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**81.2 Англ
А 647**

**АНГЛИЙСКИЙ ЯЗЫК
БАЗОВЫЙ КУРС
BEGINNERS (A1)**

Часть 2

Методические указания

**НОВОСИБИРСК
2008**

Министерство образования и науки Российской Федерации

НОВОСИБИРСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ

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Методические указания для студентов I курса
всех технических специальностей

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Настоящие методические указания предназначены для студентов I курса всех технических специальностей НГТУ, изучающих английский язык (уровень владения языком A1 – Beginners).

Цель работы – сформировать навыки устной монологической и диалогической речи в сфере бытовой и профессиональной коммуникации в рамках изучаемых тем.

Методические указания включают в себя три модуля: «Информационные технологии», «Основы инженерного дела», «Поступление на работу». Каждый модуль содержит обширный лексико-грамматический материал, представленный упражнениями на развитие всех видов речевой деятельности: чтения, письма, аудирования и говорения. Предлагаемые виды упражнений могут выполняться в парах, группах или индивидуально в зависимости от целей, поставленных преподавателем.

Каждый модуль сопровождается приложениями, которые включают в себя дополнительные тексты, предназначенные как для самостоятельной, так и для аудиторной работы студентов.

Работа выполнена на кафедре иностранных языков ТФ НГТУ

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MODULE I

INFORMATION TECHNOLOGIES

UNIT 1. COMPUTERS

1.1. Read and remember the new words

access (n)	[ə'kses]	подход, доступ
cable(n)	[keɪbl]	кабель, канат
circuit (n)	['sɜ:kɪt]	схема
short circuit (n)	[ʃɔ:t 'sɜ:kɪt]	короткое замыкание
connect (v)	[kə'nekt]	соединять, связывать, сочетать
connected (part II)	[kə'nektɪd]	связанный, соединенный
connection (n)	[kə'nekʃn]	связь, соединение, присоединение
convert (v)	[kən'vert]	преобразовывать, переделывать, конвертировать
data (n)	['deɪtə]	данные, сведения, информация
digital (adj)	['dɪdʒɪtl(ə)l]	цифровой
download (v)	['daʊnləud]	загружать (<i>в память</i>)
due to (prep)	[du: tə]	благодаря
failure (n)	['feɪljə]	невыполнение, отсутствие, про-вал
hardware (n)	['ha:dweə]	элементы электронных устройств, <i>жарг.</i> железо
software (n)	['sɒftweə]	программное обеспечение компьютера
huge (adj)	[hju:dʒ]	огромный, громадный
implementation (n)	[ɪmplɪ'men'teɪʃn]	осуществление, выполнение
improve (v)	[ɪm'pru:v]	улучшать, совершенствовать
input (n)	['ɪnpʊt]	входные данные, ввод (данных)
operating system	['ɒpəreɪtɪŋ ,sɪstəm]	операционная система

output	[ˈaʊtput]	вывод(данных), выпуск, отдача
print (v)	[prɪnt]	печатать
process (v)	[prəˈvəsəs]	обрабатывать
promote (v)	[prəˈməut]	продвигать, способствовать, поддерживать
protect (v)	[prəˈtekt]	защищать, предохранять
safe (adj)	[seɪf]	безопасный, сохранный
screen (n)	[skri:n]	экран
sight (n)	[saɪt]	зрение
store (v)	[stɔ:]	сохранять
threat (n)	[θret]	угроза
transmit (v)	[trænz'mɪt]	передавать, отправлять, посыпать
wire (n)	[waɪə]	провод, проволока
Random Access Memory (RAM)	['rændəm 'ækses 'meməri]	запоминающее устройство с произвольной выборкой

1.2. Read and translate the following international words

component	[kəmˈpənənt]	monitor	[ˈmɒnɪtə]
adapter	[ə'dæptə]	virus	[ˈvaɪrəs]
icon	['aɪkɒn]	format	['fɔ:ma:t]
disk	[dɪsk]	calculator	['kælkjʊleɪtə]
graphics	['græfɪks]	diagnose	['daɪəg'nəʊz]

1.3. Discuss the following questions in groups

- 1) What is information?
- 2) What is technology?
- 3) What is information technology?

1.4. Read and try to understand the definition of information technology (IT). Answer the question of 1.3

Information technology (IT), as defined by the Information Technology Association of America (ITAA), is “the study, design, development, implementation, support and management of computer based information systems, particularly software applications and computer hardware”. IT deals

with the use of electronic computers and computer software to convert, store, protect, process, and transmit information.

1.5. Answer the following questions

- 1) Have you ever used a computer?
- 2) When did you first use it?
- 3) Who was your first teacher?
- 4) What type of computer was it?
- 5) What operating system was it?
- 6) How often do you use the computer?
- 7) What do you usually use it for?
- 8) Can you explain what a computer is?

1.6. Read and say what parts of computer are the most important

Computer Parts

A computer is a machine for manipulating data according to a list of instructions. The parts of a computer you can touch, such as the monitor or the central processing unit (CPU) are hardware. All hardware except the CPU and the working memory are called peripherals. Computer programs are software. The operating system (OS) is software that controls the hardware. Most computers run the Microsoft Windows OS. MacOS and Linux are other operating systems.

The CPU controls how fast the computer processes data or information. We measure its speed in megahertz (Mhz) or gigahertz (Ghz). The higher the speed of the CPU, the faster the computer will run. We measure the random access memory (RAM) of the computer in megabytes (MB). RAM controls the performance of the computer when it is working and moves data to and from CPU. Programs with a lot of graphics need a large RAM to run well. The hard disk stores data and software programs. We measure the size of the hard disk in gigabytes (GB).

How can you protect your computer? Don't worry too much about viruses. You may never see one. There are just a few ways to become infected that you should be aware of. The sources can be service people, pirated games, putting floppies in publicly available PCs without write-protected tabs¹. Carry a virus-checking program and scan the PC before letting it write data onto floppies. There are actually two kinds of antivirus programs: virus shields, which detect viruses as they are infecting your PC, and virus scanners, which detect viruses once they've infected you. Viruses are something

to worry about, but not a lot. A little common sense and the occasional virus scan will keep you virus-free.

Ways to prevent infecting of your computer:

- don't use pirated software
- don't forget to update your antivirus program regularly
- don't surf the Internet in case antivirus program is not installed.

Note:

¹ write protected tabs – наклейки защиты от записи.

1.7. Look at these words from the text. Write H (hardware), P (peripheral), S (software) or M (measurement) next to each one

- | | | |
|-------------|--------------|-----------------|
| 1) CPU | 5) RAM | 9) Linux |
| 2) MacOS | 6) megahertz | 10) scanner |
| 3) megabyte | 7) mouse | 11) gigabyte |
| 4) printer | 8) modem | 12) floppy disk |

1.8. Which words go together

A	B
micro	work
spread	processor
floppy	disk
print	sheet
lap	out
net	top

1.9. Match the definitions

1) a printer	a) thick wire covered with plastic that is used for carrying electricity
2) a monitor	b) a piece of a computer with keys on it used for putting information
3) a computer	c) a computer screen
4) a cable	d) an electronic object you move to do things on a computer screen
5) a keyboard	e) a piece of equipment used for printing documents done on a computer

6) anti-virus program	f) a machine that stores programs and information in electronic form and is used for writing, calculating, communication on the Internet
7) CD-ROM	g) the main disk inside a computer used for storing programs and information
8) CPU	h) central processing unit. This is a PC's "heart" or "brains"
9) hard disk	i) a disk for storing computer information
10) operating system	j) a program that finds and removes viruses from a computer
11) peripheral	k) any equipment that is connected externally to a computer. For example: printers, scanners and modems
12) program	l) the basic software that manages a computer m) software that operates a PC and does various things, such as writing texts, keeping accounts and drawing pictures

1.10. Three speakers are describing the equipment they each need. Choose words from the list to complete their descriptions

e.g. **(1) high resolution**

3 ½", high resolution, compatible, high-level, dot matrix, upgradable, non-glare, laser, single, compact

Michael Riccioli, architect

"I want to buy a high-speed computer, so that I can get my reports finished quickly. I need _____(1) colour graphics to make my plans clear to the client. I have to use sophisticated programs so the computer must work with _____(2) software. I need something with an _____(3) memory to make it easy to expand the system."

Hilary Davies, sales representative

"I need a lightweight computer which I can travel with, which is _____(4) and can be easily carried on the shoulder. It must be _____(5) with my office computer, and must work with a _____(6) printer as we need very high quality printouts."

Ruben Greenberg, Harvard business student

"I don't want anything too complicated, a word processor with a _____(7) disk drive will do, for _____(8) disks. I must have a _____(9) screen so that my eyes don't get tired. I will also need a simple, cheap, _____(10) printer."

One of the speakers chose this personal computer. By reading the technical specifications, try to work out who it was.

386



80386 processor
20 MHz
1 Mb RAM
1.44 Mb 3.5" disk drives 65 Mb hard disk
4×16 bit plus 1×8-bit expansion slots
High resolution 14" VGA colour monitor
Latest graphics and word processing packages included

1.11. Using ex. 1.6, 1.7 tell the class about the characteristics of the computer you use or the one you'd like to buy; how do you protect your computer from viruses?

1.12. Read and divide the text into some parts. Give a title to each part

Computer Revolution

Nowadays, we cannot imagine our life without computers and the fact is that they have become so important that nothing can replace them. Since 1948 when the first computer was invented our life has changed so much that we can call it the period of digital revolution.

First computers differed from today's ones. They were so huge that some occupied 1-2 rooms or a building. But they were relatively slow. To better understand the very fast development of computer technology let's look back at some of the first stages of a progress. Computing devices were constructed in the 1930s and 1940s by Claude Shannon. They had flexible

programmability. Nowadays computers may also be as huge as the old ones but they are millions times faster. They are used mainly for complex operations to solve multipurpose tasks. Thanks to them people have access to enormous amount of information.

The next important stage in developing computer technology is the year of 1980. In this year a special team of IBM Company developed the first PC (Personal Computer). The operating system for this PCs was developed by very young talented programmers Bill Gates and Paul Allen, founders of Microsoft. The first PCs were very expensive and had a memory of 16k, ran with a processor speed 4.77 Mhz. Within the period of 10 years the Company has successfully upgraded the most important characteristics of PCs. Moreover the cost of buying a PC considerably decreased contributing greatly to its popularity. A PC became a commodity item and it has become the machine people can deal with both at work and at home.

Computer technology changes fast, but a desktop PC usually has a tower, a separate monitor, a keyboard and a mouse. The CPU, modem, CD-ROM and floppy disk drives are usually inside the tower. A notebook is a portable computer with all these components inside one small unit. Notebooks have a screen, not a monitor, and are usually more expensive than desktops with similar specifications. It also has a built-in speakers, keyboard, a web-camera, a microphone and some other devices.

1.13. Match the phrases (A) with their Russian equivalents (B)

A	B
1) imagine our life	a) товар широкого спроса
2) nothing can replace them	b) занимать здание
3) digital revolution	c) отличаться
4) differ from	d) относительно медленно
5) occupy a building	e) решать многофункциональные задачи
6) relatively slow	f) основатели Майкрософт
7) flexible programmability	g) успешно усовершенствованы
8) to solve multipurpose tasks	h) ничего не может их заменить
9) enormous amount	i) представить нашу жизнь
10) founders of Microsoft	j) огромный объем
11) successfully upgraded	k) революция в цифровой технике
12) a commodity item	l) легкая способность к программированию

1.14. Scan the text again and make the list of the characteristic of PCs and portable computers

Characteristic Features

PC	Portable computer
1. Monitor	1. Screen

1.15. Speak about computer revolution using the titles of each part of the text (ex. 1.12) and the information of ex. 1.14

UNIT 2. THE INTERNET

2.1. Read and remember the new words

attribute (n)	[ə'tribju:t]	свойство, характерный признак
at random		наугад, наобум, наудачу
authority (n)	[ə: 'θorəti]	источник информации
beyond (prep)	[bi'jond]	свыше, за пределами
cyberspace(n)	['saibəspeis]	киберпространство
destroy (v)	[di'stroi]	разрушать
feedback (n)	['fi:dbæk]	обратная связь, отдача
join (v)	[dʒɔɪn]	соединять
link (n)	[lɪŋk]	связь, соединение
network (n)	['netwɜ:k]	сеть
nuclear (adj)	['nju:klɪə]	ядерный
satellite (n)	['sætəlait]	спутник
share (v)	[ʃeə]	распределять
surf (v)	[sɜ:f]	«путешествовать» по Интернету

2.2. Read and translate the following international words

chat	[tʃæt]	internet	['intənet]
forum	['fɔ:rəm]	browser	['braʊzə]
video	['vidiəv]	gigabyte	['gigəbait]
innovation	['ɪnə'veɪʃn]	site	[saɪt]
group	[gru:p]	design	[dɪ'zaɪn]

2.3. Match the words / phrases to the definitions

e.g.: 1 – c

1) the internet	a) moving from one document or web site to another to find information
2) the web	b) copying information from a web site to your own computer
3) a web site	c) a network of computers all over the world joined by phone lines, satellite or cable
4) surfing the net	d) a system linking millions of documents stored on the internet
5) e-mail	e) the place on the internet where a company/organization/ etc. stores its documents
6) downloading	f) electronic messages sent to someone over the internet

2.4. Fill in the gaps

network, cyberspace, random, create, transfer, navigate

- 1) You can sometime have a computer ... that is not connected to the Internet.
- 2) It is easy to ... around the screen with a mouse.
- 3) Berners-Lee discovered how to ... links between computers in new ways.
- 4) Some people surf the Internet at ... just to see what they can find.
- 5) People used the Internet to ... information from one place to another.
- 6) When you surf the Internet, you are traveling in

2.5. a) Listen and mark the statements as T (true) or F (false)

1. The Internet was started in 1990.
2. The Internet links computers.
3. To visit a web site, you simply get connected to a phone line.
4. The main use of the Internet is to find mistakes.
5. Using the Internet is getting more expensive.

2.5. b) Listen again and correct the false statements, as in the example

The Internet wasn't started in 1990. It was started in 1968.

2.6. Read and translate the text

The Internet (FAQs) (Frequently Asked Questions)

The Internet is without doubt one of the most important inventions in history. It was started in 1968 by the US government, but at first it was used mainly by scientists.

Tim Berners-Lee invented the World Wide Web (WWW) when he discovered a way to jump to different files on his computer using the random, or unplanned, links between them. He then wrote a simple coding system, called HTML (Hyper Text Markup Language), to create links to files on any computer connected to the network. This was possible because each file had an individual address, or URL (Uniform Resource Locator). He used a set of transfer rules, called HTTP (Hyper Text Transfer Protocol), to link web files together across the Internet. Berners-Lee also invented the world's first browser. This lets you locate and view web pages and also navigate from one link to another.

The WWW became available to everyone in 1991 and the number of Internet users grew from 600,000 to 40 million in 5 years. Today, that number is much larger and there are now many browsers that provide web pages, information and other services.

What exactly is the Internet?

The Internet is a network (several networks, in fact) of millions of computers around the world, connected by phone lines, satellite or cable, so that all the computers on the net can exchange information with each other. The Internet links computers and World Wide Web is a system which links the

information stored inside these computers. The main use of the Internet is to find information – for your schoolwork or job, or just to find out more about your hobbies, sports or current events. You can also use the Internet to read newspapers and magazines, play games, plan your holiday or buy things from your favorite shop. E-mail makes possible to send electronic messages anywhere in the world in seconds, and you can use the Internet to chat with people and make new friends.

If you don't already use the Internet, all you need to get started is a computer, a modem and a phone line. Using the Internet is getting cheaper and easier all the time. Are you ready to surf the Net? There is a whole exciting Internet world out there waiting for you!

2.7. Fill in the words from the list, then make sentences using the completed phrases

web, surf, exchange, computer, change, get, electronic, enter, current, phone, important

- | | |
|-----------------------|-----------------------|
| 1) ... inventions | 7) to ... the address |
| 2) to ... the world | 8) a ... screen |
| 3) ... lines | 9) to ... the net |
| 4) to ... information | 10) ... events |
| 5) ... documents | 11) to ... started |
| 6) a ... site | |

2.8. Read the text again, and then use the notes below to talk about the Internet

Internet	network of computers around the world
You need:	computer, modem and phone line
To surf the net you:	enter a web site address, connected to the web site, download document, page appears on screen, click on underlined words connected to the new documents/web sites
You can use it to:	find information for work/job/hobbies/sports; current events, read newspapers/magazines, play games, plan holidays, buy things, send electronic messages (e-mail), chat with people, make new friends

2.9. Rewrite the sentences using the following verbs to introduce Indirect Speech

*complain of, thank for, ask for, advise, wonder if, suggest, agree,
want to know, explain, recommend*

- 1) Tom said: "My computer keeps downloading information very slowly. Can you help me?"
- 2) Ann answered: "You'd better call a service and update it."
- 3) Tom said: "Thank you for good advice. Moreover my printer is not working properly. Don't know what to do?"
- 4) Ann asked: "May be it's out-of-date. I think you should buy more advanced version of a laser printer."
- 5) Tom asked: "You are right. It's really so. Ann, have you any idea how to use this program?"
- 6) Ann answered: "I'm afraid, I'm not an expert in the field. I'm sure you'll find some recommendations in the Net."

2.10. Do you use the Internet? If not would you like to? Which of these things do you (or would you like to) use the Internet for?

- a) finding information
- b) playing games
- c) joining chat groups
- d) online shopping
- e) joining newsgroups.

2.11. Read the list of points about the Internet advantages (A) and disadvantages (D). Then act out short dialogues in pairs, as in the example

A: One of the disadvantages of using the Internet is that web pages with photographs, music and video make downloading slow and boring.

B: I agree, but on the other hand, the latest information is available to you at any time, quickly and easily.

- 1) Web pages with photographs, music and video make downloading slow and boring.
- 2) The latest information is available to you at any time, quickly and easily.
- 3) Online shopping can save your time and money.

- 4) Finding the information you want can take hours.
- 5) You can share your hobbies and special interests with newsgroups and chat groups.
- 6) There is too much advertising instead of information you need.
- 7) You can make new friends in chat groups.
- 8) Making “chat friends” is not the same as meeting people personally.
- 9) If you can send e-mail, it will be fast and cheap.

