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ИНФОРМАТИКИ И РАДИОЭЛЕКТРОНИКИ

Кафедра иностранных языков N1

Final Tests to the Textbook "English for Radioengineering Students" for the first-year students in two parts

Part 1

Итоговые тесты к учебному пособию «Английский язык
для студентов радиотехнических специальностей вузов»
для студентов 1-го курса ФКП, ФРЭ, ФТК

В 2-х частях

Часть 1

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Данные тесты являются дополнением к «Итоговым тестам по материалам учебного пособия "Английский язык для студентов радиотехнических специальностей вузов" для проверки сформированности навыков и умений чтения», авторов Е.П. Тарасовой, Л.Н. Жерело и др., и должно использоваться в комплексе с вышеупомянутым пособием.

Библиотека БГУИР

PART 1. VOCABULARY AND READING

Units 1-2. Test №1

I. Match each word with the correct definition.

1. radar	a.	a machine or system that has been invented by someone.
2. invention	b.	a system of sending sound over a distance using electrical signals.
3. system	c.	a piece of wire that receives television or radio signals.
4. receiver	d.	a piece of equipment used for sending radio signals or for broadcasting programmes.
5. signal	e.	a system of sending pictures and sounds by electrical signals over a distance so that people can receive them on a television set.
6. telegraph	f.	is used to refer to a set of equipment, parts, or devices, for example a hi-fi or computer.
7. transmitter	g.	a way of discovering the position or speed of things that cannot be seen, using radio signals.
8. aerial	h.	a series of sound or light waves which carry information.
9. radio	i.	a system of sending messages over long distances by means of electrical or radio signals.
10.television	j.	a part of a telephone that you hold near to your ear and speak into or a radio or television set.

II. Complete the sentences using words from exercise I. You can use each word only once.

a. One day in 1895 an Italian engineer sent the world's first radio 1____.
b. Using a simple 2 _____transmitter and a 3 _____ , he sent a signal from his attic room to his brother who was hidden in a field a kilometre away.
c. The Italian government showed no interest in this 4 _____.
d. In 1899 he sent the first wireless 5 _____ across the English Channel to France.
e. By 1901 he had improved his radio 6 _____ so much that on 12th December he astonished the world by sending the first radio signals across the Atlantic Ocean.
f. They were received 3,520 kilometres away in St John's, Newfoundland, using an 7 _____ flown in the air by a kite.
g. He even recognized the military importance of 8_____ .
h. He thought that 9 _____would never become popular.
i. Even now ships use his radio 10 _____ to send messages from ship to shore if they are in distress.

III. Match the prepositions with the verbs below.

a. on   b. in   c. by   d. from   e. of

1. to be joined _____
2. to think _____
3. to turn _____
4. to transmit _____
5. to show no interest _____

IV. Complete the sentences using verbs and prepositions from exercise III in the correct form.

1. Today we don't think twice when we _____ the radio.
2. The Italian government _____ his invention.
3. In England, he and his cousin _____ two other inventors.
4. The first radio signals across the Atlantic Ocean _____ Poldhu in Cornwall.
5. He _____ the idea of sending radio signals out into space.

V. Choose the correct word.

1. James Maxwell was one of the … mathematicians of the 19-th century.
   a) greatest   b) greatness
2. David Hughes made another important … in the pre-history of radio.
   a) discoverer   b) discovery
3. Heinrich Herts was the first to … electromagnetic waves.
   a) measure   b) measurement
4. Wireless … was named radio.
   a) transmit   b) transmission
5. Two other … joined Marconi and his cousin in England.
   a) inventors   b) inventions
6. Marconi recognized the military … of radar.
   a) important   b) importance
7. The wavelength of the wave is the distance that the wave moves during the time it takes for one … cycle of vibration.
   a) complete   b) completeness
8. We can find electromagnetic ways in … places.
   a) different   b) difference

Units 1-2. Test №2

I. Read the text. Then read the titles. Which of the following titles is the best?

a) Radio and Electronic Devices.
b) Radio Waves.
c) The Birth of Radio.
d) Radio and TV.

Today we don't think twice when we turn on the radio, but when a 21-year-old Italian invented it over 100 years ago no one could believe their ears.

One day in 1895 in Bologna, Italy, an Italian engineer sent the world's first radio signal. Using a simple radio transmitter and a receiver, he sent a signal from his attic room to his brother who was hidden in a field a kilometer away. 1 ___. The Italian government showed no interest in young Marconi's invention, but his mother believed he had a good idea. So in February of the following year, she sent him to England to meet her cousin who was an important engineer. 2 _____.

In England, this engineer and his cousin were joined by two other inventors. In 1897 he formed the Wireless Telegraph Company in London and started to transmit simple radio signals over long distances. In 1899 he sent the first wireless telegraph across the English Channel to France. 3 ___.

He had always believed that radio waves could travel round the curve of the earth. By 1901 he had improved his radio system so much that on 12th December he astonished the world by sending the first radio signals across the Atlantic Ocean.

4 _____. His system was soon adopted by the British and Italian navies. From now on, his company had the monopoly of wireless communication and he became a multi-millionaire.

This engineer is one of the key figures of the twentieth century. He even recognized the military importance of radar and thought of the idea of sending radio signals out into space. When he died in 1937, wireless stations all over the world closed down for two minutes as a mark of respect. He made only one big mistake. 5 ____.

II. Re-read the text. Choose the best sentence from the list below to complete each gap.

a. They were transmitted from Poldhu in Cornwall, and were received 3,520 kilometres away in St John's, Newfoundland, using an aerial flown in the air by a kite.
b. When his brother received the signal he fired a gun.

c. He thought that television would never become popular.

d. This meant that ships were now able to send messages from ship to shore if they were in distress.

e. It was a journey that would change the world.

III. Choose the best answer to these questions according to the text.

1. Who invented the radio?
   a) a French engineer
   b) an American engineer
   c) an Italian engineer
2. What was the Italian government's attitude towards this invention?
   a) The Italian government was interested in this invention.
   b) The Italian government didn't believe that this invention was very useful.
   c) The Italian government wasn't interested in this invention.
3. Who helped this Italian engineer to continue his work?
   a) American engineers.
   b) His cousin and two other inventors.
   c) Italian scientists.
4. Why was this invention so important for the British and Italian navies?
   a) Because it was very cheap.
   b) Because it helped the ships to send messages from ship to shore if they were in danger or difficulty.
   c) Because they wanted to use it against the USA navy.
5. What was the only mistake made by the inventor?
   a) He didn't recognize the importance of radar.
   b) He didn't recognize the importance of telegraph.
   c) He didn't recognize the importance of television.

IV. Here are some dictionary definitions of words from the text. Each word has more than one definition. Choose the definition that fits each of the words in the text best.

1. invent   a) if you invent something, you are the first person to think of it or make it.
            b) if you invent a story or excuse, you try to persuade people that it is true when it is not.
2. transmit a) when a message or electronic signal is transmitted, it is sent by radio waves.
             b) to transmit something to a different place or person means to pass or send it to the place or person.
3. wave   a) a wave is a raised mass of water on the sea or a lake, caused by the wind.

b) wave is used to refer to the way in which things such as sound, light, and radio signals travel, or the way in which the force of an explosion or earthquake spreads.

4.   space   a) space is the area that is empty or available in a building or container.

b) space is the area outside the Earth's atmosphere.

V.   Find words and expressions which mean the same as the following.

1.   give something a second thought
2.   made better
3.   amazed
4.   total control
5.   a person with a lot of money

Units 3 – 4. Test №1

I.   Match each word with the correct definition.

1. channel   a. a business organization that makes money by selling goods or services.

2. amount   b. the particular frequency used by a radio company to broadcast programmes.

3. programme   c. a wavelength on which television programmes are broadcast.

