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КАФЕДРА ИНОСТРАННЫХ ЯЗЫКОВ

СБОНИК ТЕКСТОВ И УПРАЖНЕНИЙ ДЛЯ ОБУЧЕНИЯ ОСНОВАМ ТЕХНИЧЕСКОГО ПЕРЕВОДА СТУДЕНТОВ ТУСУР

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Настоящее учебно-методическое пособие предназначено для студентов ТУСУР направлений и специальностей очной и заочной форм обучения на ФЭТ, ФСУ, ФВС, ФБ, ЭФ, РКФ, ГФ. Пособие составлено в соответствии с целями и задачами дисциплин «Английский язык», «Немецкий язык» в рамках реализации программы интегрированного обучения иностранному языку по направлению «Иностранный язык для специальных целей». Учебно-методическое пособие состоит из трех частей. Первая часть (Part I) состоит из 6 текстов и рассчитана на 24 часа аудиторных занятий и 16 часов самостоятельной работы. Тематика текстов определяется минимумом общетехнических знаний, которым обладают студенты первого курса технического университета. Тексты отобраны из оригинальных источников с учетом их информативности и соответствия научно-техническим достижениям, изложены по принципу постепенного усложнения языкового материала. Каждый текст сопровождается комплексом упражнений для совершенствования грамматических и лексических навыков, которые необходимы студентам для профессионального общения на английском языке.
Вторая часть (Part II) состоит из 10 текстов и рассчитана на 8 часов аудиторных занятий и 8 часов самостоятельной работы. Тематика и содержание текстов подобраны с учетом специальности студентов по факультетам:
ФСУ/ФЭТ/ФБ: «Computer Viruses», «Programs»;
ЭФ: «How Business is Organized», «Two Methods of Production»;
ГФ: «Disabled People», «Social Workers»;
ФВС: «Inside a Plasma Display», «Working Principle of OLEDs»;
РКФ: «3-D Printing», «Conductors and Insulators».

Третья часть состоит из 4 текстов на немецком языке и рассчитана на 16 часов аудиторных занятий и 10 часов самостоятельной работы. Тематика текстов определяется минимумом общетехнических знаний, которым обладают студенты первого курса технического университета. Тексты отобраны из оригинальных источников и изложены по принципу усложнения грамматического материала. После каждого текста расположен комплекс упражнений для совершенствования грамматических и лексических навыков, которые необходимы студентам для профессионального общения на немецком языке.
Учебно-методическое пособие содержит раздел «READER», в который входят тексты для развития и совершенствования навыков самостоятельной работы с научно-популярной литературой и литературой по специальности. Справочный материал содержит 9 приложений–таблиц, включающих краткий грамматический справочник английского языка.

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PART 1

TEXT1. GRAVITATION

READING

1. Gravitation is a natural phenomenon by which objects with mass attract one another. Gravitation **is responsible for** keeping the Earth and the other planets in their orbits around the Sun; for keeping the Moon in its orbit around the Earth and for the formation of tides.

2. Gravitation is a very important force in the universe. Every object has **a gravitational pull** which is like magnetism. But, unlike magnetism, gravitation is not only in iron and steel. It is in every object, large or small; but large objects, such as earth, have a stronger pull than small ones. Modern work on gravitational theory began with the work of Galileo Galilei in the late 16th and early 17th centuries. In his famous experiment dropping balls from the Tower of Pisa, and later with careful measurements of balls rolling down **inclines**, Galileo showed that gravitation accelerated all objects **at the same rate**. This was **a major departure** from Aristotle's belief that heavier objects are accelerated faster. Galileo correctly postulated air resistance **as the reason** that lighter objects may fall more slowly in an atmosphere.

3. It was Isaac Newton who first **set the stage for** the formulation of the theory of gravitation. In 1687, the great scientist of the seventeenth century, first studied gravitation and published Principia, which hypothesizes the **inverse-square law of universal gravitation**. When he was a boy, he often saw how apples fell to the ground. He wondered why they fell towards the earth and why they did not fly up into the sky. Later he produced the law **according to** which everything in the universe attracts everything else towards itself. The sun attracts the earth and the earth attracts the sun. Why does the earth always move round the sun, and not fly off into cold space? The sun's gravitation gives the answer. The earth always tries **to move away in a straight line**, but the sun always pulls it back. So it continues on its journey round and round the sun.

4. **Although** the bigger object has the stronger attraction, all objects, in fact, have some attraction too but we do not notice the gravitational pull of a book because the pull of the earth is very much greater.

5. Einstein **produced a new law** of gravitation. Its main results are **the same as** the results of Newton's law; but in very small and fine **matters** Einstein's law gives different results. One of these is that gravitation **bends** light a little; but according to Newton's law gravitation has very little effect on light. Einstein showed this fact **by means of** mathematics and not by experiment. And astronomers later **proved by experiments** that Einstein was right.

1. **Read the following words and expressions and pay attention to their meanings.**

1. to be responsible for something	ыть ответственным за что-либо
2. gravitational pull	гравитационное притяжение (тяга)
3. incline	наклонная плоскость
4. at the same rate	с одинаковой скоростью
5. major departure	основное (главное) новшество (нововведение)
6. as the reason	в качестве причины (как причину)
7. to set the stage for something	установить основания для чего-либо
8. inverse-square law of universal gravitation	закон всемирного тяготения
9. according to something	в соответствии с чем-либо
10. to move away	удалять(-ся)
11. in a straight line	по прямой линии
12. although	хотя; не смотря на то, что
13. to produce the law	открыть (установить) закон
14. the same as	такой же как (такие же как)
15. to bend	сгибать(-ся), гнуть(-ся)
16. matter	предмет, вопрос, сущность
17. by means of something	с помощью (при помощи) чего-либо
18. to prove by experiments	доказать посредством (с помощью) эксперимента

2. **Read the statements and decide if they are true (T) or false (F). Prove your answers.**

1. All the objects with no mass attract one another.
2. Gravitation is responsible for the formation of tides.
3. There is gravitation only in iron and steel.
4. Galileo Galilei was the first who began the modern work on the theory of gravitation.
5. Aristotle first set the stage for the formulation of the gravitational theory.
6. Isaac Newton showed the fact that gravitation bends light a little by means of mathematics.
7. According to the law of gravitation the bigger object has the stronger attraction.
8. The sun’s gravitation gives the answer why the earth always moves round the sun.
9. The main results of Einstein’s law of gravitation are the same as the Newton’s ones.
10. Astronomers agreed by experiments that Einstein was right.