2.12. Use the browser to surf the Internet at random. Find five interesting web sites to tell the class about, write down the URL (Uniform Resource Locator) of each web site and present the list to the group

KEY VOCABULARY
MODULE I
(Information Technologies)

access (n)	keyboard (n)
at random	link (n)
browser (n)	monitor (n)
cable (n)	network (n)
chat (n)	operating system
circuit (n)	output (n)
connect (v)	process (v)
connected (part II)	protect (v)
connection (n)	random (adj)
cyberspace (n)	Random Access Memory (RAM)
data (n)	satellite (n)
device (n)	screen (n)
digital (adj)	share (v)
download (v)	site (n)
hardware (n)	software (n)
icon (n)	surf (v)
innovation (n)	transmit (v)
input (n)	virus (n)
internet (n)	wire (n)
join (v)	

APPENDIX 1

SUPPLEMENTARY TEXTS

Text 1

Computer – it's a machine for carrying out calculations and performing specified transformations on information, such as storing, sorting, correlating, retrieving and processing data. The main disadvantage of computers is that staring at a screen for long periods of time can be damaging to the eyes, and sitting on a chair for hours at a time is certainly not healthy. Secondly computers distract from social interactions such as conversation. Also, people can be inclined to become anti-social and stay at home and use their computer. Finally, the most persuasive argument against the use of computers is that the more jobs are done by computers the less are done by people. It isn't very good for increasing people population. However, the advantages of computers are numerous, such as undeniable educational benefits, especially to children. School subjects become more interesting when presented on a computer screen. Moreover, computers can be fun with a seemingly endless variety of games which can be played on them. In addition, computers are valuable to any business, making life easier and saving time by being capable of storing and retrieving vast amounts of information at the touch of the button. I think computer has a lot of disadvantages and advantages. Yet, despite the health problems, risk to jobs and personal interaction, it seems that as long as the use of computers is regulated the benefits computers provide to education and businesses are invaluable. Computers make our life easier.

Text 2

Word Processing

Word processing is the use of computers to type, edit, and print letters, reports, articles, and other documents. It has replaced typewriting for many tasks at home, in school, and in the office. Business people, authors, students, and lawyers turn to word processing as a tool for writing.

Three main types of equipment are used for word processing: (1) personal computers, (2) dedicated word processors, and (3) electronic typewriters. Personal computers need special instructions called programs or software to perform word processing. Dedicated word processors are computers that do only word processing. Most dedicated word processors have built-in

word processing software. Electronic typewriters resemble electric typewriters but include a built-in dedicated computer. The computer provides limited word processing capabilities, such as the ability to store and automatically type a small amount of text.

Personal computers and dedicated word processors display characters on a computer screen as the user types them. Words, lines, paragraphs, and pages can be added, deleted, moved, or copied with a few keystrokes or the click of a button on a handheld control called a mouse. Most word processing programs and dedicated word processors enable the user to check for spelling errors. Many can check grammar in a limited way.

At the touch of a key, the user can print out an entire document. The computer can store the document on a magnetic disk, so additional copies or corrections can easily be made later. In addition, most word processing programs for personal computers and some dedicated word processors can sort and merge lists and perform limited mathematical computations.

Personal computers are the most powerful and versatile of the word processing machines. They can be programmed to do many things besides word processing. Computers can transfer information to other computers linked in a network or, using a device called a modem, send information over telephone lines. Personal computers are also the most expensive word processing machines. Dedicated word processors are a less expensive option for individuals and small businesses whose computer needs are limited to word processing.

Electronic typewriters can perform only the most basic word processing functions, such as inserting, deleting, and underlining text. Most can also check for spelling errors. On many electronic typewriters, a small screen displays material as it is typed. Many electronic typewriters have a memory, but the amount of text it can store is much smaller than in a personal computer or dedicated word processor.

Computer companies introduced relatively expensive dedicated word processors in the mid-1970's. Prices fell in the 1980's, and personal computers and word processing programs for personal computers became common. Personal computers are the most widely used form of word processor.

Text 3

In the last two decades cybernetics has experienced a major breakthrough. This led to the utilization of computers at nearly all parts of our daily life, from personal computers to complicated surgery performing. Surely the uptake of this technology facilitates a lot of difficult tasks but is

this excessive dependence ripping the warmth of our lives? In this essay, I will outline how the availability of computers affects our lives.

Most of the daily tasks an individual experiences are time and effort consuming. These two fundamental qualities could be tremendously saved by the use of computers. The average period required to prepare a decent meal for a middle-class family is around an hour to and hour and a half when using traditional methods. This time could be literally reduced to half if computerized devices are used instead. Moreover, a busy businessman is enabled to easily close a profitable deal just with a touch on this highly programmed laptop while enjoying his family vacation and not having to exert an extra effort of traveling long distances just to sign a deal.

On the other hand, new generations are growing remarkably dependent on these modern utilities, which make them handicapped when it comes to preparing a cup of tea. In addition, psychologists suggest that one of the main reasons for suicidal rate increase is recent electric inventions. This is due to that humans by nature stay emotionally healthy through socializing, but due to the importance of modern technology to maintain a financially satisfying standard of life they gradually insulate themselves. As time passes by each of these individuals gets stuck in a vicious circle of loneliness that eventually leads to suicidal attempts specially among youngsters.

In conclusion, similar to every other invention computer has its benefits and drawbacks, I personally think it all depends upon how we use the given tools . Moderation is the key here to keep the balance and allow us to live in harmony.

Text 4

A web browser is the software program you use to access the World Wide Web, the graphical portion of the Internet. The first browser, called NCSA Mosaic, was developed at the National Center for Supercomputing Applications in the early 1990s. The easy-to-use point-and-click interface helped popularize the Web, although few could then imagine the explosive growth that would soon occur. Although many different browsers are available, Microsoft Internet Explorer, Firefox and Netscape Navigator (a distant third) are the most popular. (Many Mac users prefer the Safari browser.) At one time, Netscape (now owned by AOL) and Microsoft put so much money into their browsers that competitors found it hard to keep up. The battle between the two companies to dominate the market led to continual im-

provements to the software. Version 5.0 and later releases of either browser are excellent choices. (By the way, both are based on NCSA Mosaic.)

Firefox, a more recent entry, was released in November 2004; version 2.0, with enhanced security and other new features was released in October 2006 and has been updated periodically.

You can download Internet Explorer, Firefox and Netscape Navigator for free from each company's website. If you have one browser already, you can test out the others. Also note that there are slight differences between the Windows and Macintosh versions.

Outfitted with a browser, you can surf to your heart's content, but it's easy to get lost in this vast electronic network. That's where your browser really helps, as it comes loaded with all sorts of handy features. Fortunately, you can learn the basics in just a few minutes, then take the time to explore the more advanced functions.

Since the three browsers have more similarities than differences, we'll primarily cover those. For the most up-to-date information about each browser and a complete tutorial, check the online handbook under the Help menu or go to the websites of the respective software companies.

Text 5

The World Wide Web is the most popular part of the Internet by far. Once you spend time on the Web you will begin to feel like there is no limit to what you can discover. The Web allows rich and diverse communication by enabling you to access and interact with text, graphics, animation, photos, audio and video.

So just what is this miraculous creation? On the simplest level, the Web physically consists of your personal computer, web browser software, a connection to an Internet service provider, computers called servers that host digital data, and routers and switches to direct the flow of information.

The Web is known as a client-server system. Your computer is the client; the remote computers that store electronic files are the servers. Here's how it works.

Let's say you want to visit the Louvre museum website. First you enter the address or URL of the website in your web browser. Then your browser requests all the data files that comprise the web page from the web server that host the Louvre's site. The server sends the data over the Internet to your computer. Your web browser assembles and interprets the data, displaying it on your computer screen.

The Louvre's website also has links to the sites of other museums, such as the Vatican Museum. If you click on that link, you will access the web server for the Vatican Museum. In this way, information scattered all across the globe is linked together.

The "glue" that holds the Web together is called hypertext and hyperlinks. This feature allows electronic files on the Web to be linked so you can jump easily between them. On the Web, you navigate – commonly known as browsing or surfing – through pages of information based on what interests you at that particular moment.

To access the Web you need a web browser, such as Microsoft Internet Explorer, Mozilla Firefox or Netscape Navigator. How does your web browser distinguish between web pages and other types of data on the Internet? Web pages are written in a computer language called Hypertext Markup Language or HTML.

Text 6

Think of the World Wide Web as a vast collection of electronic files stored on millions of computers all around the world. Hypertext links these files together. Uniform Resource Locators or URLs are the addresses used to locate the files. The information contained in a URL gives you the ability to jump from one web page to another with just a click of your mouse. When you type a URL into your browser or click on a hypertext link, your browser sends a request to a remote computer, called a web server, to download one or more files. Every URL is unique and identifies one specific file.

What does a typical URL look like? Here are a few examples:

<http://www.learnthenet.com>

The home page for Learn the Net.

<ftp://rtfm.mit.edu/pub/>

A directory of files at MIT available for downloading.

<news:rec.gardens.roses>

A newsgroup on rose gardening.

<http://blogs.reuters.com/soccer>

A blog about soccer.

The first part of a URL (before the two slashes) tells you the type of resource or method of access at that address. For example:

http – a hypertext document or directory,

ftp – a file available for downloading or a directory of these files,

news – a newsgroup,

file – a file located on a local drive, for instance, the hard drive of your computer.

The second part is typically the address of the computer where the data or service is located. Additional parts may specify the name of a file, the port to connect to, or the text to search for in a database.

You enter the URL of a site or web page by typing it into the Address bar of your web browser.

Browsers can store the URLs that you want to revisit by adding them to a special list. Netscape Navigator and Firefox call them Bookmarks; Microsoft Explorer calls them Favorites. Once you add a URL to your list, you return to that web page simply by clicking on the name on the list, instead of retyping the entire URL.

Most of the URLs you will use start with *http*, which stands for Hyper-text Transfer Protocol, the method by which HTML files are transferred over the Web. Here are few other things to know about URLs:

A URL usually has no spaces.

A URL always uses forward slashes (/).

URLs aren't case sensitive. So typing "http://www.learnthenet.com" or "HTTP://WWW.LEARNTHENET.COM" or any variation of upper and lower case letters takes you to the same page.

If you type a URL incorrectly, your browser will not be able to locate the site or resource you want. Should you get an error message or access the wrong site, make sure you spelled the address correctly.

You can find the URL behind any link by placing your cursor over the link. The pointer turns into a hand and the URL appears in your browser's status bar, usually located at the bottom of your browser window.

To learn more about URLs, read the World Wide Web Consortium's Fact Sheet on URLs.

Text 7

Online Music: Turn on & Tune in

If you're a music fan, there's no better source than the Internet. A high-speed connection and a good set of speakers turn your PC into a digital jukebox. With online music services, you can listen to commercial-free channels or choose from your favorite artists and songs; others allow you to burn songs to a CD or load them on a portable player for mobile listening.

As the list of online music services continues to grow, you will undoubtedly wonder which is best. Unfortunately, there's no easy answer. The right

one for you depends on your musical taste and how you like to listen to music.

How They Work

Music services break down into two basic types: subscription and non-subscription. With non-subscription services, you pay to download individual songs or an entire album. Apple's iTunes Music Store has sold over a billion songs at US \$.99.

With subscription services you pay a monthly fee to access libraries of a million or more songs. But you don't actually own the songs. Once you end your subscription, you can no longer listen to your music, unless you've actually purchased individual songs. Most subscription services also charge an additional fee for their "To-Go" service, which lets you load songs on a portable device. When evaluating a service, consider your listening habits.

Perhaps the most important question is whether the service has the music you want. It doesn't matter what it costs if you don't like the tunes. While most services boast libraries of more than a million songs, it's quality, not quantity that matters. For instance, e-Music specializes in non-mainstream artists – terrific if you like Mingus, but not if you're a Madonna fan.

The good news is that most of the services offer a free trial, since you won't really know what's stored in the music vault until after you join. If you don't like the service, be sure to cancel before the trial period is up or you'll be billed for at least a month.

There's nothing to prevent you from using a mix of services – downloading songs from MSN Music and subscribing to Napster for everyday listening. Since most services only require a month-to-month commitment, you can cancel at any time if you're unhappy. To choose the right service, it helps to understand a bit about digital music files and copyrights.

Digital Music File Formats

You've probably heard about MP3 files, the digital format that launched the online music revolution in the 1990s. It shrinks the size of audio data while preserving sound quality, so music files can be easily distributed over the Internet. While MP3 remains very popular, two other file formats are hot on its heels.

AAC (Advanced Audio Coding) has improved on MP3 by requiring less data to reproduce the same sound quality. Songs downloaded from Apple's iTunes Music Store are encoded in this format.

WMA (Windows Media Audio) has the same audio quality as MP3 with only half the file size. This means that you can store twice as many songs on a hard drive or portable player than with MP3.

While there are other formats in use, AAC, MP3 and WMA are the big three formats used by digital music services. Your personal computer can probably play songs encoded in any of the formats, but most portable music players cannot. For instance, iPods play MP3 and AAC files, but not WMA files. Bottom line: Your portable player may determine which service you can use.

Apple's iPod has an 80% share of the portable player market.

The Rights Stuff

It took the music industry a long time to embrace the digital music revolution, because it feared losing control of its product. Since the industry makes its money by selling CDs, if people can freely exchange perfect digital copies of songs, well...there goes the profit. To allay this fear, engineers have built technical safeguards into some digital file formats that control duplication and sharing of music. Referred to as Digital Rights Management or DRM, both AAC and WMA files employ DRM technology (MP3 files don't).

This is important because it restricts what you can do with songs you download. For instance, you can burn a song to a CD only a limited number of times.

APPENDIX 2

TAPESCRIP^T (to ex. 2.5.a, 2.5.b)

The Internet (Frequently Asked Questions)

The Internet is without doubt one of the most important inventions in history. It was started in 1968 by the US government, but at first it was used mainly by scientists. Since 1990, when the World Wide Web was created, it has changed the world, and its uses are growing every day.

1. What exactly is the Internet?

The Internet is a network (several networks, in fact) of millions of computers around the world, connected by phone lines, satellite or cable, so that all the computers on the net can exchange information with each other.

2. That's the same thing as the Web, isn't it?

Not quite. The internet links computers, and the World Wide Web is a system which links the information stored inside these computers.

3. What is a web site, and how do I visit one?

A company or organization stores its information in electronic documents on one of the Internet computers, somewhere in the world. This computer space – the company’s web site – has an address, in the same way that every telephone has a number. To visit a web site, you simply enter the address. Your computer is connected to the web site, a document is downloaded, and a page appears on your computer screen.

4. How do I “surf the net”?

When you visit a web site looking for information, some words on the page may be underlined, showing that there is more information about the subject in another document. If you click on one of these words, the Web automatically connects your computer to a new document or web site, even if this is stored thousands of kilometers away. You’re surfing the Net!

5. What can I use the Internet for?

The main use of the Internet is to find information – for your school-work or job, or just to find out more about your hobbies, sports or current events. You can also use the Internet to read newspapers and magazines, play games, plan your holiday or buy things from your favorite shops. E-mail makes it possible to send electronic messages anywhere in the world in seconds, and you can use the Internet to “chat” with people and make new friends.

6. What do I need in order to use the Internet?

If you don’t already use the Internet, all you need to get started is a computer, a modem and a phone line. Using the Internet is getting cheaper and easier all the time.

Are you ready to surf the net? There’s a whole exciting Internet world out there waiting for you!

MODULE II

FUNDAMENTALS OF ENGINEERING

UNIT 1. ENGINEERING: WHAT IS ALL ABOUT?

1.1. Read and remember the following words and word combinations

apply (v)	[ə'plaʊ]	применять, употреблять
be concerned with		заниматься чем-либо
branch (n)	[brɑ:tntʃ]	отрасль, подразделение
civil (adj)	['sɪvl]	(здесь) гражданский
civil engineer		инженер-строитель
communication (n)	[kə,mju:nɪkeɪʃn]	коммуникация, связь
communications (pl)		средства связи
construct (v)	[kən'strʌkt]	строить, воздвигать, сооружать,
construction (n)	[kən'strʌkʃn]	здание, строение, сооружение
deal with (v)	[di:l]	работать с, иметь дело с,
design (n)	[dɪ'zaɪn]	план, чертеж
design (v)	[dɪ'zaɪn]	проектировать, разрабатывать
device (n)	[dɪ'veɪs]	прибор, устройство
electrical installation	[,elənstæl'eɪʃnz]	электрооборудование, электроустановка
engine (n)	['endʒɪn]	двигатель, мотор,
engineering (n)	[,endʒɪ'nɪərɪŋ]	инженерное искусство,
evaluate (v)	[ə'veɪlju:t]	оценивать,

exist (v)	[ɪg'zist]	существовать
field (n)	[fi:ld]	область деятельности
fluid mechanics	[flu:d]	гидромеханика
generation (n)	[dʒenə'reʃn]	выработка, производство
improve (v)	[im'pru:v]	улучшать
investigate (v)	[ɪ'vestɪgeɪt]	изучать, исследовать,
maintain (v)	[meɪn'teɪn]	обслуживать, содержать в исправности
manufacture (n)	[,mænju'fæktʃə]	производство, изготовление
mining (n)	['maɪnɪŋ]	горнодобывающая промышленность, горное дело
nevertheless (adv)		тем не менее, однако
occupation (n)	[,ɔ:kju'peʃn]	занятие, профессия
operate (v)	['ɔ:pəreɪt]	работать, управлять
operation (n)	[',ɔ:pəreɪʃn]	деятельность, работа, управление,
prevent an accident	[prə'vent]	предотвратить несчастный случай
safety engineering		техника безопасности

1.2. Answer the following questions

- 1) What is the name of the faculty you study at?
- 2) What other engineering faculties are there at our university?
- 3) How many years do students study for Engineer's Degree?
- 4) Where do NSTU graduates usually work?
- 5) What is engineering?

1.3. Read the following word combinations and translate them into Russian

electrical engineering	safety engineering
mechanical engineering	electronic engineering
automobile engineering	medical engineering

aeronautical engineering	hydraulic engineering
marine engineering	civil engineering

1.4. Tick the fields of engineering NSTU students are trained in. Make up sentences with them using the following phrases from ex. 1.3

As far as I know...

I believe...

I am not sure but I think...

I'm afraid I don't know exactly but...

I suppose...

1.5. Read the text

What is Engineering?