4. degree   d. an object which has been sent into space in order to collect information or to be part of a communications system.

5. company   e. something that is broadcast on television or radio.

6. broadcasting   f. a change, reaction, or impression that is caused by something or is the result of something.

7. sattelite   g. how much of something you have, need or get.

8. technology   h. at a university is a qualification gained after completing a course of study there.

9. station   i. something that you hear on the radio or see on television.

10. effect   j. a particular area of activity that requires scientific methods and knowledge.

II.   Complete the sentences using words from exercise I. You can use each word only once.

a. 1 _____ in the United Kingdom is controlled by the British Broadcasting Corporation (BBC) and the Independent Broadcasting Authority (IBA).

b. Radio 1 is a pop-music 2___ with news and magazine-style 3 ___s.
c. The BBC has two TV 4 _____s.
d. The IBA is responsible for looking after the regional independent TV 5 ____s who broadcast their own programmes.
e. Some people, however, are becoming worried about the 6 ____ of violence on TV, and the 7 _____ this may have on young people.
f. This 'university of the air' allows many thousands of students to study at home for 8 _____s they would never have obtained in the main educational system.
g. New 9 _____ has made it possible for viewers to receive many more programmes into their homes through 10 _____TV.

III. Match the prepositions with the verbs below.

a. between b. for c. on d. from e. of

1. to report _____
2. to be responsible _____
3. to earn money _____
4. to consist _____
5. to choose _____

IV. Complete the sentences using verbs and prepositions from exercise III in the correct form.

1. The private companies controlled by the IBA _____ advertising.
2. National radio is controlled by the BBC, and listeners can _____ four stations.
3. Radio 2 plays light music and _____sport.
4. Their programmes _____ music and local news.
5. The IBA _____looking after the regional independent TV companies.

V. Choose the correct word.

1. Edison was a true scientist: if something … happened he wanted to find out why.
   a) usual   b) unusual
2. He could send messages much more … than by the manual method.
   a) quickly   b) quick
3. Expensive equipment can sound very disappointing if it isn't set up … .
   a) proper   b) properly
4. A CD doesn't need such … handling as a vinyl record.
   a) care   b) careful

5. Thomas Edison ran the paper through the transmitting machine very …
   a) fast   b) fastly
6. He wanted to know what … radio stations were being built in this country.
   a) power   b) powerful
7. A … television has three electron guns.
   a) colour   b) colourful
8. The effort of these young scientists are … recognized.
   a) internationally b) international

Units 3 – 4. Test №2

I. Read the text. Then read the titles. Which of the following titles is the best.

    a. TV and Radio.
    b. TV Companies.
    c. TV and 'University of the Air'.
    d. TV and Violence.

Watching television is one of the great British pastimes! Broadcasting in the United Kingdom is controlled by the British Broadcasting Corporation (BBC) and the Independent Broadcasting Authority (IBA). 1 _____.

National radio is controlled by the BBC, and listeners can choose between four stations. Radio 1 is a pop-music station with news and magazine-style programmes. Radio 2 plays light music and reports on sport. 2 _____. There are many local stations, some private and some run by the BBC. Their programmes consist mainly of music and local news.

The BBC has two TV channels. BBC 2 has more serious programmes and news features. The IBA is responsible for looking after the regional independent TV companies who broadcast their own programmes and those they have bought from other regions. There is a break for advertisements about every 15-20 minutes. 3 ____. In general, people think the programmes offered on British television are of a very high standard. 4 _____.

TV and radio are also two of the main teaching channels used by the Open University. 5 _____. They also have to do without sleep as most of their programmes are broadcast early in the morning or late at night!

New technology has made it possible for viewers to receive many more programmes into their homes through satellite TV. The 1990s may well see many changes in British TV and radio.

II. Re-read the text. Choose the best sentence from the list below to complete each gap.

    a. Radio 3 plays classical music whilst Radio 4 has news programmes, drama and general interest programmes.
    b. The BBC receives its income from the government, but the private companies controlled by the IBA earn money from advertising.
    c. Some people, however, are becoming worried about the amount of violence on TV, and the effect this may have on young people.
    d. This 'university of the air', allows many thousands of students to study at home for degrees they would never have obtained in the main educational system.
    e. The most recent independent channel is called Channel 4 and it has more specialized programmes than the main channels.

III. Choose the best answer to these questions according to the text.

1. Who is broadcasting in the United Kingdom controlled by?
    a. It is controlled by the Prime Minister.
    b. It is controlled by the BBC and the IBA.
    c. It is controlled by the government.
2. Which station plays a lot of classical music?
    a. Radio 1.
    b. Radio 2.
    c. Radio 3.
3. What is the IBA responsible for?
    a. It is responsible for earning money from advertising.
    b. It is responsible for looking after the regional independent TV companies.
    c. It's responsible for education.
4. What do people think about the programmes offered on British television?
    a. They think they are of a very high standard.
    b. They think the programmes leave much to be desired.
    c. They think that there are few educational programmes on British television.
5. Why is 'university of the air' so popular among the young people?
    a. A lot of light music is played there.
    b. This university gives them the opportunity to study at home.
    c. It has news programmes, drama and general interest programmes.

IV. Here are some dictionary definitions of words from the text. Each word has more then one definition. Choose the definition that fits each of the words in the text best.

1. feature   a. your features are your eyes, nose, mouth, and other parts of your face.
              b. a special article in a newspaper or magazine, or a special programme on radio or television.
2. break   a. a short period of time when you have a rest or a change from what you have a rest or a change from what you are doing.
              b. a lucky opportunity; an informal use.
3. standard   a. a level of quality or achievement.
              b. moral principles which affect people's behaviour.
4. change   a. if there is a change in something, it becomes different.
              b. the money that you receive when you pay for something with more money than it costs.

V. Find words and expressions which mean the same as the following.

1.   services or industries that are owned
2.   by an individual person or group
3.   something that exists, happens, or acts separately from other people or things
4.   a large business or company
5.   the activity of telling people about products, events, or job vacancies, and making them want to buy the products, go to the events, or apply for the jobs

Units 5-6. Test №1

I. Match each word or word -combination with the correct definition.

1. commodity item   a. a system which connects up a number of computers and communications devices to enable messages and data to be passed between those devices.
2. mainframe   b. the set of programs that jointly control the system resources and the processes using those resources on a computer.
3. information   c. a large computer used for large- scale operations .
4. endorsement   d. a file or group of files structured in such a way as to satisfy the needs of various users.
5. operating system e. working together on a particular project.
6. network   f. support, recommendation.

7.	microchip	g.	an electronic machine which makes quick calculations and deals with large amounts of information.
8.	computer	h.	a small piece of silicon inside a computer, on which electronic circuits are printed.
9.	database	i.	something that we know about a particular thing.
10.	collaboration	j.	items which can be produced and traded freely.

II. Complete the sentences using words from exercise I. You can use each word only once.

a. They believed that there was only a market for four 1_____s in the whole world.

b. In 1980, IBM decided that there was a market for 250,000 personal 2_____s.

c. However, the company failed to capitalize on this work, and the ideas that they put together went into the 3_____ developed for Apple's computers.

d. The cost of buying the hardware has come down considerably as the machines have become 4_____s.

e. The 5_____ technology which made the PC possible has put chips not only into computers, but also into washing- machines and cars.

f. Some books may only be made available as part of 6_____s.

g. 7_____s of computers are already being used to make 8_____ available on world-wide scale.

h. When the 9_____ between IBM and Digital Research failed, IBM asked Bill Gates to write their operating system.

i. However, without an 10_____ from IBM, it has become a minor player in the market.