3. **Read the text and match the sentences (A-E) to the paragraphs (1-5).**

A. Isaac Newton first studied gravitation and published the results of his experiments.
B. All the objects on the Earth have stronger or weaker attraction.
C. It is gravitation that keeps all the planets around the Sun.
D. In some matters Newton and Einstein's theories are different.
E. There is a gravitational pull in every object.

4. **Translate the text GRAVITATION.**

VOCABULARY

1. **Match the words and translate the word combinations.**

1. modern	a) another
2. at the same	b) resistance
3. move	c) work
4. one	d) scientist
5. produce	e) departure
6. air	f) phenomenon
7. gravitational	g) theory
8. famous	h) rate
9. natural	i) round
10. major	j) law

2. **Complete the sentences with the words and expressions from the box. There is one extra word.**

according to although in the middle famous experiment one another formulation modern physics responsible the same as reason

1. It was Isaac Newton who first set the stage for the ….. of the theory of gravitation.
2. Later he produced the law ….. which everything in the universe attracts everything else towards itself.
3. The sun is one of the stars in the galaxy, which is not ….. of the galaxy, but rather near one edge.
4. Einstein and Newton's laws of gravitation are slightly different from ….. .
5. Gravitation is a natural phenomenon which is ….. for the formation of tides.
6. Galileo showed in his …… that gravitation accelerates all objects at the same rate.
7. It is air resistance which is the ….. why lighter objects may fall more slowly in an atmosphere.

8. Gravitation is described by ….. on the base of relativity theory.
9. All objects have some attraction ….. the bigger objects have stronger one.
10. The main results of the new law of gravitation are ….. those of the Newton's law.

GRAMMAR

1. Underline which answer – A, B or C – best fits each gap.

1. Why does the earth always ….. round the sun?
   A moves **B** moved **C** move
2. There ….. millions of galaxies in the universe.
   A is **B** was **C** are
3. Aristotle ….. that the heavier objects are accelerated faster.
   A postulates **B** postulated **C** is postulating
4. Einstein was the first who ….. the modern work on gravitation theory.
   A began **B** begins **C** begin
5. Gravitation is the force which ….. all the atoms of a star together.
   A hold **B** holds **C** held
6. Everything in the universe ….. everything else towards itself.
   A attracts **B** attract **C** attracted
7. Aaccording to Newton's law gravitation ….. very little effect on light.
   A have **B** is having **C** has
8. Gravitation is the force which ….. all the atoms of a star in different directions.
   A emit **B** emitted **C** emits
9. When Isaac Newton ….. a boy, he often saw how apples fell to the ground.
   A is **B** was **C** were
10. The Earth always ….. its journey round the sun.
   A makes **B** make **C** made

2. Put the verbs in brackets into the Present Simple or Past Simple Tenses.

1. Astronomers proved by experiments that Einstein ….. right. (be)
2. Einstein ….. by means of mathematics that gravitation has very little effect on light. (show)
3. The earth always ….. to move away in a straight line, but the sun always ….. it back. (try; pull)
4. Gravitation ….. all objects at the same rate. (accelerate)
5. Isaac Newton, the great scientist of the seventeenth century, was the first who ….. gravitation. (study)
6. Gravitation ….. the very existence of the Earth, the Sun, and most of the macroscopic objects in the universe. (account for)
7. Modern physics ….. gravitation using the general theory of relativity. (describe)
8. Every object ….. a gravitational pull which is like magnetism. (have)

9. Galileo correctly ….. air resistance as the reason that lighter objects may fall more slowly in an atmosphere. (postulate)
10. Isaac Newton always wondered why apples fell towards the earth and why they ….. up into the sky. (not fly)

3. Correct the underlined mistakes.

1. Aristotle **believes** that heavier objects were accelerated faster.
2. Large objects, such as earth, **has** a stronger pull than small ones.
3. Isaac Newton first **formulates** the theory of gravitation.
4. Air resistance **are** the reason why lighter objects may fall more slowly in an atmosphere.
5. Isaac Newton published the information about gravitation **at** 1687.
6. Why **is** the earth always move round the sun?
7. Einstein showed the fact of gravitation **with** means of mathematics and not by experiment.
8. Gravitation is responsible **about** keeping the Sun in its orbit around the Earth.
9. According **with** the Newton's law gravitation has very little effect on light.
10. There **is** millions of galaxies in the universe and so there **is** thousands of millions of suns.

4. Complete the table with a suitable part of speech.

noun	adjective	verb
gravitation	gravitational	gravitate
-	calculated	-
belief	-	-
-	different	-
-	-	resist

5. Write the complete sentences.

1. great / **Isaac Newton** / a / scientist / was / the seventeenth century. / of
2. Einstein / **Did** / a / law / new / produce / gravitation ? / of
3. did not / **The** / necessary / experiment / show / results.
4. formation / tides. / **Gravitation** / responsible / is / for / of
5. with / **Objects** / attract / mass / one another.