Almost everything we use in modern life is made by engineers. In general, engineering is a science that deals with the design, construction and operation of structures, machines, engines and other devices. Engineers use theory for producing practical answers. We can say that engineering puts ideas into action. The term “engineering” is difficult to translate into Russian because it has a lot of meanings. It can be translated as “инженерное дело”, “разработка”, “строительство”. There are a lot of different types of engineering, which are called branches. So the whole science of engineering can be divided into the following main branches: electrical, mechanical, civil, electronic. There also exist several specialized areas which may be characterized as subfields of the major branches. Now let's say a few words about each branch.

Electrical engineering, for example, is one of the widest fields of engineering. It deals with systems and devices that use electric power and signals. The subfields of this branch are lighting, electricity generation, electrical installations, etc.

Mechanical engineering is concerned with design, testing, building and operation of machinery of all types. A mechanical engineer must be trained in mechanics, hydraulics, and metallurgy and machine design. The subfields of mechanical engineering are **heating and ventilation, marine engineering, automobile engineering, aeronautical engineering**.

Civil engineering deals with the design of large buildings, roads, bridges, railway lines, airports and other constructions. A civil engineer must know the properties of materials, hydraulics and fluid mechanics. The

main subfields of this branch are construction engineering and hydraulic engineering.

Also we should mention such branches as **mining and medical engineering**, which belong partly to mechanical and partly to electrical. Medical engineers, for example, create and deal with high-tech equipment, body scanners, X-ray machines, life-support systems.

Electronic engineering is concerned with the development of components and equipment for communication, computing, and so on.

One more branch of engineering which should be singled out because it can exist in any area is **safety engineering**. Its object is to prevent accidents, developing methods and procedures to safeguard workers.

To sum it up we can say that all the branches of engineering have a lot in common they use science to develop industry, manufacture and to improve our life.

1.6. Find in the text the equivalents of the following Russian phrases

- 1) наука, которая занимается...
- 2) ...внедряет идеи в жизнь
- 3) ...делится на следующие основные отрасли
- 4) производство электроэнергии
- 5) заниматься конструированием всех видов оборудования
- 6) отопление и вентиляция
- 7) проектирование больших сооружений
- 8) гидравлика и гидромеханика
- 9) разработка оборудования и его компонентов
- 10) системы жизнеобеспечения
- 11) обеспечение безопасности рабочих
- 12) иметь много общего
- 13) делать жизнь людей лучше.

1.7. Match the synonyms

A	B
create	be concerned with
branch	equipment
deal with	develop
construct	field
manufacture	built
machinery	produce

1.8. Fill in the gaps in the table, putting the words having the same root with the given one

Adjective	Verb	Noun (sphere)	Noun (profession)
—	—		engineer
	—	science	
mechanical	—		
constructive			
—			designer
—		building	
	communicate		—
preventive			—

1.9. Match the branch and the things it is concerned with

- | | |
|---------------------------|--|
| 1) civil engineering | a) body scanners, X-ray machines,
life-support systems |
| 2) mechanical engineering | b) electricity, lighting |
| 3) electronic engineering | c) construction of bridges, airports,
railways; hydraulics; fluid mechanics |
| 4) electrical engineering | d) to safeguard workers, to prevent
accidents |
| 5) medical engineering | e) cars, ships, heating, planes, operation
of machinery of all types |
| 6) safety engineering | f) computers, communications. |

1.10. Complete the sentences; use the ideas from the text

- 1) Engineering is a science ...
- 2) Branches are called ...
- 3) The specialized areas of engineering are...
- 4 One of the widest fields of engineering is...
- 5) Mechanics, hydraulics, machine design are the fields of ...
- 6) A civil engineer deals with ...
- 7) Creation of hi-tech equipment ...
- 8) Safety engineering is...
- 9) Summing up we can say that...

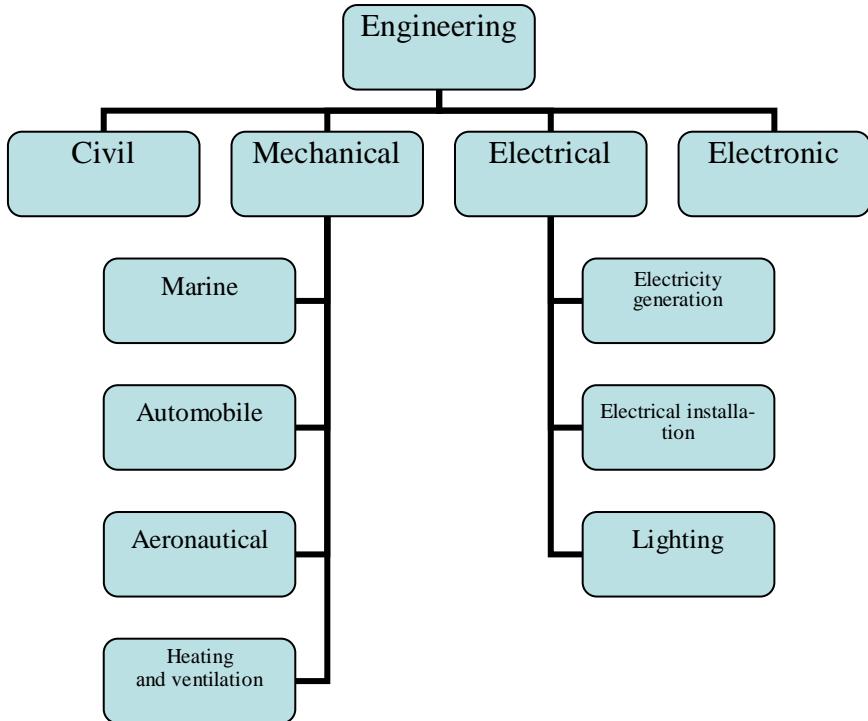
1.11. Tick the true idea based on the text

- 1) a) Only few things in modern world are made by engineers.
b) Practically everything in modern world is made by engineers.
- 2) a) Engineers use practice to produce theories.
b) Engineers use theory to produce practical answers.
- 3) a) There are several branches of engineering.
b) There are two branches of engineering.
- 4) a) Electrical engineering is the subfield of mechanical engineering.
b) Electrical engineering deals with electric power.
- 5) a) Civil engineers design different constructions.
b) Civil engineers design machinery.
- 6) a) Medical engineering is the same as mining engineering.
b) Medical engineering and mining engineering are connected both with mechanical and electrical engineering.
- 7) a) Computing belongs to electronic engineering.
b) Computing is the subfield of electrical engineering.

1.12. Answer the following questions

- 1) How can you translate the word “engineering”?
- 2) What is the general aim of engineers?
- 3) Name the main branches of engineering.
- 4) Is electricity generation a subfield of electrical engineering?
- 5) What is mechanical engineering concerned with?
- 6) Should mechanical engineer be trained in mechanics and hydraulics?
- 7) Transport engineering is the subfield of mechanical engineering, isn't it?
- 8) What does a civil engineer deal with?
- 9) What branch of engineering deals with such equipment as communication systems, computers, integrated circuits?
- 10) What do all the branches of engineering have in common?

1.13. Complete the following scheme about branches of engineering using information from the text. (What branches are left? Where will you put them?) Draw the complete scheme



1.14. Read the text 1.5 again, find the key words to describe the main types of engineering:

- a) civil,
- b) mechanical,
- c) electrical,
- d) electronic.

Make the list of key words for each type.

1.15. Tell about each type of engineering using the list of words from ex. 1.14 and the scheme from ex. 1.13

1.16. Read and translate the following dialogue

(You are a first year student. You want to learn more about your future job /speciality/. You are introduced to a graduate of your faculty.)

- Hello!
- Hello, my name is Misha.
- Nice to meet you, Misha. My name is Kolya.
- I'd like to know more about my future profession. Could you tell me about it?
- Yes, of course. What are your questions?
- You have graduated from NSTU, haven't you?
- Yes, I have. I graduated from NSTU last year with Engineer's Degree.
- Where do you work?
- Now I work at the plant "Electrosignal".
- What types of engineering is your work concerned with?
- It is concerned mostly with electrical engineering. We produce and maintain electrical installations.
- Do you need to have knowledge in electronics or mechanics for your work?
- It is useful to have knowledge in different branches of engineering, but I can't say that I deal a lot with electronic engineering.
- Thank you for answering my questions.
- Welcome any time

1.17. Make up the dialogue similar to the previous one

1.18. Listen to the given extracts. Note the key words for the branches described. And say what branches are mentioned (Appendix 1 to Module II)

1.19. Fill in the gaps with particle “to” before the Infinitive where necessary

- 1) Let me... help you with the translation.
- 2) I'd like ... read more about my future profession.
- 3) What made you ... think so?
- 4) The text was planned ...be read at home.
- 5) They saw him...repair this device.
- 6) Electronic engineering is known ... deal with components of computer systems.

- 7) I would rather ...make a plan to the text.
- 8) You had better ... mention the subfields of mechanical engineering.
- 9) Future engineers must ... study different sciences.

1.20. Replace the group of words in bold type by the Infinitive

- 1) Engineering includes a lot of areas **with which it deals**.
- 2) Engineer has many branches **in which he can work**.
- 3) Engineers use theory **for producing** practical answers.
- 4) Electric systems were constructed **for generating** electric signals.
- 5) All branches of engineering use sciences **which can improve** our life.
- 6) We have one more branch **about which we want to speak**.
- 7) I was surprised **when I heard** about the way **of translating** the word from the exercise.
- 8) The task of a civil engineer is **the design of** large buildings.

UNIT 2. ENGINEERING PROFESSION AND COURSE DESCRIPTION

2.1. Study the list of the following activities. Tick the statements which refer to you

- 1) You enjoy practical projects – creating and investigating things.
- 2) You like finding out how things work.
- 3) You are interested in improving the environment.
- 4) You like helping people.
- 5) You enjoy solving problems.
- 6) You enjoy organizing activities.
- 7) You enjoy science programs on TV or on the radio.
- 8) You sometimes read articles on scientific or engineering topics.

(The more statements you've ticked the more suitable engineering is for you).

2.2. Read the following text and answer the question, using the notes after the text:

What is an engineer?

The Profession of an Engineer

According to “Oxford Advanced Learner’s Dictionary” the first definition for the word “engineer” is “a skilled person, who designs, builds or maintains engines, machines, bridges, railways, etc”. The importance of having skills in particular fields is proved by the fact that many of early branches of engineering were based mostly on empirical¹ information.

Speaking about the engineering profession we can’t help noticing that it is one of the most ancient occupations in history. The first toolmakers² who made arrows from rock were the forerunners³ of modern mechanical engineers. The craftsmen⁴ who discovered metals in the earth were the ancestors⁵ of mining and metallurgical engineers. And technicians who construct marvelous buildings of the ancient world were the civil engineers of their time.

But at present engineers usually make practical application of theoretical sciences. Nevertheless some principles, used by engineers in their work can be applied for solving everyday problems. For example, the methodical way which helps engineers to solve the problems can be useful in everyday life. This way includes five steps: 1) defining the problem; 2) designing a solution; 3) testing the solution; 4) evaluating the solution (if the solution isn’t right, the process is repeated; when a good solution is found, pass to the next step); 5) communicate the solution. Using this method, you can prepare for the test. And the five steps will be as follows: 1) the problem is to pass the test; 2) possible solution can be to study three hours every day; 3) testing the solution is to study for three hours every day and to take the test; 4) evaluation of the solution: if you’ve passed the test with a good mark, then the solution is good; if your mark is bad, then think of a better solution; 5) communicate the good solution, that is – tell your friends about your test-passing technique.

Summing up the information given above we can say that engineers work in many fields and the range of their activities is very wide. But to be a good specialist is not the same as to be a skilled person. You should have some features in your character which will form the basis for your future profession. You should enjoy creating and investigating things, solving

problems, organizing activities. Also it would be good if you were interested in improving the environment. All those personal qualities together with good education will help you to get a deserved, interesting and well-paid job in engineering.

Notes:

- | | |
|--|--|
| ¹ empirical (adj) | – эмпирический, т. е. основанный на практическом опыте |
| ² toolmakers (n) | – изготовители инструментов |
| ³ forerunners of(to)... (n) | – предшественники |
| ⁴ craftsmen (n) ['krɑ:ftsmən] | – ремесленники, мастера, умельцы специалисты |
| ⁵ ancestors (n) ['ænsəstəz] | – прародители, предки |

2.3. Choose the right translation of the following words and word combinations from the text

- | | |
|-----------------------------|--|
| 1) skilled person | a) умный работник,
b) квалифицированный человек,
c) талантливый человек,
d) незаменимый работник; |
| 2) construct a building | a) проектировать мост,
b) создавать проект,
c) разрабатывать план,
d) возводить сооружение; |
| 3) practical application | a) практическое применение,
b) особое применение,
c) практическая задача,
d) конкретный случай; |
| 4) communicate the solution | a) найти решение проблемы,
b) рассказать о решении проблемы,
c) придумывать решение проблемы,
d) узнать о решении проблемы; |
| 5) investigate | a) изучать, b) создавать,
c) проектировать, d) знать. |

2.4. Make up word combinations of the verbs and words given below; add the article where necessary. Translate them into Russian

<i>communicate</i>	<i>apply</i>	<i>design</i>	<i>evaluate</i>	<i>define</i>	<i>create</i>	<i>improve</i>
method	building	rule	problem			
construction	data	force	conditions			
discovery	word	opportunity	information			

2.5. Start the sentences expressing ideas from the text

- 1) ...who designs, builds, maintains engines, machines, etc.
- 2) ...were based mostly on empirical information.
- 3) ...were ancestors of mining and mechanical engineers.
- 4) ...can be applied for solving different problems.
- 5) ...can prepare for test.
- 6) ... then create a better solution.
- 7) ...which will form a basis for your future profession.
- 8) ...in improving the environment.

2.6. Choose any problem from the list below. Create a solution, using the way of five steps (methodical way)

- 1) You don't know English, but in a year you must take the exam.
- 2) Your classes start at 8.30 and you are always late.
- 3) You must prepare for the lesson and you don't know the home task.
- 4) You must translate the text for the next lesson, but you don't have a dictionary or the text itself.
- 5) You've promised to call your friend and you forgot the phone number.

2.7. Choose the necessary form of the Participle

- 1) (Communicating, communicated) the solution of the problem, he was smiling.
- 2) Who is that man (operating, operated) the machine?
- 3) The (preventing, prevented) accident was discussed at the meeting.
- 4) We looked at the construction (creating, created) by the famous architect.

- 5) Everything (designing, designed) was quite marvelous.
- 6) (Investigating, investigated) the object, he found some defects.
- 7) We are gong to show the (improving, improved) version of the project.
- 8) You should learn all the words (including, included) those in the text.
- 9) The equipment (manufacturing, manufactured) by the plant is very necessary for our research.
- 10) The woman (helping, helped) us is a civil engineer.

2.8. Now you study at NSTU and in some years you'll be a qualified specialist. You've chosen one out of eleven faculties. What do you know about your faculty?

Fill in the following table.

What I know about my faculty	What I want to know about my faculty
1...	1...
2...	2...
3...	3...

2.8.1. Find (consulting the Internet, manuals or other sources) the answers for the following questions. (If you've already answered them in the table, then check your answers.) You can also find the facts you were interested in

- 1) What is the name of the faculty?
- 2) What is the date of foundation of the faculty?
- 3) What are the most interesting and important facts in its history?
- 4) Who is the dean of the faculty?
- 5) What is the number of the students studying at the faculty?
- 6) How many departments does the faculty have? Name them.
- 7) What are the entrance exams?
- 8) What specialities can one choose entering the faculty? Which one have you chosen (are going to chose)?
- 9) What is the structure of the course? What sciences and how long do you need to study for getting the degrees of Bachelor, Engineer, Master of Science?
- 10) How many years of foreign language study does the curriculum imply?
- 11) Does the faculty support the best students? In what way?
- 12) What postgraduate program is offered at the faculty?

2.8.2. Using all the found information about the faculty, prepare a presentation of your faculty and speciality. You can do it in groups, in pairs or individually

2.9. Choose one of the following themes and write a composition (120-150 words)

- 1) Engineering investigates, creates, and improves.
- 2) My present study and my future profession.
- 3) The right person to the right job.
- 4) Famous people graduated from NSTU.

UNIT 3. THE 21ST CENTURY ENGINEER

3.1. Read and study the new words on the topic

astute (adj)	[ə'stju:t]	проницательный
breakthrough (n)	['breɪkθru:]	прорыв
current (adj)	['kʌrənt]	современный, текущий
cognitive(adj)	['kɒgnɪtɪv]	познавательный
device (n)	[dɪ'veɪs]	устройство
define (v) =	[dɪ'fain]	определять
determine (v)	[dɪ'tɜ:mɪn]	
embrace (v)	[ɪm'breɪs]	объять, охватить
emerge (v)	[ɪ'mɜ:dʒ]	возникать
enable (v)	[ɪ'neɪbl]	давать возможность, приспособливать
enterprise (adj)	['entəprایz]	здесь предпримчивый
force (n)	['fɔ:s]	сила
handle (v)	['hændl]	1) делать что-либо руками 2) управлять, регулировать
innovate (v)	['ɪnəveɪt]	вводить новшество

3.2. Read these international words and guess their meaning

architecture	[ˈɑ:kɪktɛktʃə]	manipulate	[mə'nipju:leɪt]
equivalent	[ɪ'kwɪvələnt]	innovation	[,ɪnə'veɪʃn]
protein	[prəʊti:n]	chaos	[keɪɒs]
molecular	[ˈməʊlɪkjʊlə]	silicon	[ˈsɪlikən]
molecule	[ˈməlɪkjuel]	system	[ˈsɪstəm]
millisecond	[ˈmɪlli,sekənd]		

3.3. Match the adjectives in A with the definitions in B

A	B
capable	good at learning
flexible	can think of new and interesting ideas
complex	introducing new things, ideas, ways of doing
intelligent	made up of many different parts
innovative	having the ability necessary for smth.
imaginative	can bend easily without breaking
cognitive	letting to acquire knowledge

3.4. Complete the table. Use a dictionary if necessary

Adjective	Noun
capable	
flexible	
complex	
intelligent	
innovative	
imaginative	imagination
cognitive	

3.5. Add suffix *er/or* to the following verbs to make nouns (with the meaning of *performer of the action*). Translate them

e.g.: perform-performer

enable-	handle-
construct-	invent
innovate-	translate-
make-	write-
manufacture-	

3.6. Discuss in pairs and give a definition for the word *innovation*.

3.7. Modern engineers have to deal with a lot of technological innovations. Make a list of the innovations you know

- nanotechnology
-
-
-

3.8. Work in groups. Discuss the qualities a 21st century engineer should possess to use new technologies

**3.9. Compare your description with that given by J. Bordogna.
Agree or disagree**

“21st century engineers will need to be astute makers, trusted innovators, enterprise enablers, technology stewards, and knowledge handlers.”

