 1940s to describe processes by which machines do tasks previously performed by people. The word was new but the idea was not. We know of the advance in the development of steam engines that produced automatic *valves*. Long before that, during the Middle Ages, windmills had been made to turn by taking advantage of changes in the wind by means of devices that worked automatically.

Part II. Automation and its development. Automation was first applied to industry in continuous-process manufacturing such as refining petroleum, making petrochemicals, and refining steel. A later development was computer-controlled automation of assembly line manufacturing, especially those in which quality control was an important factor.

In other words, automation is the system of manufacture performing certain tasks, previously done by people, by machines only. The *sequences* of operations are controlled automatically. The most familiar example of a highly automated system is an assembly plant for automobiles or other complex products.

The term automation is also used to describe *nonmanufacturing* systems in which automatic *devices* can operate independently of human control. Such devices as automatic pilots, automatic telephone equipment and automated control systems are used to perform various operations much faster and better than could be done by people.

Automated manufacturing had several steps in its development. Mechanization was the first step necessary in the development of automation. The simplification of work made it possible to design and

build machines that *resembled* the motions of the worker. These specialized machines were motorized and they had better production *efficiency*.

Industrial robots, originally designed only to perform simple tasks in environments dangerous to human workers, are now widely used to transfer and manipulate. In the 1920s the automobile industry for the first time used an integrated system of production. This method of production was adopted by most car manufacturers and became known as Detroit automation.

The feedback principle is used in all automatic-control mechanisms when machines have ability to correct themselves. The feedback principle has been used for centuries. An outstanding early example is the *flyball governor*, invented in 1788 by James Watt to control the speed of the *steam engine*. The common *household thermostat* is another example of a feedback device.

Using feedback devices, machines can start, stop, speed up, slow down, count, inspect, test, compare, and measure. These operations are commonly applied to a wide variety of production operations. Computers have greatly *facilitated* the use of feedback in manufacturing processes. Computers gave rise to the development of numerically controlled machines. The motions of these machines are controlled by *punched* paper or magnetic tapes.

More recently, the introduction of microprocessors and computers have made possible the development of computer-aided design and computer-aided manufacture (CAD and CAM) technologies. When using these systems a designer draws a part and indicates its *dimensions* with the help of a mouse, light pen, or other input device. After the drawing has been completed the computer automatically gives the instructions.

Another development using automation is the flexible manufacturing systems (FMS). A computer in FMS can be used to monitor and control the operation of the whole factory.

Automation has also had an *influence* on the areas of the economy other than manufacturing. Small computers are used in systems called word processors, which are rapidly becoming a standard part of the modern office. They are used to edit texts, to type letters and so on.

Part III. Automation in Industry. Many industries are highly automated or use automation technology in some part of their operation. In communications and especially in the telephone industry dialing and

transmission are all done automatically. Railways are also controlled by automatic signaling devices, which have sensors that detect carriages passing a particular point. In this way the movement and location of trains can be monitored.

Not all industries require the same degree of automation. Sales, agriculture, and some service industries are difficult to automate, though agriculture industry may become more mechanized, especially in the processing and packaging of foods.

Applications of automation and robotics in industry manufacturing are one of the most important application areas for automation technology. There are several types of automation in manufacturing. The examples of automated systems used in manufacturing are described below.

1. Fixed automation refers to automated machines in which the *equipment* configuration allows fixed sequence of processing operations. These machines are programmed by their design to make only certain processing operations. This form of automation needs high initial investments and high production rates. That is why it is suitable for products that are made in large volumes. Examples of fixed automation are machining transfer lines found in the automobile industry, automatic assembly machines and certain chemical processes.

2. Programmable automation is a form of automation for producing products in large *quantities*, ranging from several dozen to several thousand units at a time. For each new product the production equipment must be ready.

The automation technology in manufacturing and assembly is widely used in car and other *consumer* product industries.

Nevertheless, each industry has its own concept of automation that answers its *particular* production needs.

Checking

Check yourself according to the chosen levels

Level A

Task 1. Fill in the blanks, using the verbs, given in brackets. Define Grammar Tense and the Voice of each verb.

1. In the automobile assembly plant such systems ... (to reach) a highly-developed form.
2. Long before that, during the Middle Ages, windmills ... (to make) to turn by taking advantage of changes in the wind by means of devices that ... (to work) automatically.
3. Such devices as automatic pilots, automatic telephone equipment and automated control systems ... (to use) to perform various operations much faster and better than could be done by people.
4. These specialized machines ... (to motorize) and they ... (to have) better production efficiency.
5. Not all industries ... (to require) the same degree of automation.
6. Another development using automation ... (to be) the flexible manufacturing systems (FMS).
7. Nevertheless, each industry ... (to have) its own concept of automation that ... (to answer) its particular production needs.

Task 2. Find synonyms among the following words. Give translation of them. Time for doing this task is limited – 5 minutes. Mind the time, please.

Ability, some, manufacture, humans, system, device, perform, car, industry, several, transfer, produce, mechanism, machine, do, move, production, people, skill, method.

Task 3. a) Write three forms (the Infinitive, Past Simple, Past Participle) of the verbs, given below.

Assemble, build, draw, find, give, invent, have, know, make, work.

b) Take any three verbs, used in the Text or in Task 3 a) and make three sentences of your own in English (in a written form). Making sentences, use pointed Tenses and Voices: *in the 1-st sentence* – Present Simple, the Active Voice; *in the 2-nd sentence* – Present Simple, the Passive Voice; *in the 3-rd sentence* – Past Simple, the Passive Voice.

c) Find a partner, read your sentences and ask him (her) to translate them into Russian. Then change your roles.

Task 4. Make up 4 questions of different types on the Text and ask your partner to answer them. Mind the grammar and choose an

auxiliary verb according to the Tense in each question. Change your roles.

Example:

- Is an assembly plant for automobiles or other complex products the most familiar example of a highly automated system? (general question)
Yes it is / No, it is not.
- What is automation? (special question) *Automation is ...*
- Did computers give rise to the development or decline of numerically controlled machines? (alternative question) *Computers gave rise to ...*
- *Computers have greatly facilitated the use of feedback in manufacturing processes, haven't they?* (tag question) *Yes, they have / No, they haven't.*

★ Complete the text, using words given below. Use each word once only. You may need to change the form of the word.

<i>remain</i>	<i>base</i>	<i>connect</i>	<i>fan</i>	<i>collect</i>
<i>leave</i>	<i>force</i>	<i>pass</i>	<i>filter</i>	<i>locate</i>

The vacuum cleaner

A conventional vacuum cleaner has a **1** ... which rests on the ground, **2** ... to a vertical section with a handle. Dust is **3** ... by a rotating brush in the base. An electric motor activates a **4** ..., which **5** ... dust and air into the dust bag **6** ... in the vertical section of the vacuum cleaner. The air **7** ... through a **8** ... and **9** ... the vacuum cleaner through the exhaust port, while the dust **10** ... in the dust bag.

Level B

Task 1. Fill in the blanks in the sentences with proper prepositions. Define Grammar Tense and the Voice of each verb in the sentences.

1. A major advance ... the 20-th century manufacturing was the development ... mass production techniques.
2. Automation is a word coined ... the 1940s ... describe processes by which machines do tasks previously performed ... people.
3. These human factors are important considerations ... industrial engineers.

4. Applications ... automation and robotics ... industry manufacturing are one ... the most important application areas ... automation technology.

Task 2. Find antonyms among the following words. Give translation of them. Time for doing this task is limited – 7 minutes. Mind the time, please.

Assemble, have, possible, build, new, take, development, in part, take to pieces, worse, give, same, old, decline, brake, impossible, in whole, better, different, need.

Task 3. a) Fill in the blanks with proper forms of the verbs.

Infinitive	Past Simple	Past Participle
do	-	-
-	was, were	-
-	-	increased
perform	-	-
-	-	become
make	-	-
apply	-	-
-	had	-
-	-	used
know	-	-

b) Take any three verbs, used in the Text or in Task 3 a) and make three sentences of your own in English (in a written form). Making the sentences, any Grammar Tense and Voice can be used.

c) Find a partner, read your sentences and ask him (her) to translate them into Russian. Then change your roles.

4. Make up any 4 questions on the Text and put them to your partner. Mind the correct word order and the correct auxiliary verb of each sentence.

Example:

- What is the term automation also used for?

When did the automobile industry use an integrated system of production for the first time?

★ Define what sentences are written using the language of technology. Then decide if sentences a) and b) have parallel meanings, or different meanings.

1. a) Hydrogen and oxygen combine to form water.
b) Water is formed from the combination of oxygen and hydrogen.
2. a) The experiment uses a process by which water is supercooled.
b) The experiment uses a device which supercools water.
3. a) Pumps were used to bring the water up from under the ground.
b) Water was pumped up to the surface of the ground.

Level C

Task 1. Complete each sentence, using the words given. One word may be used once. Give translations of these words and define what part of speech they are.

Заполните пропуски в предложениях, используя данные слова. Переведите эти слова и определите их часть речи.

Dialing, automatically, new, nevertheless, degree, idea, several, answers, transmission, all.

1. The word “automation» was ... but the ... was not.
2. There are ... types of automation in manufacturing.
3. In communications and especially in the telephone industry ... and ... are all done
4. Not ... industries require the same ... of automation.
5. ... , each industry has its own concept of automation that ... its particular production needs.

Task 2. Translate the following Russian phrases into English. Time for doing this task is limited – 10 minutes. Mind the time, please.

Переведите следующие русские фразы на английский язык. Время выполнения данного задания ограничено – 10 минут. Помните о времени, пожалуйста.

Сложная система, промышленные аппараты, завод по сборке автомобилей, производственная эффективность, современный офис, автоматизация в промышленности, химические процессы, несколько тысяч единиц за раз.

3. a) Make sentences, using the following words.

Составьте предложения, используя следующие слова.

1. In, automation, of, other words, is, system, only, the, previously, certain tasks, manufacture, done, performing, by people, by machines.
2. A, control, can, computer, factory in, the, be, to, monitor, and, the, operation, of, used, whole, FMS.
3. Railways, which, detect, point, are, a particular, also, controlled by, automatic, have, signaling, carriages, devices, sensors, that, passing.
4. Fixed, automated, processing, configuration, automation, sequence, refers to, of, operations, machines, fixed, in, which, the equipment, allows.
5. For, must, the, production, new, ready, product, equipment, each, be.

b) Define Grammar Tense and the Voice of each verb in the sentence from Task 3 a).

Определите время и залог каждого глагола в предложениях из Задания 3 а).

c) Make up three sentences in English with any phrases from Task 2. Find a partner, read your sentences and ask him (her) to translate them into English.

Составьте три предложения на английском языке с любыми фразами из Задания 2. Найдите партнера, прочитайте Ваши предложения и попросите его (ее) перевести их на русский язык.

4. Answer the following questions:

Ответьте на вопросы:

1. What was a major advance in the 20-th century manufacturing?
2. What is automation?
3. When is the term automation also used?
4. Can you give any examples of fixed automation?
5. What do you know about programmable automation?

★ Complete the text using words given below. Use each word only once.

Заполните текст, используя слова, данные ниже. Используйте каждое слово только один раз.

energy – *bending* - *machinery* *utilize* –
энергия выгибая – механизмы, использовать,

<i>extract</i> –	<i>manufactu-</i>	машины	расходовать
извлекать	<i>re</i> –	<i>skill</i> –	<i>resources</i>
	произво-	навык,	–
	дить	способность	ресурсы

Technology in use

In the past it was thought that only man could make and **1** ... tools, but now it is known that some animals have this **2** ... too. Chimpanzees use pieces of wood to **3** ... ants from ant-hills, while captive birds have been observed **4** ... a piece of wire and using it to get food out of a tube. However, only man is able to make use of natural **5** ... such as metals, and sources of **6** ... such as heat and electricity, in order to **7** ... sophisticated **8**

UNIT II PRINCIPLES OF ELECTRONICS

Pre-reading

Before studying the material of this unit, read and memorize some basic and important definitions of it.

<i>Electronics</i>	– study and application of phenomena of electrons (as in radio, television, etc., the use of cathode ray tubes, transistors etc.). – use of methods and machines to make industry more and more automatic, especially by means of electronic controls.
<i>Circuit</i>	– complete path for an electrical current; – apparatus with sequence of conductors, valves, etc., for using an electrical current.
<i>Conductor</i>	– substance that conducts heat or electric current.
<i>Current</i>	– flow of electricity through something or along a wire or a cable.
<i>Transistor</i>	– electronic device, much smaller than a radio valve, used in radio sets, hearing aids, and other kinds of electronic apparatus.

Ohm – unit of electrical resistance.

Words and Expressions to be studied:

electronic circuits	– электронные схемы
inductor	– индукционная катушка
capacitor	– конденсатор
resistor	– сопротивление
electron tube	– электронная лампа
transistor	– транзистор
radio receiver	– радиоприемник
radio transmitter	– радиопередатчик
electronic control system	– система электронного управления
electronic device	– электронное устройство
code colour	– условный цвет
fixed resistor	– постоянное сопротивление
wire-wound ceramic type	– проволочно-керамический тип
adjustable (variable) resistor	– переменное сопротивление
metal collar	– металлический хомут
contact band	– контактное кольцо
adjustment knob	– установочная ручка
screw adjustment	– установочный винт
potentiometer	– потенциометр
to handle the current	– пропускать ток
to compute the current	– рассчитать силу тока
inductance coil	– катушка самоиндукции
inductive reactance	– реактивное сопротивление
high-frequency circuit	– высокочастотная цепь
choke coil	– дроссельная катушка
filter circuit	– цепь фильтра
electric charge	– электрический заряд
voltage	– электрическое напряжение
insulator	– изолятор, непроводник

While reading the Text of this Unit, you'll find these words and expressions. They will be given as italicized ones. You may also consult notes and use any English-Russian dictionary.

Choose your level and make pre-reading tasks

Level A

I. While reading the text “Electronics and Electronic Circuit Elements” pay attention to the following English word groups and a) translate them; b) transcribe the underlined words; c) look for the answers to the following questions: how are variable resistors commonly called? What types of fixed capacitors can you name?

Other items used in the construction, in order to change the resistance, for all practical purposes, by rotating a small adjustment knob, by means of Ohm's law, a comparatively large inductance, a wide variety of shapes and sizes, store 1 coulomb of electricity.

II. Read the following sentences and a) guess the meaning of the italicized words; b) define their part of speech; c) translate these sentences into Russian. If you are not sure, consult the dictionary.

A 1. The purpose of an *inductor* is to insert inductance into a circuit.

2. The opposition to current flow in an a. c. circuit by an inductor is called *inductive* reactance and is measured in ohms.

3. *Inductance* coils are rated as to value in henrys.

B 1. *Capacitors* are commonly used in d. c. circuits.

2. The unit of *capacitance* is a farad.

3. What is capacity of this plant?

Level B

I. While reading the text “Electronics and Electronic Circuit Elements” pay attention to the following international words and a) read them aloud and give your variant of their translation; b) choose any 5 words from the list and make your own word combinations using them; c) look for the answer to the following question: where are the principles of electronics used?

Student, electronic, systems, metal, radio, effect, element, electric, operation.

II. Form adjectives from the given nouns using suffixes and think of as many words as possible connecting to the adjectives.

Example: adjustment – adjustable (resistors, screw-wrench, bookshelf, etc.)

1. change
2. effect
3. electronics
4. frequency
5. type

Level C

I. While reading the text “Electronics and Electronic Circuit Elements” pay attention to the following international words and a) read them aloud and translate (if you are not sure, consult the dictionary); b) define what parts of speech the following words are; c) look for the answer to the following question: what is a resistor?

При чтении текста “Электроника и элементы электронной цепи” обратите внимание на следующие интернациональные слова и а) прочитайте их вслух и переведите (если Вы не уверены, проконсультируйтесь со словарем); б) определите, какой части речи эти слова; в) найдите ответ на вопрос: что такое катушка сопротивления?

Practical, function, design, television, construction, method, principles, information.

II. Find the meaning of the given Russian word among the English equivalents in each line.

Найдите значение данного на русском языке слова среди эквивалентов на английском языке в каждой строке.

- | | | | | |
|-------------------|-------------|----------------|--------------|-------------|
| 1. вращаться | a) describe | b) attenuate | c) rotate | d) reduce |
| 2. приемник | a) receiver | b) transmitter | c) caller | d) tool |
| 3. провод | a) use | b) rate | c) cost | d) wire |
| 4. пропускать ток | a) carry | b) handle | c) produce | d) emit |
| 5. цепь | a) cord | b) circuit | c) circus | d) size |
| 6. устройство | a) control | b) car | c) system | d) device |
| 7. частота | a) current | b) resistor | c) frequency | d) code |
| 8. производить | a) produce | b) filter | c) mark | d) follow |
| 9. мощность | a) energy | b) capacity | c) operation | d) henry |
| 10. разделять | a) move | b) indicate | c) switch | d) separate |

Reading

Electronics and Electronic Circuit Elements

Part I. Introduction. It should be quite obvious to the student that the vast subject of electronics cannot be covered in one chapter or even in one textbook. However, this text will describe the basic principles of electronics and acquaint the student with the operation of simple electronic circuits. The information gained from this text will also enable him to continue on to more advanced studies. Further we shall discuss such circuit elements as inductors, capacitors, resistors, electron tubes, *transistors*, and other items used in the construction of electronic circuits. We shall describe the functions of these units and also the methods by which they are connected together to produce certain effects. We shall also show how the principles discussed in this text are used in *radio receivers, radio transmitters, electronic control systems, radar* and other *electronic devices*.

Part II. Electronic circuit elements. Resistors. A resistor is a circuit element designed to insert resistance in the circuit. A resistor may be of low value or of high value. Resistors in electronic circuits are made in a variety of sizes and shapes.¹ They are generally classed as² fixed, adjustable or variable, depending upon their construction and use.

The resistance value of small *fixed resistors* is sometimes indicated by a *code colour*. Resistors required to carry a comparatively high current³ and dissipate high power⁴ are usually of the *wire-wound ceramic type*.

Adjustable and variable resistors. An adjustable resistor is usually of the wire-wound type with a *metal collar* which may be moved along the resistance wire to vary the value of the resistance placed in the circuit. In order to change the resistance, the *contact band* must be loosened and moved to the desired position and then tightened so that it will not slip. In this way the resistor becomes, for all practical purposes, a fixed resistor during operation.