6. Put the word in brackets in the correct place.

1. The earth moves round the sun. (always)
2. Astronomers produced a new law two years after the experiment. (later)
3. When Isaac Newton was a boy he saw how apples fell to the ground. (often)

4. Gravitation is the agency which lends weight to objects with mass. (in everyday life)
5. We do not notice a gravitational pull of a book because the pull of the earth is much greater. (very)

7. Make questions starting with a question word in brackets.

1. The difference between the two laws is that gravitation bends light a little. (What)
2. Modern work on gravitational theory began in the late 16th century. (When)
3. We cannot notice the gravitational pull of a book because the pull of the earth is much greater. (Why)
4. Einstein showed the fact of gravitation by means of mathematics. (How)
5. There are about millions of stars in the galaxy. (How many)

8. Choose the best translation.

1. a relativity theory	**A** теория относительности **B** относительная теория **C** относительность теории
2. an everyday life	**A** жизнь в повседневности **B** повседневная жизнь **C** каждый день жизни
3. the sun attraction	**A** притягательное солнце **B** солнечное притяжение **C** солнцепритяжение
4. the earth gravitation	**A** гравитационная земля **B** земельная гравитация **C** гравитация земли

TEXT 2. COMPUTER AND HEALTH

READING

1. A computer receives facts, known as **data** and, following instructions, it **processes** these facts to produce information. Computers can process **vast amounts of** data in a very short time. Data and information can be numbers, letters, sounds, pictures or symbols. Pictures and symbols which a computer produces are called graphics. A computer cannot think for itself. It will do **exactly** as it is told – no more and no less. People often talk about 'computer **error**', but usually this means human error. If you are sent an electricity bill for millions of dollars when you only use one light bulb, it means that the computer was given the wrong instructions. **In order to** process data computers need two things – **hardware** and **software**. Hardware is the computer's machinery – the parts you can see and touch, like the monitor and all the electronic devices and **circuits** inside. Software is all the facts and the lists of instructions that a computer **receives** in order **to carry out** its **tasks**. All the different tasks of instructions are called programs.

2. Let's see what goes on inside the brain of your computer – its **processing unit**.

- Input. Data and instructions are **fed** into the computer.
- The control unit. Input comes here first and is sent to the correct part of the computer to be processed. When work is **completed**, the control unit collects the information.
- The arithmetic unit. The computer carries out all its work in the arithmetic unit. The control unit and the arithmetic unit are together called the Central Processing Unit (CPU).
- **Memory**. Data and instructions are **stored** here.
- Output. The processed data is **delivered** to the user.

3. If you don't take care, you can **damage** your health working on computers. But if you follow some simple instructions you can enjoy a danger-free time. Most monitors have an **anti-glare screen** that can stop you from getting headaches. Eyes can become strained by focusing at the same distance for a long time. Your monitor screen should be just below your line of sight. Sitting at a computer can strain your shoulders and back, so it's important to sit on a good chair. Find one that can be **adjusted to support** your back. Doctors think that an illness called **repetitive strain syndrome (RSS)** can be **caused** by working at a keyboard and using your mouse every day. It mostly affects wrists, fingers and arms and can be very painful. When typing, make sure your wrists are completely relaxed and flat, never bent. Take a 10 minute break every hour you work to rest your eyes and other parts of your body.

4. Your computer needs **looking after** too. It will work much better if you take care of it properly.

Here are some simple **dos and don'ts** of looking after hardware.

- **avoid** smoke and dust
- don't turn your computer on and off many times during the day
- avoid high temperatures
- keep drinks and food away

- don’t let your computer share an **electric socket** with another large **electrical appliance**.

5. If your computer stops working, first check that all your cables are **properly** connected. It’s funny to call a technician only to find that your dad **unplugged** your machine to do the vacuuming. Read your **manual** and try switching off and **restarting** the system. Most hardware and software manufacturers have a **helpline** you can call for advice. Don’t attempt to **fiddle with** electronics yourself. If your manuals are too full of jargon to understand, you can buy simpler guides that explain things more clearly.

6. Make sure that your files on the hard disk are organized into different directories so you can find them easily. You may copy the files from the **hard disk** onto compact, external hard, USB flash disks or any other portable devices. Then if you lose any files from the hard disk, you will still have a copy of your work. This is called **backing up**. Try **to remove** unnecessary files from the hard disk. If it gets too full, data can become jumbled and your computer starts working more slowly.

1. Read the following words expressions and pay attention to their meanings.

1. data	данные; факты; сведения; информация
2. to process	обрабатывать
3. vast amount of smth.	большое (огромное) количество чего-либо
4. exactly	точно; именно
5. error	ошибка; погрешность; отклонение
6. in order to	для того чтобы
7. hardware	аппаратное обеспечение; аппаратура
8. software	программное обеспечение
9. circuit	схема; цепь
10.to receive	получать; принимать
11.to carry out	выполнять; осуществлять
12.task	задание; задача
13.processing unit	процессор, устройство обработки данных
14.to feed (fed; fed)	питать; вводить
15.to complete	заканчивать; завершать
16.memory	запоминающее устройство; память
17.to store	хранить; вмещать
18.to deliver	доставлять
19.to damage	наносить вред; повреждать
20.anti-glare screen	антибликовый экран
21.to adjust	регулировать; устанавливать
22.to support	поддерживать
23.repetitive strain syndrome	синдром постоянного напряжения
24.to cause smth.	быть причиной чего-либо; вызывать что-либо

25.to look after	заботиться; ухаживать
26.to avoid	избегать
27.electric socket	электрическая розетка
28.electrical appliance	бытовой электроприбор
29.properly	должным образом; правильно
30.to unplug	разъединять; отсоединять
31.manual	руководство пользователя
32.to restart	перезапустить
33.helpline	служба консультативной помощи
34.to fiddle with smth.	играть чем-либо
35.hard/floppy disk	жесткий/гибкий диск
36.backing up	создание резервных копий
37.to remove	удалять

2. Read the text and answer the questions.

1.What can computers do?
2.What is called computer graphics?
3.Is ‘computer error’ an error of a computer?
4.How is the processed data delivered to the user?
5.Which things does a computer need to process data?
6.What can prevent you from headaches while working on computers?
7.What is the reason for the repetitive strain syndrome?
8.What is the best way to sit at a computer?
9.What should you do to keep your computer hardware for long?
10.What will you do if your computer stops working?