(Joseph Bordogna, U.S.National Science Foundation)

3.10. Read the summary of his article and fill in the gaps with the words:

defines, technical and scientific skills, hundreds of processors, consists of, be able to reduce, human-made devices, store the equivalent of, trying to mix

What does a 21st century engineer need to know? Let's consider some of the new capabilities that are shaping the future of engineering – *terascale, nanoscale, complexity, cognition and holism*. Science and technology are

transforming forces, that's why these emerging fields will expand our capabilities as engineers and innovators.

In the past our system architectures could handle..... . Now we are working with systems of 10000 processors. On current systems the simulation of a millisecond of protein folding requires 2 months. With new *terascale* systems¹ we maythis time.

Nanostructures² combine the smallest of..... and the large molecules of living systems. This technology lets manipulate a molecule at a time. It could lead to amazing breakthrough, e.g. U.S. Library of Congress in a device we could wear.

If we look at science and engineering, *complexity* can be met in many disciplines and in the most unexpected places. Researchers are..... polymers and silicon, because plastics are chaotic chains³ while silicon..... orderly crystals. The resulting electronic device would have marvelous flexibility and be less expensive.

The dictionary..... *cognition* as “the mental process or facility by which knowledge is acquired”. It is the knowledge, methods, tools that lead us to cognitive revolution which can reduce the influence of the information revolution.

According to the dictionary *holism* is “the concept that entity⁴ is greater than the sum of its parts». Modern engineer should be able to see connections of seemingly different components and integrate them.

Taken together this means that the 21st century engineer will need more than.... . He will need to embrace complex systems and the issues they present.

Notes:

¹ Системы, работающие в масштабе 10^{12}

² Системы, работающие в масштабе 10^{-9}

³ Хаотичные цепи

⁴ Здесь: целое

3.11. Find in the text the opposites of the following words and word combinations

orderly

simple systems

sum of its part

at present

similar components

3.12. Replace the underlined words with their synonyms from the text

- 1) Nanotechnology is one of the promising fields that will change the future.
- 2) The new device will have wonderful elasticity.
- 3) Silicon is comprised of orderly crystals.
- 4) Cognitive revolution can minimize the impact of the information revolution.
- 5) Some of the new capabilities are determining the future of engineering.

3.13. Give the translation of the following phrases, using the text

- современные системы
- белковая свертка
- устройство, созданное человеком
- удивительный прорыв
- упорядоченные кристаллы
- прекрасная гибкость
- кажущиеся несовместимыми компоненты

3.14. Match a verb and a noun to make phrases

- | | |
|---------------|----------------------------|
| 1) to acquire | a) the future |
| 2) to expand | b) capabilities |
| 3) to shape | c) a variety of processors |
| 4) to handle | d) knowledge |
| 5) to require | e) much time |

3.15. Use these word combinations in the sentences of your own

3.16. Make up a description of the ideal 21st century engineer

- personal qualities he should possess
- knowledge he should acquire

UNIT 4. TECHNOLOGICAL INNOVATIONS

4.1. THE NANOTECHNOLOGY

4.1.1. Read and study the new words on the topic

affect (v)	[ə'fekt]	воздействовать, влиять
amplify (v)	[æmpl'fai]	
= reinforce (v)	[,ri: in'fɔ:s]	усиливать
artificial (adj)	[,ɑ:tifi ʃəl]	искусственный
destroy (v)	[d1'strɔɪ]	уничтожать, разрушать
disperse (v)	[d1'spɜ:s]	рассеивать
manufacture (v)	[,mænʃʊ'fæktʃə]	производить
perform (v)	[pə'fɔ:m]	выполнять
replace (v)	[rɪ'pleɪs]	заменять, вытеснять
remove (v)	[rɪ'mu:v]	удалять
resist (v)	[rɪ'zɪst]	противостоять, сопротивляться
surgery (n)	['sɜ:dʒəri]	хирургия
supply (v)	[sə'plaɪ]	поставлять, обеспечивать
supply (n)		запас, поставка
spill (v)	[spɪl]	разливать
store (v)	[stɔ:]	хранить
shape (v)	[ʃeɪp]	формировать
target (n)	['ta:git]	цель
target (v)		нацеливать

4.1.2. Read these international words and guess their meanings

aerosols	['eərəsɒl]
bio-active	[,baɪə'æktyv]
ceramics	[sɪ'ræmɪks]

hierarchy	[ˈhaɪərərɪəkɪ]
hierarchical	[,haɪəˈrɪkəl(ə)l]
polymers	[ˈpɒlɪmə]
product	[ˈprɒdʌkt]

4.1.3. Answer the questions

- 1) What do you know about nanotechnology?
- 2) What can we build with nanotechnology today and what will we be able to build in future?

4.1.4. Read the text and explain what nanotechnology is

Nanotechnology

Nanotechnology is the engineering of functional systems at the molecular scale. Thus it's the science of building tiny things. Today we usually make things by shaping materials – cutting, grinding¹, milling², etc. But in the future, we'll be able to work on a smaller scale and build things atom by atom.

Today scientists can build nanowires – extremely strong tubes that are just four atoms wide. And when they have the manufacturing systems, they'll be able to build anything we want – diamonds, water, food, robots, etc. We'll be able to make all kinds of things smaller, lighter, cheaper, stronger, and smarter.

We are at the start of a technological revolution and nanotechnology will affect every part of our lives – cars, computers, medicine, energy supplies, food, clothes. It will offer better built, longer lasting, cleaner, safer products for home, for communications, for transportation, for agriculture, and for industry in general. And it will happen sooner than most people think. By 2010 you won't be able to count the number of businesses using nanotechnology.

Notes:

¹ шлифовка

² размол

4.1.5. Mark the sentences True (T)/ False (F). Correct the wrong statements

- 1) Nanotechnology is the science of making large things.
- 2) Nowadays scientists can't build nanowires.

- 3) In the nearest future we'll be able to make smaller, cheaper and safer products for all needs.
- 4) Technological revolution won't influence any sphere of our life.
- 5) Nanostructures will be true only in 40-50 years.

4.1.6. Read the information about 4 generations of nanotechnologies given in the table. Give the examples of Participle II

<p><u>1st Passive nanostructures (1st generation products)</u></p> <p>Materials designed to perform 1 task</p> <p>~ 2000</p>	<p>a) Dispersed and contact nanostructures, e.g.: aerosols</p> <p>b) Products incorporating nanostructures, e.g.: coatings, nanoparticle reinforced composites, nanostructured metals, polymers, ceramics</p>
<p><u>2nd Active nanostructures</u></p> <p>For multitasking</p> <p>~ 2005</p>	<p>a) Bio-active, health effects, e.g.: targeted drugs, biodevices</p> <p>b) Physico-chemical active, e.g.: 3D-transistors, amplifiers, adaptive structures</p>
<p><u>3rd Integrated nanosystems</u></p> <p>(with thousands of interacting components)</p> <p>~ 2010</p>	<p>E.g.: guided assembling, 3D networking and new hierarchical architectures, robotics</p>
<p><u>4th Molecular nanosystems</u></p> <p>(molecular manufacturing)</p> <p>~ 2015–2020</p>	<p>E.g.: molecular devices “by design”, atomic design, emerging functions</p>

**4.1.7. Make Participle I and Participle II of the following verbs.
Translate them**

*E.g.: incorporate- incorporating (P1)-включающий, включая
incorporated (P2)-включенный*

describe, develop, design, perform, introduce, integrate, include, build, connect, limit, improve, formulate.

4.1.8. Make up 5 sentences with the participles from ex. 4.1.7

4.1.9. Match the verbs in A with their synonyms in B

A	B
affect	take away
perform	pour out
resist	form
shape	carry out
remove	oppose
spill	influence

4.1.10. Use the verbs from 4.1.9 in the sentences below. Change the form where necessary

- 1) He has beensurgery for 10 years.
- 2) I accidentally..... my drink all over him.
- 3) These stains will be difficult to.....
- 4) This metal is able to.....corrosion.
- 5) You can buy specially.....bricks for an arch.
- 6) Nanotechnology in its advanced form will..... almost all industries and all areas of society.

4.1.11. Complete these predictions about nanotechnology. Use each verb in the list once

<u>construct</u> (1)	perform
replace (with)	store
clean up	take
remove	stop
resist	wear
send	

A Manufacturers will be able <u>to construct</u>(1) cars from lightweight materials that are 50 times stronger than steel. Today's two-ton Cadillac could weigh only 50 kg in the future. The materials used to build cars will be able to.....(2) scratches, dents, and rust (царапины, вмятины, ржавчина)
B We'll be to.....(3) trillions of bytes of information in a structure the size of sugar cube
C Doctors will be able to.....(4) broken human bones (кости) with artificial bones made with nanotechnology. Nanorobots will be able to.....(5) surgery. We'll be able to.....(6) pills(пиллоуи) containing nanorobots
D We'll be able to.....(7) nanorobots up into space to rebuild the ozone layer. Other nanorobots will be able to.....(8) pollutants from water and.....(9) oil spills
E Everyone will be able to.....(10) computers and colour screens because they will be built into their clothes. We'll be able to.....(11) our clothes from getting dirty by making them with stain repellent fabrics (ткани, устойчивые к пятнам)

4.1.12. Match each of the following headings with one of the abstracts (A–E) above

- 1) Medicine
- 2) Clothes
- 3) Car
- 4) Environment
- 5) Computers

4.1.13. Discuss these questions in groups and make a short report about nanotechnologies

- Can you see any applications for nanotechnology in your job?
- What things would you like to be smaller, stronger, etc?
- Could nanotechnology affect employment in your industry? (How?)
- Do you like the idea of having nanorobots inside your body?
- Some people say we'll be able to live for ever with nanotechnology.

Would you like to?

- Is nanotechnology always going to be a good thing? Can you see any dangers?

4.2. NEW SOURCES OF ENERGY

4.2.1. Read and study the new words on the topic

fossil fuel	[fɒsil]	природное топливо
consume (v)	[kən'sju:m]	потреблять
consumption (n)	[kən'sʌmpʃn]	потребление
conserve energy	[kən'sɜ:v 'enədʒi]	сохранять энергию
demand (for) (n)	[dɪ'ma:nd]	спрос
deplete (v)	[dɪ'pli:t]	истощать
diminish (v)	[də'miniʃ]	уменьшать(ся)
electrical power	[ɪ'lektrɪkəl 'paʊə]	электроэнергия
electrical appliance	[ɪ'lektrɪkəl ə'plaɪəns]	эл. прибор
generate electricity	[dʒenə'reit ɪ'lek'trɪsti]	вырабатывать электричество
insulate (v)	[ɪn'sjuleɪt]	изолировать
power(v)	[paʊə]	питать
plug (into) (v)	[plʌg]	подключать
photovoltaic (adj)	[fəʊtəʊvəl'teɪk]	фотоэлектрический
nuclear power	[nju:kliə]	ядерная энергия
renewable (adj)	[ri'nju:əbl]	возобновляемый
non-renewable (adj)	[nɒn ri'nju:əbl]	невозобновляемый
utility company	[ju:'tiləti 'kʌmپəni]	компания по оказанию коммунальных услуг
wall socket	['wɔ:l 'sɒkit]	эл. розетка

4.2.2. Read these international words and guess their meaning

battery	[ˈbætəri]	energy	[ˈenədʒi]
cycle	[saɪkl]	electricity	[ˌelekˈtrɪsiti]
chemical reactor	[ˈkemɪkəl rɪˈækta]	radiation	[ˌreɪdiˈeɪʃn]
gas	[gæs]	thermal	[ˈθɜ:ml]

geothermal	[dʒiːəʊ'θəːməl]	transformation	[trænsfə'meɪʃən]
hydraulic	[haɪ'draʊlɪk]	volt	[vəʊlt]

4.2.3. Add punctuation and capital letters to the text, and then make a list of non-renewable sources of energy

when you plug an electrical appliance into the wall socket do you know where your electricity comes from probably the local public utility company but how does the utility company generate the electricity you use at home if it is like most power companies it produces electrical power by burning fossil fuels coal natural gas or oil it makes steam which turns turbines to generate electricity at the power plant in the u s 88 per cent of all the electricity comes from coal natural gas and oil they are non-renewable fuels which according to the estimate of scientists will run out during this century

4.2.4. Replace the underlined words in 4.2.3 with their synonyms

come to an end
makes
produce
power station
educated guess

4.2.5. Fill in the gaps with the words from the table

electricity	reduce	power	use
generation	consumers	far	users
increase	sources	energy	light
consumption			

We hear so much these days of local problems of electricity.....(1). Many.....(2) are taking steps to(3) their electricity.....(4). This is as a result of the recent.....(5) in electricity tariffs for.....(6). We should all try to.....(7) less.....(8), by insulating our houses, turning off the.....(9) when leaving a room and using less hot water.

We must try to develop alternative(10) of energy. It is known that nuclear power comes to the consumer as electricity, which is convenient form of(11). Although nuclear.....(12) stations are large, they can be built.....(13) from places where people live.

4.2.6. Answer the question

What new sources of energy have you heard about? Give examples of their usage.

4.2.7. Match these alternative sources of energy A to the correct definitions B

A	B
Solar	energy from plant and animal residues (остатки)
Wind	energy from heat inside the earth
Geothermal	energy from the sun
Modern biomass	energy from seawater movement and temperature changes
Ocean	energy from small dams, such as those filled by melting snow
Small hydroelectric	energy from moving air

Note:

A combination of these 6 alternative sources of energy may prove to be our best hope to fill the energy created as supplies of fossil fuels gradually diminish.

4.2.8. Read the text to get information about one of the alternative sources of energy

Solar energy

One of the most promising researches is the development of power stations with direct transformation of solar energy. Almost all energy comes from the Sun. The energy stored in coal, oil, and natural gas is the result of photosynthesis carried by plants that lived hundreds of millions of years ago. Wind energy is actually the movement of the atmosphere driven by the heat from the Sun. It was Russia that was the first in the world to develop and test a photoelectric battery of 32,000 volts, which made it possible to concentrate solar radiation. Currently solar energy is used in two ways: for heat (thermal) and to generate electricity (photovoltaic).

However, the efficiency of a solar power station is considerably reduced because of limited time of its work during the year. But it is possible to improve the efficiency of solar power stations by developing different combinations of solar power stations and traditional ones – thermal, atomic and hydraulic. Today some engineers are working at the problem of developing

electric power stations with the use of a thermal-chemical cycle. It will operate on products of the transformation of solar energy, while the “solar” chemical reactor uses CO₂ and water steam of the thermal power station. The result is that we have a closed cycle.

In Kamchatka there are geothermal power stations operating on hot water-steam mixture from the depth of about a kilometer. In some projects water will be heated by the warmth of mountains at a depth of four-five km.

It is planned that plants working on energy of the solar heat provided by the sun will be built on a larger scale. It is important that all these advances in developing new sources of energy and improving the old ones help to solve the energy problem as a whole and they won't have negative effects on the environment.

4.2.9. Make the words from given letters. Mind the synonyms given in brackets

neregy (power)

ateoper (work)

ronenvirmetn (surroundings)

erateneg (produce)

ateh (warmth)

uceder (diminish)

fyieficenc (productivity)

rovepim (make better)

4.2.10. Change the underlined prepositions for the correct ones

- 1) We develop power stations under direct transformation of solar energy.
- 2) Wind energy is actually the movement with the atmosphere driven by the heat to the sun.
- 3) Photosynthesis is carried from plants that lived hundreds of million years before.
- 4) The efficiency of a solar power station is reduced on limited time of its work.
- 5) At present engineers are working with the problem of developing electric power stations above the use of a thermal-chemical cycle.
- 6) In some projects water will be heated during the warmth of mountains on a depth of four- five km.

4.2.11. Complete the sentences

- 1) Almost all energy.....
- 2) The energy stored in natural resources is the result of.....
- 3) Wind energy is actually.....

- 4) Solar energy is used in two ways:
- 5) It is possible to improve the efficiency of.....
- 6) A thermal-chemical cycle will operate on.....
- 7) In Kamchatka there are geothermal power stations.....
- 8) All these advances in developing new sources of energy and improving the old ones.....

4.2.12. Write the questions using the prompts. Match them to the answers a-h

- 1) Where / all energy / come / from?
 - 2) What / the result /photosynthesis?
 - 3) What /the first country / to develop /a photoelectric battery?
 - 4) How / solar energy / used?
 - 5) Why /the efficiency of solar power stations/ reduced?
 - 6) What /the solar chemical reactor / use?
 - 7) What / power stations / in Kamchatka?
 - 8) What / the purpose of developing new sources of energy?
-
- a) In two ways: thermal and photovoltaic.
 - b) Russia.
 - c) Solving the energy problem.
 - d) Because of limited time of its work.
 - e) The energy stored in coal, oil, and natural gas.
 - f) From the Sun.
 - g) Geothermal power stations operating on hot water-steam mixture.
 - h) CO₂ and water steam of the thermal power station.

4.2.13. Choose the correct alternative (Infinitive/Gerund)

- 1) We need to improve /improving the efficiency of solar power stations.
- 2) The scientists suggested to develop/ developing different combinations of solar power stations and traditional ones.
- 3) They plan to work / working with energy of the solar heat.
- 4) It is worth pointing out / to point out why large hydroelectric stations are not good for use.
- 5) The World Energy Council refused to use / using traditional biomass because of environmental problems it can cause.
- 6) We expect to solve /solving the energy problem in the nearest future.

4.2.14. Read *Energy jokes* based on pun (игра слов). Find the meanings of the underlined words in a dictionary to understand the puns

1. – Why is wind energy so popular?
– Because it has a lot of fans.
2. – Did you hear about the foolish gardener? He planted a light bulb and thought he would get a power plant.
3. – What do cars driven late at night burn for fuel?
– Midnight oil.