III. Match the prepositions with the verbs below.

a. on   b. out of   c. in   d. for   e. up

1. to get _____
2. to set _____
3. to look _____
4. to fund _____
5. to be leaders _____

IV. Complete the sentences using verbs and prepositions from exercise III in the correct form.

a. In 1980 IBM 1 _____ a special team to develop the first IBM PC.
b. Xerox Corporation 2_____ the initial research _____ personal computers.
c. In 1952 IBM decided 3 _____ the business of making mainframe computers.
d. When IBM were 4 _____ an operating system they went initially to Digital Research who 5 _____ command- based operating systems.

V. Choose the correct word.

1. Industry seek … and more accurate methods of production.
   a) fast   b) fasten
2. Electronics deals with transistors and other … devices.
   a) state-solid   b) solid-state
3. Bulky electronic equipment will be … for automation of production..
   a) suitable   b) unsuitable
4. The shortest microwaves have a … of about three hundredth of a centimetre.
   a) wavelength b) lengthwave
5. The spaceships will carry a large amount of miniature equipment, … systems.
   a) life-support b) support-life
6. They are looking for new methods to … metals.
   a) strength   b) strengthen
7. You should … the TV set before you make adjustments inside it.
   a) connect   b) disconnect
8. The police have … a plot against the President.
   a) covered   b) uncovered

Units 5-6. Test №2

I. Read the text. Then read the titles. Which of the following titles is the best?

a. From the History of Mainframes.
b. From the History of Personal Computers.
c. From the History of Xerox Corporation.
d. From the History of Digital Research.

II. Re-read the text. Choose the best sentence from the list below to complete each gap.

In 1952, a major computing company took a decision to get out of the business of making mainframe computers. They believed that there was only a market for four mainframes in the whole world. That company was IBM. 1_____.

In 1980, IBM decided that there was a market for 250,000 PCs, so they set up a special team to develop the first IBM PC. It went on sale in 1981 and set a world-wide standard for IBM – compatibility which, over the next ten years , was only seriously challenged by one other company, Apple Computers. Since then, over seventy million PCs made by IBM and other manufactures have been sold. 2_____.

The history of the multi-billion dollar PC industry has been one of mistakes. Xerox Corporation funded the initial research on personal computers in their Palo Alto Laboratory in California. However, the company failed to capitalize on this work, and the ideas that they put together went into the operating system developed for Apple's computers. 3_____.

The first IBM PC was developed using existing available electrical components. When IBM were looking for an operating system, they went initially to Digital Research, who were market leaders in command- based operating systems (4_____). When the collaboration between IBM and Digital Research failed, IBM turned to Bill Gates to write their operating system.

Bill Gates founded Microsoft on the basis of the development of MS/DOS, the initial operating system for the IBM PC. Digital Research have continued to develop their operating system, DR/DOS, and it is considered by many people to be a better product than Microsoft's. However, without an endorsement from IBM, it has become a minor player in the market. 5 _____

The cost of buying the hardware has come down considerably as the machines have become commodity items. Large companies are considering running major applications on PCs, something which, ten years ago, no one would have believed possible of a PC. In contrast, many computers in people's homes are just used to play computer games.

The widespread availability of computers has in all probability changed the world for ever. The microchip technology which made the PC possible has put chips not only into computers, but also into washing-machines and cars. Some books may never be published in paper form, but may only be made available as part of public databases. Networks of computers are already being used to make information available on a world-wide scale.

a. these are operating systems in which the users type in commands to perform a function.
b. Over this period, PCs have become commodity items.
c. Novell, the leaders in PC networking, now own Digital Research, so

things may change.
d. The following year they reversed their decision.
e. This was a graphical interface: using a mouse, the user clicks on icons which represent the function to be performed.

III.   Choose the best answer to these questions according to the text.

1.   How many mainframes did IBM think it was possible to sell in 1952?
   a.   a hundred
   b.   four
   c.   250,000
2.   Which company was IBM only contested by?
   a.   Xerox Corporation
   b.   Digital Research
   c.   Apple Computers
3.   Who paid for the first research into PCs?
   a.   IBM
   b.   Novell
   c.   Xerox Corporation
4.   Which company later used the results of this research?
   a.   IBM
   b.   Apple Computers
   c.   Novell
5.   Which company turned to Bill Gates to write their operating system?
   a.   IBM
   b.   Apple Computers
   c.   Digital Research

V.   Here are some dictionary definitions of words from the text. Each word has more than one definition. Choose the definition that fits each of the words in the text best.

1. team   a. a group of people who play together against another group in a sport or game.
                 b. a group of people that work together.
2. command   a. if you command someone to do something, you order him to do it.
                 b. a special sentence used in programming languages.
3. system   a. a way of organizing or doing something in which you follow a fixed plan or set of rules, also a particular set of rules (or programmes in computing), especially in mathematics or science.
                 b. whole institution or aspect of society that is organized in a particular way.

4. mouse   a. a device used to point at a location on a computer screen.
                b. a small furry animal with a long tail.

VI. Find words and expressions which mean the same as the following.

1. international
2. contested
3. errors
4. paid for
5. recommendation

Units 7-8. Test 1

I. Match each word with the correct definition.

1. keyboard   a. information that has been prepared, often in a particular format, for a specific purpose.
2. hardware   b. the part of a visual display unit on which the program, data, and graphics may be seen.
3. pixel   c. a portable board with a clip at the top for holding papers.
4. data   d. the screen of a computer terminal or PC.
5. software   e. electrical force.
6. clipboard   f. the computer equipment and its peripherals.
7. display   g. a general term for any computer program.
8. voltage   h. it is used for touch-screen and pen-based computers, voltage is sent across the glass in horizontal and vertical lines forming a grid.
9. screen   i. an input device like a typewriter for entering characters.
10. grid   j. an individual dot on a computer screen.

II. Complete the sentences using words from exercise I. You can use each word only once.

a. 1 _____ PS s are not much bigger than an actual clipboard.
b. The first technology allows raw 2 _____ to get into the computer.
c. When you use a 3_____, that can require you to do a lot of typing.
d. The computer's liquid crystal 4 _____ screen is covered by a sheet of glass with a transparent conductive coating.
e. Users input data by printing individual letters directly on the 5_____ .
f. Some technologies depend on 6 _____ and vary depending on the particular computer.
g. Voltage is sent across the glass in horizontal and vertical lines forming a fine 7 _____.

h. At any point of the grid, the 8 _____ is slightly different.

i. The computer uses this information to determine where the stylus is and causes a liquid crystal 9 _____ to appear at those coordinates.

j. Every time this happens the 10 _____ assumes that one letter or number has been written.

III. Match the prepositions with the verbs below.

a. from   b. with   c. on   d. in   e. out

1. to take hold _____
2. to figure _____
3. to prevent _____
4. to rely _____
5. to replace _____

IV Complete the sentences using verbs and prepositions from exercise III in the correct form.

1. There is one thing, however, that _____ the machines _____ becoming their user friendliest: you still have to input data with a keyboard.
2. This technology _____ the mass market only last year.
3. The other technology allows the computer to _____ what that data means.
4. The first technology _____ principally on hardware.
5. Clipboard PCs _____ the keyboard _____ a liquid crystal display screen and an electronic stylus.

V. Choose the correct word.

1. The … of the technology enables us to improve the quality of articles produced.
   a) develop   b) development
2. For example, thermometers … temperature in terms of the length of a thin line of liquid in a tube.
   a) measure   b) measurement
3. The results of this fundamental research find wide application in the … of substances with new properties.
   a) evolve   b) evolvement
4. Power lasers send very … light pulses to the Moon.
   a) short   b) shortage
5. The equipment tested required further … .
   a) improve   b) improvement

6. This record-player … every sound perfectly.
   a) produce   b) reproduces
7. Researchers are seeking ways to improve memories and auxiliary …
   equipment.
   a) store   b) storage
8. All the data are … by digits.
   a) present   b) represented

Units 7-8. Test 2

I. Read the text. Then read the titles. Which of the following titles is the best?

1. Portable Computers.
2. Desktop Computers.
3. Clipboard Computers.
4. Mainframe Computers.

II. Re- read the text. Choose the best sentence from the list below to complete each gap.

For the last generation, Silicon Valley and Tokyo have been working to design computers that are ever easier to use. There is one thing, however, that has prevented the machines from becoming their user friendliest: you still have to input data with a keyboard, and that can require you to do a lot of typing and to memorize a lot of elaborate commands.