3. Read the text again and choose the best heading (A-F) for each paragraph (1-6).

A. Times of Trouble
B. What is a Computer?
C. Looking after the Hardware.
D. What Happens Inside?
E. Organizing Files.
F. Some Advice to Avoid Health Problems.

4. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. Hardware and software are things without which a computer can’t work.
2. It is the central processing unit that is the main part of a computer.
3. Every user of a computer can see and touch its hardware.
4. The monitor screen should be above your sight line.

5. All manuals are difficult to understand.
6. Different directories can help you find your files quickly.
7. If a computer stops working, the first thing to do is to call a technician.
8. There is hardly a computer manufacturer that has a helpline you can call for advice.
9. You should give some rest to your eyes taking a 10 minute break every hour you work.
10. Repetitive strain syndrome is an illness that can be caused by working at a keyboard and using your mouse every day.

5. Translate the text Computer and Health.

VOCABULARY

1. Match the words and translate the word combinations.

1. restart	a) break
2. organize	b) data
3. light	c) tasks
4. process	d) disk
5. follow	e) information
6. collect	f) cables
7. read	g) manual
8. connect	h) bulb
9. floppy	i) files
10. ten minute	j) a computer

2. Complete the sentences with the words and expressions from the box. There is one extra expression.

damage circuits and devices headache some advice for a long time wrong instructions directories take care of fiddle with more slowly call a technician

1. You can … your health spending a lot of time at the screen of a computer.
2. 'Computer error' means that the computer was given the ….. .
3. Hardware, the computer's machinery, includes all the electronic..… inside a computer.
4. If you …..it properly, it will work much better and for a long.
5. Getting a ….. is a result of working on a computer without any breaks.
6. If you focus at the same distance ….. , your eyes can become strained.
7. Necessary files on the hard disk are organized into different ….. .
8. If you need ….. , most computer manufacturers have a helpline you can call.
9. Never ….. electronic devices yourselves if you do not understand a problem. Read a manual or call a helpline.

10.If a hard disk gets too full with files your computer starts working ….. .

3. Match the words with a similar meaning.

1. delete	a) error
2. device	b) try
3. complete	c) operate
4. mistake	d) remove
5. attempt	e) unit
6. work	f) finish

4. Match the words with an opposite meaning.

1. unplug	a) disconnect
2. input	b) receive
3. inside	c) switch off
4. send	d) plug in
5. switch on	e) outside
6. connect	f) output

GRAMMAR

1. Make sentences from the following words beginning with the word in bold.

1.computer / its / **The** / brain / processing / of / is / unit. / the
2.does / error / computer / **What** / mean? / usually
3.simple / **If** / problems. / can / follow / you / avoid / instructions / health / you
4.after. / computer / needs / **Your** / looking
5.attempt / electronics. / shouldn't / with / yourself / to fiddle / **You**

2. Underline which answer – A, B or C – best fits each gap.

1. The computer ….. all its work in the arithmetic unit.
   A carry out **B** carries out **C** carried
2. The processed data ….. to the user.
   A delivers **B** delivered **C** is delivered
3. Sitting at a compute for a long time ….. usually very painful.
   A is **B** are **C** am
4. Your computer will work better if you … care of it.
   A take **B** will take **C** are taken
5. You can buy simpler guides that ..… things more clearly.
   A explain **B** are explaining **C** explained

3. Make questions to the underlined words.

1. A computer starts working worse when the hard disk gets too full.
2. Computers need hardware and software to start working.
3. RSS can be caused by working on a computer every day.
4. Computers can process vast amount of information.
5. Data and instructions are stored in the memory unit.

4. Make the following sentences negative.

1. A hard disk gets full when there are too many unnecessary files.
2. Health problems are usually caused by sitting at a computer for a long time.
3. If you have serious problems with a computer, you should call a technician.
4. One of the most serious problems with health doctors call repetitive strain syndrome.
5. People often talk about "computer error" which they usually do themselves.

5. Complete the table with a suitable part of speech.

noun	**adjective**	**verb**
information	informative	inform
-	adjusted	-
-	-	organize
simplification	-	-
-	stored	-

6. Make adverbs from the following adjectives.

exact	exactly
direct	
hard	
careful	
back	
complete	
easy	
proper	
simple	

TEXT 3. FAX

READING

1 Facsimile machines only came into **widespread** use in the late 1970s when international standards were set by the Comite Consaltatif International Telegraphique et Telephonique (CCITT), a body based in France. Before this, machines could only communicate with those made by the same **manufacturer**.

2 Since then, facsimile technology has become increasingly **sophisticated**. The latest machines, which must be linked to a special digital phone line, can send a document to several places at once for the price of one phone call.

3 Facsimile **transmission involves** sending a document along a telephone line and **converting** the **received** signals into a reproduction of the original. 'Fax' machines can now send an A4 document, containing images as well as words, in less than a minute.