4.2.15. Study these *Energy idioms*, and then put them in the sentences below. Change the verb if necessary

- 1) **all steamed up:** to be angry or worried
 - 2) **burn the midnight oil:** to work late at night
 - 3) **burn the candles at both ends:** to work too hard without enough rest
 - 4) **burn out:** to lose one's interest or desire, often due to overuse
 - 5) **get wind of:** to discover or find out
 - 6) **hot air:** meaningless or unimportant things
- a) People who _____ often have accidents because they are tired.
b) The presenter promised his workshop would be very informative and exciting, but I left because he was full of _____
c) After the 2004 season, Nick Jordan was _____ on basketball. He wanted to play baseball instead.
d) Once the students _____ free light drinks, there was a line at the restaurant.
e) Don't get _____ and start an argument.
f) Because she had a term paper due to the next morning, Mary was _____ to finish it on time.

4.2.16. Number the lines of the dialogue in the correct order. Then try to reproduce it

- 1) Hello, glad to meet you, Alex, haven't seen you for ages, since we graduated from the University.
- Oh, your work is very important nowadays. Mankind needs energy for producing light, heat and transportation.

- Sure, that's so. And as the population grows, so does the demand for better quality of life. Energy consumption increases daily.
- Well, let's go to the seminar and listen to the presenter speaking about alternatives to non-renewable fossil fuels.
- Really? As for me, I am with Bell Telephone Company. It is a global leader in electrical engineering. And I deal with new technologies.
- How do you do, Denis, I haven't expected to meet you here. Are you also going to attend this seminar?
- Certainly, as you know, I'm interested in energy problems and the speaker will just speak about it. By the way I work at this University.
- But the threat to clean air and pure water increases too. These natural resources are limited.
- Yes, that's why we should develop new systems to conserve energy and find alternative sources of energy.
- OK. Let's go. I want to know much about it.

4.2.17. Make a presentation on “Renewable sources of energy”

4.3. AUTOMATION

4.3.1. Read the new words and translate the examples with them

robotics (n) [rə(ʊ)'bɒtɪks] робототехника
The robotics revolution changes the kind of work that people do.

dangerous (adj) ['deindʒərəs] опасный
The professor conducted a very dangerous experiment in his lab.

personality (n) [,pɜ:sə'nælɪti] индивидуальность, личность
Your clothes often reflects your personality.

design (v) [dɪ'zain] проектировать, конструировать
Japanese scientists designed a new kind of a service robot last year.

cute (adj) [kju:t] умный, милый
He succeeded in doing the most difficult test. He is so cute.

boring (adj) ['bɔ:rɪŋ] скучный
It was boring to sit there without anything to do.

routine (adj) [ru:'ti:n] обычный, рутинный
So many days are routine and uninteresting, especially in winter.

device (n) [dɪ'veɪs] устройство, механизм
Our laboratories are equipped with modern devices.

react (v) [rɪ'ækt] реагировать
Smart materials react to changes in their environment.

environment (n) [ɪn'veɪrən'ment] окружающая среда
All people should keep the environment in good condition.

sensor (n) ['sensə] датчик
With the help of sensors robots can operate.

instruction (n) [ɪn'strʌkʃ(ə)n] инструкция, указание
Before carrying out the operation one should study all the instructions.

4.3.2. Match the synonyms

- | | |
|-----------------|--|
| 1) machine | a) to behave differently as a result of smth |
| 2) instructions | b) boring |
| 3) to design | c) surroundings |
| 4) to react | d) device |
| 5) environment | e) directions |
| 6) routine | f) to project |

4.3.3. Match English words with Russian equivalents

- | | |
|----------------|---|
| 1) robotics | a) роботы, в) робототехника, с) работа |
| 2) personality | a) личность, в) персона, с) персонаж |
| 3) to react | a) реагировать, в) реакция, с) переделать |
| 4) environment | a) исследование, в) эксперимент,
c) окружающая среда |
| 5) to design | a) проектировать, в) показывать,
c) дизайн |

- 6) sensors а) чувства, в) сенсация, с) датчики
7) cute а) хитрый, в) милый, с) остроумный

4.3.4. Read the text A and put the sentences and phrases (a-g) below in the correct places (1-7)

- a) in factories, laboratories or warehouses
 - b) In this play machines behave like people
 - c) like an arm
 - d) can “see” the environment and
 - e) like handling nuclear or radioactive metals
 - f) The reality is less exciting.
 - g) understand the messages from the sensors and

Text A

a	We can thank the world of literature for the words robot and robotics . The word robot was first used by the Czech playwright Karel Capek who in 1921 wrote a drama, RUR (Rossum's Universal Robots). It was about machines that could move like human beings and do their work. (1) _____ Asimov used it in a short story in 1941.
b	Robots often star in films too, for example dangerous machines like Terminator or cute ones like R2D2 in "Star Wars". (2) _____ Industrial robots don't have personalities and they don't think like people. Most real robots are designed to save people from dangerous jobs (3) _____ or boring, routine work (4) _____.
c	A simple robot is made of: <ul style="list-style-type: none">• A mechanical device (5) _____ that can react to its environment.• Sensors that (6) _____ give information to device.• Systems or computer programs that (7) _____ give the device instructions.

4.3.5. Read the text again and give each paragraph (a, b, c) the correct heading

Application	Structure	Historical facts
-------------	-----------	------------------

Answer the following question:

Which title is the best to the whole text? Why?

- a) Imaginary robots in film and fiction.
- b) Robots: fantasy and reality.

4.3.6. Read the text again and say whether these statements are true(v) or false(x)

- 1) The word “robot” was first used in the drama written by Asimov.
- 2) Robots are also used as characters in films.
- 3) Robots can replace people in dangerous jobs.
- 4) Robots have personalities and they think like people.
- 5) A simple robot is made only of a mechanical device.
- 6) Robots are ideal in performing routine and boring work.

4.3.7. Match the words (A) with their corresponding definitions (B)

A	B
1) device	a) attractive, clever
2) to react	b) a machine that can do human tasks automatically
3) cute	c) to make a plan of smth., to create
4) robot	d) likely to lead to physical harm and danger
5) to design	e) a piece of equipment
6) dangerous	f) to behave differently as a result of smth.

4.3.8. Complete the sentences with the suitable words from the text

- 1) _____ is the science that is concerned with creating, designing and developing robots.
- 2) Robots can react to its _____ with the help of sensors.
- 3) If robots have _____ they can replace people in future.
- 4) A special computer program gives the device _____ what to do.
- 5) _____ means to behave in a different way under certain circumstances.
- 6) Of course, most robots are safe but they can be _____ machines like Terminator.

4.3.9. Replace the underlined words with the words used in the text

- 1) In factories robots save people from boring work.
- 2) In reality robots can't have a character of a human being..
- 3) This type of robot was created by the scientists and engineers of our factory.
- 4) These devices help robots to see the environment.
- 5) They gave us directions how to use that machine.

4.3.10. Complete the sentences with the verb from the box. Sometimes you need a verb (Present, Past, Future Simple) and sometimes you need -ing form (working/going etc.)

wait/waiting	react/reacting
design/designing	move/moving
work/working	give/giving

- 1) The group of scientists ... a new type of robot once a year.
- 2) The designers are ... in the laboratory at the present moment.
- 3) Look over there! That robot is ... like human beings.
- 4) If there are any changes in the environment the device will ... to them.
- 5) My colleagues were ... for me when I arrived.
- 6) Our teacher ... us instructions before each experiment.

4.3.11. Put the verb in brackets into the right form, *the Infinitive* or *-ing* form

- 1) Have you finished ... (conduct) this research?
- 2) I suggest ... (do) the experiment in our well-equipped laboratory.
- 3) They don't mind ... (design) a new machine.
- 4) That robot stopped ... (react) to any changes. It was broken.
- 5) Somebody forgot ... (switch) off that machine.
- 6) The designers promise ... (finish) this project in time.

4.3.12. In pairs, design a robot to do a dangerous or boring job. Describe its structure and functions

For example:

Structure(description)	Work to do
A mechanical arm	Pack boxes, load goods etc.

4.3.13. Think about the examples of robots used in films and real life. Tell the class about them

Which one is the most interesting or technologically advanced?

Text B

4.3.14. Read and study the given words and phrases

pose danger to sb.= create danger	создавать опасность
a printed circuit board	печатная схема
require great strength/efforts	требовать огромных усилий
deal with= be concerned with	иметь дело, заниматься чем-то
affect	воздействовать
install	устанавливать
assume	брать, допускать, выполнять
assembly	сборка

4.3.15. Answer the following questions

- 1) How are robots used in industry?
- 2) What operations could be done by robots in automobile industry?
- 3) What are robots used in electronics for?
- 4) What operations could be done by robots in dangerous and uncomfortable for human workers conditions?

4.3.16. Read the text and complete the table

Robots Help People

Many of the robots in use today do jobs that require great strength or pose danger to people working in some environments. For example, robots are particularly useful in the automobile industry where parts of automobiles are about 100 kilos or more and it's difficult to deal with them. Robots can easily move heavy components between workstations.

Spray painting is another task suited to robots because robots don't need to breathe. They are not affected by toxic fumes.

The third in the list of useful jobs for robots is the assembly of electronic parts. Robots are perfect at installing chips in printed circuit boards and never put a chip in the wrong place. Earlier robots could not usually see and hear but newer types of robots are equipped with video cameras and other sensing devices. These robots are used in space projects, nuclear reactor stations and underwater works. Such jobs are especially difficult and dangerous for human workers that is why they are more and more assumed by robots.

Types of Jobs for Robots	Reason
Automobile industry	
Spray painting	
Assembly of electronic parts	
Space projects	
Nuclear reactor stations	
Underwater works etc.	

4.3.17. Find English equivalents in the text and read the sentences with them

- 1) установка чипов
- 2) особенно полезны
- 3) требует больших усилий
- 4) двигать тяжёлые детали
- 5) ядовитые испарения, пары
- 6) иметь дело
- 7) оборудованы

4.3.18. Complete the sentences. Choose the right word or phrase in brackets

- 1) Robots move heavy components between (rooms, workstations, cities).
- 2) Robots are used for spray painting because they don't need to (eat, move, breathe).
- 3) Newer types of robots are equipped with (intellect, video cameras, printed circuit boards).

- 4) Robots are used in electronics for (installing, deleting, replacing) chips.
- 5) Robots do jobs that are (dangerous, funny, safe) for people.

4.3.19. Skim through the text again and give the end of the sentences

- 1) Robots are particularly useful in
- 2) Spray painting is another task suited to robots because
- 3) Robots are perfect at
- 4) Newer types of robots are equipped with
- 5) Robots are used in
- 6) Such jobs are especially difficult and dangerous for

4.3.20. In pairs, discuss advantages and disadvantages of using robots in industry and different spheres of science and life. Discuss the question: “Can robots replace people in future?”

4.3.21. Answer the following questions

- 1) Can you give any example of a robot used for entertainment?
- 2) Have you heard about such robots as AIBO and ASIMO?

4.3.22. Work in two groups, read the information about Robot (A)/(B). Tell the students of another group about Robot (A)/(B)

Robot A

AIBO (Artificial Intelligence roBot) is a robot dog, developed by Sony. He is 27,4 cm long, 26,6 cm high and weighs 1,5 kilos. You can control him with a computer, a remote control or with voice instructions. He needs a battery and can operate for about 1,5 hours. The price is about 1300 \$. **AI-BO** is not just a joy. Sony developed and tested him as an electronic friend for old people.

Here some things AIBO can do:

- walk and run backwards and forwards
- stand on his back legs and lower his front legs
- see and remember things
- understand the name you give him
- dance
- understand 75 different voices (Sit! Come ! No !, etc.)

- take photographs
- make robotic dog sounds
- learn new actions

Robot B

ASIMO (Advanced Step in Innovative MObility) is a humanoid robot, developed by the Honda Motor Co. He is 120 cms tall and he weighs 43 kgs. You can control him with a computer or give him voice instructions.

ASIMO is a service robot. He is designed to help people. He can walk and climb stairs, so he can carry food upstairs to a sick person and do other jobs around the home.

Here are some things ASIMO can do:

- walk forwards and backwards
- bend¹ and straighten his joints²
- adjust³ the size of the steps he takes
- climb up and down stairs
- turn left, right and around
- raise and lower his arms 105 degrees
- operate light switches
- open and close doors
- carry loads
- push cars

Notes:

¹ to bend – сгибать

² joints – суставы

³ to adjust- to regulate

4.3.23. Try to guess whether the following sentences are true or false. If the sentence is false make it true

A

- 1) AIBO is a toy for children.
- 2) He can remember his name.
- 3) He can bend his legs.
- 4) He can stand on his front legs.
- 5) He can raise and lower his front legs.
- 6) He can turn on a light.
- 7) He can speak 75 words of English.

- 8) He can learn to do new things.
- 9) He can move his ears and tail.
- 10) He can bend his back.

B

- 1) ASIMO is developed by Sony.
- 2) He can't raise his arm more than 110 degrees.
- 3) He can use a telephone.
- 4) He can walk forwards and backwards.
- 5) He can dance.
- 6) He can run.
- 7) He can understand voice instructions.
- 8) He can take small and large steps.
- 9) He can't carry loads.
- 10) He can't help people.

4.3.24. Answer the following questions

- 1) What is ASIMO?
- 2) Which company developed ASIMO?
- 3) How can we control ASIMO?
- 4) Why is ASIMO called a service robot?
- 5) By means of what can AIBO operate?
- 6) What actions of AIBO are similar to those of a real dog?
- 7) Why is AIBO considered to be an electronic friend for old people?

4.3.25. Speak on the topic Robots and Robotics. Make use of the following plan (150–200 words)

- I. Introduction
The History
- II. Main Body
 1. Spheres of Usage: a) industry
b) science
c) entertainment
 2. Functions and Reasons
- III. Conclusion
“Can Robots Replace People?”

4.4. BIOENGINEERING

4.4.1. Read and study the new words and phrases

artificial	[,ɑ:tɪ'fiʃəl]	искусственный
intellect	'intəlekt]	интеллект
function	[,fʌŋkʃən]	функционировать
properly	'prɒpəli]	правильно
missing	['mɪsɪŋ]	отсутствующие
parts	['pa:ts]	части
bioengineering	[,baɪəʊ,endʒɪ'nɪəriŋ]	биотехнология
agricultural engineering	['ægrɪ,kʌltʃərəl ,endʒɪ'nɪəriŋ]	сельскохоз. техника
bionics (n)	[baɪ'ɒnɪks]	бионика
biochemical engineering	[,baɪəʊ'kemɪkəl ,endʒɪ'nɪəriŋ]	биохимическая инженерия
human-factors engineering	['hju:mən 'fækτəz ,endʒɪ'nɪəriŋ]	разработка техники с учетом психофизиологических факторов
bioenvironmental engineering	['baɪəʊvɪn,vraɪən'mentl ,endʒɪ'nɪəriŋ]	биоэкология, относящаяся к биосфере
biological control system	[,baɪə'lɒdʒɪkəl kən'trəul 'sist(ə)m]	система биологического регулирования
system of health care	['sist(ə)m əv 'helθ 'keə]	система здравоохранения
life-support field	['laɪf sə'pɔ:t 'fi:ld]	сфера жизнеобеспечения
microscopic system	[,maɪkroskəp'ɪskopik 'sist(ə)m]	микросистема
living system	['lɪvɪŋ 'sist(ə)m]	биологическая система
human medicine	['hju:mən 'medsən]	лекарственные препараты для людей

bypass the heart	[ˈbaɪpɑ:s]	шунтировать сердце
damaged organ	[ˈdæmɪdʒd ˈɔ:gən]	поврежденный орган
instrumenta- tion (n)	[,instrumen'teɪʃ(ə)n]	контрольно- измерительные приборы
fermenta- tion (n)	[,fɜ:men'teɪʃ(ə)n]	культивирование (мик- роорганизмов)
design criteria	[dɪ'zain kri'a:tɪriə]	критерии проектирования
physician (n)	[fɪ'zɪʃən]	врач, терапевт
regulate (v)	[rɪ'gjuleɪt]	регулировать
interact (v)	[,ɪntər'ækɪt]	взаимодействовать
recognize (v)	[rɪ'kɔ:gnaɪz]	признавать
surgery (n)	['sɜ:dʒəri]	хирургия
surgeon (n)	['sɜ:dʒən]	хирург
safe (adj)	[seɪf]	безопасный
safety(n)	['seɪfti]	безопасность

4.4.2. Read the text and choose a heading to each paragraph

Branches	History	Introduction

Bioengineering

I. Walking and talking, seeing and hearing and many other common actions are a part of everyday life. However, scientists who work in the field of bioengineering - _____ -study in great detail the biological control systems that regulate these everyday actions. Some of these scientists help to build artificial limbs and organs for people whose natural body parts are missing or not functioning properly. _____ . Bioengineers may also use engineering methods to achieve biosynthesis of animal or plant products - such as for fermentation processes.

II. Before World War II the field of bioengineering was unknown. Little communication or interaction existed between the engineer and the life scientist. _____ . The agricultural engineer and the chemical engineer, involved in fermentation processes, have always been bioengineers since they deal with biological system and work with biologists. Mechanical engineers have worked with the medical profession for many years in the development of artificial limbs. Another area of mechanical engineering that falls in the field of bioengineering is the air-conditioning. Since the early 1920s engineers and physiologists were employed by the American Society of Heating and Ventilating Engineers to study the effects of temperature on humans and to provide design criteria for heating and air-conditioning systems. Today there are many more examples of interaction between biology and engineering, particularly in the medical and life-support fields. There is an increasing recognition of the role the engineer can play in several of the biological fields, including human medicine. Bioengineering is developed out of specific desires or needs: the desire of surgeons to bypass the heart, the need for replacing organs, the requirement for life-support in space and many more. In most cases the early interaction and education were a result of personal contacts between a physician or a physiologist and an engineer. Engineers began to study also the methods and techniques _____ .

III. Bioengineering consists of the following branches:

- 1) _____. It is concerned with medical problems, including the replacement of damaged organs, instrumentation, and the systems of health care.
- 2) Agricultural engineering. This branch deals with the problems of biological production and environment that influence this production.
- 3) Bionics. Bionics is the study of living systems so that the knowledge gained can be applied to the design of physical system.
- 4) Biochemical engineering. It includes fermentation engineering, application of engineering principles to microscopic biological systems that are used to create new products by synthesis.
- 5) Human-factors engineering. It concerns the application of engineering, physiology, and psychology to the optimization of the human-machine relationship.
- 6) Environmental health engineering. Also called bioenvironmental engineering, this field concerns the application of engineering principles to the control of the environment for the health, comfort and safety of human beings.