Enter the clipboard computer, a technology that has been in development for the last 20 years but took hold in the mass market only this year. Clipboard PCs –which, as their name suggests, are not much bigger than an actual clipboard – replace the keyboard with a liquid crystal display (LCD) screen and an electronic stylus. 1 _____.

There are two technologies at work in a clipboard PC: one allows raw data to get into the computer and the other allows the computer to figure out what that data means. The first technology relies principally on hardware and varies depending on the particular computer. In one system, marketed under the name GRIDPad, the computer's LCD screen is covered by a sheet of glass with a transparent conductive coating. Voltages is sent across the glass in horizontal and vertical lines forming a fine grid; at any point on the grid, the voltage is slightly different. When the stylus – which is essentially a voltmeter – touches the screen, it informs the computer of the voltage at that point. 2 _____. The position of the stylus is monitored several hundred times a second, so as the stylus moves across the glass, whole strings of pixels are activated.

Making that writing comprehensible to the computer, however, requires the help of some powerful software. When the stylus is being used, the computer is programmed to look for moments when the tip does not touch the screen for a third of a second or more. 3_____. The pixel positions of this fresh character are then passed on to the computer's pattern recognition software, which instantly identifies the letter or number written.

The software does this by first cleaning up the character – smoothing out crooked lines and removing errant dots. 4 _____. When the computer finds the closest match, it encodes the character in memory and displays it on the screen as if it had been typed. 5 _____. To move to the next page, you flick the stylus at the bottom of the screen as if you're flicking the page of a book.

a.   The computer uses this information to determine where the stylus is and causes a liquid crystal pixel to appear at those coordinates.
b.   The remaining lines and curves are then compared with a series of templates in the computer's memory that represent hundreds of thousands of different versions of every letter in the English alphabet and all ten numerals.
c.   Users input data by printing individual letters directly on the screen.
d.   To delete a word, you simply draw a line through it.
e.   Every time this happens the software assumes that one letter or number has been written.

III.   Choose the best answer to these questions according to the text.

1.   How big is a clipboard PC?
   a.   It is smaller than an actual clipboard.
   b.   It is not much bigger than an actual desktop computer.
   c.   It is not much bigger than an actual clipboard.
2.   How does the computer know when one letter or number is complete?
   a.   The software decides that one character or number is complete if the tip of the stylus is not in contact with the screen for more than half a second.
   b.   The computer is programmed to look for moments when the tip does not touch the screen for a third of a second or more.
   c.   The computer gives a user one second for each letter or number.
3.   How can you delete a word after you have written it?
   a.   You must clean the screen with a special piece of cloth.
   b.   You must write a word 'delete' on the screen.
   c.   You draw a line through it.
4.   How can you change the page?
   a.   You must write 'next page' on the screen.
   b.   You must draw a line at the top of the screen.

c. You must flick the stylus at the bottom of the screen.
5. Does a clipboard computer have a keyboard?
   a. On a clipboard, an electronic pen replaces the traditional keyboard.
   b. A clipboard computer uses a keyboard instead of a stylus.
   c. Every clipboard computer has a keyboard and a stylus.

IV. Here are some dictionary definitions of words from the text. Each word has more than one definition. Choose the definition that fits each of the words in the text best.

1. stylus   a. a pointed implement for drawing or writing.
             b. an electronic device that is used to draw or write on the screen.
2. sheet   a. a large, flat, thin piece of glass, metal or wood.
             b. a large rectangular piece of cloth, used on a bed.
3. letter   a. a written symbol which represents a sound of a language.
             b. a message on paper that you send to someone.
4. memory   a. your ability to remember things.
             b. a device or medium which can store information.

V. Find words and expessions which mean the same as the following.

1. understand
2. covering
3. points
4. made by mistake
5. move quickly and sharply

Units 9-10. Test №1

I. Match each word with the correct definition

1. sonar   a. a large business or company .
2. disillusioned b. a piece of equipment for taking photographs or for making a film.
3. market   c. when you realize that something is not as good as you thought.
4. defense   d. the type of land there.
5. obstacle   e. a place where goods or animals are sold, or the number of people who want to buy a product.
6. terrain   f. something which makes it difficult for you to go forward or to do something.

7. controller	g. action taken to protect someone or something from attack.
8. corporation	h. a machine which moves and performs certain task automatically.
9. camera	i. equipment on a ship which can calculate the depth of the sea or the position of an underwater object using sound waves.
10. robot	j. a person with responsibility for a particular task.

II. Complete the sentences using words from exercise I. You can use each word only once.

a. The word '1 _____' comes from the Czech word for 'work'.
b. The robots became so 2 _____ with their human masters that they revolted.
c. Since then, many companies have entered the robotics 3 _____.
d. This robot was fitted with bump detectors, a 4_____ range finder, and a TV 5_____.
e. In 1967, the General Electric 6 _____ had developed a four – wheeled machine for the US Department of 7_____.
f. This system combined a human 8 _____ with automatic processing of information about the 9._____, right down to the foot movements needed to ensure smooth movement.
g. This machine could walked over 10 _____s and lift loads several times its own weight.

III. Combine a word from A with one from B

	A		B
1.	industrial	a.	camera
2.	TV	b.	operator
3.	mainframe	c.	robot
4.	radio	d.	channel
5.	human	e.	computer

IV. Complete the sentences using word-combinations from exercise III.

a. In 1954, the American inventor George Devol began work that eventually led to the 1 _____.
b. Shakey was fitted with bump detectors, a sonar range finder, and a 2_____.
c. This was because it could only be controlled by a separate 3_____, which sent its commands to the robot through a 4_____.

d. The machine carried a 5_____, who had to control each of the four legs.

V. Choose the correct word.

1. Computers … researchers in the biological, physical and social sciences.
   a) able   b) enable
2.. … is a very important factor in computers.
   a) weight   b) overweight
3. A microprocessor unit is a … miniaturized version of the minicomputers.
   a) high   b) highly
4. The field of laser application is expanding very … .
   a) rapid   b) rapidly
5. Many difficulties had been … before the researcher succeeded in his work.
   a) come   b) overcome
6. Very sophisticated transmitters and receivers are … to possess "memories".
   a) sure   b) ensure
7. Computers are … to solve complicated problems.
   a) able   b) enable
8. There is … any sphere of life where the atom may not find useful application.
   a) hard   b) hardly

Units 9-10. Test2.

I. Read the text. Then read the titles. Which of the following titles is the best?

1. Robots and Their Masters.
2. Robots in Education.
3. Robots in Medicine.
4. Robots: Past, Present and Future.

II. Re-read the text. Choose the best sentence from the list below to complete each gap.

The word 'robot' was invented by the Czech playwright, Karel Čapek. It comes from the Czech word for 'work'. In Čapek's play RUR (Rossum's Universal Robots), which came to London in 1921, the robots became so

intelligent and so disillusioned with their human masters that they revolted.They destroyed the humans and created a new world inhabited only by robots. 1_____.

In 1954, the American inventor George Devol began work that eventually led to the industrial robot as we know it today. 2_____. Since then, many companies have entered the robotics market.

Between 1967 and 1969, researchers at the Stanford Research Institute in the United States developed a robot with wheels named Shakey. Shakey was fitted with bump detectors, a sonar range finder, and a TV camera. 3_____. However, at the time, Shakey was thought to be a failure. This was because it could only be controlled by a separate mainframe computer, which sent its commands to the robot through a radio channel.