4 When you **feed** a document into the machine, a fluorescent lamp reflects the image on to a series of mirrors which reduce its size so that the whole document can be reflected on to a camera lens. The lens can only read the image in black and white. This information is converted, via a microprocessor, into binary information. The machine records black as 0 and white as 1.

5 Another microprocessor then converts the binary data into digital information, which allows more data to be stored on the microchip. But, because most telephone systems cannot read digital information, this is again changed, via another microprocessor (modem), into analogue tones, or **pitches** of noise. The first machine transmits these tones to the second.

6 The receiving machine converts the analogue tones back into digital and then binary information. It sends a signal (in binary code) to the thermal head, or printer. This turns **heated** elements on or off according to the **pattern** of 0s and 1s **contained** in the signal. The pattern of black and white is then printed on to heat-sensitive paper.

7 Fax machines send information at the **rate** of 9,600 bits of information per second. A few seconds' interference on the phone line can make several lines of a document **illegible**. If the line is noisy, the sending machine will slow down **to reduce** the amount of information lost.

1. Read the following words expressions and pay attention to their meanings.

1. widespread	широко распространенный
2. manufacturer	производитель; изготовитель
3. sophisticated	сложный
4. transmission	передача
5. involve	включать в себя; связывать
6. convert into smth.	переводить; превращать во что-либо
7. receive	получать; принимать
8. feed	питать; подавать; поддерживать
9. pitch	степень; уровень; напряжение

10. heat	нагревать
11. pattern	шаблон; модель
12. contain	содержать; включать в себя
13. rate	скорость; степень
14. illegible	нечеткий; неразборчивый
14. reduce	снижать; уменьшать

2. Read the text and answer the questions.

1. What do facsimile machines origin from?
2. What is the price of sending a document to several places at once?
3. Can images or only words be sent within a document?
4. What colour can lens read images in?
5. What actions does facsimile transmission involve?
6. What is modem used for?
7. How is the image printed?
8. What is the rate of sending information?
9. What does the fax machine do to reduce the amount of information lost?
10. Why is it necessary to convert digital information into analogue tone?

3. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. Facsimile transmission doesn't involve sending a document along a telephone line.
2. Nowadays you can't send an A4 document with images and words.
3. The fax machine records black as 1 and white as 0.
4. The receiving machine sends a signal in binary code to the thermal head.
5. A few seconds' interference on the phone line doesn't change the image.

4. Which paragraph(s):

1. says about the speed of sending information?
2. gives the information about the first date of using fax machines?
3. describes how to send a document?
4. gives the information about the latest achievements of facsimile technology?
5. says about the colour of images sent?

5. Translate the text FAX.

VOCABULARY

1. Match the words and translate the word combinations.

1. binary	a) lens
2. phone	b) data
3. thermal	c) line
4. fax	d) head
5. camera	e) machine

2. Match the words with similar meaning.

1. turn on	a) switch off
2. turn off	b) speed
3. at once	c) keep
4. attract	d) absorb
5. rate	e) complicated
6. store	f) immediately
7. sophisticated	g) switch on

3. Match the words with opposite meaning.

1. turn on	a) receive
2. reduce	b) disconnect
3. send	c) switch off
4. link	d) transmit
5. receive	e) increase

GRAMMAR

1. Make sentences from the following words beginning with the word in bold.

1. communicate / machines / those / made / **The** / manufacturer. / same / by / with / could / only / the
2. be / to / special / machines / must / phone / linked / a / digital / line. / **The**
3. **Is** / this / binary / information / converted / into / data / a / microprocessor? / via
4. read / information. / not / **Most** / systems / digital / telephone / can
5. **The** / in / black / lens / the / reads / white. / image / and

2. Make negatives and general questions from the statements.

1. Facsimile technology has become sophisticated.
2. The lens can read the image in black and white.

3. The pattern of black and white is printed on to heat-sensitive paper.
4. The sending machine will slow down to reduce the amount of information lost.
5. A microprocessor converts the binary data into digital information.
6. Facsimile machines came into use in the late 1970s.

3. Put the word in brackets in the correct place.

1. Facsimile technology has become sophisticated (increasingly).
2. The lens can read the image in black and white (only).
3. The pattern of black and white is printed on to heat-sensitive paper (then).
4. A microprocessor converts the binary data into digital information (then).
5. Facsimile machines came into use in the late 1970s (only).

4. Make questions to the underlined words.

a) Facsimile machines came into use in the late 1970s.
b) A fluorescent lamp reflects the image on to a series of mirrors.
c) If necessary the sending machine will slow down to reduce the amount of information lost.

5. What do the underlined words stand for?

1. Before this, machines could only communicate with **those** made by the same manufacturer. (para 1)
2. When you feed a document into the machine, a fluorescent lamp reflects the image on to a series of mirrors **which** reduce its size so that the whole document can be reflected on to a camera lens. (para 4)
3. **It** sends a signal (in binary code) to the thermal head, or printer. (para 6)

6. Choose the best translation.

1. a special digital phone line	**A** специальная цифровая телефонная линия **B** специальная линия цифровых телефонов **C** специальный телефон цифровой линии
2. camera lens	**A** линза фотокамеры **B** камерная линза **C** камера линз
3. facsimile technology	**A** факсимильная технология **B** технология передачи факсовых сообщений **C** факс технологии

7. Divide the following words into 3 groups.

machine use set communicate made manufacturer transmission involve received reproduction image feed reflect reduce lens converted record store digital transmit interference reduce lost series sophisticated

1. noun	2. adjective/participle	3. verb

8. Complete the table with a suitable part of speech.

noun	adjective/ participle	verb
transmission	transmitted	transmit
receiver	-	-
-	-	heat
-	convertible	-
processor	-	-
-	-	link
-	-	communicate
digit	-	-
-	manufactured	-
-	-	use

9. Fill in the gaps with an appropriate part of speech formed from the word in brackets.

1. The technology has become increasingly (complicate).
2. (Receive) machine converts the analogue tones back into digital and then binary information.
3. It sends a signal to the (print).
4. The pattern of black and white is (print) on to heat-sensitive paper.
5. Fax machine sends (inform) at the rate of 9,600 bits per second.