4.4.3. Read the text again and fill in the gaps with the following sentences

- 1) Medical engineering.
- 2) A few exceptions, however, should be noted.
- 3) This aspect of bioengineering work is called biomedical engineering.
- 4) including biologists, physicists, engineers and physicians.
- 5) in medicine, physiology, psychology and biology.

4.4.4. Find the sentences in the text with the following phrases. Read and translate them

- 1) in great detail
- 2) was unknown
- 3) an increasing recognition
- 4) the system of health care
- 5) fermentation engineering

4.4.5. Match the words (A) with the definitions (B)

A	B
1) artificial	a) to work in the correct way
2) interact	b) especially
3) recognize	c) act of putting smth. to a practical use
4) function	d) communicate and work together
5) application	e) to admit that smth. exists or is true
6) particularly	f) opposite to natural.

4.4.6. Fill in the gaps with the words from ex. 4.4.5

- 1) He was performed a serious operation, he was put in an _____ kidney.
- 2) The experiment showed that all the devices _____ in the proper way.
- 3) This substance can change its properties, _____ under environmental circumstances.
- 4) The scientists from most universities _____ with each other in order to develop and discover more new innovations in chemistry.
- 5) At the lesson we study engineering materials and many their _____.

4.4.7. Match the pairs of antonyms

- | | |
|---------------|--------------|
| 1) proper | a) natural |
| 2) gain | b) dangerous |
| 3) artificial | c) wrong |
| 4) safe | d) give |

4.4.8. Match the questions with the answers

1. When did the field of bioengineering become known?	a) It is biomedical engineering.
2. What is bioengineering developed out?	b) There are 6 branches of bioengineering.
3. What branch of bioengineering is concerned with building artificial limbs and organs for people?	c) They are biologists, physicists, engineers and physicians.
4. What specialists work in the field of bioengineering?	d) It became known after World War II.
5. How many branches does bioengineering consist of?	e) It is developed out of specific needs and desires.

4.4.9. Complete the table. Then fill in the gaps in the sentences below with the words from the table according to the context

verb	noun	Participle I
function
...	interaction	...
...	...	communicating
regulate
...	application	...
...	...	replacing
develop

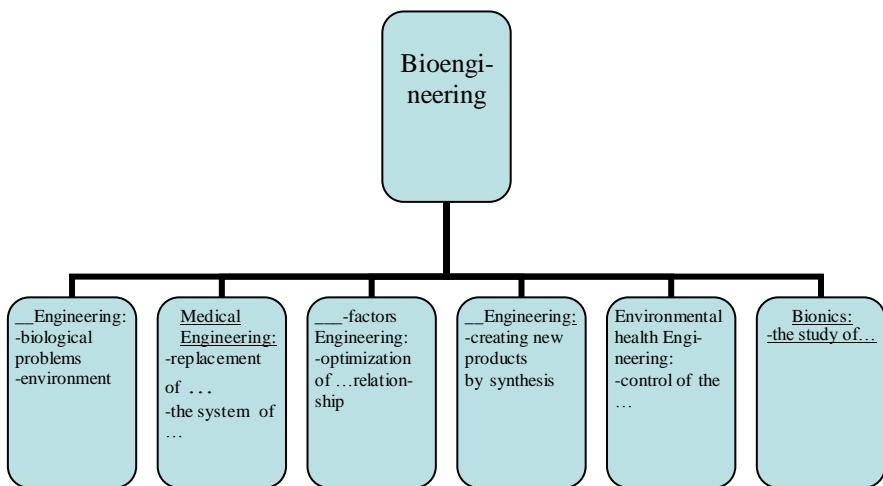
- 1) Biomedical engineering is the _____ of physical principles, materials and devices to the understanding and treatment of living organisms.
- 2) Scientists continue _____ many new techniques for the treatment or correction of disease.
- 3) This new device can _____ blood pressure.

- 4) The body needs a _____ control system for thermal _____.
- 5) We can _____ with people in most parts of the world by telephone.

4.4.10. Rewrite the following sentences putting the verbs in the Passive Voice

- 1) Students can replace the ingredients in order to get a new substance.
- 2) That device regulated the speed of the machine.
- 3) The designers will develop a new kind of robot next year.
- 4) We apply all our skills and knowledge in the research.
- 5) After conducting this experiment we received good results.

4.4.11. In pairs, complete the following diagram



4.4.12. Discuss the following questions

- 1) What is bioengineering?
- 2) Why is bioengineering important for people?
- 3) How old is bioengineering?
- 4) What engineering fields are connected with bioengineering? Why?
- 5) Do you know any examples from everyday life or different spheres of science how bioengineering has changed people's life for the better?

KEY VOCABULARY
MODULE II
(Fundamentals of Engineering)

apply (v)	automation(n)
astute (adj)	assume(v)
affect (v)	be concerned with
amplify (v) = reinforce (v)	biological control system
branch (n)	bioengineering(n)
breakthrough (n)	bionics(n)
consume (v)	bioenvironmental engineering
consumption (n)	construct(v)
conserve energy	civil engineer
demand (for) (n)	communication(n)
destroy (v)	damage(v)
design criteria	design(v)
emerge (v)	deal with (v)
electrical power	engine(n)
electrical appliance	electrical installation
enable (v)	fermentation(n)
field (n)	fluid mechanics
human-factors engineering	generation (n)
force (n)	instrumentation(n)
fossil fuel	biochemical engineering
generate electricity	install (v)
handle (v)	improve (v)
innovate (v)	investigate (v)
insulate (v)	life-support field
manufacture (v)	maintain (v)
non-renewable (adj)	manufacture (v)
perform (v)	microscopic system
power(v)	occupation (v)
plug (into) (v)	operate (v)
replace (v)	prevent accident(v)
remove (v)	personality (n)
renewable (adj)	pose danger
resist (v)	robotics (n)
surgery (n)	safety engineering
supply (v, n)	sensor(n)
store (v)	system of health care
shape (v)	subfield (n)
wall socket	

APPENDIX 1

TAPESCRIPPT (to ex. 1.18)

**(From “Oxford English for Electrical and Mechanical Engineering”,
Answer Book)**

- 1) I work in a power station. I’m responsible for turbine maintenance. I work shift: midnight to eight o’clock this month.
- 2) I design body scanners. They give doctors far more information than X-rays and there’s no risk to the patient.
- 3) I work on jet engines. Onboard computers record readings every five hours and every twenty-five take-off. This information allows us to carry out servicing before defects or reduction in performance occurs.
- 4) The best thing about my job is that I get to go on sea trials after the refit is finished.
- 5) I’m working with the architects of a new hospital. Getting the heating and ventilation right is important. I have to make sure that the working environment will be comfortable for the patients and staff.
- 6) Safety is very important in my job. Everything must be earthed to make sure that no one gets a shock.
- 7) My main areas of expertise are fuel consumption and engine emission. International pressures are really making things difficult for us.

APPENDIX 2

SUPPLEMENTARY TEXTS

Text 1

You study at the technical university. You future job may be concerned with engineering. Read the text and think of the job that would suit your abilities and intentions.

Jobs in Engineering

Professional engineers may work as

Design engineers (инженеры-конструкторы): They work as part of a team to create new products and extend the life of old products by updating them and finding new applications for them. Their aim is to ensure quality

and reliability of the design and to introduce new components and materials to make the product cheaper, lighter, or stronger.

Installation engineers (инженеры по монтажу): They work on the customer's orders to install equipment produced by their companies.

Production engineers (инженеры по производству): They ensure that the production process is efficient, that materials are handled safely and correctly, that possible faults are corrected.

Just below the professional engineers are the **technical engineers** (инженеры-технологи). They require a detailed knowledge of a particular technology – electrical, mechanical electronic, etc. They may lead teams of engineering technicians (техников). Technical engineers and engineering technicians may work as:

Test/Laboratory technicians (техники по проведению лабораторных испытаний): They test samples of the materials and of the product to ensure quality is maintained.

Installation and service technicians (техники по монтажу и эксплуатации оборудования): They ensure that equipment sold by the company is installed correctly and carry out preventative maintenance and essential repairs.

Production planning and control technicians (техники по планированию и управлению производством): They produce the manufacturing instructions and organize the work of production so that it can be done as quickly, cheaply, and efficiently as possible.

Inspection technicians (техники по контролю за качеством): They check and ensure that incoming and outgoing components and products meet specifications (отвечают техническим условиям).

Debug technicians (техники по устранению технических дефектов): They fault find (определяют неисправности при помощи дефектоскопа), repair and test equipment and products down to component level.

Draughtsmen/women (чертёжники): They produce the drawings and design documents from which the product is manufactured.

Look through the text again. Who would be employed to

- 1) test completed motors from a production line?
- 2) find out why a new electronics assembly does not work?
- 3) see that the correct test equipment is installed on a production line?
- 4) find a cheaper way of manufacturing a product?
- 5) see that a new product is safe to use?

Using the knowledge you have gained from the text *Jobs in Engineering* try to identify the jobs of these workers from their statements

- 1) We perform standard chemical and physical tests on samples, usually as a result of a complaint from inspectors on the production line. We are an important part of production. We have the authority to stop the line if we find something seriously wrong. It's interesting work, and we're able to move around from test to test and chat. Sometimes the work gets a bit repetitive.
- 2) We measure up the components to see that they are the right size and shape, and we make any minor adjustments ourselves. All along, parts will need adjusting slightly and you have to check things at each stage with measuring instruments.
- 3) I find my job a very satisfying one. It's never easy to say exactly why one likes a job. I think the basic thing I get out of my profession at the moment is the creativity that is involved in design work. You start from square one with a plain sheet of paper. You draw a component. You design something and perhaps a few months later you can see the end product. And you get told whether or not your design works! I think it's that aspect that I find most satisfying.
- 4) My company makes desalination equipment. It takes the salt out of sea water so it can be used for drinking and irrigation. A lot of our customers are in the Middle East. I have to go there whenever new equipment is being set up to make sure it's properly installed and everything is running OK.

Text 2

Modern Biomass

Biomass simply means fuel produced from organic sources. Traditional biomass such as wood, charcoal, and other plant matters has been fuel of choice for thousand years, and it remains so in many parts of the world. Modern biomass, however, includes other types of fuel derived from plants, such as the residuals of existing agricultural, livestock and lumber industry, from forests planted and harvested renewably, and from farms dedicated to this purpose, from the processing of pulpwood residues, cereals and logging operations, which can be processed into gas or burned in bio gas power plants to generate electricity. Methane from urban landfills and from animal and human wastes is another potential type of fuel derived from biomass. Modern biomass may have the greatest potential for growth, especially in

transportation and powering vehicles. For example, Brazil has been a leading nation in the use of ethanol (alcohol-based fuel) for automobiles. It is derived from sugar cane and grains grown specially to produce ethanol. Biomass also looks promising as a fuel source for electricity in small, local power stations.

Answer the following questions:

- 1) What is biomass?
- 2) What does modern biomass include?
- 3) Can methane be derived? How?
- 4) Does biomass have potential for growth?
- 5) What country has been a leading nation in the use of ethanol (alcohol-based fuel) for automobiles?

Text 3

Wind

The use of wind energy is growing faster than any other type of renewable energy because of improvements in the wind turbine technology over the past 30 years. The best locations for wind as an energy source are coasts, mountains, and plains. Like solar rays, wind is also a form of intermittent renewable energy, available only about 30 % of the time. Often when the sun isn't shining, the wind is blowing; so many users rely on wind turbines to complement solar panels. Most of the world's wind generation capacity is located in the United States, Denmark (the pioneer in wind generation), the Netherlands (famous for its use of windmills), Germany, and India. While wind generation of electricity is clean, some disadvantages include the noise of blades of windmills and the appearance. A large wind farm on a hillside is clearly visible, in the same way that large arrays of solar panels are.

Answer the following questions:

- 1) Why is the use of wind energy growing faster than any other type of renewable energy?
- 2) Where can we locate wind turbines?
- 3) Is wind a form of intermittent renewable energy?
- 4) Why do many users rely on wind turbines?
- 5) Where is most of the world's wind generation capacity located?
- 6) What are the disadvantages of the use of wind energy?

Text 3

Other Types of Power Plants

A

Steam Turbine Plants

Steam turbine plants can be divided into three general categories: fossil fueled, nuclear, and renewable. Most of electricity produced in the United States, for example, comes from fossil fuel steam turbine plants, about 70%. The dominant fossil fuels are coal, petroleum and natural gas; others include petroleum coke, coke oven gas, and liquefied petroleum gas. Steam turbine plants operate by burning fuel, which heats water in a boiler; the water boils and produce steam, which is channeled to a turbine and turns it. The turbine is connected to a generator shaft which turns and produces power. All steam turbine plants function the same way.

Of the many fuels used in steam turbine plants, coal is the most common. Coal is inexpensive and readily available since the US has large deposits. Annually electric utilities purchase over 900 million short tons (короткая\малая тонна = 907,2 кг) of coal for electric generation.

Answer the following questions:

- 1) What three categories can steam turbine plants be divided into?
- 2) What are the dominant fossil fuels?
- 3) How do steam turbine plants operate?
- 4) What are the pros and cons of building steam turbine plants?

B

Fuel Cell Power Plants

Fuel cells¹ are electrochemical devices which directly convert hydrogen, or hydrogen-rich fuels into electricity without combustion. This process is much more efficient than traditional thermal power plants, converting up to 80 % of the chemical energy in the fuel (compared to a maximum of 40 % for conventional power plants). Although their structure is somewhat like that of battery, fuel cells never need recharging or replacing and can produce electricity as long as they are supplied with hydrogen and oxygen. Fossil flues (coal, oil and natural gas), biomass (plant material), or pure hydrogen can be used as the source of fuel. If pure hydrogen is used, the emissions from a fuel cell are only electricity and water. Fuel cells are small and

modular in nature and therefore fuel cell power plants can be used to provide electricity in many different applications, from electric vehicles to large, grid-connected utility power plants. First used in the U.S. space program, fuel cells are a developing technology with a few commercial uses, but may emerge as a significant source of electricity in the near future.

The fuel cell power section contains "stacks" (хранилища) of one or more fuel cells. Most individual fuel cells are small in size and produce between 0.5 and 0.9 volts of electricity. Therefore, any power plants must have a large number of individual fuel cells. This modular nature of fuel cells is one of their advantages. A fuel cell power plant can be built to a certain size and then have its power output quickly and easily increased by adding more stacks of fuel cells when and if demand for electricity increases. Air, (for its oxygen) and hydrogen rich fuel are added to the stacks of the fuel cells, and the output is water, heat and direct current (DC). The power conditioner section of a fuel cell power plant most often consists of an inverter which converts the electricity to alternating current (AC).

Note:

¹ Fuel cells – топливные элементы

Answer the following questions:

- 1) Is the process of converting hydrogen, or hydrogen-rich fuels into electricity without combustion efficient? Why?
- 2) What is emitted from a fuel cell if pure hydrogen is used?
- 3) What field were the first fuel cells used in?
- 4) How much electricity do fuel cells produce?
- 5) What advantages do fuel cells have?
- 6) How do fuel cells operate?

MODULE III

APPLYING FOR A JOB

UNIT. APPLYING FOR A JOB

1.1. Read and study the new words

apply for (v)	[ə'plai]	претендовать на ..., подать заявление на ...
applicant (n)	[ˊæplɪkənt]	кандидат, претендент
application (n)	[ɔːplɪˋkeiʃn]	заявление, заявка
application form		заявление о приеме на работу
letter of application (or cover letter)		сопроводительное письмо (к заявлению о приеме на работу)
assist (v)	[əˋsist]	помогать, содействовать
assistance (n)	[əˋsistəns]	помощь, содействие
benefits package		льготы
candidate (n)	[ˋkændidət]	кандидат
career (n)	[kəˋriə]	карьера
career objective		цель карьеры
make a career in		сделать карьеру в ...
Curriculum Vitae CV (resume)	[kəˋrɪkjuːləm vɪˋtaɪ] [ˋvi:tai]	автобиография, резюме
employ (v)	[ɪmˋplɔɪ]	нанимать
employee (n)	[ˋemplɔɪ̯eɪ̯]	служащий, работающий по найму
employer (n)	[ɪmˋplɔɪ̯er]	наниматель, работодатель
employment agency		агентство по трудуоустройству

fee (n)		оплата труда профессионалов
fire (v) (dismiss)	[faɪə]	увольнять
hire (v)	[haɪə]	нанимать на работу
human resource department (personnel department)	[ˈhju:mən rɪ'sɔ:s] [ɔ:pə:sə'nel dɪ'pa:tment]	отдел кадров
interview (n, v)	[ˈintəvju:]	1) интервью, собеседование, беседа 2) проводить беседу, собеседование; интервьюировать
interviewee (n)	[ɔ:intəvju: 'i:]	лицо, с которым проводят собеседование; интервьюируемый
interviewer (n)	[ˈintəvju:ə]	лицо, проводящее собеседование; интервьюер
job interview		собеседование при трудоустройстве
job (n)	[dʒɔ:b]	работа (место работы или отдельное задание)
full-time job		работа с полной занятостью
part-time job		работа с частичной занятостью
occupation (n)	[ɔ:kju'peɪʃn]	занятие, должность
permanent (adj)	[ˈpə:mənənt]	постоянный
qualification (n)	[ɔ:kwɔ:lif'i 'keiʃn]	квалификация
recruit (v)	[rɪ:kru:t]	набирать кадры, вербовать
recruitment (n)		набор кадров
register (v)	[r'redʒɪstə]	регистрировать, заносить в список
registration (n)	[r'redʒɪs'træʃn]	регистрация, внесение в список

reference (n)	[ˈrefrəns]	рекомендация; лицо, дающее рекомендацию
salary (n)	[ˈsæləri]	зарплата служащего
shortlist (v, n)	[ʃɔ:t ˈlist]	1) включать в окончательный список 2) окончательный список претендентов
skilled (adj)		квалифицированный
temporary (adj)	[ˈtemp(ə)rəri]	временный
vacancy (n) (opening position)	[ˈveɪkənsi]	вакансия
vocation (n)	[voʊˈkeɪʃn]	призвание, профессия
wage (n)	[weɪdʒ]	зарплата рабочих

1.2. Match English words with their Russian equivalents, for example: 1 – d

- | | |
|------------------|------------------|
| 1) applicant | a) собеседование |
| 2) occupation | b) квалификация |
| 3) qualification | c) помочь |
| 4) application | d) претендент |
| 5) registration | e) заявление |
| 6) assistance | f) зарплата |
| 7) employ | g) вакансия |
| 8) salary | h) занятие |
| 9) vacancy | i) нанимать |
| 10) interview | j) регистрация |

1.3. Match the words with their synonyms, for example: 1 – h

- | | |
|--------------|--------------|
| 1) vacancy | a) payment |
| 2) assist | b) employ |
| 3) job | c) testimony |
| 4) reference | d) dismiss |
| 5) fire | e) work |

- | | |
|---------|-------------|
| 6) hire | f) help |
| 7) post | g) position |
| 8) wage | h) opening |

1.4. Match the words with their antonyms or opposites, for example: 1 – i

- | | |
|---------------|---------------|
| 1) skilled | a) unemployed |
| 2) employed | b) temporary |
| 3) permanent | c) prevent |
| 4) hire | d) lose a job |
| 5) assist | e) part-time |
| 6) strength | f) applicant |
| 7) find a job | g) weakness |
| 8) employer | h) fire |
| 9) full-time | i) unskilled |

1.5. Translate the following sentences into Russian paying attention to the words in bold type

a)

- 1) All **work** and no play makes Jack a dull boy.
- 2) He's been out of **work** for a month but now he's found a very good job in New York.
- 3) A doctor, a teacher, a journalist, and an architect are very good **professions**.
- 4) He comes from a **professional** family.
- 5) He took up journalism as his **career**.
- 6) **A job** is something you do to make money but **career** comprises your interests, abilities and ambitions.
- 7) I could never do an ordinary nine-to-five **job**.
- 8) It's important to find **a job** that offers good career prospects.
- 9) Nursing is hard work and often low paid but for many people it is a **vocation**.
- 10) Medicine has always been a male-dominated **profession**.

b)

- 1) The car industry is one of the biggest *employers*.
- 2) The number of people in *employment* has fallen.
- 3) The new contract will enable us *to employ* about 50 extra people.
- 4) I wrote five *applications* for *jobs* but didn't get a single reply.
- 5) Anyone under 30 need not *apply*.
- 6) Have you got any income apart from your *pay*?
- 7) Bob is on a very good *salary* now.
- 8) Her teaching *experience* gave her a big advantage over the other *applicants* for the job.
- 9) We will need to have references from your former *employers*.
- 10) We still have *vacancies* for drivers but all the other positions have been *filled*.