A **variable resistor** is arranged so that it may be changed in value at any time by the operator of the electronic circuit. This change is usually accompanied by rotating a small *adjustment knob* or by turning a *screw adjustment*. Variable resistors are commonly known as **rheostats** or **potentiometers**.

It must be pointed out that the use of a resistor of any type must be very carefully considered. The capacity of a fixed resistor, rheostat or potentiometer must be such that it can handle the current⁵ through the circuit without damage *computing the current* by means of Ohm's law.

Inductors. The purpose of an inductor, or *inductance coil*, is to insert inductance into a circuit. The effect of an inductance is to oppose any change⁶ in the existing current flow in a circuit. The opposition to current flow in an a. c. circuit by an inductor is called *inductive reactance* and is measured in ohms.

Inductors are made in many shapes and designs. An inductor used in extremely *high-frequency circuits* may consist of only one turn or even less than one turn of wire. On the other hand, an inductor used as a *choke coil* in a low-frequency circuit or in a *filter circuit* may contain many turns of wire and also be wound on an iron core to increase the inductance.

Inductors are often used in radio in connection with capacitors to provide tuned circuits. These tuned circuits are most valuable in radio and television for filtering out unwanted frequencies⁷ and passing the desired frequencies.

Inductance coils are rated as to value in henrys. One henry is a comparatively large inductance. Therefore, many of the inductors used in electronic circuits are rated in millihenrys. One millihenry (mh) is one thousandth of a henry. One henry is the inductance of a coil which will produce a back voltage of 1 volt when the current change is at the rate of⁸ 1 amp per second.

Capacitors. A capacitor may be defined as a device consisting of two or more conductor plates separated from one another by a dielectric and used for receiving and storing an *electric charge*. The effect of a capacitor in an electric circuit is to oppose any change in the existing *voltage*.

Capacitors are commonly used in d. c. circuits to reduce the effects of transient voltages and currents. Electrical transients are high voltages developed from time to time when the circuit is broken or reconnected, as when a switch is turned on or off. These transient voltages are usually caused by the inductance of a circuit. In an a. c. circuit the capacitor is often used to block the direct current but permit the flow of the alternating current. In effect, the alternating current appears to flow

through the capacitor but is actually being stored first on one plate of the capacitor and then on the other.

Like many other electronic units, capacitors are manufactured in a wide variety of sizes and styles. Some very low-capacity capacitors are merely tiny wafers of metal separated by an *insulator*; large capacitors may weigh several pounds. Fixed capacitors are of two general types. One is the dry capacitor which consists of metal plates separated by a dry dielectric such as mica or waxed paper, and the other is the electrolytic capacitor, whose dielectric is a chemical paste or one electrolyte. The electrolytic capacitor is effective in only one direction. This means that it must be connected in such a manner that the positive and negative polarities are correct. If it is connected in reverse, the current will flow through the capacitor and destroy it. Fixed capacitors of both the dry and electrolytic type are manufactured in a wide variety of shapes and sizes. The electrolytic capacitors are marked to indicate the correct method of connection into a circuit.

The unit of capacitance is a farad. A capacitor which will store 1 coulomb of electricity under an e. m. f. of 1 volt has a capacitance of 1 farad. The farad is an extremely high value of capacitance; therefore capacitors used in standard electronic circuits are rated in⁹ microfarads (1 mf = one millionth of a farad) or micromicrofarads (1 mf = one millionth of a microfarad).

Notes:

¹ in a variety of sizes and shapes – разнообразных размеров и форм

² are generally classed as – обычно делятся на

³ to carry a comparatively high current – пропускать сравнительно большой ток

⁴ to dissipate high power – рассеивать большую мощность

⁵ to handle the current – пропускать ток

⁶ to oppose any change – противодействовать изменениям

⁷ to filter out unwanted frequencies – избавляться от нежелательных частот

⁸ at the rate of – со скоростью

⁹ are rated in – исчисляются в

Checking

Check yourself according to the chosen levels

Level A

Task 1. Change each of the following sentences into Past and Future Simple.

1. A resistor is a circuit element designed to insert resistance in the circuit.
2. A variable resistor is arranged so that it may be changed in value at any time by the operator of the electronic circuit.
3. This means that it must be connected in such a manner that the positive and negative polarities are correct.
4. Fixed capacitors are of two general types.
5. In this way the resistor becomes, for all practical purposes, a fixed resistor during operation.

Task 2. Find antonyms among the following words. Give translation of them. Time for doing this task is limited – 5 minutes. Mind the time, please.

Direct, dry, increase, block, negative, transmit, low, reduce, wet, connect, wide, indirect, separate, together, high, positive, narrow, permit, receive, separately.

Task 3. a) Match each word with its correct definition.

- | | |
|----------------|--|
| 1. device | a – to make use of; find a use for. |
| 2. to retain | b – metal peg with a ridge round its length, driven into wood, metal, etc., by twisting under pressure, for fastening and holding things together. |
| 3. to utilize | c – piece or length of metal drawn out into the form of a thread. |
| 4. frequency | d – something thought out, invented, or adapted, for a special purpose. |
| 5. screw | e – to point out; make known; state briefly. |
| 6. to indicate | f – to keep, continue to have or hold, keep in place. |
| 7. wire | g – rate of occurrence; number of repetitions (in a given time). |

b) Put a question tag on the end of these sentences.

1. However, this text will describe the basic principles of electronics and acquaint the student with the operation of simple electronic circuits,
2. In this way the resistor becomes, for all practical purposes, a fixed resistor during operation,
3. Inductors are made in many shapes and designs,
4. The resistance value of small fixed resistors is sometimes indicated by a code colour,
5. It must be pointed out that the use of a resistor of any type must be very carefully considered,

Task 4. You are going to take part in the conference “Modern branches of Electronics” abroad. There is a special Registration Form that you are to fill.

Registration form

Yes! I would like to register for “Modern branches of Electronics”

25-27 May, 2009.

Please complete and return to:

Economic Forum, 20 Business Avenue,
Sun City, Dreamland.

Name (Mr/Ms) _____

Position _____

Firm/company _____

The name of my report _____

Address _____

City _____ Post Code _____

Country _____

Telephone _____ Fax _____

Please register me for the conference. I have enclosed my cheque for \$ 200 made payable to: Economic Forum.

Please add me to your mailing list

The conference language is English.

★ Translate this dialogue using words and expressions from the Text “Electronics and Electronic Circuit Elements”.

- Привет, Ольга, как дела?
- Привет, Олег. Так себе. Завтра у меня контрольная по теме “Электроника и элементы электронной цепи”, а я не могу запомнить все эти термины.
- Я рекомендую тебе перечитать лекцию об основных принципах электроники еще раз. Какие элементы электронной цепи ты помнишь?
- Это резисторы, индукционные катушки, конденсаторы, транзисторы... .
- Верно, еще электронные лампы и некоторые другие элементы. А в чем измеряется индукция?
- Если я не ошибаюсь, то в миллигенри. А какова единица измерения емкостного сопротивления?
- Это фарад. Повтори еще функции элементов электронной цепи и будь готова привести примеры электронных устройств, в которых можно встретить принципы электроники. Думаю, что у тебя есть все шансы написать эту работу хорошо.
- Спасибо за помощь. До встречи завтра.

Level B

Task 1. Make the sentences, given below interrogative and negative. Define Grammar Tense and the Voice of each verb in the sentence.

1. A resistor is a circuit element designed to insert resistance in the circuit.
2. This means that it must be connected in such a manner that the positive and negative polarities are correct.
3. Inductors are made in many shapes and designs.
4. We shall describe the functions of these units and also the methods by which they are connected together to produce certain effects.
5. A capacitor may be defined as a device consisting of two or more conductor plates separated from one another by a dielectric and used for receiving and storing an electric charge.

Task 2. Find synonyms among the following words. Give translation of them. Time for doing this task is limited – 5 minutes. Mind the time, please.

Element, unfasten, change, receive, shape, connect, mechanism, transform, actually, get, tiny, loosen, in fact, form, join, small, component, device.

Task 3. a) Write three forms (the Infinitive, Past Simple, Past Participle) of the verbs, given below.

Break, describe, have, know, mean, produce, show, store.

b) Take any three verbs, used in the text “Electronics and Electronic Circuit Elements” and make three sentences of your own in English (in a written form). Making the sentences, any Grammar Tense and Voice can be used.

c) Find a partner, read your sentences and ask him (her) to translate them into Russian. Then change your roles.

Task 4. Make up any 4 questions on the text “Electronics and Electronic Circuit Elements” and put them to your partner.

Example: What is the purpose of an inductor? Are capacitors manufactured in a wide variety of sizes and styles?

★ Choose any electronic device. Imagine and write down 4 reasons why you would like to buy it.

Example: I am thinking of buying this calculator because of its modern design / I would like to buy these electronic cigarettes to give up smoking and to make less harm to myself and to the people who surround me.

Level C

Task 1. Make the sentences, given below interrogative and negative.

Сделайте предложения, данные ниже вопросительными и отрицательными.

1. One henry is a comparatively large inductance.
2. Further we shall discuss such circuit elements as inductors, resistors, electron tubes, and other items used in the construction of electronic circuits.
3. They are generally classed as fixed, adjustable or variable, depending upon their construction and use.

4. Variable resistors are commonly known as rheostats or potentiometers.
5. It should be quite obvious to the student that the vast subject of electronics cannot be covered in one chapter or even in one textbook.

Task 2. Find a noun in each line. Time for doing this task is limited – 4 minutes. Mind the time, please.

Найдите существительное в каждой строке. Время выполнения данного задания ограничено – 4 минуты. Помните о времени, пожалуйста.

- | | | | |
|------------------|--------------|--------------|--------------|
| 1. a) inserted | b) value | c) about | d) they |
| 2. a) know | b) go | c) can | d) capacity |
| 3. a) electronic | b) used | c) circuit | d) into |
| 4. a) frequency | b) dry | c) many | d) obvious |
| 5. a) other | b) even | c) receiver | d) larger |
| 6. a) resistant | b) important | c) transient | d) current |
| 7. a) extremely | b) tube | c) than | d) inductive |

Task 3. a) Answer the following questions:

Ответьте на следующие вопросы:

- 1) What modern electronic devices can you name?
- 2) What are the elements of electronic circuit?
- 3) What do you know about resistors?
- 4) Inductors are not often used in radio in connection with capacitors to provide tuned circuits, aren't they?
- 5) What can be the weight of large capacitors?

b) Make up any 4 questions on the text “Electronics and Electronic Circuit Elements” and put them to your partner. Use questions from Task 3 a) as examples.

Составьте 4 вопроса к тексту “Электроника и элементы электронной цепи” и задайте их своему партнеру. Используйте вопросы из задания 3 а) как примеры.

Task 4. You are going to take part in the economic competition “Modern branches of Electronics” abroad. There is a special Registration Card that you are to fill.

Вы собираетесь принять участие в зарубежном конкурсе “Современные сферы электроники”. Вам необходимо заполнить эту специальную регистрационную форму.

Registration Card

Surname _____
First name _____
Age _____
Country _____
Address _____
Profession or field of study _____

★ *Choose any 5 words from the list and make your own word combinations, using them.*

Выберите любые 5 слов из данного списка и составьте собственные словосочетания, используя их.

Device, element, to handle, metal, to produce, radio, resistor, screw, variety, voltage.

UNIT III WELDING

Pre-reading

Before studying the material of this unit, read and memorize what the term “welding” means.

Welding – a process when metal parts are joined together by the application of heat, pressure, or a combination of both.

Words and Expressions to be studied:

pressure welding	– сварка давлением
heat welding	– сварка нагреванием
instead (of)	– вместо, взамен
bolting	– скрепление болтами
riveting	– клепка
to depend (on, upon)	– зависеть от
purpose	– цель
available	– имеющийся в наличии
source	– источник
gas welding	– газосварка

arc welding	– электродуговая сварка
resistance welding	– контактная сварка
electron-beam welding	– электронно-лучевая сварка
flame	– пламя
edge	– край
simultaneously	– одновременно
filler	– наполнитель
rod	– прут, стержень
to melt	– плавить(ся)
joint	– соединение, стык
advantage	– преимущество
surface	– поверхность
coated	– покрытый
flux	– флюс
fusible	– плавкий
to shield	– заслонять, защищать
tip	– кончик
gas-tungsten	– сварка оплавлением вольфрамовым электродом в среде инертного газа
bare	– голый
rate	– зд. скорость
gas-metal arc	– аргоно-дуговая сварка
considerably	– значительно, гораздо
surrounding	– окружающий
carbon dioxide	– углекислый газ
droplet	– капелька
liquid	– жидкость, жидкий
beneath	– под, ниже, внизу
layer	– слой
weld seam	– сварной шов
clamp	– зажим, зажимать
semi-automatic	– полуавтоматический
to create	– создавать
submerge	– погружать

While reading the Text of this Unit, you'll find these words and expressions. They will be given as italicized ones. You may also consult any English-Russian dictionary.

Choose your level and make pre-reading tasks

Level A

I. While reading the text “Welding processes” pay attention to the following word groups and a) read and translate them into Russian; b) define the parts of speech of the italicized words; c) tell what you know about welding.

The application of heat, construction of many types of structures, the most common welding process, the properties of the metals, several advantages over other welding methods, a high-quality weld, very efficient, the flow of current, wire manufacturing, especially in automobile industry.

II. Make nouns from the following verbs.

Achieve, create, employ, equip, fill, heat, join, produce, supply, weld.

Level B

I. While reading the text “Welding processes” pay attention to the following word groups and a) read them aloud; b) translate them into Russian; c) speak about branches where we can find the usage of welding.

Types of structures, motor industry, a basic process, according to the sources of heat and pressure, a metallic electrode, a chemically inert gas, by coating the electrode with flux, however, in many fields of sheet metal, automatic machines.

II. Define what parts of speech are the following words.

Heat, combination, the most common, machinery, include, portable, generate, widely, shielded, granular.

Level C

I. While reading the text “Welding processes” pay attention to the following words and a) read these words correctly; b) put them in the alphabetic order; c) answer to the question: what is welding?

При чтении текста “Сварочные процессы” обратите внимание на следующие слова и а) прочитайте эти слова правильно; б) поставьте их в алфавитном порядке; в) ответьте на вопрос: что такое сварка?

Pressure, manufacture, air, source, classified, methods, result, current, dioxide, automatic.

II. Make your own possible combinations of words (phrases) using the words, given above.

Составьте собственные словосочетания (фразы), используя слова, данные выше.

Reading

Welding processes

As we have already read at the beginning of this unit, welding is a process when metal parts are joined together by the application of heat, pressure, or a combination of both. The process of welding can be divided into two main groups: *pressure welding*, when the weld is achieved by pressure and *heat welding*, when the weld is achieved by heat. Heat welding is the most common welding process used today.

Nowadays welding is used *instead of bolting and riveting* in the construction of many types of structures, including bridges, buildings, and ships. It is also a basic process in the manufacture of machinery and in the motor and aircraft industries. It is necessary almost in all productions where metals are used. The welding process depends greatly on the properties of the metals, the *purpose* of their application and the *available* equipment. Welding processes are classified according to the sources of heat and pressure used. The welding processes widely employed today include *gas welding*, *arc welding*, and *resistance welding*. Other joining processes are laser welding, and *electron-beam welding*.

Gas Welding. Gas welding is a non-pressure process using heat from a gas *flame*. The flame is applied directly to the metal, *edges* to be joined and *simultaneously* to a *filler* metal in the form of wire or *rod*, called the welding rod, which is *melted* to the *joint*. Gas welding has the *advantage* of using equipment that is portable and does not require an

electric power source. The *surfaces* to be welded and the welding rod are *coated* with *flux*, a *fusible* material that *shields* the material from air, which would result in a defective weld.

Arc Welding. Arc-welding is the most important welding process for joining steels. It requires a continuous supply of either direct or alternating electrical current. This current is used to *create* an electric arc, which generates enough heat to melt metal and create a weld. Arc welding has several advantages over other welding methods. Arc welding is faster because the concentration of heat is high. Also, fluxes are not necessary in certain methods of arc welding. The most widely used arc-welding processes are shielded metal arc, *gas-tungsten* arc, *gas-metal* arc, and *submerged* arc.

Shielded Metal Arc Welding. In shielded metal-arc welding, a metallic electrode, which conducts electricity, is coated with flux and connected to a source of electric current. The metal to be welded is connected to the other end of the same source of current. An electric arc is formed by touching the *tip* of the electrode to the metal and then drawing it away. The intense heat of the arc melts both parts to be welded and the point of the metal electrode, which supplies filler metal for the weld. This process is used mainly for welding steels. There are also other types of welding.

Gas-tungsten Arc Welding. As non-consumable electrodes tungsten or carbon electrodes can be used in gas-tungsten arc welding a tungsten electrode is used in place of the metal electrode used in shielded metal-arc welding. A chemically inert gas, such as argon, helium, or carbon dioxide is used to shield the metal from oxidation. The heat from the arc formed between the electrode and the metal melts the edges of the metal. Metal for the weld may be added by placing a bare wire in the arc or the point of the weld. This process can be used with nearly all metals and produces a high-quality weld. However, the *rate* of welding is considerably slower than in other processes.

Gas-Metal Arc Welding. In gas-metal welding, a *bare* electrode is shielded from the air by *surrounding* it with argon or *carbon dioxide* gas and sometimes by coating the electrode with flux. The electrode is fed into the electric arc, and melts off in *droplets* that enter the *liquid* metal of the weld seam. Most metals can be joined by this process.

Submerged Arc Welding. Submerged-arc welding is similar to gas-metal arc welding, but in this process no gas is used to shield the

weld. Instead of that, the arc and tip of the wire are submerged *beneath* a *layer* of granular, fusible material that covers the *weld seam*. This process is also called electroslag welding. It is very efficient but can be used only with steels.

Resistance Welding. In resistance welding, heat is obtained from the resistance of metal to the flow of an electric current. Electrodes are *clamped* on each side of the parts to be welded, the parts are subjected to great pressure, and a heavy current is applied for a short period of time. The point where the two metals touch creates resistance to the flow of current. This resistance causes heat, which melts the metals and creates the weld. Resistance welding is widely employed in many fields of sheet metal or wire manufacturing and is often used for welds made by automatic or *semi-automatic* machines especially in automobile industry.

Checking

Check yourself according to the chosen levels

Level A

Task 1. Join pairs of the following words and phrases according to the meanings.