TEXT 4. NANOTECHNOLOGY: WHAT WILL IT MEAN?

READING

1. Nanotechnology will make us healthy and wealthy **though** not necessarily-wise. In a few **decades**, this **emerging** manufacturing technology will let us inexpensively **arrange** atoms and molecules **in most of the ways** permitted by physical law. It will let us make supercomputers that **fit** on the head of a pin and a lot of medical nanorobots smaller than a human **cell** able to **eliminate** cancer, infections, **clogged arteries** and even old age. People will look back on this era with the same feelings we have toward medieval times - when technology was primitive and almost everyone lived in poverty and died young.

2. Besides computers billions of times more powerful than today's and new medical **capabilities** that will heal and cure in cases that are now viewed as **utterly** hopeless, this new and very **precise** way of **fabricating** products will also eliminate the pollution from **current** manufacturing methods. Molecular manufacturing will make exactly what it is supposed to make, no more and no less, and **therefore** won't make **pollutants**.

3. When nanotechnology pioneer Erick Drexler first **dared** to publish this vision back in the early 1980s, the **response** of scientific community was skeptical, **at best**. It seemed too good to be true, and many scientists pronounced the whole thing impossible. But the laws of physics care little for **either** our hopes **or** our fears, and **subsequent** analysis kept returning the same answer: it will take time, but it is not only possible but almost **unavoidable**.

4. The progress of technology around the world has already given us more precise, less expensive manufacturing technologies that can make an unprecedented **diversity** of new products. Nowhere this is more **evident** than in computer hardware: computational power has increased **exponentially** while the finest **feature** sizes have **steadily shrunk** into the deep submicron **range**. It seems clear where we're headed: molecular computers with billions upon billions of molecular **switches**. And if we can arrange atoms into molecular computers, why not a whole range of other molecularly precise products?

5. It has taken decades for the **bulk** of the research community to accept the **feasibility** of this vision. But when the President of the United States in 2005 called for a US $500 million National Nanotechnology Initiative, we knew nanotechnology had reached critical mass.

1. **Read the following words expressions and pay attention to their meanings.**

1. though	хотя; однако (же)
2. decade	десятилетие
3. emerging	появляющийся; возникающий
4. arrange	располагать; классифицировать; приспосабливать
5. in most of the ways	большинством способов
6. fit	устанавливать; прилаживать

7. cell	клетка; ячейка
8. eliminate	устранять; уничтожать; ликвидировать
9. clogged arteries	закупоренные, засоренные артерии
10. besides	кроме (того)
11. capability	возможность; способность
12. heal	излечивать; исцелять
13. utterly	абсолютно; совершенно; полностью
14. precise	точный; четкий
15. current	современный; теперешний; текущий
16. therefore	поэтому; следовательно
17. pollutant	загрязняющий агент
18. dare	сметь; отважиться
19. response	реакция; ответ; отклик
20. at best	в лучшем случае
21. either … or	или …. или ….
22. subsequent	последующий
23. unavoidable	неизбежный
24. diversity	разнообразие; многообразие
25. evident	очевидный
26. exponentially	явно; показательно
27. feature	деталь; признак; свойство
28. steadily	постоянно; неизменно
29. shrink (shrank,shrunk)	сокращать (-ся)
30. range	предел; сфера; область; радиус действия
31. switch	изменение; переключение
31. bulk	большое количество; большая часть; большинство
32. feasibility	осуществимость; выполнимость; возможность

2. Read the text and answer the questions.

1. When was nanotechnology invented?
2. What are the main advantages of nanotechnology?
3. How small can supercomputers be made with the use of nanotechnology?
4. Who was nanotechnology invented by?
5. How will nanotechnology help eliminate pollution?

3. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. The power of computers stays steadily at the same level while the size of their components is much smaller.
2. The scientific community accepted the idea of nanotechnology immediately.
3. Nanotechnology can help people overcome a lot of dangerous illnesses.
4. The new technology will help people increase intellectual power.

5. The implementation of nanotechnology in industry will be very expensive.

4. Translate the text «Nanotechnology: what will it mean?».

VOCABULARY

1. Read the text and find the words with similar meaning.

1. that is why (para 2)
2. modern (para 2)
3. make disappear (para 2)
4. answer (para 3)
5. following (para 3)
6. exact (para 4)
7. variety (para 4)
8. producing (para 4)
9. scope (para 4)
10. idea, understanding (para 5)

2. Read the text and find the words with opposite meaning.

1. poor (para 1)
2. forbidden (para 1)
3. partly (para 2)
4. hidden (para 4)
5. grown bigger (para 4)
6. decreased (para 4)

3. Match the words and translate the word combinations.

1. arrange	a) power
2. computational	b) technology
3. human	c) atoms
4. physical	d) cells
5. manufacturing	e) law

4. Complete the sentences with the words from the box.

emerging unavoidable therefore arrange subsequent fit pollutants eliminate current

1. This new way of producing products will ….. the pollution from ….. manufacturing methods.
2. Molecular manufacturing will make exactly what it is supposed to make and ….. will not make any ….. .

3. It will let us make supercomputers that ….. on the head of a pin.
4. ….. analysis kept returning the same answer: it will take time, but it is not only possible but almost ….. .
5. This ….. manufacturing technology will let us inexpensively ….. atoms and molecules in most of the ways permitted by physical law.