1.6. Choose the necessary word and put it into the gap

- | | |
|--|--------------------|
| 1) We are going to interview three ... for
the position. | 1 advertise |
| 2) If you need applicants for this position,
... in a special section of the local newspaper. | 2 curriculum vitae |
| 3) Personnel office will help you to find
a new | 3 employee |
| 4) All the information about the staff
of the firm can be found in | 4 applicants |
| 5) She has a good ... for the position:
a college degree, good work experience. | 5 personnel office |
| 6) I want to find a new secretary, so I'll
call an employment | 6 qualification |
| 7) If you are an applicant for the position,
you have to write your | 7 agency |
| 8) Don't ask him ... questions, it will be
impolite. | 8 personal |

1.7. Answer the following questions

a) 1) Have you ever had a full-time or part-time job?

What was your job?

How did you get it?

What was your salary (wage)?

2) Is it difficult for a NSTU graduate to find a well-paid job?

b) What qualities best describe people who want to succeed in work or study? Add some more. Use the following words in your answers.

dependable

ambitious

critical

truthful

accurate

responsible

independent

decisive

quiet

patient

broad-minded

reserved

indifferent

enthusiastic

quick-minded

strong-willed

reliable

careful/careless

persistent

c) What qualities do you need to get a good job in future?

patience

energy

courage

experience

determination

talent

goodwill

creativity

charm

intelligence

reliability

training

loyalty

d) Think of preferences concerning your future job. Put a cross on each line to indicate your opinion.

prefer to work alone

prefer to work in a team

like taking risks

plan to avoid risks

like variety

like routine

like to work in one place	like travelling
prefer to talk	prefer to listen
prefer to manage	prefer to be managed
like pressure	dislike pressure
prefer to think	prefer to act
take a long-term view	take a short-term view

e) Analyse the previous answers (in b, c, d) and assess your qualities and abilities using the scheme.

	Personal strengths	Personal weaknesses	Suggestions for further development
1	I'm independent	I'm not persistent	I should work
2	I prefer to work alone	I dislike pressure	to improve my ...
3			I should be more ...
4			
5			
6			
7			

1.8. Conditional sentences

1.8.1. Lets speak about what your future job might be. Complete conditional sentences (II type) using the items that would interest you. Explain your choice

I would be happy in a job if I could.....

For example: I would be happy in a job if I could deal with people.

or I would be happy in a job if I worked in an office.

- 1) do the same things all time
- 2) do things my way
- 3) work with machines or use instruments
- 4) work flexible hours
- 5) work on information processing methods
- 6) work in the field of nanoelectronics technology

- 7) deal with electronic control system
- 8) work as a part of a team
- 9) meet with public
- 10) have experience in the operation and maintenance of electromechanical plants (установок)

1.8.2. Say that you would act otherwise (иначе) using conditional sentences (II type)

If I were you I

For example:

If I were you I wouldn't refuse from a full-time job.

- 1) I refuse from a full-time job.
- 2) I don't know how to write a letter of application.
- 3) I accept this part-time job.
- 4) I am not at work.
- 5) I don't apply for this job immediately.
- 6) I don't include Ann into the shortlist.
- 7) I don't hire a private detective to find out who is blackmailing you.

1.8.3. Translate the conditional sentences (III type) into Russian paying attention to the past actions

- 1) If he *had been* an experienced engineer he *would have given* us good advice.
- 2) If Tom *hadn't been* so busy he *could have made* a call.
- 3) If Nancy *hadn't been* so old she *could have found* a job.
- 4) If the price of petrol *hadn't risen* I *wouldn't have sold* my car.
- 5) If he *had had* a clean current driving licence it *would have been* very essential for decision making.
- 6) If he *had had* some experience in operating hydraulics, pumps, and heat exchangers he *would have been hired* for the post of a design engineer.

1.9. Looking for a Job

When a company intends to recruit or employ new people it may decide to advertise the job or position in the “NEED HELP” section of a newspaper.

Read and analyse the job advertisement. Answer the questions below.

Castleton AAA

Engineering Technicians c.£ 13,000

In this multi-skilled role you will carry out corrective and preventative maintenance on a variety of electrical, electronic, and mechanical plant. You will use computer-based monitoring systems for effective control, fault diagnosis, and operation of plant and equipment.

Applicants should have a recognized HNC or National Certificate in Electrical/Electronic Engineering and have served a recognized apprenticeship. Experience in the operation and maintenance of electro-mechanical plant utilizing electronic system control including experience of HVAC plant and systems, electronic PLC systems, positional and electronic speed control systems including hydraulics, pumps, and heat exchangers would be desirable.

This demanding position requires effective communication skills together with a flexible attitude.

A clean current driving licence is essential.

In return you can expect an attractive salary and benefits package.

Please forward a comprehensive CV to Denise Dickens, Personnel Department, Administrative Block A, Castleton Airport, Castleton CS21 3SL. Closing date for receipt of completed applications is 31 December.

Words:

advertise	помещать объявление, рекламировать
advertisement	объявление, реклама
c (from Latin <i>circa</i>)	приблизительно
apprenticeship	обучение, опыт
plant	установка, оборудование
HVAC plant	High Voltage Alternative Current plant
HNC	Higher National Certificate

- 1) What company is advertising?

- 2) Where are the jobs based?
- 3) At what professional level are the jobs available?
- 4) Applicants from which branch of engineering are preferable?
- 5) What qualifications are required?
- 6) In addition to qualifications, what must the applicants have completed?
- 7) List some of the areas in which experience is necessary.
- 8) In addition to qualifications and experience, what characteristics should applicants have?
- 9) Which non-professional qualification is essential?
- 10) What might a benefits package include?

1.10. Getting a Job

People can apply for the job by sending in a letter of application or a covering letter (US – cover letter) and a curriculum vitae or CV (in US - resume) containing details of their education and experience.

What should a CV be?

The CV (Curriculum Vitae – *lit.* record of life) is presenting your qualifications, skills and attributes to the employer. CV demonstrates the suitability of an applicant for the job. In compiling CV the applicant has one objective only – to get an interview in order to get a job.

A CV must be accurate, interesting and up-to-date. It must be presentable so that it makes the best impression possible and gets noticed. It should answer the needs of each particular position.

1.11. Study the CV given below. Answer these questions

- 1) What parts does it consist of?
- 2) What information is included into each section?
- 3) What is her highest educational qualification?
- 4) Why do you think the education and experience sections of her CV start with the most recent events?
- 5) Why does she give two references?
- 6) Why has she chosen these people to be her referees?
- 7) Why does she include interests and activities?

CURRICULUM VITAE

Personal details

Name: Fiona Weaver
Date of birth: 7 April 1974
Address: 6 Haymarket, Newcastle, NC1 4YU
Marital status: Single

Education and qualifications

1991-1995 Faraday College of Further Education, Newcastle
– National Certificate in Electrical and Electronic Engineering (day release from S & T (UK) Ltd)
1985-1990 George Stephenson Secondary School, Newcastle

I hold a clean driving licence. I have been driving for three years.

Work experience

1995 Inspection Technician
to present Sturner & Thomson (UK) Ltd
– Responsible for checking incoming components and completed products using a wide range of test equipment including computer-based record systems.

1991-1995 Apprentice electrical technician
Sturner & Thomson (UK) Ltd

1990-1991 Office junior
Brent & Wicker, Solicitors
– Basic secretarial duties-filing, word-processing, telephone receptionist, in a busy lawyer's office

Interests and activities

Travel, modern dance, swimming

Reference

College:	Work:
Mr Andrew Wood	Mrs Joy Milne
Head of Department	Personnel Officer
Electrical Engineering	S & T (UK) Ltd
Faraday College	North Street
Cornwallis Road	NEWCASTLE NC14 7TI
NEWCASTLE NC2 3PL	

1.12. Write your own CV in English using qualifications you already have or ones that you think you might get in the future. Use the CV in ex. 1.11 as a model

1.13. Letter of Application

The letter of application, sometimes called cover letter can be as important as the CV because it is the first direct contact between a candidate and an employer. If this letter is not well written and presented, it will make a poor impression. The letter of application normally contains four parts in which you should:

- 1) confirm that you wish to apply and say where you learned about the job;
- 2) say why you are interested in the position and your interests are the same as those of the company;
- 3) show that you can contribute to the job by describing your most relevant skills and experience;
- 4) indicate your willingness to attend an interview (and possibly say when you will be free to attend).

1.14. Study this letter of application which accompanied the CV in ex. 1.11. What information does it add to the CV?

15 December 19-	6 Haymarket Newcastle NC1 4YU
Ms Denise Dickens Personnel Department Administrative Block A Castleton Airport Castleton CS21 3SL	
Dear Ms Dickens,	
Re: Engineering Technicians	
I would like to apply for the post of Engineering Technician as advertised in today's issue of the Tribune. I enclose my CV with the names of two referees.	
You will note from my CV that I have a National Certificate in Electrical and Electronic Engineering and considerable experience. My work at S & T (UK) means that I am familiar with HVAC plant and systems including electronic system control. As an inspection technician, I have experience of a wide range of systems for product testing and component evaluation.	
I enjoy my work at S & T but would like now to broaden my experience, especially in the area of maintenance. I feel that I can bring considerable skill to the post together with the ability to work well in a team. I am also interested in further improving my qualifications by studying for an HNC, part-time.	
I look forward to hearing from you. Yours sincerely	
Fiona Weaver	
Fiona Weaver	

1.15. Read and analyze details from the letter of application given below. Look at the outline of the letter on the left and indicate where the information should go

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Fiona Scott

- (a) Although I am presently employed by a non-profit making organisation, it has always been my intention to work in a commercial environment. I would particularly welcome the chance to work for your company as I have long admired both the quality of the products that it provides and its position as a defender of environmental causes. As you will notice on my enclosed CV, the job you are offering suits both my personal and professional interests.
- (b) I would be pleased to discuss my curriculum vitae with you in more detail at an interview. In the meantime, please do not hesitate to contact me if you require further information. I look forward to hearing from you.
- (c) Dear Ms Baudoin (d) 8th January 2000
- (e) I am writing to apply for the position which was advertised last month in *The Independent*.
- (f) 52 Hanover Street (g) Nathalie Baudoin
Edinburgh Patagonia GmbH
EH2 5LM Reitmorstrasse 50
UK 8000 Munich 22
Germany
- (h) My work experience has familiarised me with many of the challenges involved in public relations today. I am sure that this, together with my understanding of the needs and expectations of sport and nature enthusiasts, would be extremely relevant to the position. Moreover, as my mother is German, I am fluent in this language and would definitely enjoy working in a German-speaking environment.
- (i) Fiona Scott (j) Yours sincerely

1.16. Write your own letter of application for one of the positions proposed in advertisements in the text 4 (Appendix 1, Module III)

1.17. Interviewing Job Applicants

Interviews are a central part of the recruitment process for most organizations. Usually applicants are interviewed after sending in an application form or CV. The purpose of an interview is to assess the applicant, and for the applicant to demonstrate abilities and personality. It is also an oppor-

tunity for the applicants to make sure that the organization and the position are what they want. Here are some useful advice for you to follow in future.

1.17.1. Preparation for the Interview

- Learn about the organization
- Have specific job or jobs in mind
- Review your qualifications for the job
- Prepare to answer broad questions about yourself
- Review your resume
- Arrive before the scheduled time of your interview
- Get plenty of sleep the night before the interview

What to Wear

Women	Solid dark colored suits or a dress Wear hosiery If wearing a dress/skirt, make it sure it's at least knee-length Nothing skin-tight
Men	Solid colored button-up shirt, tucked in Tie Dark socks Nothing too baggy If wearing a suit, go with dark colors Your shoes and belt should match

1.17.2. During the Interview

- Be confident and make the interviewer think that you are a self-confident person
 - If you have any doubts, keep them to yourself
 - Know as much as you possibly can about the job you're applying for before you go for the interview
 - Try to relax
 - Be yourself
 - Be polite

About Questions

- Listen carefully and make sure that you answer the question
- Make eye contact with the interviewer

- Don't speak negatively about anyone
- Use pauses effectively
- Always tell the truth because the interviewer can check and verify the information

1.17.3. After the Interview

- If you didn't answer a question well in the interview, don't be afraid to phone up soon and say something
- If you are successful at the interview stage you will receive an official letter offering you a job

1.17.4. Read the following sentences and mark false/true statements

- 1) Offer to shake the interviewer's hand when you meet. This demonstrates your self-confidence.
- 2) You can smoke if you feel nervous.
- 3) Your dress shouldn't be conservative. Much jewelry and perfume will keep the interviewer's attention.
- 4) Arrive early. Arriving late makes your first impression a negative one.
- 5) Smile. This person is giving up his/her time to talk to you.
- 6) Don't argue, agree with any idea, even if you can't believe in it.
- 7) Don't bite your lips, don't chew on pen/pencil.

1.18. Match the job interview questions 1–5 with their answers a–e

- 1) How many jobs have you had since leaving university?
- 2) Why have you changed jobs so often?
- 3) What have you done that shows leadership?
- 4) In what ways has your job changed since you joined the company?
- 5) Have you ever worked with a difficult person?

- a) I now have more responsibility and work longer hours.
- b) Well, I lead the sales team. I'm also chairperson of a local business association.
- c) I wanted to earn more money.
- d) Well, the boss in my last company wasn't easy to work with.
- e) I've worked for six companies.

1.19. Read the dialogue between the interviewer (I) and the applicant (A) and find the answers to the following questions

- 1) What job is he applying for?
- 2) What are the applicant's skills.
- 3) What are his interests?
- 4) What does the applicant want to know about the opening position?

Interviewing an Applicant for a Job

- I: So, let me ask you a few questions about your skills. Can you type?
- A: Yes, I can — on a word processor. I can type about 60 words a minute.
- I: OK. What about languages?
- A: Well, I'm bilingual in French and English.
- I: Oh, that's good. How is your written French?
- A: Er, not very good, really. I can't write business letters for example, but, of course, I can learn ...
- I: Right, have you got any other skills that you want to tell me about? Skills that are useful if you work for a newspaper?
- A: Well, I can drive. I've got an international license. And I think I'm good with people, I can talk to anyone.
- I: OK, good. What about interests? What do you like doing in your spare time?
- A: First of all sports. I like playing tennis.
- I: OK. That's all I want to ask you. Would you like to ask me anything?
- A: Oh, yes. Can I ask about the salary first?
- I: It's about £ 13 000 a year.
- A: Right, thank you. And the hours?
- I: Well, this is a daily newspaper. The offices never close. But the normal hours in the Advertising Department are nine to five.
- A: Monday to Friday?
- I: Yes. But sometimes people work in the evenings and at weekends when there's a problem.
- A: I see. And can I ask you about holidays?
- I: You get four weeks holiday. People usually take one week at Christmas, one week at Easter and two in summer. Is there anything else?
- A: No, I don't think so. Thank you for the interview.

You are welcome. Nice to meet you.

1.20. Read the dialogue between Evelyn Jones, personnel manager of a large company, and Mr. Johnson. Pay attention to four main parts of this interview:

- a) the beginning of the interview;
- b) previous experience;
- c) reasons for applying;
- d) closing the interview.

Mr. Johnson's Interview

Ms. Jones: Come in, Mr. Johnson. Won't you sit down? I'm Evelyn Jones, personnel manager.

Mr. Johnson: How do you do, Ms. Jones? I'm very glad to meet you.

Ms. Jones: We've been hearing some very fine things about you, Mr. Johnson. You've been doing some fine work in Wisconsin. I've read your records, and you certainly have had excellent experience. If you don't mind, I'd like to know a little more about why you want to change your position.