The next important step was the development of robots with legs. In 1967, the General Electric Corporation had developed a four- wheeled machine for the US Department of Defense. The machine carried a human operator who had to control each of the four legs. 4_____.

Later devices were more successful – for example, a four-legged robot developed at the Tokyo Institute of Technology in 1980. This system combined a human controller with automatic processing of information about the terrain, right down to the foot movements needed to ensure smooth movement.

In 1983, a six-legged robot was developed by Odetics Incorporated, for commercial production. 5_____. This machine could walk over obstacles and lift loads several times its own weight.

Meanwhile, research continues on machines that rely on one or two legs. In 1984, Marc Raibert developed one-legged hopping robots at Carnegie Mellon University in the USA.

a. His company, the Unimation Company, developed flexible industrial machines and began to market them in the early sixties.
b. This was an extremely difficult job for the driver, and the machine regularly became unbalanced and fell over.
c. A battery-powered model, Odex I, used a radio channel for leg control and a video link for conveying images.
d. All three helped Shakey to move freely and avoid obstacles.
e. This theme of ungrateful robots rebelling against their human creator is one that has been used by many science fiction writers.

III. Choose the best answer to these questions according to the text.

1. Who invented the word 'robot'?
   a. American scientists
   b. Czech scientists
   c. the Czech playwright.

2. When did George Devol begin his work that led to the industrial robot?
   a. in 1921
   b. in 1954
   c. in 1967
3. Where was a robot with wheels named Shakey developed?
   a. in the UK
   b. in the USA
   c. in Canada
4. What corporation developed robots with legs?
   a. the British Broadcasting Corporation
   b. Xerox Corporation
   c. the General Electric Corporation
5. What kind of robot was developed by Odetics Incorporated?
   a. a one - legged hopping robot
   b. a four - legged robot
   c. a six - legged robot.

IV. Here are some dictionary definitions of words from the text. Each word has more than one definition. Choose the definition that fits each of the words in the text best.

1. play   a. to spend time with toys or taking part in some games.
        b. a piece of writing performed in a theatre, on the radio, or on television.
2. work   a. to do the tasks which your job involves, or a task needs to be done.
        b. the tasks which your job involves, or any tasks which need to be done.
3. master a. the man a servant works for.
        b. if you master something, you manage to learn it.
4. step   a. if you step in particular direction, you move in that direction.
        b. one of a series of stages, or a single action taken for a particular purpose.

V. Find words and expressions which mean the same as the following.

1. a person who writes plays
2. work that involves studying something and trying to discover facts about it
3. something that is unsuccessful
4. orders
5. someone who is employed to operate or control a machine

Unit 11-12. Test №1

I. Match each word with the correct definition.

1. accuracy   a. a large-scale attempt to do something.
2. welding   b. need it.
3. imitate   c. someone who cannot see.
4. reasoning   d. an elephant's nose.
5. require   e. such substances will kill you or make you ill if you swallow or absorb them.
6. project   f. copy something.
7. texture   g. joining two pieces of metal together by heating their edges and putting them together so that they cool and harden into one piece.
8. poisonous   h. the ability to perform a task without making a mistake.
9. blind   i. the ~ of something is the way that it feels when you touch it.
10. trunk   j. the process by which you reach a conclusion after considering all the facts

II. Complete the sentences using words from exercise I. You can use each word only once.

a. These are the types of jobs that 1_____ great strength.
b. A 2_____ tool used by a human worker weighs about 100 pounds or more and is difficult to handle.
c. Unlike human painters, they are unaffected by the 3_____ fumes.
d. These robots are used in space 4_____ nuclear reactor stations, and underwater exploration research.
e. This automatic 5 _____ is particularly valuable in this kind of industry because locating and fixing mistakes is costly.
f. Earlier robots were usuall 6_____ and deaf but newer types of robots are fitted with video cameras and other sensing devices that can detect heat, 7 _____, size, and sound.
g. The industrial arm is a classic example sientists have been able to model robot to 8_____ the vertebrate spine of a snake in order to paint the interior of automobiles.
h. They have simulated the muscle structure and movement of an elephant's 9 _____ in an attempt to create a robotic arm capable of lifting heavy objects.
i. Robot 10 _____ powers have a long way to go before they can approach what biological evolution has achieved over the course of hundreds of millions of years.

III. Combine a word from A with one from B.

	A.		B.
1.	potential	a.	supermen
2.	electronic	b.	painting
3.	mechanical	c.	models
4.	spay	d.	boards
5.	circuit	e.	parts

IV. Complete the centences using word-combinations from exercise III.

a. As 1_____, robots may be called upon to do anything from moving heavy components between workstations on a factory floor to carrying bags of cement.
b. 2. _____ is another task suited to robots because robots do not need to breathe.
c. Third in the list is useful jobs for robots in the assemly of 3_____.
d. Robots shine at installing chips in printed 4_____ because of a capability that robots have that people don't.
e. In their efforts to expand the range of robotic applications, researchers are looking beyond traditional designs to examine a variety of 5_____ from the biological world.

V. Choose the correct word.

1. The origin of automation can be traced back to the early days of the first … revolution.
   a) industry   b) industrial
2. The so-called analogue systems of television are replacing by … systems.
   a) digit   b) digital
3. Its written history goes back to the … paintings of the ice age.
   a) rock   b) rocky
4. Automation in a … factory or industry reduces the amount of labour needed.
   a) particular b) particularly
5. The image of industrial robot used in manufacturing processes is far… from such.
   a) differ   b) different
6. There is no clear-cut … for industrial robots.
   a) define   b) definition
7. On the basis of the … facts theoretical physics is to formulate laws.
   a) experiment   b) experimental
8. You should turn on these ventilators to … the air in the room.

a) pure   b) purify
9.   Such a tube cannot … .
      a) amplify   b) ample

Unit 11-12. Test №2

I.   Read the text. Then read the titles. Which of the following titles is the best?

1.   New Models of Robot in Stock Now.
2.   Humans Against Robots. Who is the Best?
3.   Artificial Intellect – Reality or Fiction?
4.   The Robotics Revolution.

II.   Re-read the text. Choose the best sentence from the list below to complete each gap.

        Many of the robots in use today do jobs that are especially difficult for human workers. These are the types of jobs that require great strength or pose danger. 1_____. A welding tool used by a human worker weighs about 100 pounds or more and is difficult to handle. As mechanical supermen, robots may be called upon to do anything from moving heavy components between workstations on a factory floor to carrying bags of cement.
        Spay painting is another task suited to robots because robots do not need to breathe. 2_____. Robots are better at this task, not because they are faster or cheaper than humans, but because they work in a place where humans cannot.
        Third in the list of useful jobs for robots is the assembly of electronic parts. Robots shine at installing chips in printed circuit boards because of a capability that robots have that people don't. 3 _____. This automatic accuracy is particularly valuable in this kind of industry because locating and fixing mistakes is costly.
        Earlier robots were usually blind and deaf but newer types of robots are fitted with video cameras and other sensing devices that can detect heat, texture, size, and sound. 4_____.
        In their efforts to expand the range of robotic applications, researchers are looking beyond traditional designs to examine a variety of potential models from the biological world. The industrial arm is a classic example. Scientists have been able to model robots to imitate the vertebrate spine of a snake in order to paint the interior of automobiles. 5_____
        The challenge of equipping robots with the skills to operate independently, outside of a factory or laboratory, has made heavy demands on the ingenuity and creativity of academic, military, and industrial scientists

for years. Simply put, robot hands – like robot legs, or eyes, or reasoning powers – have a long way to go before they can approach what biological evolution has achieved over the course of hundreds of millions of years. Much more will have to happen in laboratories around the world before robots can be compared to nature's handwork.