- | | |
|---------------------------------------|---|
| 1) pressure welding | a) болтовое (клепаное) соединение |
| 2) heat welding | b) зависеть от свойств металлов |
| 3) bolting | c) плавкий материал |
| 4) welding process | d) непрерывная подача электрического тока |
| 5) depend on the properties of metals | e) имеющееся оборудование |
| 6) available equipment | f) сварка давлением |
| 7) fusible material | g) дефектный сварной шов |
| 8) defective weld | h) процесс сварки |
| 9) alternative electrical current | i) источник электрического тока |
| 10) electric power source | j) тепловая сварка |

Task 2. Translate the following words and phrases into English.

Вольфрамый электрод, инертный газ, окисление, высококачественный сварочный шов, скорость сварки, углекислый газ, аргон, гелий, жидкий металл, слой плавкого материала в виде гранул, листовой материал, полуавтоматические сварочные станки.

Task 3. Make up questions to which the following sentences might be the answers.

1. Heat welding is the most common welding process used today.
2. There are also other types of welding.
3. The welding process depends greatly on the properties of the metals.
4. This process is also called electroslag welding.
5. Other joining processes are laser welding, and electron-beam welding.

Task 4. Make your annotation of the text “Welding processes” according to the following structure:

1. Sphere of knowledge this information belongs to.
2. The theme of the text.
3. Summary of the text.

Before doing this task consult Supplement 1 and study how to write annotations. Remember that it is necessary to use the language clichés.

★ Find a partner, make a dialogue according to the given situation and be ready to present it to your group.

The situation: You are going to start your own business and found a firm, providing welding services. You can't decide if it really worth choosing this sphere. Discuss pros and cons of such business in your city (region/country). Will it be profitable/in good demand?

Level B

Task 1. There are some words:

High, joint, advantage, break, liquid, add, manufacture, low, attach, several, similar, divide, long, produce, some, different, cold, create, junction, fusible, join, solid, short, meltable, reduce, heat, classify, disadvantage.

Fill in the table according to the sense. The first line in the table has been already done for you as an example. Time for doing this task is limited – 5 minutes. Mind the time, please.

synonyms	antonyms
joint – junction	add – reduce
... - - ...
... - - ...
... - - ...
... - - ...
... - - ...
... - - ...

Task 2. Define whether these statements are true or false:

1. Heat welding is the most common welding process used today.
2. The welding processes widely employed today include gas welding, laser welding, and resistance welding.
3. Arc welding has no advantages over other welding methods.
4. In gas-metal welding, a bare electrode is shielded from the air by surrounding it with argon or carbon dioxide gas and sometimes by coating the electrode with flux.
5. Submerged-arc welding is also called electroslag welding. It is very efficient but can be used only with steels.
6. The point where the two metals touch creates resistance to the flow of current.

Task 3. a) Make up 4 questions of the different types on the text “Welding processes”.

b) Change each of the following sentences into Past and Future Simple.

1. Nowadays welding is used instead of bolting and riveting in the construction of many types of structures, including bridges, buildings, and ships.
2. The welding process depends greatly on the properties of the metals, the purpose of their application and the available equipment.
3. The point where the two metals touch creates resistance to the flow of current.
4. It requires a continuous supply of either direct or alternating electrical current.

5. There are also other types of welding.

Task 4. Read the text “Welding processes” again and make your summary of the text. Before doing this task consult Supplement 1 and study the information how to write summaries and look through the example. Remember that it is necessary to use key words and the language clichés.

★ Imagine that you and your colleagues are going to discuss the advantages of using welding in the industry of our region. Enumerate some advantages of welding processes.

Level C

Task 1. Complete each sentence, using the words given. One word may be used once. Give translations of these words and define what part of speech they are.

Завершите каждое предложение, используя слова, данные ниже. Каждое слово может быть использовано единожды. Дайте перевод этих слов и определите, какой они части речи.

Gas, rate, basic, welding, according to, flame, joined by, industries, pressure, metals, heat.

1. Welding is also a ... process in the manufacture of machinery and in the motor and aircraft
2. Welding processes are classified ... the sources of ... and ... used.
3. ... welding is a non-pressure process using heat from a gas
4. However, the ... of welding is considerably slower in gas-tungsten ... than in other processes.
5. Most ... can be ... this process.

Task 2. Translate these sentences into Russian.

Переведите эти предложения на русский язык.

1. In resistance welding, heat is obtained from the resistance of metal to the flow of an electric current.
2. The heat from the arc melts the edges of the metal.
3. A bare electrode is shielded from the air by surrounding it with argon or carbon dioxide gas.
4. Submerged-arc welding is similar to gas-metal arc welding.

5. Electrodes are clamped on each side of the parts to be welded.
6. Resistance causes heat which melts the metals and creates the weld.

Task 3 a) Make sentences, using the following words. If it is necessary, look through the text once again.

Составьте предложения, используя следующие слова. При необходимости просмотрите текст данного раздела еще раз.

1. The, greatly, welding, of, process, the properties, depends on, the metals.
2. An, and, drawing, of, the tip, electric, by, arc, touching, is formed, the electrode, it, to, the metal, then, away.
3. Electroslag, only, efficient, steels, welding, be, is, very, but, can, with, used.
4. The, between, the arc, heat, from, the edges, the metal, formed, of, the electrode, and, melts, the metal.

b) Define Grammar Tense and the Voice of each verb in the sentences from Task 3 a).

Определите время и залог каждого глагола в предложениях из Задания 3 а).

Task 4. Read the text “Welding processes” again and formulate the main idea of each paragraph.

Прочитайте текст “Сварочные процессы” еще раз и сформулируйте главную идею каждого абзаца.

★ Imagine that you and your colleagues are going to the international conference devoted to welding processes. Think of some three interesting titles for the reports which you would present.

Представьте, что Вы и Ваши коллеги собираетесь на международную конференцию, посвященную сварочным процессам. Подумайте над тремя интересными заголовками для докладов, которые Вы бы представили там.

UNIT IV COMPUTERS

Pre-reading

Before studying the material of this unit, read and memorize some basic and important abbreviations of it.

<i>PC</i>	– Personal Computer.
<i>CPU</i>	– Central Processing Unit.
<i>ALU</i>	– Arithmetic/Logic Unit.
<i>RAM</i>	– Random-Access Memory.
<i>ROM</i>	– Read-Only Memory.
<i>BIOS</i>	– Basic Input/Output System.
<i>GPS</i>	– Global Positioning System.
<i>USB</i>	– Universal Serial Bus.
<i>DSL</i>	– Digital Subscriber Line.
<i>PCI</i>	– Peripheral Component Interconnect.

Words and Expressions to be studied:

general-purpose	– общего назначения
input/output devices	– устройства ввода/вывода
keyboard	– клавиатура
network	– сеть
to store	– хранить
to handle	– управлять, регулировать, манипулировать
to browse	– просматривать (напр., доступные сетевые ресурсы)
hardware	– оборудование, аппаратное обеспечение, “железо”
rectangular circuit board	– прямоугольная системная плата
connection	– связь, подключение, соединение
to personalize	– персонализировать
application	– применение, использование
currently	– в настоящее время, теперь
directly	– непосредственно
temporarily	– временно, на время

permanent	– постоянный
to establish	– устанавливать, учреждать
software	– программное обеспечение, “софт”
to interface	– соединять
to imply	– подразумевать
capability	– возможность
portability	– портативность
versatility	– универсальность
trackball	– шаровой указатель
average	– средний
palmtop	– карманный компьютер
to rely on	– основываться
mainframe	– (универсальная вычислительн.) машина
to diminish	– уменьшать
in favor of	– в пользу
transaction	– операция, сделка
to comprise of	– состоять из
performance	– выполнение, совершение

While reading the Text of this Unit, you'll find these words and expressions. They will be given as italicized ones. You may also consult any English-Russian dictionary.

Choose your level and make pre-reading tasks

Level A

I. While reading the text “Computers: their usage, parts and types” pay attention to the following word groups and a) read and translate them into Russian; b) enumerate all the components and applications of computers that you can remember to the groupmates.

A general-purpose information processing device, a specialized computer for handling GPS signals, basically the same hardware, directly on the motherboard, a large-capacity permanent storage, by converting analog sound into digital information, displayed by the monitor, tightly integrated computers, large hard drives, processing millions of transactions.

II. Add the second word to complete the word – combination:

1. information ... ; 2. network ... ; 3. browse ... ; 4. connected ... ;
5. permanent ... ; 6. expensive ... ; 7. process ...; 8. output ... ;
9. type ...; 10. basic

Level B

I. While reading the text “Computers: their usage, parts and types” pay attention to the following words of the same stem and a) read these words correctly, define what parts of speech the following words are and translate them; b) answer to the question: how were computers used in your school?

1. to type – typically – type
2. to connect – connection – connected
3. to use – usage – useful – user
4. to process – microprocessor – processing
5. to store – storage – stored
6. to personalize – personal – person

II. Read and translate the following phrases from the text “Computers: their usage, parts and types” into Russian:

For processing MP3 files, to send e-mail, a sound card, memory in a computer, the electricity used by the computer, displayed by the monitor, portable computers, touchscreen technology, powerful processors, particularly in large companies.

Level C

I. While reading the text “Computers: their usage, parts and types” pay attention to the following words and a) read the following words correctly and guess their meanings; b) answer to the questions: what is PC and what do you personally use it for?

При чтении текста “Компьютеры: их использование, части и типы” обратите внимание на следующие слова и а) прочитайте эти слова правильно и угадайте их значение; б) ответьте на вопросы: что такое персональный компьютер и как лично Вы используете его?

Personal, microprocessor, documents, electricity, audio, monitor, type, technology, service, machine.

II. Make your own possible combinations of words (phrases) using the words, given above.

Составьте собственные словосочетания (фразы), используя слова, данные выше.

Reading

Computers: their usage, parts, and types

Part I. A General-Purpose Device. The computer that everyone thinks of first is typically the personal computer, or PC. Here is one way to think about your PC: “A PC is a *general-purpose* information processing device. It can take information from a person (through *input devices* like the *keyboard* and mouse), from a device (like a floppy disk or CD) or from the *network* (through a modem or a network card) and process it. Once processed, the information is shown to the user (on the monitor), *stored* on a device (like a hard disk) or sent somewhere else on the network (back through the modem or network card).”

A PC is a general purpose tool built around a microprocessor. It has lots of different parts – memory, a hard disk, a modem, etc. – that work together. We have lots of special-purpose processors in our lives. An MP3 Player is a specialized computer for processing MP3 files. A GPS is a specialized computer for *handling* GPS signals. A Gameboy is a specialized computer for handling games.

A PC can do it all because it is general-purpose. “General purpose” means that you can do many different things with a PC. You can use it to type documents, send e-mail, *browse* the Web and play games.

Part II. Computer hardware. The physical components that make up a computer are called *hardware*. Every PC has basically the same hardware; the difference in size and power of that hardware is what makes one PC more expensive or powerful than another. Let’s take a look at the main components of a typical desktop computer.

Motherboard is a thin, *rectangular circuit board* that forms the foundation of your computer. It contains many computer chips and *connections*. The CPU and memory are usually on the motherboard.

Other systems may be found directly on the motherboard or connected to it through a secondary connection. For example, a sound card can be built into the motherboard or connected through PCI. The motherboard allows users to *personalize* a computer system depending on their *applications* and needs the computer is *currently* working with.

Central Processing Unit (CPU) is the microprocessor that is the “brain” of the computer system. Everything that a computer does is overseen by the CPU.

Memory is very fast storage used to hold data. It has to be fast because it connects *directly* to the microprocessor. There are several specific types of memory in a computer:

Random-Access Memory (RAM) is a type of memory used to *temporarily* store information that the computer is currently working with.

Read-Only Memory (ROM) is a *permanent* type of memory storage used by the computer for important data that does not change.

Basic Input/Output System (BIOS) is a type of ROM that is used by the computer to *establish* basic communication when the computer is first turned on.

Power supply is an electrical transformer that regulates the electricity used by the computer.

Hard disk is a large-capacity permanent storage used to hold information such as programs and documents.

Operating system is the basic *software* that allows the user to *interface* with the computer.

Sound card is used by the computer to record and play audio by converting analog sound into digital information and back again.

Graphics card is used to translate image data from the computer into a format that can be displayed by the monitor.

Part III. Types of Computers. There are a lot of terms used to describe computers. Most of these words *imply* the size, expected use or *capability* of the computer. Here are the main computer types:

Personal computer. The personal computer (PC) is defined as a computer designed for general use by a single person. PCs were first known as *microcomputers* because they were a complete computer but built on a smaller scale than the huge systems in use by most businesses.

Desktop. It is a PC that is not designed for *portability*. The expectations with desktop systems are that you will set the computer up

in a permanent location. Most desktops offer more power, storage and *versatility* for less cost than their portable analogs.

Laptop. These devices are also called *notebooks*; laptops are portable computers that integrate the display, keyboard, a pointing device or *trackball*, processor, memory and hard drive all in a battery-operated package slightly larger than an *average* hardcover book.

Palmtop. *Palmtops* are tightly integrated computers that often use flash memory instead of a hard drive for storage. These computers usually do not have keyboards but *rely on* touchscreen technology. Palmtops are typically smaller than a paperback novel and very lightweight. A slightly larger and heavier version of the palmtop is the *handheld computer*.

Server. This is a computer that has been optimized to provide services to other computers over a network. Servers usually have powerful processors, lots of memory and large hard drives.

Mainframe. In the early days of computing, mainframes were huge computers that could fill an entire room or even a whole floor! As the size of computers has *diminished* while the power has increased, the term mainframe has fallen out of use *in favor of* **enterprise server**. You'll still hear the term used, particularly in large companies to describe the huge machines processing millions of *transactions* every day.

Supercomputer. This type of a computer usually costs hundreds of thousands or even millions of dollars. Although some supercomputers are single computer systems, most are *comprised of* multiple high performance computers working in parallel as a single system.

Checking

Check yourself according to the chosen levels

Level A

Task 1. Match the components of the PC with their usage.

- | | |
|----------------------|--|
| 1) USB (Flash drive) | a) a generic name for digital lines that are provided by telephone companies to their local subscribers that carry data at high speed. |
|----------------------|--|

- | | |
|--------------------------------------|--|
| 2) Hard disk | b) a standard for connecting peripherals to a PC, designed by Intel and released in Autumn 1993. |
| 3) Digital Subscriber Line (DSL) | c) a standard for connection sockets on computers and other electronic equipment. |
| 4) Hardware | d) a component of the PC that contains many computer chips and connections. |
| 5) Read-Only Memory (ROM) | e) a device for medium-term storage of data. |
| 6) The motherboard | f) a component of the PC that record and play audio. |
| 7) The sound card | g) a device for a permanently stored data that does not change. |
| 8) The Central Processing Unit (CPU) | h) a device that is called as the microprocessor “brain”. |

Task 2. Define whether these statements are true or false:

1. A PC can take information from a person, from a device or from the network but can't process it.
2. “General purpose” means that you can do many different things with a PC.
3. Motherboard is a thin, triangular circuit board that forms the foundation of your computer.
4. Palmtops usually do not have keyboards but rely on touchscreen technology.
5. As the size of computers has diminished while the power has increased, the term mainframe has come into use in favor of enterprise server.
6. Servers usually have powerful processors, lots of memory and little hard drives.

Task 3. Translate the dialogue into English, please.

- Какие основные части аппаратного обеспечения ты знаешь?
- Это – материнская плата, центральный процессор, разные типы памяти, например, память произвольного доступа и память,

постоянно хранящая информацию, устройства ввода/вывода информации, жесткий диск, операционная система, звуковая плата, графическая карта и т.д.

– А который из этих компонентов содержит много чипов и соединений?

– Думаю, что это – материнская плата. Обычно на ней содержится центральный процессор и память. Также может быть встроена и звуковая плата.

– А память нужна, чтобы хранить данные, не так ли?

– Да, ты прав. Бывает несколько типов памяти в компьютере: память произвольного доступа (RAM) и постоянная память (ROM).

– Спасибо, ты мне очень помог выяснить кое-что для себя о некоторых важных компонентах компьютера.

Task 4. Make your abstract of the information from the text “Computers: their usage, parts and types” according to the following structure:

1. The theme of the text.
2. The main idea of the text.
3. Summary of the text.
4. The author’s conclusion.
5. Your own comments.

Before doing this task consult Supplement 1 and study how to write abstracts. Remember that it is necessary to use the language clichés.

★ Find information in any source and present a short but very useful, interesting and informative report to your group on one of the themes given below. The time of the presentation should be not less than 5-7 minutes. Be ready to answer your groupmates’ questions if there are any.

1. Computer languages.
2. WiFi and its usage.
3. Computer viruses.
4. The application of computers in everyday life / modern world / my future work.

Level B

Task 1. There are some words:

Store, user, specific, connect, network, storage, comprise, basically, build, sound, instead of, send, permanent, hold, first, provide.

Define what parts of speech the following words are. Choose all verbs among them and give their three forms (Past Indefinite, Participle II, Participle I). Time for doing this task is limited – 5 minutes. Mind the time, please.

Task 2. Make up questions to which the following sentences might be the answers.

1. A PC has lots of different parts – memory, a hard disk, a modem, etc. – that work together.
2. You can use it to type documents, send e-mail, *browse* the Web and play games.
3. Memory is very fast storage used to hold data.
4. They offer more power, storage and *versatility* for less cost than their portable analogs.
5. It is used by the computer to record and play audio by converting analog sound into digital information and back again.
6. The term mainframe has fallen out of use in favor of enterprise server.

Task 3. a) Define Grammar Tense and the Voice of each verb in the following sentences.

1. A GPS is a specialized computer for handling GPS signals.
2. Graphics card is used to translate image data from the computer into a format that can be displayed by the monitor.
3. A server has been optimized to provide services to other computers over a network.
4. In the early days of computing, mainframes were huge computers that could fill an entire room or even a whole floor.
5. You'll still hear the term "supercomputer" used, particularly in large companies to describe the huge machines processing millions of transactions every day.

b) Translate these sentences correctly according to the defined Tenses and the Voices.

Task 4. Make your annotation of the text “Computers: their usage, parts and types” according to the following structure:

1. Sphere of knowledge this information belongs to.
2. The theme of the text.
3. Summary of the text.

Before doing this task consult Supplement 1 and study how to write annotations. Remember that it is necessary to use the language clichés.