Mr. Johnson: Well, there are several reasons. The main one is that there is no chance for advancement where I am. The company I'm working for is quite small, as you know. In the last couple of years the work has become rather dull. I feel that your larger company can offer me a challenge in research. I've read about a lot of exciting new plans you are making.

Ms. Jones: It's true we're expanding, and we need some new people with new ideas. What are your other reasons?

Mr. Johnson: Your location here, for one. I've been wanting to move to California for a number of years. I'm getting tired of cold weather in the winter.

Ms. Jones: It's true. California does have a pleasant climate. Lots of people are coming here to enjoy it.

Mr. Johnson: Also there's the matter of money. This position will give me a raise in salary. My children will be getting old

enough to go to college soon, and a college education is very expensive these days.

Ms. Jones: Let's see, you have two children, don't you? A boy and a girl?

Mr. Johnson: That's right.

Ms. Jones: Very good. Well, if you just follow me, Mr. Johnson, I'll introduce you to the president of the company. And I hope you'll be joining us soon.

1.21. You want to apply for:

- 1) a position of an engineer in some field;**
- 2) a university teacher at NSTU;**
- 3) a lab assistant in some research institute.**

Make up your own dialogues between an interviewer and a candidate. You can follow the plan:

- 1) opening the interview
- 2) reasons for applying
- 3) personal strengths (skills)
- 4) weaknesses
- 5) people you work well with
- 6) interests
- 7) questions on vacancy
- 8) closing the interview.

1.22. Listen to the interview with Christina Kramer (Tapescript 1, Appendix 2). Consult the words below. Mark each statement True or False and correct the false ones

Words:

challenge
be fluent in Japanese
contribute to
be good at training staff
meet deadlines

вызов, перспектива
свободно говорить на японском
делать вклад, способствовать
хорошо обучать персонал
укладываться в срок

- 1) She doesn't like traveling.

True/False

- | | |
|---|-------------------|
| 2) She likes people who work hard and are reliable. | True/False |
| 3) She loves jogging. | True/False |
| 4) She is patient when people don't meet deadlines. | True/False |
| 5) She is fluent in Chinese. | True/False |
| 6) She doesn't like aerobics. | True/False |
| 7) She is very good at <u>organizing</u> seminars. | True/False |
| 8) She wants to contribute to success of the company. | True/False |

1.23. Make the following job interview questions

- 1) do / why / this job / want you?
- 2) strengths / what / your / are?
- 3) what kind of people /work / well / with / do you?
- 4) interests / what / your / are?
- 5) have / what mistakes / you / made?
- 6) any questions / to ask / you / have / do / us?

1. 24. Listen again to the tape and check your answers

1.25. Ask and answer these questions (ex. 1.23) in pairs

1.26. Listen to three stores and fill in the gaps (Tapescript 2, Appendix 2). If necessary consult the list of words

Words:

Story 1

group interview	собеседование в присутствии нескольких представителей
sales rep.	торговый представитель
media	средства массовой информации
jug of water	графин воды
pour	наливать, налить
was embarrassed	был смущён

Story 2

got stuck in traffic
hooted his horn
ignored him

застрял в “ пробке ”
просигналил
не обратил внимания на него

Story 3

trainee accountant
ashtray
afterwards

бухгалтер-стажёр
поднос
после, впоследствии

Story 1

Charlie: My worst interview (1) was about three years ago. I had a group interview for a (2) job with a big media company. I was fine at first but when the interviewer asked me a question I suddenly began to feel very (3) My throat went dry and I couldn't speak. They (4) me a jug of water and a cup. All 20 people in the room stopped and looked at me. I tried to pour the water into the cup but my hand was shaking so much that the water went everywhere. I was so (5) I had to leave the room. I still go cold all over when I think about it.

Story 2

Alison: Well, I think my worst (6) was about two months ago. I had an interview for a (7) that I really wanted. I decide to drive but I got (8) in traffic and when I got there I was in a big (9) By mistake, I parked my old car in the (10) parking place. He arrived as I was getting out of my car. He hooted his horn and asked me to park somewhere else. I ignored him and ran off to the interview. Unfortunately, he was the interviewer and he was so angry that he didn't even give me an interview.

Story 3

Kevin: My first interview after leaving college was for a trainee (11) job in a firm in Leicester. When I walked into the room the interviewer threw an (12) at me. I quickly moved to one side and it missed. (13) , I didn't get the job. They

told me afterwards that the ashtray was to test how people (14) The person who caught the ashtray and (15) it back got the job! The people who moved to one side or caught it and put it back on the desk, didn't!

1.27. Mark the following statements True or False, correct the false ones

Story 1

- | | |
|--|-------------------|
| 1) His worst interview experience was about six years ago. | True/False |
| 2) Charlie had a group interview for a sales rep. job with a big media company. | True/False |
| 3) When the interviewer asked him a question he suddenly began to feel very nervous. | True/False |
| 4) They offered Charlie a bottle of juice and a cup. | True/False |
| 5) Charlie was so embarrassed he had to leave the room. | True/False |

Story 2

- | | |
|---|-------------------|
| 1) Alison had an interview for a job that she really wanted. | True/False |
| 2) She got stuck in traffic. | True/False |
| 3) By mistake, Alison parked her old bike in the Managing Director's parking place. | True/False |
| 4) Managing Director hooted his horn and asked her to park somewhere else. | True/False |
| 5) She didn't ignore him and parked her car in the other place. | True/False |
| 6) Managing Director was the interviewer and he gave her an interview. | True/False |

Story 3

- | | |
|--|-------------------|
| 1) Kevin's first interview after leaving college was for an installation and service technician job. | True/False |
| 2) When he walked into the room the interviewer threw an ashtray at him. | True/False |

- | | |
|--|---|
| 3) Unfortunately, he didn't get the job.
4) They told him afterwards that the ashtray was to test how people react.
5) The people who caught it and put it back on the desk got the job! | True/False
True/False
True/False |
|--|---|

1.28. Listen again. In which story did the person ...

- 1) not have an interview?
- 2) need a drink?
- 3) have to react quickly?
- 4) ignore interviewer?
- 5) feel embarrassed about what happened?
- 6) not know they would throw an ashtray?

KEY VOCABULARY
MODULE III
(Applying for a Job)

apply for (v)	interviewee (n)
applicant (n)	interviewer (n)
application (n)	job interview
application form	job (n)
letter of application	full-time job
assist (v)	part-time job
assistance (n)	occupation (n)
benefits package	opening position
candidate (n)	permanent (adj)
career (n)	qualification (n)
career objective	recruit (v)
make a career in	recruitment (n)
Curriculum Vitae (CV)	register (v)
employ (v)	registration (n)
employee (n)	reference (n)
employer (n)	salary (n)

employment agency	shortlist (n, v)
fee (n)	skilled (adj)
fire (v)	temporary (adj)
hire (v)	vacancy (n)
human resource department	vocation (n)
interview (n, v)	wage (n)

APPENDIX 1

SUPPLEMENTARY TEXTS

Text 1

Planning a Career

Having a job and having a career are two very different things. A job is something you do to make money. You may enjoy the job, work hard at it and do well, but you are primarily doing it for the money to satisfy your other interests outside of the work environment. A career is something that integrates your desires and interests so that it gives you satisfaction above and beyond the money you make. To have a career means commitment and development but first of all planning. This process can begin at any age. For some people it starts when they are a small child and visit mom or dad at their place of work. For others it can come later through the inspiration of a teacher or exposure to a wider range of fields.

It is up to each individual to decide whether a job or career is best for them. People may share the same talent and interest but other aspects of their personality will dictate which direction to go with that interest. For example, one guitar player may decide to plan a career as a professional musician. Another may decide that the financial insecurity is too much for him, get a regular job and satisfy his musical interests in his free time.

Whether you decide to get a job or plan a career, the job market today is quite different from that of your parents (and even probably from your elder sibling). In the Soviet system, under *raspredeleniye*, young people were guaranteed a job upon graduation. Now, not only are there any guarantees after university, institute or school, but available jobs are scarce and difficult to secure. The young person in today's Russia faces a very competitive job market.

What do the new dynamics of the Russian job market mean for young people? First, if they have decided they want a career, they must start early

in their academic life to plan and take steps to develop their professional careers. Second, in addition to a suitable background for a desired career, creativity, self-promotion and preparation are absolutely vital for any sort of success in the job search. Last, students must develop confidence in themselves and recognize the power that each of them has to take control of their future and shape it in a way that is best for them.

Read the text and say if you agree or disagree with the following statements

- 1) Having a job and having a career are two very different things.
- 2) Planning a career can begin at any age.
- 3) The choice of a career doesn't only depend on a person's talents and interests.
- 4) To face a competitive job market is to have no guarantees for getting a job.
- 5) To take control of the future and to be well-prepared for the challenges of the job market, one should take several very important steps.

Text 2

Why People Work

Have you ever asked yourself what you are working for? If you have ever had the time to consider this question, or put it to others, you might well have heard some or all of the following. "It's the money of course," some say with a smile, as if explaining something to a small child. Or it's the satisfaction of a job well done, the sense of achievement behind the clinching of an important deal. I worked as a bus conductor once, and I can't say I felt the same as I staggered along the swaying aisle trying to sell tickets without falling into someone's lap. It's the company of other people perhaps, but if that is the case, what about farmers? Is it the conversation in the farmyard that keeps them captivated by the job? "Work is power and a sense of status," say those who have either attained these elusive goals, or feel distressed that nobody has yet recognized their leadership qualities. Or we can blame it all on someone else, the family or the taxman. I suspect, and I say this under my breath, that most of us work rather as Mr. Micawber lived, hoping for something to turn up. We'll win the lottery, and tell the boss what we really think. We'll scrape together the money and open that little shop we always dreamed of, or go around the world, or spend more

time in the garden. One day we'll get that promotion we deserve, but until then at least we have something to do. And we are so busy doing it that we won't have time to wonder why.

Answer the questions

- 1) Why do you think people don't usually ask themselves about their reasons for work?
- 2) What reasons for working are given in the passage? Do you think they are serious?
- 3) Who can say that work is power?
- 4) Does the author of the passage agree with the opinions he presents in the passage? Why?
- 5) What other reasons for working can you think of?

Text 3

Make Your Job Work for You

Your job can be a step in the direction of the rest of your life. How you feel about it, what you learn from it, what you do with it or what it does to you helps you to decide where you go from there. If you want to get the most out of it, if you want it to lead you down the path of success, there are certain things you should do. Here are some suggestions:

Don't let the salary be your main reason for taking the job. Sometimes a lower paying job with the right company and the right contacts can do a lot more for you than a higher salary. Decide what is the lowest pay with which you can be satisfied. Then decide what other things can be important. How much training and/or experience can you get on this job. Some companies give their new employees priceless training. On-the-job experience can be very valuable to you when you apply for your next job. It gives you the practical experience that no school can offer. This can lead to a much higher salary later. What chances are there for advancement within the company? Sometimes accepting a lower paying job gives you a chance to show your boss how capable you are and how valuable you can be to the company. This will pay off later.

Another very important item for you to think about when you apply for the job *is the type of contacts you can make.* Just as a smart student chooses professors rather than just courses, a smart employee tries to meet and become friendly with the people who help him or her move ahead, either in this company or on the next job. Even if you can't do that, however, just

having the opportunity to meet and develop a relationship with different kinds of personalities can help you develop skills that may move you ahead much faster on your next job. Learning about the job from other people, or learning what it takes to move ahead in a company by observing other people, is an extremely valuable skill.

OK, so now you have the job and you want to make an impression – you want people to notice you. What can you do to become a valuable employee? *Do a little bit more and do it well.* It really isn't that hard to be successful in your life. It's too bad, but many people try to do as little as they can on the job. Take advantage of that – do just a little bit more. This is not to suggest that you should allow anyone to take advantage of you. However, it is suggested that you do your work faithfully and competently and to the best of your ability at all times. There is a saying: "Build a better mousetrap and the world will beat a path to your door." One way to be noticed in a company is to suggest little things that can improve the routine way that things are done. You must be careful here, however. Sometimes a way of doing thing has been established that has been carefully thought through and has advantages that you don't realize. The wrong suggestion can hurt you as much as the right suggestion can help you.

Do remember that other employees can be helpful to you. You should at least try not to score points by being critical of a fellow employee who is also doing his or her best job. Ambition, jealousy, and personality differences are encountered on any job, but the more friends you make and the fewer enemies, the better position you are in. There are times when you will need the help of your fellow employees. It is then that your prior actions can result in the kind of back-stabbing that hurts.

There is another important point to be made. Sometimes you may realize that you made a mistake by taking this job. *Don't feel married to it.* If it will help your career, quit it and look for another. This is the time when the friends you have made, the reputation you have earned on the job, and the experience and training you have got will be most helpful. No job is ever a waste of time because if you have given it your best, you have learned something from it. Take all this with you to your next job and continue to move up from there.

First, of course, you have to get the job. When you do, though, it's up to you to become a valuable employee. Good luck!

Answer the questions

- 1) What may the reasons for taking a lower paying job be?

- 2) How can the contacts you make in the company help you move ahead?
- 3) What should you do to be a more important employee?
- 4) How do you understand: “Build a better mousetrap and the world will beat a path to your door”?
- 5) How can your fellow employees be helpful to you?
- 6) When do you think you should quit the job?
- 7) Why is it said that no job can be a waste of time?

Text 4

Study the advertisements on the following pages. Select suitable jobs for which these applicants could apply

- 1) Technician engineer, 27, HNC¹ in Electrical Engineering, with two years' sales experience.
- 2) Professional engineer, 35, with five years' experience in the automotive industry.
- 3) Design engineer, 42, BSc in Mechanical Engineering, with experience in managing projects.
- 4) Technician, 24, National Certificate in Mechanical Engineering, two years' shop floor experience.
- 5) Electrical engineer, 50, HNC, long experience in maintenance of high voltage plant.
- 6) Mechanical engineer, 46, HND, experience in maintenance.
- 7) Yourself.

Note:

¹ HNC – Higher National Certificate

SALES ENGINEER

Sinclair is one of the UK's largest private engineering groups, with an international reputation. The sealing systems operation requires a Technical Sales Engineer to sell the world-renowned Chesterfield range of products throughout the Midlands.

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Please reply in writing with full cv in the first instance to Box 1383, The Herald, Liverpool L1 1QP.

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John Blair Engineering, part of the Nelson House Group, is a UK and International leader in power and process engineering. Continuing success in gaining new contracts world-wide has resulted in the ongoing growth of our Operations Division. This has created opportunities for additional Senior Subcontract Personnel.

Your prime responsibilities will involve:

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To be successful in this challenging position you will be qualified to degree level in a Mechanical, Electrical, or Quantity Surveying discipline and have 10 years experience at a Senior level preferably with a large, successful organization. Good communication and interpersonal skills are an essential requirement.

Salary is negotiable at a level attractive to high calibre individuals and in addition to the career prospects you would expect from a Company of our stature, we offer an attractive range of benefits, substantial pension provision, free life assurance, permanent health insurance, and generous relocation expenses where appropriate.

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JOHN BLAIR

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This important role carries an excellent salary and generous benefits including free private health care, life assurance, contributory pension scheme, and a progressive relocation package if necessary.

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Department, Semiconductor UK plc, Larkspur
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Semiconductor UK

d

Part of the N & S Group, one of the world's major suppliers of automotive components, PREMIER VANDERBILT LTD is a market leader in the manufacture of plain bearings for automotive and general engineering applications.

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Together with an attractive salary the benefits are those which can be expected from a progressive organization. There will be excellent opportunities for career development as the company continues to grow.

To apply, please send a cv stating current salary, to, Stuart P. Alexander, Human Resources Manager, Premier Vanderbilt Ltd, 10 Stonehouse Road, Wycliffe Valley Industrial Estate, Bathgate, Berks RG20 2EW.

Closing date for applications in Wednesday 5 January 19- and interviews will be held during January 19-.

E

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Please apply in own handwriting enclosing CV to:

**Mrs M Ramsay
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PACKAGING LTD
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Westfield Industrial Estate
Bristol BS68 9HQ.**

(Only applicants selected for interview will receive an acknowledgement within the next 3 weeks.)

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APPENDIX 2

TAPESCRPTS

Tapescript 1 (to ex. 1.22)

I: Why do you want this job?

CK: I like traveling and using my languages. I also like meeting people, and I want a new challenge. I really want to work for this company. It has an excellent reputation. I think with my excellent sales experience I can contribute to its success.

I: What are your strengths?

CK: I am fluent in Italian and Spanish. I am good at training sales staff and I get on well with people. I think, I'm very good at organizing seminars for customers.

I: What mistakes have you made?

CK: I'm not patient when people don't meet deadlines.

I: What kind of people do you work well with?

CK: I like people who work hard and are reliable.

I: What are your interests?

CK: I have a lot different interests. As I said before, I like traveling, and I like reading travel books. I also like aerobics and skiing.

I: Do you have any questions to ask us?

CK: If I get the job, when would you like me to start?

Tapescript 2 (to ex. 1.26)

Story 1

Charlie: My worst interview experience was about three years ago. I had a group interview for a sales rep. job with a big media company. I was fine at first but when the interviewer asked me a question I suddenly began to feel very nervous. My throat went dry and I couldn't speak. They offered me a jug of water and a cup. All 20 people in the room stopped and looked at me. I tried to pour water into the cup but my

hand was shaking so much that the water went everywhere. I was so embarrassed I had to leave the room. I still go cold all over when I think about it.

Story 2

Alison: Well, I think my worst experience was about two months ago. I had an interview for a job that I really wanted. I decided to drive but I got stuck in traffic and when I got there I was in a big hurry. By mistake, I parked my old car in the Managing Director's parking place. He arrived as I was getting out of my car. He hooted his horn and asked me to park somewhere else. I ignored him and ran off to the interview. Unfortunately, he was the interviewer and he was so angry that he didn't even give me an interview.

Story 3

Kevin: My first interview after leaving college was for a trainee accountant job in a firm in Leicester. When I walked into the room the interviewer threw an ashtray at me. I quickly moved to one side and it missed. Unfortunately, I didn't get the job. They told me afterwards that the ashtray was to test how people react. The person who caught the ashtray and threw it back got the job! The people who moved to one side or caught it and put it back on the desk, didn't!

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Для заметок

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АНГЛИЙСКИЙ ЯЗЫК

БАЗОВЫЙ КУРС

BEGINNERS (A1)

Часть 2

Методические указания

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