In the meantime, the robotics revolution is already beginning to change the kind of work that people do. The boring and dangerous jobs are now assumed, by robots. By the turn of the century, more and more humans will be required for tasks that machines cannot do.

a. These robots are used in space projects, nuclear reactor stations, and underwater exploration research.
b. Unlike human painters, they are unaffected by the poisonous fumes.
c. For example, robots are particularly useful in the automanufacturing industry where parts of automobiles must be welded together.
d. They have simulated the muscle structure and movement of an elephant's trunk in an attempt to create a robotic arm capable of lifting heavy objects.
e. A robot, once properly programmed, will not put a chip in the wrong place.

III. Choose the best answer to these questions according to the text.

1. What kind of job do robots do today?
    a) They usually do the types of jobs which are interesting for human workers.
    b) They usually do the types of jobs which are very simple for human workers.
    c) They usually do the types of jobs which are very dangerous and require great strength.
2. Why do robots do very well at installing chips in printed circuit boards?
    a) Because robots work very quickly.
    b) Because this kind of job is very dangerous for people.
    c) Because robots have the ability to put a chip in the proper place if they are once programmed properly.
3. Where do reseachers try to find examples of potential models?
    a) in the technical world
    b) in the chemical world
    c) in the biological world
4. What do reseachers try to teach robots to do?
    a) They try to teach robots to operate independently, outside of a factory or laboratory.
    b) They try to teach robots to fly.
    c) They try to teach robots to write fiction books.
5. What kind of jobs will more and more humans be required for by the

end of the century?
   a) for jobs which are too dangerous for robots.
   b) for jobs which are too easy for robots.
   c) for jobs which only humans can do.

IV. Here are some dictionary definitions of words from the text. Each word has more than one definition. Choose the definition that fits each of the words in the text best.

1. examine   a) if you examine something, you look at it or consider it carefully.
               b) if a teacher examines you, he or she finds out how much you know by asking you questions or by making you take an examination.
2. model   a) a model is a three- dimensional copy of an object, usually one that is smaller than the object.
               b) if a system is used as a model, people copy it in order to achieve similar results.
3. handle   a) the part of an object that you hold in order to carry it or operate it.
               b) if you handle something, you hold it and move it about in your hands.
4. assembly   a) a large number of people, gathered together, especially a group of people who meet regularly to make laws.
               b) the assembly of a machine or device is the process of fitting its parts together.

Find words and expressions which mean the same as the following.
   1. manipulate
   2. correcting
   3. expensive
   4. increase
   5. copy

Unit 13-15. Test №1

I. Match each word with the correct definition.

1. important   a. if you refer to a ~ thing, you are referring only to that thing, rather than to other things of that type.
2. individual b. if one thing is ~ from another, it is unlike the other thing in some way.
3. different   c. total and complete.

4.   particular   d. if something is ~, you can use it or obtain it.
5.   specific   e. very significant, valuable, or necessary.
6.   absolute   f. a ~ person remains firm in their friendship or support for someone or something.
7.   available   g. something that is ~ is influenced by personal opinions and feelings.
8.   superior   h. to be ~ to something or someone means to be better than them.
9.   loyal   i. you use ~ to emphasize that you are talking about a particular thing or subject.
10.   subjective   j. relating to one person or thing, rather than to a large group.

II.   Complete the sentences using words from exercise I. You can use each word only once.

a. Rating a 1_____ service over another is entirely subjective.
b. Price is 2_____ to some people, while the number of files 3_____ for download is important for others.
c. Because of these and so many other 4_____ judgments, there can be no 5_____ .
d. It all comes down to 6_____ needs and preferences.
e. Users tend to be fiercely 7_____ to their 'home' online service.
f. It prevents them from seeing the advantages of a 8_____ service.
g. Each offers one or more products or features that either do not exist elsewhere or are 9_____ to the same features on other services.
h. I have a really 10_____ reason for being on one service – I use it to send monthly articles to magazines in Japan.

III.   Choose the correct word.

1.   … optical fibres carry in formation as pulses of light.
      a) Hair-thin   b) Thin - hair
2.   If the research is successful … will receive a source of energy with enormous resources of fuel.
      a) kindman   b) mankind
3.   These … can produce parts with high accuracy.
      a) machine-tools   b) tool-machines
4.   Flying into cosmos has been man's … dream.
      a) old-age   b)age-old
5.   A … gives out ultra-violet rays with effects like those of the sun.
      a) lamp-sun   b)sun-lamp
6.   This young scientist has a … fame.
      a) world-wide   b) wide-world

7   … recording is almost free of signal errors.
        a) Digit   b) Digital
8.   Lasers have wide-ranging … uses.
        a) technology   b) technological

IV.   Choose the correct word.

1.   Commercial video broadcasting over the air will be replaced by … into
        homes via fibre optics.
        a) transmit   b) transmission
2.   The new computer does not require special … .
        a) ventilate   b) ventilation
3.   Einstein gave all his life to the … of human knowledge.
        a) `increase       b) in`crease
4.   The discoveries in physics … our possibilities in other sciences.
        a) `increase       b) in`crease
5.   You are to … the result of your research in a week.
        a) `present        b) pre`sent
6.   Computers … data in a matter of minutes.
        a) `process        b) pro`cess
7.   This … will prevent the formation of impurities.
        a) `process        b) pro`cess
8.   The traditional approach to this problem is to consider each new … as
        a new problem
        a) `process        b) pro`cess

Units 13-15. Test №2

I.   Read the text. Then read the titles. Which of the following titles is the
        best.

        1. Off Line Services.
        2. Online Services.
        3. Computer Book Club.
        4. CompuServe.

II.   Re-read the text. Choose the best sentence from the list below to
        complete each gap.

        I'm frequently asked which online service is 'best' but the answer is
there is no best. 1_____. Price is important to some people, while the
number of files available for download is important to others. Because of

these and so many other different judgments, there can be no absolute. 2_____ .

Still, users tend to be fiercely loyal to their 'home' online service – which is usually the first online service they ever used. 3_____. For my part, I like all the services I use and I'm on two dozen.

Each offers one or more products or features that either do not exist elsewhere or are superior to the same features on other services. 4_____.

So, the real answer to the question is simple: the best online service is the service that has what you want and easy for you to use. The point? Keep an open mind when checking out an online service. Judge it based on what it offers and how it meets your needs – not in comparison to what you're used to using. (5_____).

Eventually, we're all going to be interlinked, no matter which service we use, in what DIALOG'S Richard Ream calls a 'network of networks'.

Until then, most of us have to go to more than one service to find everything we need.

    a. They tend to judge all other online services based on this first service – often preventing themselves from seeing the advantages of a specific service.

    b. Rating a particular service over another is entirely subjective.

    c. It takes a couple of sessions to shake preconceived notions of what an online service 'should' be.

    d. It all comes down to individual needs and preferences.

    e. And I've a really subjective reason for being on one service – I use it to send monthly articles to magazines in Japan.

III. Decide whether the following statements are true (T) or false (F) in relation to the information in the text.

1. Most people choose an online service because of the price or the number of available files.
2. Everybody has one service which he/she likes more than all the others.
3. Each online service offers one or more products or features that either do not exist elsewhere or are better to the same features on other services.
4. You should judge each service according to whether it is better or worse overall than the service you are currently using.
5. Eventually, all services will be accessible from the service you are using.

IV. Here are some dictionary definitions of words from the text. Each word has more than one definition. Choose the definition that fits each of the words in the text best.

1. service   a. a system that provides something for the public.
                      b. a religious ceremony, especially a Christian one.
2. judgment   a. a decision made by a judge or by a court of law.
                      b. an opinion that you have or express after thinking
                         carefully about something.
3. feature   a. a special article in a newspaper or magazine, or a
                         special programme on radio or television.
                      b. a feature of something is an interesting or
                         important part or characteristic of it.
4. article   a. a piece of writing in a newspaper or magazine.
                      b. an article of a formal document is a section dealing
                       with a particular point.