GRAMMAR

1. Change the following sentences into Future Simple.

1. A lot of scientists considered the idea of nanotechnology to be impossible.
2. First, the response of the scientific society to a new phenomenon was skeptical.
3. The progress of nanotechnology around the world has already given us more precise, less expensive manufacturing technologies.
4. We can arrange atoms into molecules in most of the ways permitted by physical law.
5. The use of nanotechnology is almost unavoidable.

2. Make sentences from the following words beginning with the word in bold.

1. mass. / reached / **Nanotechnology** / has / critical
2. exponentially. / has / **Computational** / increased / power / of / computer hardware
3. eliminate / **New** / also / will / technology / pollution. / the
4. **The progress** / of / has / more / given / us / already / precise / manufacturing methods. / technology
5. impossible. / scientists / nanotechnology/ **Many** / pronounced

3. Make questions to the underlined words.

1. In a few decades, <u>this emerging manufacturing technology</u> will let us nexpensively arrange <u>atoms and molecules</u> in most of the ways permitted by physical law.
2. Nanotechnology pioneer <u>Erick Drexler</u> first dared to publish this vision back <u>in the early 1980s.</u>
3. Computational power has increased <u>exponentially</u>

1. Divide the following words into 4 groups.

wealthy eliminate clogged medieval primitive capabilities impossible subsequent expensive submicron unprecedented exponentially feasibility remarkably vision community necessarily inexpensively unavoidable diversity

1. noun	2. verb	3.adjective/participle	4. adverb

2. Complete the table with a suitable part of speech.

noun	adjective/ participle	verb	adverb
analysis	-	-	-
-	computational		-
-	-	criticize	-
-	-	permitted	x
molecule	x	-	-
initiative	-	-	-
-	-	pollute	x

3. Fill in the gaps with an appropriate part of speech formed from the word in brackets.

1. Subsequent (analyze) of nanotechnology kept returning the same answer: it will take time, but it is not only (possibility) but almost unavoidable.
2. Nowhere is this more evident than in computer hardware: (compute) power has increased **(**exponential**).**
3. It has taken decades for the bulk of the research community to accept the (feasible) of the new vision.
4. The use of nanotechnology around the world has already given us less expensive (manufacture) technologies that can make an unprecedented (diverse) of new products.
5. This (emerge) manufacturing technology will let us (expensive) arrange atoms and molecules in most of the ways (permit) by physical law.

4. Choose the best translation.

1. the research community	**A** исследование сообщества **B** исследовательское сообщество **C** исследователи сообщества
2. nanotechnology pioneer	**A** нанотехнологический пионер **B** нанотехнология пионера **C** пионер нанотехнологии
3. computer hardware	**A** компьютер аппаратных средств **B** жесткий компьютер **C** аппаратные средства компьютера

TEXT 5. SEARCHING FOR ALTERNATIVE SOURCE OF ENERGY

READING

Everybody knows that there's nothing which is able to be eternal. So it's quite natural that conventional sources of energy are going to disappear very soon. There're a lot of reasons for this. Here are only some of them. First, these traditional sources can't be considered renewable. As it follows from this we're going to waste all of them in the very nearer future. And secondly, they are especially harmful for our environment.

The development of unconventional and renewable energy sources is a major challenge facing humankind in the 21st century. We are desperately in need of new forms of energy which must be practical, cheap to set up and maintain, highly productive and above all kind to our planet.

Most of the main energy sources are based on the consumption of non-renewable resources (petroleum, coal, natural gas and uranium). Except for nuclear fuels, tidal energy and geothermal energy, all terrestrial energy sources are from current solar insolation or from remains of plant or animal life. Besides, hydropower has been one of the most important sources to generate electricity.

Thermonuclear power, or nuclear power, comes from the splitting of atoms. It's a widely used and inexpensive form of energy. However, it's possibly the most dangerous because there are health risks from radiation.

Sugar cane can be used as a biofuel. Biomass production involves using garbage, corn or other vegetation to generate electricity. For example, alcohol from sugar cane is quite commonly used as fuel in Brazil.

Geothermal power from hot, hardened rock above the magma of the earth's core is the result of the accumulation of radioactive materials during the formation of Earth. For instance, from under the ground Iceland gets geothermal energy, which provides most of the country's heat and hot water. In the mid-20th century Russian scientists suggested using hot volcanic vapours to generate cheap geothermal electric power.

Other alternative sources of energy include the wind and the sun. Wind power has been used for many years in countries like Holland and Denmark. In many parts of the world the sun fulfills many energy needs. Solar panels heated by the sun produce electricity.

What about future sources of energy? Ralph Hansen, a NASA engineer, proposed a plan to use solar-powered satellites to capture the power of the sun in space where the sun shines 24 hours a day, 365 days a year. His plan would provide low-cost non-polluting energy for the entire world.

An additional energy source to be developed is fusion energy, the process that powers the sun and the stars. Nuclear fusion represents an unlimited source of energy. In fusion nuclei combine to form bigger nuclei while releasing energy. Fusion power could solve many of energy problems, but despite research in 1950s, no commercial fusion reactor is expected before 2050. Many technical problems remain unsolved.

So, we will have to look closer at different energy sources which are an attractive power-generation option.