★ Work with a partner. Imagine that you are going to meet with your business partners from an American company, dealing with computers. Find out

- ✓ Their name
- ✓ Where they come from
- ✓ Job title
- ✓ Location of the company
- ✓ How long they have had their job
- ✓ Main customers
- ✓ Responsibilities
- ✓ Other additional information that you want to know

Level C

Task 1. Match the columns of the following table to make true sentences and translate them into Russian. Mind their grammar.

Соедините колонки следующей таблицы, чтобы составить правдивые предложения и переведите их на русский язык. Следите за грамматикой.

A personal computer (PC)	is used	powerful processors, lots of memory and large hard drives
You	are	the microprocessor that is the “brain” of the computer system
A sound card	can be built	more power, storage and versatility for less cost than their portable analogs
Central Processing	is	typically smaller than a

Unit (CPU)		paperback novel and very lightweight.
Graphics card	have	a general-purpose information processing device
Palmtops	is	to translate image data from the computer into a format that can be displayed by the monitor
Servers	offer	a PC to type documents, send e-mail, browse the Web and play games.
Most desktops	can use	into the motherboard or connected through PCI

Task 2. Finish these sentences according to the information given in the text “Computers: their usage, parts and types”.

Завершите данные предложения согласно информации текста “Компьютеры: их использование, части и типы”

1. A personal computer is a
2. ... are called hardware.
3. Motherboard contains
4. A PC has lots of different parts –
5. Here are the main computer types:
6. You can use a computer to

Task 3 a) Translate the following word groups, paying attention to the nouns in the function of attribute. If it is necessary, look through the text once again.

Переведите следующие группы слов, обращая внимание на существительные в функции определения. При необходимости просмотрите текст данного раздела еще раз.

Network card, general-purpose device, large-capacity storage, battery-operated package, computer systems.

b) Make sentences, using all word groups, given above. If it is necessary, look through the text once again.

Составьте предложения, используя все группы слов, данные выше. При необходимости просмотрите текст данного раздела еще раз.

Task 4. Read the text “Computers: their usage, parts and types” again and make your summary of the text. Before doing this task consult Supplement 1 and study the information how to write summaries and look through the example. Remember that it is necessary to use key words and the language clichés.

Прочитайте текст “Компьютеры: их использование, части и типы” еще раз и напишите краткое изложение текста. Перед выполнением данного задания проконсультируйтесь с Приложением 1 и изучите информацию, как писать краткий пересказ, просмотрите пример. Помните, что необходимо использовать ключевые слова и языковые клише.

★ Imagine that you and your colleagues are going to the international conference devoted to computers. Think of some interesting questions devoted to the modern problems in the sphere of computer usage that you can ask your foreign partners.

Представьте, что Вы и Ваши коллеги собираетесь на международную конференцию, посвященную компьютерам. Придумайте несколько интересных вопросов, посвященных современным проблемам в сфере использования компьютеров, которые Вы бы могли задать Вашим зарубежным партнерам.

UNIT V COMPUTER VIRUSES

Pre-reading

Before studying the material of this unit, read and memorize what the terms “virus” and “computer virus” mean.

Virus – poisonous element causing the spread of infectious disease;
– a tiny parasite which can infect living organisms. It is made only of RNA (ribonucleic acid) plus protein coat; sometimes of DNA (deoxyribonucleic acid) plus protein.

Computer virus – a program that is able to copy itself when it is run. Very often, computer viruses are run

as a part of other programs. They affect security and are a part of malware (such as the Trojan horse or worms).

Malware
(short for *malicious software*) – is a type of software that becomes installed on a computer without the person using the computer knowing about it or wanting it there. There are different types of malware that can harm computers, such as viruses and spyware.

Words and Expressions to be studied:

spread (n, v)	– распространение; распространяться
prior	– прежний, бывший, предшествующий
to release	– освобождать, выпускать
bulletin board	– доска объявлений
spreadsheet	– электронная таблица
precursor	– предшественник, предвестник
to erase	– стирать, удалять
to wipe out	– стирать, уничтожать
trait	– характерная черта, особенность
similarity	– подобие, сходство
DNA (deoxyribonucleic acid)	– ДНК, дезоксирибонуклеиновая кислота
cell	– клетка
inject	– вводить, впускать, добавлять
viral	– вирусный
to bud	– расти, развиваться
to piggyback	– использовать (что-л. в своих интересах)
to execute	– выполнять, делать, осуществлять
obviously	– очевидно
to embed	– внедрять, прикреплять
legitimate	– легальный, настоящий
to modify	– видоизменять, трансформировать
to launch	– запускать, начинать
unfortunately	– к несчастью, к сожалению
to despise	– презирать
to replicate	– воспроизводить, моделировать
trigger	– триггер, пусковая система

to wreak	– разрушать, губить
security hole	– слабое место / прокол в обеспечении безопасности / защите
to claim	– требовать, заявлять
to grab	– овладевать, захватывать
vulnerable	– уязвимый, ранимый
sophisticated	– опытный, современный, продвинутый (о пользователе)
interconnected	– взаимосвязанный, объединенный
to be on the wane	– уменьшаться, убывать
occasionally	иногда, время от времени, порой

While reading the Text of this Unit, you'll find these words and expressions. They will be given as italicized ones. You may also consult any English-Russian dictionary.

Choose your level and make pre-reading tasks

Level A

I. While reading the text “Computer viruses: their history, essence and types” pay attention to the following word-combinations and a) try to translate them without any dictionary; b) tell what you know about computer viruses and how often you personally face them while using a computer.

Widespread in business, download programs of all types, send out messages to warn one another, unlike (a cell), in other cases, some sort of destructive attack, by automatically mailing itself to, a properly engineered virus, to have an amazing effect on, on the other hand.

II. Make nouns from the following verbs.

To popularize, to process, to program, to discover, to protect, to infect, to design, to damage, to secure, to erase.

Level B

I. While reading the text “Computer viruses: their history, essence and types” find the following English phrases in it and a)

read them aloud; b) give their Russian equivalents (consult the dictionary if it is necessary); c) tell about your ideas how to protect computers from viruses.

Extremely popular, the virus known as, to run the program, to share some of the traits of biological viruses, in some cases, send out messages to warn, enough similarities, a code attached to a common program, an unsuspecting program, by automatically mailing itself, unfortunately, to activate the attack phase, to erase all of your data, on the other hand, a new way to create something.

II. Define what parts of speech are the following words.

Widely, non-existent, operating, another, damage, mysterious, infected, scan, security, program.

Level C

I. While reading the text “Computer viruses: their history, essence and types” find the following English words in it and a) read them aloud correctly (if you are not sure, consult the dictionary); b) give their translation; c) tell what types of computer viruses you know and then check if they are the same in the text.

При чтении текста “Компьютерные вирусы: их история, суть и типы” найдите в нем следующие английские слова и а) прочитайте эти слова вслух правильно (если Вы не уверены, проконсультируйтесь со словарем); б) дайте их перевод; с) расскажите, какие виды компьютерных вирусов Вы знаете. Затем проверьте – говорится ли в тексте об этих же самых вирусах, что Вы упомянули.

Virus, personal, to release, widespread, to reproduce, memory, existing, machine, extremely, business, to attach, operating, sophisticated, security, to download, specific.

II. Make your own combinations of words (phrases) using the words, given above.

Составьте собственные словосочетания (фразы), используя слова, данные выше.

Example: *specific security, download data, type of memory etc.*

Reading

Text A. Computer viruses: their history, essence and types

Part I. History. Traditional computer viruses were first widely seen in the late 1980s, and they came about because of several factors. The first factor was the *spread* of personal computers (PCs). *Prior* to the 1980s, home computers were nearly non-existent or they were toys. Real computers were rare, and they were locked away for use by “experts”. During the 1980s, real computers started to spread to businesses and homes because of the popularity of the IBM PC (*released* in 1982) and the Apple Macintosh (released in 1984). By the late 1980s, PCs were widespread in businesses, homes and college campuses.

The second factor was the use of computer *bulletin boards*. People could dial up a bulletin board with a modem and download programs of all types. Games were extremely popular, and so were simple word processors, *spreadsheets*, etc. Bulletin boards led to the *precursor* of the virus known as the Trojan horse. A Trojan horse is a program that sounds really cool when you read about it. So you download it. When you run the program, however, it does something uncool like *erasing* your disk. So you think you are getting a neat game but it *wipes out* your system. Trojan horses only hit a small number of people because they are discovered quickly. Either the bulletin board owner would erase the file from the system or people would send out messages to warn one another.

The third factor that led to the creation of viruses was the floppy disk. In the 1980s, programs were small, and you could fit the operating system, a word processor (plus several other programs) and some documents onto a floppy disk or two. Many computers did not have hard disks, so you would turn on your machine and it would load the operating system and everything else off of the floppy disk.

Part II. What is a “virus”? Computer viruses are called viruses because they share some of the *traits* of biological viruses. A computer virus passes from computer to computer like a biological virus passes from person to person.

There are *similarities* at a deeper level, as well. A biological virus is not a living thing. A virus is a fragment of *DNA* inside a protective jacket. Unlike a *cell*, a virus has no way to do anything or to reproduce by itself – it is not alive. Instead, a biological virus must *inject* its DNA

into a cell. The viral DNA then uses the cell's existing machinery to reproduce itself. In some cases, the cell fills with new *viral* particles until it bursts, *releasing* the virus. In other cases, the new virus particles *bud* off the cell one at a time, and the cell remains alive.

A computer virus shares some of these traits. A computer virus must *piggyback* on top of some other program or document in order to get *executed*. Once it is running, it is then able to infect other programs or documents. *Obviously*, the analogy between computer and biological viruses stretches things a bit, but there are enough similarities that the name sticks.

How they spread. Early viruses were pieces of code attached to a common program like a popular game or a popular word processor. A person might download an infected game from a bulletin board and run it. A virus like this is a small piece of code *embedded* in a larger, *legitimate* program. Any virus is designed to run first when the legitimate program gets executed. The virus loads itself into memory and looks around to see if it can find any other programs on the disk. If it can find one, it *modifies* it to add the virus's code to the unsuspecting program. Then the virus *launches* the "real program". The user really has no way to know that the virus ever ran. *Unfortunately*, the virus has now reproduced itself, so two programs are infected. The next time either of those programs gets executed, they infect other programs, and the cycle continues.

If one of the infected programs is given to another person on a floppy disk, or if it is uploaded to a bulletin board, then other programs get infected. This is how the virus spreads.

The spreading part is the infection phase of the virus. Viruses wouldn't be so violently *despised* if all they did was *replicate* themselves. Unfortunately, most viruses also have some sort of destructive attack phase where they do some damage. Some sort of trigger will activate the attack phase, and the virus will then "do something" – anything from printing a silly message on the screen to erasing all of your data. The trigger might be a specific date, or the number of times the virus has been replicated, or something similar.

Part III. Types of Infection. When you listen to the news, you hear about many different forms of electronic infection. The most common are:

• **Viruses** – a virus is a small piece of software that piggybacks on real programs. For example, a virus might attach itself to a program such as a spreadsheet program. Each time the spreadsheet program runs, the virus runs, too, and it has the chance to reproduce (by attaching to other programs) or wreak a program.

• **E-mail viruses** – an e-mail virus moves around in e-mail messages, and usually replicates itself by automatically mailing itself to dozens of people in the victim's e-mail address book.

• **Worms** – a worm is a small piece of software that uses computer networks and security *holes* to replicate itself. A copy of the worm scans the network for another machine that has a specific security hole. It copies itself to the new machine using the security hole, and then starts replicating from there, as well.

• **Trojan horses** – a Trojan horse is simply a computer program. The program *claims* to do one thing (it may claim to be a game) but instead of it does damage when you run it (it may erase your hard disk). Trojan horses have no way to replicate automatically.

Computer viruses are mysterious and *grab* our attention. On the one hand, viruses show us how *vulnerable* we are. A properly engineered virus can have an amazing effect on the worldwide Internet. On the other hand, they show how *sophisticated* and *interconnected* human beings have become. Viruses in general *are on the wane*, but *occasionally* a person finds a new way to create one, and that's when they are in the news.

Checking

Check yourself according to the chosen levels

Level A

Task 1. Fill in the blanks, using the verbs, given in brackets. Define Grammar Tense and the Voice of each verb.

1. Traditional computer viruses ... (to see) first widely in the late 1980s.

2. A Trojan horse ... (to be) a program that ... (to sound) really cool when you read about it.

3. So you ... (to think) you ... (to get) a neat game but it ... (to wipe) out your system.

4. Many computers ... (not to have) hard disks, so you ... (to turn on) your machine and it ... (to load) the operating system and everything else off of the floppy disk.
5. Some sort of trigger ... (to activate) the attack phase, and the virus will then “do something” – anything from printing a silly message on the screen to erasing all of your data.
6. Computer viruses ... (to be) mysterious and ... (to grab) our attention.
7. A properly engineered virus ... (to have) an amazing effect on the worldwide Internet.

Task 2. Find synonyms among the following words. Give translation of them. Time for doing this task is limited – 5 minutes. Mind the time, please.

To wipe out, destroying, feature, to modify, safety, to turn on, damage, to execute, security, to erase, information, to perform, injury, to change, trait, occasionally, destructive, to switch on, data, sometimes.

Task 3. a) Write three forms (the Infinitive, Past Simple, Past Participle) of the verbs, given below.

Lead, download, run, erase, send, reproduce, spread, show, get, find.

b) Take any five verbs, used in the Text or in Task 3 a) and make five sentences of your own in English (in a written form). Making sentences, use pointed Tenses and Voices: *in the 1-st sentence* – Present Simple, the Active Voice; *in the 2-nd sentence* – Present Simple, the Passive Voice; *in the 3-rd sentence* – Past Simple, the Passive Voice, *in the 4-th sentence* – Present Perfect, the Active Voice; *in the 5-th sentence* – Future Simple, the Passive Voice.

c) Find a partner, read your sentences and ask him (her) to translate any three of them into Russian. Then change your roles.

Task 4. Make up 4 questions of different types on the Text and ask your partner to answer them. Mind the grammar and choose an auxiliary verb according to the Tense in each question. Change your roles.

Example:

- Were Traditional computer viruses first widely seen in the late 1980s? (general question) *Yes they were / No, they were not.*
- What is a “virus”? (special question) *A virus is*

- Is a worm a small piece of software or hardware? (alternative question)
A worm is a small piece of
- Computer viruses are called viruses because they share some of the traits of biological viruses, aren't they? (tag question) *Yes, they are / No, they aren't.*

Task 5. Study the extract about some types of viruses given below. Make a list of key words and / or a plan of the extract. Then use them to retell the information to the group.

The I LOVE YOU virus, which appeared on May 4, 2000, was even simpler than the Melissa virus. It contained a piece of code as an attachment. People who double clicked on the attachment allowed the code to execute. The code sent copies of itself to everyone in the victim's address book and then started corrupting files on the victim's machine. This is as simple as a virus can get. It is really more of a Trojan horse distributed by e-mail than it is a virus.

The Melissa virus took advantage of the programming language built into Microsoft Word called VBA, or Visual Basic for Applications. It is a complete programming language and it can be programmed to do things like modify files and send e-mail messages. It also has a useful but dangerous auto-execute feature. A programmer can insert a program into a document that runs instantly whenever the document is opened. This is how the Melissa virus was programmed. Anyone who opened a document infected with Melissa would immediately activate the virus. It would send the 50 e-mails, and then infect a central file called Normal DOT so that any file saved later would also contain the virus! It created a huge mess.

Microsoft applications have a feature called Macro Virus Protection built into them to prevent this sort of thing. With Macro Virus Protection turned on (the default option is on), the auto-execute feature is disabled. So when a document tries to auto-execute viral code, a dialog pops up warning the user. Unfortunately, many people don't know what macros or macro viruses are, and when they see the dialog they ignore it, so the virus runs anyway. Many other people turn off the protection mechanism. So the Melissa virus spread despite the safeguards in place to prevent it.

In the case of the I LOVE YOU virus, the whole thing was human-powered. If a person double-clicked on the program that came as an attachment, then the program ran and did its thing. What fueled this virus was the human willingness to double-click on the executable.

★ Find a partner, make a dialogue according to the given situation and be ready to present it to your group. You should present not less than 5 phrases from each speaker. Use the active vocabulary of this Unit.

The situation: One day you have found that your computer doesn't work correctly. There might have been a virus. You have a friend who is good at computers. Call him / her and ask for advice (discuss some widespread viruses and ask the caller why he / she decided that the PC is at hazard, also talk about the advantages / disadvantages of some well-known antivirus programs, the ways to avoid computer infection etc.).

Level B

Task 1. Fill in the blanks in the sentences with proper prepositions or articles. Define Grammar Tense and the Voice of each verb in the sentences.

1. ... the 1980s, real computers started to spread to businesses and homes because ... the popularity of ... IBM PC (*released* ... 1982) and the Apple Macintosh (released ... 1984).
2. ... third factor that led ... the creation ... viruses was the floppy disk.
3. The virus loads itself ... memory and looks ... to see if it can find any other programs ... the disk.
4. If one of ... infected programs is given ... another person on ... floppy disk, or if it is uploaded to ... bulletin board, then other programs get infected.
5. When you listen ... the news, you hear ... many different forms ... electronic infection.

Task 2. Find antonyms among the following words. Give translation of them. Time for doing this task is limited – 7 minutes. Mind the time, please.

Erase, constructive, enough, add, similarity, many, unfortunately, stop, silly, find, insert, clever, abstract, few, lose, forget, too little, difference, continue, destructive, know, fortunately.

Task 3. a) Fill in the blanks with proper forms of the verbs.

Infinitive	Past Simple	Past Participle
-	-	done
release	-	-
-	-	come
-	claimed	-
see	-	-
-	-	known
replicate	-	-
-	had	-
give	-	-
-	-	sent

b) Take any three verbs, used in the Text or in Task 3 a) and make three sentences of your own in English (in a written form). Making the sentences, any Grammar Tense and Voice can be used.

c) Find a partner, read your sentences and ask him (her) to translate them into Russian. Then change your roles.

Task 4. Make up any 4 questions on the Text and put them to your partner. Mind the correct word order and the correct auxiliary verb of each sentence.

Example:

- When did the IBM PC get its popularity?
- How are viruses spread?

Task 5. Finish the beginning of these sentences according to the sense. Consult the text “Computer viruses: their history, essence and types” if it is necessary.