V. Find words and expressions which mean the same as the following.

1. It is a question of
2. about twenty-four
3. examining
4. suggests
5. You have to use the online service at least two times to decide

Additional Reading Material For Personal Testing.

Text 1

Casting a Smaller Net May Be the Way to Get a Company to Mesh Better.

Although the rise of the Internet has been extraordinary – there are probably something like 40 million people connected by this global network of networks – from a business point of view it possesses a fatal weakness: nobody is making much money out of it.

There are various schemes for selling goods and services, but few are more than at the pilot stage in order to understand the issues and problems of this new kind of electronic commerce.

But businesses are discovering a viable alternative: the intranet revolution is here … and it works.

Intranets are simply the application of Internet technologies within a company. Instead of an audience of millions, a firm creates a private network for staff.

By building on the Internet's strength – its ability to link incompatible computers – it is possible to transform how a company uses its computing resources and how the firm itself functions. Even if intranets don't make money, they can certainly save it.

The company can do away with printed internal manuals, rule books, regulations, vacancy announcements, corporate notices and general memos. They can be replaced with electronic versions held on a server, a computer that acts as a central store.

This means that information can (theoretically) be always up-to-date whenever an employee accesses it over the internal network.

Intranets make on-line discussion forums possible. Each work group or department can have its own electronic bulletin-board for messages, suggestions and comments.

Just as it is often easier to send e-mail than to telephone or write a memo, so on-line discussion forums can do away with hard-to-organise meetings.

Intranets also allow more direct collaboration. For example, members of a marketing department could work simultaneously across the network on a document or design.

By extending intranets to embrace several company networks (those located at different sites, say) it is possible to bring together groups who may be separated physically – by oceans, even.

Proponents argue that an intranet can help employees feel they are contributing to the corporate culture, transforming it into something living and interactive rather than dead and imposed from on high.

If some of these uses sound a little too adventurous, another of the most popular applications of intranets may appeal: to provide access to corporate data, particularly information held in mainframe databases which hitherto has been locked away because of compatibility problems between computers.

With an intranet it is now possible to draw together information from many disparate sources in order to combine them into a unified view.

The benefits of intranets are so compelling that the market research company IDC claims that the global intranet market for web servers alone will be worth nearly $ 1 billion (£ 650 million) in 2000 – more than twice the predicted size of the Internet market.

Netscape, whose software and services make it in many ways the bellwether of the on-line industry, already generates 75 to 80 per cent of its revenues from intranet sales. So even if the torrent of Utopian hype fails ultimately to broaden the Internet's appeal beyond the throngs of compulsive electronic chatterboxes in anoraks, corporate visionaries would be unwise to

overlook the fact that, where nets are concerned, small possesses the potential to be not only beautiful but profitable too.

I. Read the text and answer the questions.

1. What is a fatal weak side of the Internet?
2. What are intranets?
3. What opportunities do intranets provide?
4. Is the global intranet market bigger than the Internet market?

II. Read the text and define if the following statements are *true* or *false*.

1. The alternative to the Internet is intranets.
2. There are not many benefits of the use of intranets.
3. Intranets allow more direct collaboration.
4. Netscape generates 70 to 75 per cent of its revenues from intranet sales.

It's Square to Watch Satellite TV.

The big disadvantage of satellite TV for many viewers is the dish that sticks out from your house like a wok on legs. So far, all efforts to produce a neat, unobtrusive antenna have resulted in products that either failed to work properly or were sold at absurd prices.

In the past, BSB used a neat little 'Squarial', a diamond – shaped antenna with no protruding horn, but it was expensive and difficult to make, and was dropped soon after BSB was absorbed by sky to become BSkyB.

However, flat antennas could finally be coming back for public consumption. The Cable and Satellite Show in London last week saw the launch of one flat antenna and the announcement of a research grant to enable another to be produced.

Galaxis, the German satellite receiver company, launched a rectangular antenna called Future I, which is approximately the size of a telephone directory mounted on a bracket facing the satellite.

It is said to be the world's smallest satellite antenna and will be capable of receiving signals from both the Astra and Eutelsat craft without the need for expensive motorized mounts to move physically between the satellites.

Future I is being marketed first in Asia and the US, but it will be on sale in Britain in the near future.

A technology that could produce a flat antenna the size of a dartboard which will be attached directly to a wall or roof, rather than mounted on brackets, was also on display at the show.

Mike Wright, a British radio engineer, has developed an antenna based on focusing the radio waves by means of metallic rings printed on a plastic film – a principle known as a Fresnel lens.

Using a lens rather than a dish lets the antenna pick up signals over a wide angle, allowing it to be mounted directly on a wall or roof. A feed horn is then positioned at the focal point in front of the lens. Wright has been hard at work developing the technology for many years, but now claims to be near the production stage with an advanced printing pattern that gives a performance comparable with that of dishes.

His company, Anntech, based near Baldock in Hertfordshire, has just been given a Department of Trade and Industry Smart award to finish off the research needed to produce a flat antenna with the same performance as a dish but exploiting the plastic construction, to sell at a considerably lower price than that of precision–made metal dishes.

Flat antennas have acquired a bad name in the "past decause of failures such as the Squarial, but all this is about to change", says Wright.

Chris Partridge
The Times, 1996

I. Read the text and answer the questions.

1. Why are neat antennas of satellite TV not widely used?
2. What new satellite antennas were displayed at the show in London?
3. What antenna has Mike Wright developed?
4. What has the company Anntech been given an award for?

II. Read the text and define if the following statements are *true* or *false*.

1. There aren't big disadvantages of modern satellite antennas, are there?
2. In the past, BSB used a little antenna with protruding horn.
3. Flat antennas have no future for public consumption.
4. The world's smallest satellite antenna is "Squarial".
5. Antenna, called Future 1, is based on the principle of Fresnel lens.

Robot to Examine Ice on Moon.

The American space agency Nasa is considering a proposal to send a roving vehicle to the moon's south pole to examine the ice that is believed to lie in the permanent darkness of a deep crater, writes Tim Furniss.

The craft would be launched in December 2000 and would spend three months on the moon, locating the ice and determining its composition.

The Lunar Ice mission has been proposed by the Robotics Institute of Carnegie Mellon University and is being considered as the fifth mission in Nasa's Discovery programme, which plans to fly "faster, smaller, better, cheaper" interplanetary missions, launched within three years of inception at a cost of $ 180m (£ 112m).

Two Discovery missions, Near Earth Asteroid Rendezvous and Mars Pathfinder, have already been launched. The third is the Lunar Prospector, which will lift off in October. The fourth is called Stardust; its mission will be to gather interstellar dust and fragments of comets and bring them back to Earth.

The finalists for the fifth mission will be assessed in April. Lunar Ice will have to compete against other projects, such as the Mercury Global Orbiter.

The rover vehicle, called Explorer, will be a four-wheeled robot, weighing about 630lb, which would travel up to six miles a day over the moon's rugged surface.

It would drill parts of the south pole to a depth of about 3ft and take core samples, to see if the ice lies in stratified, compacted layers, recording the history of the moon like the rings of a tree trunk back on the Earth.

Photographs of the ice taken from the Explorer would give scientists an idea what similar material may look like on other icy moons such as Europa, which orbits Jupiter and which came under close scrutiny recently when spectacular images were beamed back from the Galileo orbiter.

The Explorer vehicle will have a spectrometer and a gas analyzer to examine the chemical composition of the ice. The analyser will take samples and heat them to 1,000C, with the spectrometer analysing the gases released. These could include methane and carbon dioxide.

For some scientists, the vital objective will be to find out if there's enough frozen water to support a manned moon base. The water could provide oxygen and hydrogen to support life, generate power and make rocket fuel. Such a moon base could become a fuelling station for flights to Mars.