1. Traditional computer viruses were
2. ... because of the popularity of the IBM PC.
3. Trojan horses only hit a small number of people because
4. ... like a biological virus passes from person to person.
5. Any virus is designed to
6. ... anything from printing a silly message on the screen to

7. Computer viruses are

8. Viruses in general are . . . , but occasionally a person finds a new way to create one, and that's

★ Here is a piece of information devoted to one of the type of computer viruses – a “Worm”. This extract has a more detailed description of this kind of infection than we came across in the text of this unit. Read it and summarize the information of it in 7–10 sentences. Be ready to present it to the group aloud. Some italicized words are explained below the text.

A **worm** is a computer program that has the ability to copy itself from machine to machine. Worms normally move around and infect other machines through computer networks. Using a network, a worm can expand from a single copy incredibly quickly. For example, the Code Red worm replicated itself over 250,000 times in approximately nine hours on July 19, 2001.

A worm usually exploits some sort of security hole in a piece of software or the operating system. For example, the Slammer worm (which caused *mayhem* in January 2003) exploited a hole in Microsoft's *SQL* server.

Code Red. Worms use up computer time and network bandwidth when they are replicating, and they often have some sort of evil intent. A worm called Code Red made huge headlines in 2001. Experts predicted that this worm could clog the Internet so effectively that things would completely *grind to a halt*.

The Code Red worm slowed down Internet traffic when it began to replicate itself, but not nearly as badly as predicted. Each copy of the worm scanned the Internet for Windows NT or Windows 2000 servers that do not have the Microsoft security patch installed. Each time it found an unsecured server, the worm copied itself to that server. The new copy then scanned for other servers to infect. Depending on the number of unsecured servers, a worm could *conceivably* create hundreds of thousands of copies.

The Code Red worm was designed to do three things:

- ✓ Replicate itself for the first 20 days of each month;
- ✓ Replace Web pages on infected servers with a page that declares “Hacked by Chinese”;

- ✓ Launch a concerted attack on the White House Web server in an attempt *to overwhelm* it.

The most common version of Code Red is a variation, typically referred to as a mutated strain, of the original Ida Code Red that replicated itself on July 19, 2001.

Notes to the Text:

1. *mayhem* (old use, and the U.S.A.) – the same as maiming: wound or injury that makes some part of the body (or a computer system) useless.
2. *SQL* (server) – a) сокр. от Structured Query Language; язык структурированных запросов, язык SQL; b) site database; база данных SQL Server, в которой находится системная и инвентаризационная информация главного узла.
3. *to grind to a halt* – to be capable to stop / pause work of something.
4. *conceivably* – admittedly, presumably (предположительно, вероятно)
5. *to overwhelm* – to crush, to destroy.

Level C

Task 1. Complete each sentence, using the words given. One word may be used once. Give translations of these words and define what part of speech they are.

Заполните пропуски в предложениях, используя данные слова. Переведите эти слова и определите их часть речи.

Operating, we, automatically, *wipes out*, were, system, hand, horses, processor, attached, documents, or.

1. So you think you are getting a neat game but it ... your
2. In the 1980s, programs were small, and you could fit the ... system, a word ... (plus several other programs) and some ... onto a floppy disk.
3. Early viruses ... pieces of code ... to a common program like a popular game ... a popular word processor.
4. Trojan ... have no way to replicate
5. On the one ... , viruses show us how vulnerable ... are.

Task 2. Translate the following Russian phrases into English. Time for doing this task is limited – 10 minutes. Mind the time, please.

Переведите следующие русские фразы на английский язык. Время выполнения данного задания ограничено – 10 минут. Помните о времени, пожалуйста.

Чрезвычайно популярный, стереть файл, загрузить операционную систему, некоторые характерные черты, легальная программа, видоизменить и добавить вирусный код, рассылать автоматически, одна из зараженных программ, правильно разработанный компьютерный вирус, с одной / другой стороны.

Task 3. a) Make sentences, using the following words.

Составьте предложения, используя следующие слова.

1. they, home, or, nearly, computers, toys, were, non-existent, were.
2. when, it, a Trojan, really, is, horse, a program, you, that, about, sounds, cool, read.
3. viruses, computer, the traits of, share, called so, viruses, are, they, some, of, biological, because.
4. activate, some, all of, then, sort of, erase, trigger, will, the phase, and, may, attack, the virus, data, your.
5. the, each, the, time, program, virus, runs, spreadsheet, too, runs.

b) Define Grammar Tense and the Voice of each verb in the sentence from Task 3 a).

Определите время и залог каждого глагола в предложениях из Задания 3 а).

c) Make up three sentences in English with any phrases from Task 2. Find a partner, read your sentences and ask him (her) to translate them into English.

Составьте три предложения на английском языке с любыми фразами из Задания 2. Найдите партнера, прочитайте Ваши предложения и попросите его (ее) перевести их на русский язык.

Task 4. Answer the following questions:

Ответьте на вопросы:

1. When were the IBM PC and the Apple Macintosh release?
2. Why are computer viruses called “viruses”?
3. What is a virus? Is a biological virus a living thing?
4. How is an e-mail virus activated?
5. What is a “Worm”?

Task 5. Study the extract about one of the computer viruses. Translate it into Russian in a written form. Use any dictionary if necessary.

Изучите отрывок об одном из компьютерных вирусов. Переведите его на русский язык в письменной форме. Используйте любой словарь, если необходимо.

The latest thing in the world of computer viruses is the e-mail virus, and the Melissa virus in March 1999 was spectacular. Melissa spread in Microsoft Word documents sent via e – mail, and it worked like this:

Someone created the virus as a Word document uploaded to an Internet newsgroup. Anyone who downloaded the document and opened it would trigger the virus. The virus would then send the document (and therefore itself) in an e-mail message to the first 50 people in the person’s address book. The e-mail message contained a friendly note that included the person’s name, so the recipient would open the document thinking it was harmless. The virus would then create 50 new messages from the recipient’s machine. As a result, the Melissa virus was the fastest-spreading virus ever seen! As mentioned earlier, it forced a number of large companies to shut down their e – mail systems.

★ Here are the answers to some questions about computer viruses. Work with a partner. Make up questions to which the following sentences might be the answers and present the result of your work in a dialogue.

Вам даны ответы на некоторые вопросы о компьютерных вирусах. Работайте в паре. Составьте вопросы, на которые следующие предложения могли бы считаться ответами, и представьте результат вашей работе в виде диалога.

1. By the late 1980s.
2. Because they are discovered quickly.
3. If one of the infected programs is given to another person on a floppy disk, or if it is uploaded to a bulletin board, then other programs get infected.
4. Because they share some of the *traits* of biological viruses.
5. Anything from printing a silly message on the screen to erasing all of your data.
6. The most common are: e-mail viruses, worms and Trojan horses.
7. Yes, it can have an amazing effect on the worldwide Internet.

Unit VI

MONEY AND THE MONEY MARKET

Pre-reading

Before studying the material of this unit, read and memorize some basic and important definitions of it.

<i>Money</i>	<ul style="list-style-type: none">– metal (gold, silver, copper, or alloys) stamped into coins, printed notes with values stamped on them, given and accepted when buying and selling, etc.– a medium of exchange, in terms of which the value of all goods and services is expressed.
<i>Market</i>	<ul style="list-style-type: none">– public place (an open space or a building) where people meet to buy and sell goods; any arena, physical or virtual, in which buyers and sellers make transactions.– the world of commercial activity where goods and services are bought and sold.– demand.
<i>Stock Market</i>	– a market for the trading of a company stock, and derivatives of the same; both of these are securities listed on a stock exchange as well as those only traded privately.
<i>Money Market</i>	– the global financial market that is used for short-term borrowing and lending.
<i>Money market account</i>	– a deposit account that is also considered a savings account, but the account has checks written upon it with a certain amount of restrictions.

Words and Expressions to be studied:

medium	– зѢ. средство
to settle	– зѢ. оплачивать
deferred payment	– отсроченный платеж

to occur	– иметь место, случаться
value	– ценность, стоимость
obsolete	– устарелый, вышедший из употребления
to borrow	– брать в долг, занимать
to lend (lent)	– ссужать, давать займы
liquid	– зд. Легко реализуемый, ликвидный
asset	– наличность, наличный капитал; активы (мн. ч.)
transaction	– сделка, дело
supply	– снабжать, поставлять; обеспечивать (v.); – предложение; запас; поставка, снабжение (n.)
equity	– эквивалент, чистая стоимость
bond	– облигация
pledge	– залог, заклад; поручительство
eligible	– подходящий, желательный
mortgage	– заклад, ипотека
loan	– заём, ссуда
treasury bill	– казначейский вексель
mutual fund	– (паевой) инвестиционный или доверительный фонд
securities	– ценные бумаги

While reading the Text of this Unit, you'll find these words and expressions. They will be given as italicized ones. You may also consult any English-Russian dictionary.

Choose your level and make pre-reading tasks

Level A

I. While reading the text “Money and the Money Market” find in it the following English phrases and a) give Russian equivalents for them; b) define what parts of speech they are; c) tell what types of money are in the market today.

To settle debts, standard of deferred payment, circulating currency, saving account, the smallest component of the money supply, division of

labour, short-term obligations, up to thirteen months, the core of the money market, large amounts of asset-backed commercial paper.

II. Make nouns from the following verbs.

Agree, circulate, demand, exchange, issue, pay, provide, purchase, secure, supply.

Level B

I. While reading the text “Money and the Money Market” find in it the following English phrases and a) read them aloud; b) give their Russian equivalents (consult the dictionary if it is necessary); c) tell what the money market is.

A medium of exchange, to pay for goods and services, the various forms of financial accounts, an absence of money, short term securities, short-term liquid assets, used for purchases with a card or check.

II. Define what parts of speech are the following words.

Basic, valuable, to mention, commodity, transaction, necessarily, wider, local, notably, determine.

Level C

I. While reading the text “Money and the Money Market” find in it the following English words and a) read them aloud correctly (if you are not sure, consult the dictionary); b) give their translation; c) tell what money is.

При чтении текста “Деньги и денежные рынки” найдите в нем следующие английские слова и а) прочитайте эти слова вслух правильно (если Вы не уверены, проконсультируйтесь со словарем); б) дайте их перевод; в) расскажите, что такое деньги. To borrow, commercial, debt, financial, labour, particular, purchases, supply, transactions, worth.

II. Make your own possible combinations of words (phrases) using the words, given above.

Составьте собственные словосочетания (фразы), используя слова, данные выше.

Example: to borrow a book, commercial papers, Ann's debt etc.

Reading

Money and Money Market

Money, for any country in the world, is a *medium* of exchange. It can be in the form of paper money, coins, or any type of holdings in a bank account. This medium of exchange is used to pay for goods and services and also *to settle* debts. It is legally and socially acceptable. Money also sets the standards of value in measuring any kind of relative worth of these goods and services. Money is a standard of *deferred payment*.

The types of money that are in the market today are the circulating currency and the various forms of financial accounts. Circulating current is and paper money or coin with legal tender status. Simply, it is the cash that is circulated in the economy. The other form of money is the money that sits in bank accounts such as demand deposits, savings account, and certificate deposits. Within the scheme of a modern economy, the currency of that particular economy is usually the smallest component of the money supply.

Money is central to the study of economics and finance. This is because money never holds the same *value* against another country's money, and also, money is never the same as the real value of the things you purchase with it. Before any sort of money standard existed, traders were how people received goods and services to live. Even if there is an absence of money in a particular market, barter exchanges are more likely *to occur*. The use of money is recognized at encouraging trade and division of labour.

In recent years, paper or coin money has become nearly *obsolete* with the large scale usage of credit and debit cards. Money is often earned and directly deposited into a bank account. The money is then used for purchases with a card or a check. In this way, real "money" never changes hands.

The **money market** is the global financial market that is used for short-term *borrowing* and *lending*. This market provides short-term *liquid* assets for the global financial system. In finance, the money market only deals with various short-term *transactions* of *assets*. The money market is the place in the economy where short-term obligations

are bought and sold. Short-term obligations are things such as treasury bills, banker's acceptances, and commercial papers.

The parties that make up the money market are financial institutions and dealers in money. These dealers are the ones who want to borrow or lend money and credit. The participants in the money market borrow and lend for short periods of time. The period of time can be anywhere up to thirteen months and still be considered short-term. Money market trades are made in short term financial instruments. Financial instruments are often referred to as paper. This market contrasts the capital market because the capital market deals in long-term funding that is *supplied* by *equity* and *bonds*.

The core of the money market is the banks that borrow and lend to each other. They use commercial paper and repurchase agreements to lend and borrow. Finance companies also fund themselves through the money market by issuing large amounts of asset-backed commercial paper to themselves which is secured by the *pledge* of *eligible* assets. Eligible assets include auto *loans*, *mortgage* loans, mortgage backed securities and credit card receivable, among others. Most large corporations issue commercial paper on their own credit.

Other common money markets are certificates of deposit, *treasury bills*, money markets, *mutual funds*, municipal notes and a federal agency of short term *securities*. A money market manager is a trained professional who specializes in the short term transactions and natures of **money market accounts**.

Checking

Check yourself according to the chosen levels

Level A

Task 1. Fill in the blanks, using the verbs, given in brackets. Define Grammar Tense and the Voice of each verb.

1. This medium of exchange ... (to use) to pay for goods and services and also ... (to settle) debts.
2. Money also ... (to set) the standards of value in measuring any kind of relative worth of these goods and services.
3. Even if there ... (to be) an absence of money in a particular market, barter exchanges ... (to be) more likely to occur.

4. Before any sort of money standard ... (to exist), traders were how people received goods and services to live.
5. The core of the money market ... (to be) the banks that ... (to borrow) and ... (to lend) to each other.
6. Finance companies also ... (to fund) themselves through the money market by issuing large amounts of asset-backed commercial paper to themselves which ... (to secure) by the pledge of eligible assets.

Task 2. Find synonyms among the following words. Give translation of them. Time for doing this task is limited – 7 minutes. Mind the time, please.

Money, purchase, supply, work, deal, short-dated, lack, commodity, provide, cash, occur, deposit, absence, transaction, account, goods, happen, labour, short-term, buying.

Task 3. a) Write three forms (the Infinitive, Past Simple, Past Participle) of the verbs, given below.

Borrow, have, settle, buy, sell, bring, lend, pay, find, occur.

b) Take any three verbs, used in the Text or in Task 3 a) and make three sentences of your own in English (in a written form). Making the sentences, use pointed Tenses and Voices: *in the 1 st sentence* – Present Indefinite, the Active Voice, *in the 2 d sentence* – Present Indefinite, the Passive Voice, *in the 3 d sentence* – Past Indefinite, the Passive Voice.

c) Find a partner, read your sentences and ask him (her) to translate them into Russian. Then change your roles.

Task 4. Make up 4 questions of different types on the Text and ask your partner to answer them. Mind the grammar and choose an auxiliary verb according to the Tense in each question. Change your roles.

Example:

- Is money a medium of exchange? (general question) *Yes it is/No, it is not.*

- What is money? (special question) *Money is...*

- Do most large corporations issue or buy commercial papers? (alternative question) *Most large corporations ...*

- *Money is a standard of deferred payment, isn't it? (tag question)
Yes it is/No, it is not.*

★ Give Russian equivalents of these proverbs. Choose any 4 and comment on them.

Money talks.

Money makes the mare go.

Money makes money.

Money often unmakes the men who make it.

Money is the root of all evil.

Level B

Task 1. Fill in the blanks in the sentences with proper prepositions. Define Grammar Tense and the Voice of each verb in the sentences.

1. Money also sets the standards ... value ... measuring any kind ... relative worth ... these goods and services.

2. ... recent years, paper or coin money has become nearly obsolete ... the large scale usage ... credit and debit cards.

3. The money is used ... purchases ... a card or a check.

4. Financial instruments are often referred ... as paper.

5. The period ... time can be anywhere ... to thirteen months and still be considered short-term.

Task 2. Find antonyms among the following words. Give translation of them. Time for doing this task is limited – 7 minutes. Mind the time, please.

Never, short, little, low, supplier, demand, sellers, same, much, always, high, labour, buyers, supply, long, leisure, different, consumer.

Task 3. a) Fill in the blanks with proper forms of the verbs.

Infinitive	Past Simple	Past Participle
buy	-	-
-	sold	-
-	-	received
lend	-	-
borrow	-	-
make	-	-
-	-	been

-	sat	-
supply	-	-
-	-	used

b) Take any three verbs, used in the Text or in Task 3 a) and make three sentences of your own in English (in a written form). Making the sentences, any Grammar Tense and Voice can be used.

c) Find a partner, read your sentences and ask him (her) to translate them into Russian. Then change your roles.

Task 4. Make up any 4 questions on the Text and put them to your partner.

★ Make up conditional sentences as in an example.

Example: take the job / I, you

Answer: I would take the job if I were you.

1. Do a part-time job / I, find it
2. Buy a house / I, have enough money
3. Live on interest / I, have much money in a bank.
4. Go around the world / I, millionaire

Level C

Task 1. Complete each sentence, using the words given. One word may be used once. Give translations of these words and define what part of speech they are.

Заполните пропуски в предложениях, используя данные слова. Переведите эти слова и определите их часть речи.

occur, dealers, coins, absence, standard, study, form, finance, lend, barter, account.

1. It can be in the ... of paper money, ... , or any type of holdings in a bank
2. Money is central to the ... of economics and
3. Even if there is an ... of money in a particular market, ... exchanges are more likely to
4. Money is a ... of deferred payment.
5. These ... are the ones who want to borrow or ... money and credit.

Task 2. Translate the following Russian phrases into English. Time for doing this task is limited – 5 minutes. Mind the time, please.

Переведите следующие русские фразы на английский язык. Время выполнения данного задания ограничено – 5 минут. Помните о времени, пожалуйста.

Любой вид денежного стандарта, отсутствие денег, платить за товары и услуги, та же самая стоимость, выпускать большое количество коммерческих бумаг, участники денежных рынков, финансовые учреждения, настоящая стоимость вещей.

Task 3. a) Make sentences, using the following words.

Составьте предложения, используя следующие слова.

1. is, also, this, and, debts, to pay, medium, goods, of, exchange, used, services, and, to settle, for.
2. money, is, value, the, against, because, money, never, same, another, country's, holds, this.
3. use, is, and, the, of, money, at, division, trade, recognized, encouraging, of, labour.
4. on, most, large, paper, corporations, own, issue, their, credit, commercial.
5. for, provides, this, assets, global, market, short-term, the system, financial, liquid.

b) Define Grammar Tense and the Voice of each verb in the sentences from Task 3 a).

Определите время и залог каждого глагола в предложениях из Задания 3 а).

c) Make up three sentences in English with any phrases from Task 2. Find a partner, read your sentences and ask him (her) to translate them into Russian. Then change your roles.

Составьте три предложения на английском языке с любыми фразами из Задания 2. Найдите партнера, прочитайте Ваши предложения и попросите его (ее) перевести их на русский язык.

Task 4. Answer the following questions:

Ответьте на вопросы:

1. What is money?

2. What forms of money do you know?
3. Why is money central to the study of economics and finance?
4. What is the money market?
5. What do eligible assets include?
6. What other common money markets can you name?

★ Answering the questions, given below make a short story and present it aloud to your group.

Отвечая на вопросы, данные ниже, составьте короткую историю и представьте ее своей группе.

Example: Are you careful with money? How do you plan your budget?

Answer: Usually, I am not careful with money. But this year I decided to plan my budget because

1. Are you careful with money?
2. How do you plan your budget?
3. What do you spend your pocket money on?
4. Are you ready to work 24 hours a day to become rich?
5. Who is the bread winner in your family?
6. What would you do if you won one million? What would you spend it on?

UNIT VII EXTRACURRICULAR WORK

TELECOMMUNICATION TECHNOLOGY

Pre-reading

I. Study the text given below at home.

a) Scan the text and find out the main points concerning to WiFi that are to be discussed;

b) Find English equivalents to the following Russian words and word-combinations in the text: броский (легко запоминающийся) термин; высокочастотные радиоволны; более обычное, но широко распространенное использование беспроводного доступа в Интернет; длина волны; постоянное (жесткое) соединение; совместимость между электронными устройствами; безопасность и

кодирование; предсказывать развитие информационных процессов; недостаточная информация, распространение данной технологии.

c) Explain first in Russian and then in English what the following terms mean: acronym, protocol, router, printer, Bluetooth, hotspot.

While doing this task, consult any dictionary or search this information in the Internet.

d) After reading the text, be ready to say some words about the essence of WiFi in the world of modern telecommunication technology and some advantages of WiFi applications.

Reading

The essence and the application of WiFi

What is WiFi?

The world of modern telecommunication technology is awash with acronyms, long numbers and other weird bits of code that few people understand. The term WiFi should be relatively easy because it's a play on the words "high-fidelity" or "hi-fi", which means sound reproduction that is very similar to the original. But "WiFi" doesn't really stand for wireless fidelity. It's simply a catchy term for equipment using a particular wireless communication standard, or protocol, known as IEEE 802.11 (more about this bit of code later). Using this standard, computers and other devices can link in a wireless local area network (WLAN), which is a number of computers or computer-like devices that can talk to each other using high-frequency radio waves instead of connecting cables. The WLAN can in turn be hooked into the internet, usually with the aid of a cable.

Basically, then, WiFi is a generic name for the main method by which a WLAN is set up. But the term WiFi, as well as the technology itself, has evolved quite a bit since it was first coined in about 2000 and is now used more broadly, particularly by the general public, to mean a wide range of wireless communication technologies.

WiFi uses

Perhaps the most visible manifestation of WiFi is the coffee-shop laptop tuned cordlessly into a WLAN and hence into the worldwide web, but some phone users might also be doing it by WiFi. VoIP ("voice over the internet protocol") phones enable users to speak to others via the

internet. The increasing availability of WiFi means that people with VoIP phones can use them more and more like mobile phones, talking with friends and colleagues over the internet from the same coffee-shop in which they connect their laptops to the worldwide web.

WiFi is used in many other applications as well. Some televisions are going WiFi, allowing viewers to wander about their houses with their own portable screens. One company recently offered a camera that connects to the internet via WiFi, allowing people to email photos to friends and colleagues directly from their cameras. A more mundane but widespread use of WiFi is in communication between computers and peripheral devices such as printers and projectors.

The great advantage of WiFi over wired networks is that it does not require wires to connect it to a network. Potentially, WiFi and other wireless technologies could be made available everywhere to everyone, not only helping a business person on the move but also remote communities that might otherwise wait years for cables to reach them.

How does it work?

WiFi equipment works by radio waves, which have a very wide and increasingly sought-after range of frequencies. If the world of communication technology is awash with acronyms, the radio wave spectrum is increasingly jammed with signals as different kinds of devices try to communicate with each other. Extremely low frequencies of 3 – 30 hertz (or cycles per second) are used for radio communications with submarines; the wavelengths can be thousands of kilometers in length.

In contrast, WiFi equipment uses radio waves in the frequency ranges 2.4 – 2.5 and 4.9 – 5.8 gigahertz (GHz), with wavelengths of 60 and 120 millimeters. The ranges are classified by the International Telecommunication Union as “super high frequency” and is much higher than the frequency used for AM radio (300 – 3000 kilohertz), short-wave radio (3 – 30 megahertz MHz), and FM radio and television broadcasting (both 30 – 300 MHz). It is also generally a little higher than the frequency used for mobile phones and two-way radios (300 MHz to 3 GHz). Telstra’s new Next G system, which allows high-speed wireless internet connections, operates at 850 MHz.

Other devices that use radio waves in the super high frequency range include microwaves, automatic roller-doors and cordless phones. Bluetooth, a form of wireless technology normally used for very short-

range communication between devices such as a laptop and a personal digital assistant (PDA), operates at about 2.4 GHz.

At the epicentre of a common WiFi set-up involving personal or laptop computers is a wireless access point, connected by hardwire to the internet. A router converts digital information in the form of 1s and 0s into radio waves, and transmits these via an antenna. It can also receive radio waves and convert these to digital data, which it can then send to the internet via its hardwire connection. Laptop computers or other devices within range using the same WiFi protocol can communicate with the access point and, through it, connect to the internet.

The protocol is important. If the laptop and router are to communicate, it is important that they speak the same language. Compatibility between electronic devices is one of the industry's great challenges, and it has been achieved in the current generation of WiFi devices through the adoption of a standard developed by the Institute of Electrical and Electronics Engineers (IEEE) to define the way WiFi equipment operates. This standard, IEEE 802.11, provides the basic parameters within which a WiFi device will operate; for example, it gives the operating frequency and the rate of data transfer. Each area in which WiFi is available is called a "hotspot".

Where is WiFi heading?

WiFi has become very popular very quickly, to the point that in certain sectors of the economy it is almost a prerequisite for doing business. Some hotels would probably lose custom if they didn't offer WiFi to their guests, who expect to be able to log on before they nod off. WiFi-less coffee shops might be bypassed by laptop-toting latte drinkers wanting to connect while they caffeinate.

The number of uses to which WiFi could be put is almost limitless. In the home, electrical equipment such as the refrigerator, television, lighting system, microwave and stereo equipment could all be linked and regulated by WiFi. The technology also has exciting possibilities in environmental science.

But perhaps the single greatest advantage of wireless networks over wired technologies is that they are more flexible about the infrastructure required to set them up. That's why community groups have latched onto them, and it is also why they are being pursued in developing countries,

where they can be used to bypass the very expensive business of laying cables.

WiFi technology is not without problems; security and encryption is one of the biggest. But few people think it is a passing fad. So where is WiFi heading?

Predicting the evolution of information technology is not easy, especially given its current extraordinary rate of change: this month's boom product might be next month's landfill. But a few things about WiFi seem certain: speeds will increase, the range of uses to which it is put will broaden and its availability will continue to spread. It will also face more competition.

Keeping tuned

The array of wireless technology already in use can be confusing. Consumers have a huge range of choices but often insufficient information on which to base their purchasing decisions. Can your laptop do WiFi and WiMAX, and does it need to? What does the shop assistant mean when she asks if you want a PDA with Bluetooth? Do you need a WiFi rice-cooker? The proliferation of the technology does have one advantage: if you don't understand it and want to find out what it all means, you can at least research it – from almost anywhere!

Checking

Task 1. Number the following main ideas in the order they appear in the text.

- a. Bluetooth, a form of wireless technology normally used for very short-range communication between devices such as a laptop and a personal digital assistant (PDA), operates at about 2.4 GHz.
- b. The great advantage of WiFi over wired networks is that it does not require wires to connect it to a network.
- c. The standard, IEEE 802.11, provides the basic parameters within which a WiFi device will operate; for example, it gives the operating frequency and the rate of data transfer.
- d. "WiFi" is simply a catchy term for equipment using a particular wireless communication standard.
- e. WiFi equipment works by radio waves, which have a very wide and increasingly sought-after range of frequencies.
- f. The number of uses to which WiFi could be put is almost limitless.

□ g. A more mundane but widespread use of WiFi is in communication between computers and peripheral devices such as printers and projectors.

□ h. A few things about WiFi seem certain: speeds will increase, the range of uses to which it is put will broaden and its availability will continue to spread.

Task 2. Find Russian equivalents to the following words and word-combinations:

1. awash; 2. to be hooked into; 3. the most visible manifestation of WiFi; 4. to wander about; 5. remote communities; 6. extremely low frequencies; 7. two-way radio; 8. environmental science; 9. the single greatest advantage of wireless networks; 10. their purchasing decisions.

Task 3. Match the words and phrases in column A with those in column B.

A	B
1. rate of change	a) полезность, пригодность
2. possibility	b) обходить, игнорировать
3. to nod off	c) маршрутизатор
4. a passing fad	d) темп изменений роста
5. to latch onto	e) терять клиентуру
6. router	f) дремать
7. to bypass	g) минутная прихоть
8. availability	h) возможность
9. to lose custom	i) высококачественное воспроизведение
10. high-fidelity	j) вцепиться в к.-л. / ч.-л., приобретать, осознавать выгоду

Task 4. Guess what letters are missed in the words written below. Fill the missed letters in, read the words aloud and translate them correctly.

1. te _ _ nol _ g _	6. t _ l _ vi _ _ on	11. s _ _ en _ e
2. t _ _ m	7. pro _ e _ t _ r	12. b _ s _ n _ ss
3. w _ r _ less	8. a _ tomat _ _	13. p _ rch _ s _
4. d _ v _ ce	9. a _ _ ess	14. _ ncr _ _ s _
5. fr _ qu _ n _ y	10. _ l _ ctroni _	15. d _ c _ s _ on

Task 5. Change each of the following sentences into Past and Future Simple.

1. Other devices that use radio waves in the super high frequency range include microwaves, automatic roller-doors and cordless phones.
2. Extremely low frequencies of 3 – 30 hertz (or cycles per second) are used for radio communications with submarines.
3. Using this standard, computers and other devices can link in a wireless local area network (WLAN).
4. Predicting the evolution of information technology is not easy, especially given its current extraordinary rate of change.
5. The WiFi technology also has exciting possibilities in environmental science.

Task 6. Define whether these statements are true or false:

1. The great advantage of WiFi over wired networks is that it does not require wires to connect it to a network.
2. A router converts digital information in the form of 1s and 0s into radio waves, and transmits these via the Internet.
3. Each area in which WiFi is available is called a “hotspot”.
4. If the laptop and router are to communicate, it is important that they speak the same language.
5. Extremely high frequencies of 30 – 300 hertz (or cycles per second) are used for radio communications with submarines; the wavelengths can be hundreds of kilometers in length.
6. In the home, electrical equipment such as the refrigerator, television, lighting system, microwave and stereo equipment couldn't all be linked and regulated by WiFi.

Task 7. Finish these sentences according to the information given in the text.

1. The term WiFi means
2. WiFi is used
3. WiFi equipment works
4. WiFi has become very ... because
5. Predicting the evolution of information technology is

Task 8. Make up 4 questions of the different types on the text (a general one, a special one, an alternative one, a tag one).

Task 9. Translate the dialogue into English, please.

- Ты знаешь, что означает термин “WiFi”?
- Под термином “WiFi” подразумевается один из форматов передачи цифровых данных по радиоканалам, а точнее стандарт IEEE 802.11b.
- А как расшифровывается этот термин?
- Это сокращение от двух английских слов: “беспроводная точность”.
- И какой может быть скорость передачи данных?
- Устройства на базе этой технологии позволяют обеспечивать скорость передачи данных до 11 мегабит в секунду.
- Как я понимаю, сейчас WiFi из высокотехнологичной новинки стал насущной необходимостью.
- Да, все больше и больше устройств оснащают оборудованием, совместимым с WiFi – от ноутбуков и мобильных телефонов до специальных WiFi – приемников для автомобилей.
- Сегодня расширение зон доступа к Интернету через WiFi становится одним из приоритетов в развитии современных городов, не так ли?
- Ты прав. Работы по обеспечению максимально возможного покрытия городской территории WiFi – сетями ведутся не только в таких огромных городах, как Москва, Лондон и Нью-Йорк, но и в таких относительно небольших, как Кемерово, например.

Task 10. Make your summary of the text “The essence and the application of WiFi”. Before doing this task you may consult Supplement 1 and study the information how to write summaries.

Task 11. a) Translate the italicized part of the text “The history of IEEE 802.11 creation and its application” into English in a written form. While doing this task you may consult any dictionary; b) Divide the text into logical parts, then retell it and think of some good titles for it.

The history of IEEE 802.11 creation and its application

WiFi – стандарт по беспроводной передаче данных. Передача данных осуществляется по радиоволнам на частотах, находящихся

в диапазоне 2.4 – 2.4835 ГГц. Концепция WiFi сетей была придумана и реализована в 1991 г. компанией NCR Corporation, технология называлась WaveLan.

Сам термин WiFi был придуман организацией WiFi Alliance. Данная организация занимается проведением тестов на совместимость оборудования и сертификацией WiFi оборудования. Продукт, который успешно проходит сертификацию альянса, получает отметку “зарегистрированный товарный знак” (“WiFi Certified”). Изначально данную сертификацию проходили только WiFi продукты стандарта IEEE 802.11b. Сегодня же, сертификацию может пройти любой WiFi продукт семейства IEEE 802.11.

Технология WiFi, получила широкое применение во многих современных предприятиях, муниципальных учреждениях, школах, домах, квартирах, как более универсальная альтернатива проводных локальных сетей. Многие гостиницы, отели, рестораны, фаст-фуды предоставляют доступ к своей WiFi сети. Подобные WiFi-сети называются хот-споты. Доступ к таким сетям может быть как с авторизацией (платные хот-споты), так и без (доступ – бесплатный).

Так же довольно часто встречаются беспроводные сети WiFi в коттеджных поселках. Подключение к сети за городом стоит довольно дорого, и жители поселка могут заказать установку WiFi сети для того, чтобы разбить один канал доступа в Интернет на всех и отслеживать трафик каждого пользователя благодаря биллинговым системам (через выставление счета). Помимо сетей в коттеджных поселках, технология WiFi позволяет строить беспроводные сети городского масштаба, к которым могут подключиться со своих ноутбуков или мобильных телефонов как частные пользователи (например, на улице или в парке), так и корпоративные клиенты (например, заказать подключение к Интернет для своего офиса).

Благодаря технологии WiFi появилась возможность установки бюджетных вариантов беспроводных мостов, установка и настройка которых не требует каких-то специфичных знаний и навыков программирования, так как в сетевом (web) интерфейсе точек доступа могут разобраться практически все. Беспроводные мосты

WiFi могут работать на расстояниях до 15–20 км при условии прямой видимости.

Без надлежащей защиты WiFi сеть может быть легкодоступна для нежелательных пользователей, которые используют этот доступ с целью бесплатного подключения к Интернет или с целью поиска и копирования каких-либо данных на компьютерах в этой сети. Таким образом, любому пользователю, собирающемуся установить WiFi сеть, необходимо использовать системы шифрования, такие как Wired Equivalent Privacy (WEP), или более современные – WiFi Protected Access (WPA), WPA2, WPA2 – Enterprise.

(По информации: wifi4free.ru/articles/WiFi-definition/)

UNIT VIII EXTRACURRICULAR WORK

ON THE ROAD

Pre-reading

I. Study the texts given below at home.

a) Text A is a version of the article appeared in print on January 12, 2012, on page B1 of the New York edition of a well-known newspaper “The New York Times”. Scan the text and find out some problems that are discussed. Is the auto industry being developed?

b) Find English equivalents to the following Russian words and word-combinations in Text A: отвлечение внимания, полоса движения, предупреждать водителей, прилагать усилие, небольшие отличия в выполнении (использовании), кабина (салон) автомобиля, увеличивать риск, регулировать (настраивать автоматически), исследовательские проекты, потребитель, сборочный конвейер.

c) Explain first in Russian and then in English what the following words mean: smartphone, blind spot, prototype, traffic signs, brakes, safety, traffic jam, headlight, wheel, automaker.

While doing this task, if it is necessary try to consult any dictionary.

d) After reading the text, be ready to say some words about the advantages and disadvantages or about necessity and / or benefit of bringing different apps, phones, music etc. to a car’s entertainment system.

Reading

Turning to Tech on the Road

By Sam Grobart

Published: January 11, 2012

LAS VEGAS – If Mercedes, BMW and Ford have their way, the new cars they build will be able to port apps, games, music and movies from a smartphone to a car’s entertainment system.

But for every potential distraction automakers add, they find themselves having to build in ways to prevent drivers from crashing their new smartphone on wheels: automatically applying the brakes at a traffic light; alerting drivers when a car is in the blind spot or reading traffic signs and slowing a car as speed zones change.

As cars become ever more vibrant entertainment centers, automakers find themselves in a kind of arms race with themselves that they are powerless to prevent. “We can’t stop the prolific growth of consumer technology,” said Paul Mascarenas, chief technical officer at Ford. “We can’t stop people bringing phones in their cars. We endeavor to make sure people do it in the safest way possible.”

The push toward greater connectivity in the car can be found in many of the automakers’ booths at the International Consumer Electronics Show in Las Vegas, which happens to run concurrently with the North American International Auto Show in Detroit. Increasingly, the two industries are sharing more than just dates on a calendar.

Ford’s Sync App Link, Mercedes-Benz’s forthcoming Drive Style app and BMW Connected Drive have slight differences in execution, but the purpose is the same: importing apps and content from a smartphone into the car’s displays and controls.

Using the smartphone as a hub of digital content and services means drivers are able to preserve the same media and features they use when they are out of their cars. “You’re already used to using your phone,” Mr. Mascarenas said. “We’re trying to create a seamless experience from your home or office into your car.”

Adding technology that brings the online world into a car’s cockpit obviously increases the risk that a driver will become distracted. The National Transportation Safety Board has joined safety organizations in calling for bans on cellphone use while driving. The auto industry’s response is to use other technologies to try to reduce that risk.