The ice at the south pole is thought to have come from comets that hit the moon early in its history.

Most of the water that lay on the surface would have evaporated in the high temperatures of the lunar day but in the crater at the south pole it is permanently dark and the temperature is close to absolute zero. Some

scientists think that there could be billions of cubic feet of water below the surface.

The tantalising possibility of frozen water on the moon came from America's Department of Defense, whose Clementine spacecraft gathered data by radar while orbiting the moon.

The $ 75m mission had been launched to develop new technologies for the Ballistic Missile Defense Organisation. The Department of Defense noted last December that the possible existence of a "dirty ice lake" in a crater eight miles deep "has enormous implications for a permanent human return to the moon".

Early estimates suggest the block of ice may be about 1,000 ft long and 30ft deep and is probably mixed with dirt, rather like the ice overlying the Arctic tundra.

The Sunday Times, 1996

I. Read the text and answer the questions.

1. What proposal is Nasa considering now?
2. What are the five Discovery missions of Nasa?
3. What will the rover vehicle, called Explorer, do?
4. Why is examining the ice of the moon one of the objectives of the project?

II. Read the text and define if the following statements are *true* or *false*.

1. The American space agency Nasa is going to explore the moon's north pole.
2. The rovery vehicle Explorer can drill parts of the south pole to a depth of about 5 ft.
3. The Explorer cannot examine the chemical composition of the ice.
4. One of the objectives of the project is to find out if there is enough frozen water for a manned moon base.
5. Some scientists think that the block of ice may be about 2,000 ft long and 30 ft deep.

Microchip to Replace the Dog Tags of War

By Hugh McManners
Defence Correspondent

The soldier's dog tag, an emblem of war since the turn of the century, is about to enter the information age. The traditional metal disc is to be replaced by a computer chip full of vital medical and personal data.

The chip – set in reinforced plastic and no bigger than a 50p piece – will have an information storage capacity that is the size of a large filing cabinet and could contain a soldier's full medical history, x-rays and vaccinations as well as personal details.

Frontline medics will be able to slot the chip from a wounded soldier's tag into portable computers to get an instant read-out of his past health, fitness and allergies to drugs, thus improving the chances of saving his life.

Colonel John Richardson, Defence Medical Services professor of general practice who is helping develop the technology, said the old metal discs had been used primarily to identify dead soldiers for burial and to inform next of kin.

"These new tags will keep people alive by giving instant and full access to all the information on each patient. We are aiming to give as much of the same quality of care on the battlefield as we give in normal practice", he said.

Untill now soldiers' ID discs carried little more than name, rank, blood group and religion. More detailed information is kept on field medical cards which can be miles from the front line and can get lost, as happened during the Gulf war.

The "meditags", which will have to withstand the prolonged extremes of winter cold and desert heat, have undergone preliminary trials by soldiers who have worn them for three-week periods. So far the tags have survived assault courses and short exercises.

Comprehensive field testing will begin early next year on exercises using simulated casualties. If successful, troops in Bosnia will then use them for a year to identify and last minute software problems before they are issued to all navy, RAF and army troops.

Their introduction is part of an information revolution in which battlefield commanders will get more accurate up-to-date data on the medical state of their frontline troops via a secure Internet–style system. This will enable medical supplies and surgical teams to be more precisely targeted on locations with the heaviest casualties.

At present, computer modelling is used to predict casualty figures and types of injuries so that treatment and medical supplies can be moved to the right places. Such forecasts have never been more than experienced guesswork.

The capacity of the newtags will be increased to store more information such as voice notes, video film and three–dimensional body scans which frontline surgeons can rotate and manipulate on screen when performing operations.

As with the present ID discs, each soldier will be issued with two of the new tags with their name and number stamped on the outside of each. If a soldier is killed, one will be left with the body so he can be buried correctly, while the other will be kept so next of kin can be informed.

Before the 20th century, army commanders were less concerned about precisely who got killed. Change came about with the rise of citizen armies and conscription. In the Boer war of 1899 – 1902, British troops for the first time carried strips of material in their pockets bearing their name.

In 1907 the first metal tags – made of aluminium – were introduced throughout the British Army, stamped with a soldier's name, rank, number, regiment and religion. Blood group was later added, followed by allergy information in the early 1970s.

The Sunday Times, 1996

I. Read the text and answer the questions.

1. What will the information storage capacity of the computer chip be?
2. What opportunities will the soldier's dog tag in the form of the computer disc provide?
3. Have the new tags undergone preliminary tests?
4. How many tags will a soldier carry?

II. Read the text and define if the following statements are *true* or *false*.

1. Microchip is to replace the traditional soldier's dog tag.
2. The new tag will contain a soldier's full medical history and personal details.
3. The new tags will not be able to withstand the extremes of winter cold and desert heat.
4. Medical supplies and surgical teams will be more precisely targeted via a secure Internet-style system.
5. The capacity of the new tags is low.

Now You Can Buy a Digital Work of Art.

The usual way to buy a painting is to walk into a gallery, take a look at what is on the walls and make a selection. But that now seems very old-fashioned.

An antique shop in the Kings Road, Chelsea, now boasts its own Internet art gallery, with work from 100 different galleries on display. All the customer has to do is look at a screen in the shop.

The "gallery", to be called Banca dell'Arte, will be officially launched next Wednesday at the Art96 exhibition. But it is already in business.

"A chap came in from the street, saw some paintings on the wall and asked if I had any more," says Tim Badgett, a partner in the business. "Instead of inviting him to my studio, I sat him down at the computer and he found one he liked. He bought it for his wife's birthday."

Badgett's partner Amos Levy is now considering some major technical upgrades. "We are working on 3-D for sculpture and virtual reality, as if you were walking through the gallery and seeing the art hanging on the walls," he says.

Levy and Badgett seem an odd couple at first. Levy, burly, bearded and Italian, was once a rock promoter handling bands including Aerosmith, Ted Nugent and the New York Dolls. Badgett is a former restaurateur and owner of a chain of chic shoe shops.

Levy was in Milan on business when he discovered the Banca dell'Arte system for presenting art online. Back in London, his art dealer wife told him about Badgett "who might have a corner in his antique shop available".

"I was happy to give Amos the space," says Badgett. "sitting all day in an antique shop can be dull. There are long periods when no one comes in, but you have to be here".

Now nearly half the shop is taken up with computers – Levy's machine sits on an 18th century gateleg table.

The service benefits artists as well as buyers, the partners claim. "New artists can come directly to us instead of facing rejection all over town," says Badgett.

The basic fee for artists or galleries is £500 a year and includes a listing with a short description and five images. For £1,500 they get 100 images. Hardware, software and yearly contracts are available. Paintings can sell for up to £25,000.

Banca dell'Arte has a big advantage over other online art catalogues. Thanks to its software, pictures that could take 15 minutes to download using a standard modem appear in as little as 15 seconds. Because they are encrypted, images cannot be copied off the screen. Viewers can e-mail artists and galleries directly.

The special software can be downloaded from the Internet or installed via floppy disk – free to anyone who sends a stamped, addressed envelope to Artnetwork Ltd, Unit 10, 535 Plaza, Kings Road, London SW10 OSZ.

The Times, 1996

I. Read the text and answer the questions.

1. What is a new means of buying a painting?
2. How does the Internet art gallery work?
3. Who are the owners of the Internet art gallery?
4. What is the basic fee for artists or galleries for the use of the Internet gallery?

II. Read the text and define if the following statements are *true* or *false*.

1. The owners of the gallery are going to introduce some new technical upgrades.
2. Amos Levy is a former restaurateur and owner of a chain of chic shoe shops.
3. Paintings can sell for up to £5,000.
4. Viewers cannot e-mail artists and galleries.
5. This gallery doesn't have a big advantage over other online art catalogues.