Today's cars already can do many automated safety tasks. They can maintain a set distance from the car in front of it and apply mild corrective steering to keep a car in its lane. They can also automatically adjust the headlights and determine if drivers are drowsy and then sound an alarm to awaken them.

Automakers acknowledge that the foundations are already in place for cars that, one day, may drive themselves. At that point, the issue of distraction is substantially reduced.

Fully autonomous cars, from research projects at Google to automakers' own prototypes, have already proved to be viable. In 2010, driverless cars that participated in VisLab's Intercontinental Autonomous Challenge drove about 9,300 miles from Parma, Italy, to Shanghai. That was an extreme test of autonomous-car technology, but more prosaic uses may be tried in the future.

"If you're stuck in a traffic jam or driving hundreds of miles in a straight line across Nebraska or Montana," Dieter Zetsche, the Mercedes-Benz chief executive, said in a speech at C.E.S. on Tuesday, "it might be better for you to read a book."

Automakers see other benefits to letting mobile app developers add all kinds of things to cars. It may help bring down the cost of car.

"You already have a phone with things like navigation and music and local information," said James Buczowski, Ford's director of electrical and electronics systems. "It's cheaper for both consumer and for us. We don't have to build it. We can rely on our partners."

It can also help cars stay up to date. The typical car can require seven years or more of development. Designs and specifications are fixed years before the first vehicle rolls down the assembly line. Changes in consumer technology – where major updates to the software, if not entire new models, are released on at least an annual basis – move at a far faster rate. By making the smartphone a component of the car, automakers hope to hitch a ride on a technology that changes in months, not years.

"While we are already working on the cars that will hit the road seven years from now, the next disruptive consumer technology might hit the market in seven months," Dr. Zetsche said. "A 20-year-old car might be a classic that you love to drive, but do you know anybody who is still using a 20-year-old mobile phone?"

(По информации www.nytimes.com)

Checking

Task 1. a) Guess what letters are missed in the words written below. Fill the missed letters in and read the words aloud correctly. b) Find a partner. Choose any 5 words from this exercise; make your own sentences using them. Ask your partner to translate your sentences. Then change your roles.

- | | | |
|---------------------|------------------|-----------------------|
| 1. sm _ rt _ _ on _ | 6. r _ _ d | 11. v _ h _ c _ e |
| 2. br _ k _ s | 7. si _ _ | 12. _ _ tom _ k _ r |
| 3. tr _ f _ _ c | 8. s _ f _ t _ | 13. n _ v _ g _ _ ion |
| 4. d r _ v _ r | 9. d _ st _ nc _ | 14. ex _ c _ t _ ve |
| 5. li _ _ t | 10. r _ l _ _ se | 15. e _ tr _ me |

Task 2. Find synonyms among the following words. Give translation of them. Time for doing this task is limited – 7 minutes. Mind the time, please.

Appendix, to endeavor, forthcoming, to ban, traffic congestion, cost, potential, buyer, to guard, cockpit, headlight, to prohibit, response, booth, to try, appearance, prototype, possible, benefit, consumer, price, headlamp, to prevent, original, advantage, traffic jam, answer, supplement.

Task 3. a) There are some meanings of the word “traffic” according to its part of speech. Study them and translate some sentences below the table after it.

traffic	noun	– движение, транспорт;
		– грузы, фрахт (плата владельцу транспортных средств за предоставленные им услуги по перевозке грузов или пассажиров);
		– перевозки, грузооборот;
		– торговля, торговые дела;
	adjective	– дорожный, транспортный;
verb	– торговать (чем-либо);	
	– иметь дело; вступать в сговор;	

1. Traffic was unusually light for that time of day.
2. The traffic officer reminded children that they must cross the road only at the pedestrian crossing.
3. They trafficked with us for cocoanuts and other fruit.

4. Traffic in illicit drugs was now worth some 500 thousand million dollars a year.

5. She discovered that he was trafficking with her enemies.

b) All phrases in this task contain the word “traffic”. Match the phrases in column A with those in column B, trying to guess their meanings, first without consulting a dictionary. If it is difficult to match, you may look for some of them in a dictionary.

A	B
1. two-way traffic	a) движение машин в час пик
2. to direct traffic	b) нарушение правил дорожного движения
3. vehicular traffic	c) воздушные перевозки
4. rush-hour traffic	d) задерживать, блокировать движение; мешать, препятствовать движению
5. local traffic	e) двустороннее движение
6. air traffic	f) автомобильное движение
7. one-way traffic	g) светофор
8. to hold up / block / obstruct / tie up traffic	h) движение в пределах одной транспортной линии; местное движение
9. traffic offence	i) регулировать движение транспорта
10. traffic lights	j) одностороннее движение

Task 4. Find Russian equivalents to the following words and word-combinations:

1. applying the brakes; 2. entertainment centers; 3. to have slight differences in execution; 4. concurrently; 5. the prolific growth; 6. to be drowsy 7. to keep a car in its lane; 8. disruptive consumer technology.

Task 5. Change each of the following sentences into Past and Future Simple.

1. We can't stop people bringing phones in their cars.

2. You're already used to using your phone.

3. We're trying to create a seamless experience from your home or office into your car.

4. Fully autonomous cars, from research projects at Google to automakers' own prototypes, have already proved to be viable.

5. It's cheaper for both consumer and for us.

Task 6. Fill in the appropriate modal verb into each sentence and define their meanings. Choose among the following variants of modal verbs: *can, can't, are able to, may, might, have to.*

1. “We ... stop the prolific growth of consumer technology,” said Paul Mascarenas, chief technical officer at Ford.
2. Automakers acknowledge that the foundations are already in place for cars that, one day, ... drive themselves.
3. Today’s cars already ... do many automated safety tasks.
4. Using the smartphone as a hub of digital content and services means drivers ... preserve the same media and features they use when they are out of their cars.
5. It’s cheaper for both consumer and for us. We don’t ... build it. We ... rely on our partners.
6. If you’re stuck in a traffic jam or driving hundreds of miles in a straight line across Nebraska or Montana, it ... be better for you to read a book.
7. The typical car ... require seven years or more of development.

Task 7. These are the adjectives that were used in the text in different degrees of comparison:

Safe, drowsy, cheap, good, slight, new, extreme, many, far, fast.

a) Form the Comparative Degree and the Superlative Degree of each adjective; b) Choose any 3 adjectives from the list, make sentences using them and read your sentences to the group to translate.

Task 8. a) Find the underlined non-finite form of the verb in each sentence (the Participle, the Gerund or the Infinitive); b) give their characteristics and define the function in the sentence; c) translate each sentence in the proper way, according to the forms and functions.

Example: They can also automatically adjust the headlights and determine if drivers are drowsy and then sound an alarm to awaken them.

to awaken – b) the Indefinite Infinitive, the Active Voice, функция: обстоятельство цели; c) Они могут также регулировать передние фары и определять, когда водители засыпают и затем издают сигнал тревоги, чтобы разбудить их.

1. By making the smartphone a component of the car, automakers hope to hitch a ride on a technology that changes in months, not years.
2. You're already used to using your phone," Mr. Mascarenas said.
3. That was an extreme test of autonomous-car technology, but more prosaic uses may be tried in the future.
4. Adding technology that brings the online world into a car's cockpit obviously increases the risk that a driver will become distracted.
5. They find themselves having to build in ways to prevent drivers from crashing their new smartphone on wheels.
6. The auto industry's response is to use other technologies to try to reduce that risk.

Task 9. Make up 4 questions of the different types on the sentences, given below (a general one, a special one, an alternative one, a tag one). There should be twelve of them in the end.

1. In 2010, driverless cars that participated in VisLab's Intercontinental Autonomous Challenge drove about 9,300 miles from Parma, Italy, to Shanghai.
2. The typical car can require seven years or more of development.
3. But the purpose is the same: importing apps and content from a smartphone into the car's displays and controls.

Task 10. Make your summary of the text "Turning to Tech on the Road". Before doing this task you may consult Supplement 1 and study the information how to write summaries.

Task 11. Read the article taken from the Guardian published on Friday 27 January 2012 that describes the Peugeot 3008 Allure.

a) While reading the article, study this car brand's technical characteristics and the features. Be ready to answer some questions after reading it:

- What can you say about technical characteristics of this crossover?
- How do you understand the abbreviation "SUV" from the article? Explain the full form of it in English and translate into Russian.
- Why didn't the author's nephew like that car? Does the author agree with his opinion?

– What does the author mean by this sentence “Certainly it’s not beautiful. It does get much better inside – it’s spacious and pleasant and light, if you’ve got a posh one with a panoramic roof”?

– Is the author satisfied with this brand? How can you prove it?

b) Choose any car brand produced in any country (may be that one you like/have/would like to buy etc.) and compare its characteristics / features / exterior etc. with those mentioned in the article. You may add any other points for the comparison that were not given here.

c) Write an annotation of this article. Before doing this task you may consult Supplement 1 and study the information how to write annotation.

Price £22,795

Top speed 121mph

Acceleration 0-62mph in 9.7 seconds

Combined mpg 51.3

CO2 emissions 145g/km

Eco rating 6/10

Cool rating 4/10

The first thing you notice when you turn the key in the ignition of the Peugeot 3008 Allure is a little see-through Perspex screen that rises on top of the dashboard, in front of the steering wheel. Whoa! What the hell is that? “0mph” it says, in orange, until I start off down the road, when the numbers increase.

Ah, I see, there’s a small projector, projecting my speed on to the screen. So I don’t need to take my eyes from the road to see how fast I’m going. It’s like having my speed written on the road ahead, a constant reminder. You can get other information up there, too – for instance, how many seconds you are behind the vehicle in front, to stop you getting too close – but you could argue that that information is already there. Nothing really beats simply looking. You can get too reliant on gizmos and gadgets. The speed thing is brilliant, though, especially for someone with six points on their license. If all the cars I tested had them, my career as a famous motoring journalist might last a little longer.

Not that this is a car I’m going to be going very fast in, albeit the 150bhp two-litre diesel model does plenty of low-end grunt. It’s one of those crossovers that is becoming increasingly popular. A little bit SUV, but less socially unacceptable and murderous on the old planet; a little bit

people carrier, but less like a bus to drive; a little bit estate car, but fatter and therefore roomier... It's a little bit anything you want it to be, really.

Apart from lovable, perhaps. My nine-year-old nephew certainly wasn't much taken. "It's like a turd," he said (apologies for the language – he's been very badly brought up). Oh yes, why's that, Oliver? "Because it's big and brown and it looks like a turd." (He's not colour-blind – the one in the photo is not the one I had. That one was brown, or metallic "hickory", to be precise.) Nothing like anything I've ever passed, mind (my nephew's diet is as bad as his upbringing, it seems). But he does kind of have a point. Certainly it's not beautiful. It does get much better inside – it's spacious and pleasant and light, if you've got a posh one with a panoramic roof.

I was a crossover sceptic, thought they were neither one thing nor the other, but I'm coming round to them, beginning to see the point. Certainly for a winter weekend in Wales, with lots of stuff and muddy boots, the Peugeot 3008 was great. And I didn't once creep above the speed limit by mistake, not even by one mile an hour. Ha, the columns, and the famous career, live on.

SUMMARY

A **summary** is a shorter version of the original. Such a simplification highlights the major points from the much longer subject, such as a text, speech, film, or event. The purpose is to help the audience get the gist in a short period of time.

A written summary starts with a lead, including title, author, text type, and the main idea of the text. It has a clearly arranged structure and is paraphrased with new words without quotations from the text. Unlike a retelling, a summary has no dramatic structure and is written in present tense. In summaries only indirect speech is used and depictions are avoided. Summaries of books or dissertations present the major facts in common scientific language.

Nonfiction summaries serve to familiarize the reader with the subject matter of an entire work in a short space of time. They are written in a balanced and objective way, mirroring the genre's aim to portray actual events from the author's point of view. Generally, nonfiction summaries do not offer analysis or assessment. Summarizers use nonfiction guidelines mentioned above, but also provide numerical ratings and evaluations of the titles covered.

Summary Writing

The ability to summarize information is one of the most important critical thinking skills you can develop. Taking large quantities of information, understanding what that information means, and considering it into a shorter version of the original allows you to have important information on hand for easy reference without having to memorize long passages or complex statistics.

In technical writing, different audiences need varying amounts or types of information. The technical summary, or abstract, is written for those who need a brief overview of a longer document for general information or to make decisions. For whatever purpose, writing summaries is a task that many think is easy but, in actuality, can be quite challenging.

Process and Hints to a Summary Writing

The biggest problem with a summary writing is deciding what to include and what to leave out. A bit of instruction on the process to

follow, along with useful techniques, will have you writing expert summaries in no time.

1. Read the piece to be summarized for understanding, without editing. Make sure you understand the content, including major and minor sections, as well as the overlying message being conveyed. Look closely at topic sentences and key words repeated throughout.

2. Read through the material and cross out useless information while what you believe to be the most important points, even if those points are words or phrases.

3. Write your summary in your own words. Follow both the organization of the original as well as its tone, though you need to make sure your own points of view is objective. Opinions should not appear in a summary. Any words or phrases from the original need to be properly documented and punctuated.

4. Your summary should be 15 to 20 percent of the length of the original.

5. Be sure to go back when you've finished your summary and compare it to the original for accuracy.

*(Πο υηφορμαυυυ <http://en.wikipedia.org/wiki/Summaries>,
<http://www.columbia.edu/cu/ssw/write/handouts/summary.html>)*

Practical task. a) Read the text “Laser lidar” and study the summary to this text.

Laser lidar

Laser-based lidar (light detection and ranging) has also proven to be an important tool for oceanographers. While satellite pictures of the ocean surface provide insight into overall ocean health and hyperspectral imaging provides more insight, lidar is able to penetrate beneath the surface and obtain more specific data, even in murky coastal waters. In addition, lidar is not limited to cloudless skies or daylight hours. “One of the difficulties of passive satellite-based systems is that there is water surface reflectance, water-column influence, water chemistry, and also the influence of the bottom”, said Chuck Bostater, director of the remote sensing lab at Florida Tech University (Melbourne, FL). “In shallow waters we want to know the quality of the water and remotely sense the water column without having the signal contaminated by the water column or the bottom”. A typical lidar system comprises a laser transmitter, receiver telescope, photodetectors, and range-resolving

detection electronics. In coastal lidar studies, a 532-nm laser is typically used because it is well absorbed by the constituents in the water and so penetrates deeper in turbid or dirty water (400 to 490 nm penetrates deepest in clear ocean water). The laser transmits a short pulse of light in a specific direction. The light interacts with molecules in the air, and the molecules send a small fraction of the light back to telescope, where it is measured by the photodetectors.

(taken from "Laser Focus World", 2003, v 46, №3, p45)

A Summary of the text "Laser lidar"

The text focuses on the use of laser-based lidar in oceanography. The ability of lidar to penetrate into the ocean surface to obtain specific data in murky coastal waters is specially mentioned. Particular attention is given to the advantage of laser-based lidars over passive satellite-based systems in obtaining signals not being contaminated by the water column or the bottom. A typical lidar system is described with emphasis on the way it works. This information may be of interest to research teams engaged in studying shallow waters.

b) Try to write your own summary.

ANNOTATION

An annotation is a brief summary of a book, article, or other publication. An abstract is also a summary, but there is a difference between the two. An abstract is simply a summary of a work, whereas the purpose of an annotation is to describe the work in such a way that the reader can decide whether or not to read the work itself. Annotations may be descriptive or critical. An annotation helps the reader understand the particular usefulness of each item. The ideal annotation shows the relationships among individual items and may compare their strengths or shortcomings.

Process and Hints to Annotation Writing

The following points provide guidance for writing annotations. As appropriate each of these issues might be assessed and commented on in the annotation.

1. Qualifications of the author, unless very well known.
2. The scope and main purpose of the publication (e.g., book, article, web site).
3. The intended audience and level of reading difficulty.

4. The author's bias or assumptions, upon which the work's rationale rests.

5. The method of obtaining data or doing research.

6. The author's conclusions.

7. Comparison with other works on the same subject.

8. Materials appended to the work — e.g., maps, charts, photos, etc.

9. The work's importance or usefulness for the study of a subject.

10. The annotation should be about 100 to 200 words.

Not all of these points are necessary for every annotation, and they certainly do not have to be noted in the order listed here, but they at least ought to be kept in mind when writing an annotation.

*(По информации [http://en.wikipedia.org/wiki,
http://legacy.earlham.edu/~libr/content/resources/writing/annotations.ht
ml](http://en.wikipedia.org/wiki/http://legacy.earlham.edu/~libr/content/resources/writing/annotations.html))*

While processing information given in the texts for annotation writing, study and use some necessary **language clichés**:

- ✓ The text / article deals with ...
- ✓ The title of the text/article is ...
- ✓ The text / article is taken from ...
- ✓ As the title implies the article describes ...
- ✓ The paper is concerned with...
- ✓ The text/article is about / deals with the problem of ...
- ✓ At the beginning of the text / article the author deals with ...
- ✓ It is known that...
- ✓ It is clear from the text/article that ...
- ✓ It should be noted about...
- ✓ The fact that ... is stressed.
- ✓ A mention should be made about ...
- ✓ It is spoken in detail about...
- ✓ It is reported that ...
- ✓ The text gives valuable information on...
- ✓ One of the main points to be singled out is ...
- ✓ In this connection I'd like to say that ...
- ✓ Among other things the text/article raises the problem / issue of ...
- ✓ Much attention is given to...
- ✓ It is shown that...

- ✓ The text / article gives facts / names / figures etc., illustrating / describing / proving ...
- ✓ Then the author points out / says / tells us / informs / explains that / gives information / definition of ...
- ✓ The paper looks at recent research dealing with...
- ✓ The main idea of the article is...
- ✓ It gives a detailed analysis of...
- ✓ It draws our attention to...
- ✓ It is stressed that...
- ✓ The article is of great help to ...
- ✓ The article is of interest to ...
- ✓ is/are noted, examined, discussed in detail, stressed, reported, considered.
- ✓ At the end of the text / article ...
- ✓ The following conclusions are drawn ...
- ✓ The author comes to the conclusion that...
- ✓ In conclusion the author says that ...
- ✓ On the one hand ...
- ✓ On the other hand ...
- ✓ Finally, ...
- ✓ I find the question / problem of ... very important because ...
- ✓ I consider / found the text / article interesting / informative / useful for my speciality / difficult / easy / to read / to translate / to understand ...
- ✓ In my opinion the text / article is (not) ...
- ✓ I think / suppose / believe / consider that ...

Practical task. a) Read the sample annotation and study the key to it.

Sample Annotation

(1) Trevor, C.O., Lansford, B. and Black, J.W. (2004). Employee turnover and job performance: monitoring the influences of salary growth and promotion. *Journal of Armchair Psychology*. Vol 113, no.1, pp. 56-64. (2) In this article Trevor et al. review the influences of pay and job opportunities in respect to job performance, turnover rates and employee motivation. (3) The authors use data gained through organizational surveys of blue-chip companies in Vancouver, Canada to try to identify the main causes of employee turnover and whether it is

linked to salary growth. (4) Their research focuses on assessing a range of pay structures such as pay for performance and organizational reward schemes. (5) The article is useful to my research topic, as Trevor et al. suggest that there are numerous reasons for employee turnover and variances in employee motivation and performance. (6) The main limitation of the article is that the survey sample was restricted to mid-level management, (7) thus the authors indicate that further, more extensive, research needs to be undertaken to develop a more in-depth understanding of employee turnover and job performance. (8) This article will not form the basis of my research; however it will be useful supplementary information for my research on pay structures.

The key: (1) citation, (2) introduction, (3) aims and research, (4) scope, (5) usefulness (to your research / to a particular topic), (6) limitations, (7) conclusions, (8) reflection (explain how this work illuminates your topic or how it will fit in with your research).

*(По информации The Learning Centre:
Academic Skills Resources. 21 Aug. 2007.
University of New South Wales. 15 Nov. 2007)*

b) Find a text on your specialty (it can be taken from any primary source whether a magazine, a newspaper, a website etc.) and write an annotation of it. Remember to use some useful language clichés.

c) Present your annotation to the group mates (before doing it, distribute some copies with your text among the students of your group). Be ready to answer their questions about the rules of annotation writing and prove the advantages (disadvantages) of your annotation.

ABSTRACT

Shorter, more concise nonfiction summaries are called abstracts. An **abstract** is a brief summary of a research article, thesis, review, conference proceeding or any in-depth analysis of a particular subject or discipline, and is often used to help the reader quickly ascertain the paper's purpose. When used, an abstract always appears at the beginning of a manuscript, acting as the point-of-entry for any given scientific paper or patent application. Abstracting and indexing services for various academic disciplines are aimed at compiling a body of literature for that particular subject.

The terms *précis* or *synopsis* are used in some publications to refer to the same thing that other publications might call an “abstract”. In management reports, an executive summary usually contains more information (and often more sensitive information) than the abstract does. There are two types of abstracts usually used: 1) descriptive abstracts – their purpose is to tell readers what information the report, article, or paper contains; 2) informative abstracts – their purpose is to communicate specific information from the report, article, or a paper.

Process and Hints to Abstract Writing

Writing an abstract you may use the following steps:

1. Reread the article, paper, or a report and look for the following main parts of them: purpose, methods, scope, results, conclusions and recommendation.
2. Use the headings, outline heads, and table of contents as a guide to writing your abstract.
3. If you are writing an abstract about another person’s article, paper, or report, the introduction and the summary are good places to begin. These areas generally cover what the article emphasizes.
4. After you have finished rereading the article, paper, or report, write a rough draft without looking back at what you’re abstracting.
5. Don’t copy key sentences from the article, paper, or report: you’ll put in too much or too little information.
6. Don’t rely on the way material was phrased in the article, paper, or report: summarize information in a new way.
7. Revise your rough draft to correct weaknesses in organization.
8. Drop unnecessary information; add important information that you left out.
9. Fix errors in grammar, spelling, and punctuation.

(По информации <http://en.wikipedia.org/wiki/Abstracts>)

Practical task. a) Choose any text from this textbook that was the most interesting/informative/useful/ understandable for you and/or important for students of your speciality etc. and do the following:

1. Formulate the theme of information from the text, using the following clichés: *the text deals with, is concerned with, touches upon, is devoted to, describes* etc.

2. Process the information, given in the text in the following way: *a)* divide the text into several parts according to the content; *b)* write out a number of key-words to each part of the text; *c)* retell each part using the key-words but don't copy key sentences from the article, paper, or report; *d)* formulate the main idea of the text; *e)* retell the text in 10-12 sentences.

3. Find out the author's conclusion in the text and write it down using the following clichés: *the following conclusions are drawn...; the author comes to the conclusion that...; in conclusion the author says that ...* etc.

4. Give your own comments on the information from the text trying to answer the following questions: *a)* how do you consider the actuality of the information, given in the text; *b)* how do you think who and for what purposes could use it. Make use of the following clichés: *I consider / found the text interesting / informative / useful for my speciality / difficult / easy / to read / to translate / to understand ..., the information of the text may be addressed to the students / graduates / engineers / specialists / all those interested in ..., the text may be recommended to the postgraduates / bachelors / students ..., I find the question / problem of ... very important because ...* etc.

b) Present your abstract of the information from the text according to the following structure:

1. The theme of the text.
2. The main idea of the text.
3. Summary of the text.
4. The author's conclusion.
5. Your own comments.

Questions and Tasks for the Colloquium (a spoken test)

General understanding of UNIT I.

I. Answer these questions:

1. How is the term automation defined in the text?
2. What is the most “familiar example” of automation given in the text?
3. What was the first step in the development of automaton?
4. What were the first robots originally designed for?
5. What was the first industry to adopt the new integrated system of production?
6. What is feedback principle?
7. What do the abbreviations CAM and CAD stand for?
8. What is FMS?
9. What industries use automation technologies?

II. Find the following words and word combinations in the Text of Unit I.

1. автоматические устройства; 2. автоматизированное производство;
3. выполнять простые задачи; 4. как легкие, так и тяжелые детали;
5. интегрированная система производства; 6. принцип обратной связи;
7. механизм может разгоняться и тормозить; 8. компьютер автоматически посылает команды;
9. высокоавтоматизированная система; 10. непроизводственная система.

General understanding of UNIT II.

I. Translate the following word combinations into Russian.

1. Basic principles; 2. circuit elements; 3. high current; 4. dissipate power;
5. wire-wound type; 6. variable resistor 7. fixed resistor;
8. handle the current; 9. turns of wire; 10. filter circuit; 11. tuned circuits;
12. rate in henrys; 13. conductor plates; 14. transient voltages; 14. dry capacitor.

II. Be ready to explain these abbreviations, taken from the text of Unit II and translate them into Russian.

a.c., d.c., e.f.m., mf, mh.

III. Answer the following questions:

1. What are the elements of the electronic circuit?
2. What are the functions of these elements?
3. Can you define the types of resistors?
4. What is the effect of a capacitor in an electric circuit?
5. Where are inductors are often used and what for?
6. What are the tuned circuits most valuable for and where?

General understanding of UNIT III.

I. Answer these questions:

1. How can a process of welding be defined?
2. How can we join metal parts together?
3. Where is welding necessary?
4. What are the two main groups of welding processes?
5. What kinds of welding can be used for joining steels?
6. What are the principles of gas welding?
7. What does arc welding require?
8. Could you enumerate all types of welding discussed in Unit III?

II. Find the following words and word combinations in the Text of Unit III.

1. взамен скрепления болтами;
2. переносное оборудование;
3. сварочный пруток;
4. источник тока;
5. скорость сварки;
6. расплавиться;
7. быть похожим на что-либо;
8. очень эффективный;
9. создать сварной шов;
10. производство проволоки (электрического провода).

General understanding of UNIT IV.

I. Answer these questions:

1. What is PC and what do you personally use it for?
2. What does the abbreviation CPU mean?
3. What parts of a PC can you name?

4. What kinds of memory do you know? What is the difference between them?
5. Are supercomputers the most expensive and the most powerful?
6. What part of a computer is used to establish basic communication?
7. What is the difference between a hard disk and a floppy disk?
8. What is used to record and play audio?

II. Translate the following word combinations into Russian.

1. аппаратное обеспечение; 2. устройство общего назначения;
3. главные компоненты компьютера; 4. программное обеспечение;
5. постоянный тип памяти; 6. устройства ввода и вывода информации;
7. портативные компьютеры; 8. сенсорная технология;
9. универсальность использования; 10. просматривать Интернет.

General understanding of UNIT V.

I. Answer comprehension questions on the texts of the unit:

1. What is known about the usage of computers during the 1980s?
2. How does a Trojan horse operate?
3. What the most common computer viruses do you know?
4. What have you studied about a biological virus while reading the text of the unit?
5. Does a biological virus have the similar traits with a computer virus? Which?
6. How can computer viruses be spread?
7. Computer viruses do some damage to our computers, don't they? What exactly can they do?
8. Why do computer viruses grab our attention?
9. What is a "Worm"?
10. What can you tell about the Code Red?

II. Be ready to explain these abbreviations, taken from the texts of Unit V and translate them into Russian.

IBM, PC, RNA, DNA, SQL.

General understanding of UNIT VI.

I. Answer these questions:

1. What is money? What forms of money do you know?
2. What is the money market? What is the core of the money market?
3. Why has paper or coin money become nearly obsolete in recent years?
4. What does the word “dealer” mean?
5. What do eligible assets include?
6. What examples of short-term obligations can you give?
7. What is known about common money markets?
8. Can you give an explanation to such profession as a money market manager?

II. Translate the following word combinations into Russian.

1. the value of goods and services;
2. to make transactions;
3. to buy and sell goods;
4. company stock;
5. short-term borrowing;
6. a certain amount of restrictions;
7. division of labour;
8. legally and socially acceptable;
9. relative worth of goods and services;
10. a standard of deferred payment.

III. Translate these word combinations into English:

1. средство обмена;
2. оплачивать долги;
3. схема современной экономики;
4. использование денег;
5. казначейский вексель;
6. зарабатывать деньги;
7. инвестиционный фонд;
8. отсроченный платеж;
9. ипотека (заклад);
10. финансовые учреждения.

**UNIT I
ENGINEERING AND AUTOMATION**

Table of Scores:

	Task 1	Task 2	Task 3	Task 4	Task ★	Total
Level A	10	10	16	4	10	50
Level B	10	10	16	4	6	46
Level C	10	8	11	5	8	42

Table of Personal Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	43–50	31-42	20-30	10-19	till 10
Level B	40-46	28-39	18-27	9-17	till 9
Level C	36-42	26-35	17-25	8-16	till 8

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	43–50	31-42	20-30	10-19	till 10
Level B		40-46	28-39	18-27	till 18
Level C			36-42	26-35	till 26

**UNIT II
PRINCIPLES OF ELECTRONICS**

Table of Scores:

	Task 1	Task 2	Task 3	Task 4	Task ★	Total
Level A	10	10	12	5	10	47
Level B	10	9	14	4	4	41
Level C	10	7	9	6	5	37

Table of Personal Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	40-47	29-39	19-28	9-18	till 9
Level B	35-41	25-35	16-24	8-15	till 8
Level C	32-37	23-31	15-22	7-14	till 7

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	40-47	29-39	19-28	9-18	till 9
Level B		35-41	25-35	16-24	till 16
Level C			32-37	23-31	till 23

UNIT III WELDING

Table of Scores:

	Task 1	Task 2	Task 3	Task 4	Task ★	Total
Level A	10	12	5	10	10	47
Level B	12	6	14	10	3	45
Level C	11	6	8	9	3	37

Table of Personal Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	40-47	29-39	19-28	9-18	till 9
Level B	39-45	28-38	18-27	9-17	till 9
Level C	32-37	23-31	15-22	7-14	till 7

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	40-47	29-39	19-28	9-18	till 9
Level B		39-45	28-38	18-27	till 18
Level C			32-37	23-31	till 23

UNIT IV COMPUTERS

Table of Scores:

	Task 1	Task 2	Task 3	Task 4	Task ★	Total
Level A	8	6	10	10	15	49
Level B	8★	6	10	10	10	44
Level C	8	6	10	10	10	44

★ Level B Task 1 максимально оценивается в 8 marks (баллов). 7 баллов присуждается, если правильно дать 3 формы каждого из 7 глаголов и 1 балл – за правильное определение всех частей речи перечисленных в задании слов.

Table of Personal Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	42-49	30-41	19-29	10-18	till 10
Level B	38-44	27-37	18-26	9-17	till 9
Level C	38-44	27-37	18-26	9-17	till 9

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	42-49	30-41	19-29	10-18	till 10
Level B		38-44	27-37	18-26	till 18
Level C			38-44	27-37	till 27

UNIT V COMPUTER VIRUSES

Table of Scores:

	Task 1	Task 2	Task 3	Task 4	Task 5	Task ★	Total
Level A	13	10	18	4	10	10	65
Level B	10	11	16	4	10	10	61
Level C	12	10	13	5	9	7	56

Table of Personal Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	56-65	39-55	26-38	13-25	till 13
Level B	52-61	37-51	24-36	12-23	till 23
Level C	48-56	34-47	22-33	11-21	till 11

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	56-65	39-55	26-38	13-25	till 13
Level B		52-61	37-51	24-36	till 24
Level C			48-56	34-47	till 34

UNIT VI
MONEY AND MONEY MARKET

Table of Scores:

	Task 1	Task 2	Task 3	Task 4	Task ★	Total
Level A	11	10	16	4	1-5	46
Level B	12	9	16	4	1-4	45
Level C	11	8	14	6	1-6	45

Table of Personal Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	40-46	28-39	19-27	9-18	till 9
Level B	39-45	28-38	18-27	9-17	till 9
Level C	37-45	28-38	18-27	9-17	till 9

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	40-46	28-39	19-27	9-18	till 9
Level B		39-45	28-38	18-27	till 18
Level C			39-45	28-38	till 28

EXTRACURRICULAR WORK
UNIT VII
TELECOMMUNICATION TECHNOLOGY

Table of Scores:

Level A	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
	8	10	10	15	10	6	5
	Task 8	Task 9	Task 10	Task 11a	Task 11b	Total	
	4	10	10	10	15	113	

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	97-113	69-96	45-68	27-44	till 27

**EXTRACURRICULAR WORK
UNIT VIII
ON THE ROAD**

Table of Scores:

Level A	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6
	25	14	15	8	10	8
	Task 7	Task 8	Task 9	Task 10	Task 11	Total
	13	6	12	10	25	till 29

Table of General Results (marks):

	excellent	good	satisfactory	poor	bad
Level A	126-146	89-125	58-88	29-57	till 29

LIST OF ABBREVIATIONS USED IN THE TEXTBOOK

№	abbreviation	full form	meaning	used on page №
1	CAD	computer-aided design	автоматизированное проектирование	р. 8
2	CAM	computer-aided manufacture	автоматизированное (компьютеризированное) производство	р. 8
3	FMS	flexible manufacturing systems	гибкая производственная система (ГПС)	р. 8
4	mh	millihenry	миллигенри	р. 20
5	d. c.	direct current	постоянный ток	р. 21
6	a. c.	alternating current	переменный ток	р. 21
7	e.m.f.	electromotive force	электродвижущая сила (ЭДС)	р. 21
8	mf	microfarad	микрофарада	р. 21
9	PC	Personal Computer	персональный компьютер	р. 37, 40, 41
10	CPU	Central Processing Unit	центральный процессор	р. 37, 41
11	ALU	Arithmetic/Logic Unit	арифметико-логическое устройство	р. 37
12	RAM	Random-Access Memory	оперативное запоминающее устройство	р. 37, 41
13	ROM	Read-Only Memory	постоянное запоминающее устройство	р. 37, 41
14	BIOS	Basic Input/Output	базовая система ввода / вывода	р. 37, 41

		System		
15	GPS	Global Positioning System	система глобального позиционирования	р. 37, 40
16	USB	Universal Serial Bus	универсальная последовательная шина	р. 37, 43
17	DSL	Digital Subscriber Line	множество технологий, объединенных в одно семейство, разработанное для высокоскоростной передачи данных по телефонным линиям	р. 37, 43
18	PCI	Peripheral Component Interconnect	взаимосвязь периферийных компонентов (шина ввода/вывода для подключения периферийных устройств к материнской плате компьютера)	р. 37, 41
19	RNA	ribonucleic acid	РНК, рибонуклеиновая кислота	р. 49
20	DNA	deoxyribonucleic acid	ДНК, дезоксирибонуклеиновая кислота	р. 49, р. 53
21	SQL	Structured Query Language	язык структурированных запросов; язык SQL	р.60
22	WiFi	Wireless Fidelity	Беспроводная привязанность (беспроводная технология передачи данных на расстоянии до 460 метров и на скорости до 54 Мбит/с. стандарта 802.11)	рр. 74-81
23	IEEE	Institute of Electrical and Electronic Engineers	техническая спецификация, которая определяет функционирование беспроводных локаль-	рр. 74-75

		то, что выпущено данным институтом	ных вычислительных сетей, работающих в диапазоне 2,4 ГГц со скоростью 11 Мбит	
24	WLAN	Wireless Local Area Network	беспроводной доступ к локальной сети	pp. 74-81
25	VoIP	“voice over the internet protocol”	система связи, обеспечивающая передачу речевого сигнала по сети Интернет или по любым другим IP-сетям	р.74
26	GHz	gigahertz	гигагерцы	р.75
27	MHz	megahertz	мегагерцы	р.75
28	PDA	personal digital assistant	персональный цифровой секретарь (карманный компьютер, используемый в качестве записной книжки)	р.76
29	WEP	Wired Equivalent Privacy	протокол, относящийся к группе стандартов 802.11 IEEE шифрования информации и предупреждения несанкционированного доступа в беспроводных сетях	р.81
30	WPA	WiFi Protected Access	протокол, относящийся к группе стандартов беспроводной связи 802.11, является расширенной и улучшенной версией протокола безопасности WEP	р.81
31	C.E.S.	Common Economic Space	единое экономическое пространство (ЕЭП)	р.83

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3. wifi4free.ru/articles/WiFi-definition/
4. www.nytimes.com.

Sources recommended for writing summaries, annotations and abstracts

For studying more information and tips about rules and ideas of a summary writing look through the following sources:

<http://leo.stcloudstate.edu/acadwrite/summary.html>

<http://englishtips.org/summary.html>

For studying more information and tips about rules and ideas of annotation writing look through the following sources:

<http://www.accessola2.com/superconference2009/626/>

<http://www.brighthub.com/education/k-12/articles>

http://www.lc.unsw.edu.au/onlib/annotated_bib.html

For studying more information and tips about rules and ideas of abstract writing look through the following sources:

<http://research.berkeley.edu/ucday/abstract.html>

<http://www.ece.cmu.edu/~koopman/essays/abstract.html>

<http://en.wikipedia.org/wiki/Abstracts>.

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