1. **Read the following words and expressions and pay attention to their meanings.**

to search for	искать
eternal	вечный
conventional	обычный, традиционный
renewable	возобновляемый
to waste	расходовать, тратить
to set up	устанавливать
to maintain	содержать (поддерживать)в хор.сост.
except for	за исключением, кроме
fuel	топливо
tidal energy	10. энергия приливов
terrestrial	11. земной
insolation	12. инсоляция, освещение солн. лучами
fossil	13. ископаемое
besides	14. кроме того, к тому же
splitting	15. расщепление
sugar cane	16. сахарный тростник
to involve	17. включать в себя, вовлекать
core	18. ядро
vapour	19. пар
to capture	20. захватывать
fusion	21. слияние, синтез
to release	22. выделять, высвобождать
despite	23. несмотря на

2. **Read the statements and decide if they are true (T) or false (F). Prove your answers.**

1. New forms of energy must be environmentally friendly.
2. The main energy sources are based on the consumption of non-renewable sources.
3. Fossil fuels include petroleum.
4. Geothermal power is dangerous because of radiation.
5. Alcohol is widely used as fuel in Russia.
6. Nuclear energy comes from splitting atomic particles.
7. Iceland is famous for its solar power.
8. R.Hansen suggested getting energy from garbage.
9. Danish scientists proposed to use volcanic vapours to generate electricity.
10. A fusion reactor will be built before 2050.

3. Read the text and answer the questions.

1. Why will conventional sources of energy disappear soon?
2. What is the main problem facing humankind in our century?
3. What is the most dangerous form of energy according to the text?
4. What form of energy is the result of the accumulation of radioactive materials?
5. What sorts of energy will the future produce?

4. Translate the text Searching for Alternative Source of Energy.

VOCABULARY

3. Match the words and translate the word combinations.

1. source	a) to set up and maintain
2. cheap	b) option
3.fossil	c) energy
4. power-generation	d) panels
5. tidal	e) remains
6. solar	f) problems
7. to solve	g) power
8.earth's	h) of fuel
9. fusion	i) satellites
10. solar-powered	j) core

4. Match the words with a similar meaning.

1. traditional	a) to heat
2. to supply	b) despite
3.to warm	c) conventional
4. to emit	d) entire
5. in spite of	e) to provide
6. to include	f) to release
7. whole	g) to search for
8. to produce	h) to involve
9. to decide	i) to generate
10. to look for	j) to solve

5. Match the words with an opposite meaning.

1. natural	a) non-renewable
2. splitting	b) expensive
3. past	c) unlimited
4. renewable	d) insufficient
5. solved	e) high
6. limited	f) future
7. to appear	g) unsolved
8. sufficient	h) fusion
9. cheap	i) artificial
10. low	j) disappear

6. Complete the sentences with the words and expressions from the box. There is one extra word.

eternal terrestrial desperately health risks wind vapours capture remain accumulation fusion solar

1. ….. energy sources come from solar insolation or fossil remains.
2. Humankind ….. needs new forms of energy.
3. Nuclear power is dangerous because of ….. .
4. Nothing in the nature is ….. .
5. It was suggested to use hot volcanic ….. to generate electricity.
6. Solar-powered satellites can ….. the power of the sun in space.
7. Unfortunately, many technical problems ….. unsolved.
8. Geothermal power is the result of the ….. of radioactive materials.
9. ….. panels produce electrical energy.
10. ….. energy is an alternative source to be developed in the future.

GRAMMAR

9. Put the verbs in brackets into the Present Perfect or Past Simple Tenses.

1. We ….. natural sources of energy for a long time. (know)
2. Ever since the beginning of the Industrial Revolution the question of the future of energy supplies ….. economists. (occupy)
3. In the mid-20th century Russia ….. the first Russian tidal power plant on the Kola Peninsular. (build)
4. Long ago people in Hawaii ….. the strong winds to produce electricity.(use)
5. In the past the world ….. mostly on hydroelectric power. (depend)

10.Make the following sentences passive.

1. People can use sugar cane as a biofuel.
2. Solar panels produce electricity.
3. Holland and Denmark have used wind power for many years.
4. We won't build a commercial fusion reactor soon.
5. People widely use thermonuclear power.
6. During the recent generations people built dams across rivers.
7. We must develop alternative sources of energy.
8. We need energy to warm or cool us, process our food, etc.
9. We usually use gasoline and natural gas for cars.
10. Geothermal energy provides the country's heat and hot water.

11.Complete the table with a suitable part of speech.

noun	**adjective**	**verb**
solution	solved	-
-	-	to disappear
production	-	to produce
-	powered	-
-	-	to split

12. Make sentences from the following words beginning with the word in bold.

1. natural/ traditional/ **It's/** will/ that/ sources /energy/ very/ soon./of/ disappear
2. technology/ reactors. /**Another**/ is/ promising/ thermonuclear/
3. could/ solve/ problems./ of/ many/ **Fusion**/ power/ energy/
4. combine/ releasing/ **In/ fusion**/ to form/ nuclei/ while/ bigger/ nuclei/ energy.
5. of the world/ fulfills/ many/ energy/ the sun/ **In/** parts/ needs./many

13.<u>Underline</u> which answer – A, B or C – best fits each gap.

1. The nuclear power is the ….. form of energy.
   A more dangerous **B** danger **C** most dangerous
2. Wind farms are not as … as nuclear power stations.
   A uglier **B** ugly **C** more ugly
3. Fusion energy is ..… than common forms of energy.
   A more expensive **B** expensive **C** the most expensive
4. The development of new technologies is one of the … problems facing mankind today.
   A big **B** biggest **C** bigger
5. The ….. money we'll invest the ….. we'll develop new energy sources.
   A much/soon **B** more/sooner **C** most/soonest

14.Choose the best translation.

1. power consumption	A потребляемая энергия B потребление энергии C энергия потребления
2. sugar cane	A сахар тростника B сахар из тростника C C сахарный тростник
3.fusion energy	A энергия синтеза B синтетическая энергия C синтез энергии
4. wind farm	A ветряная ферма B ветер с фермы C ветреная ферма

TEXT 6. MOBILE REVOLUTION

READING

No consumer product in history has caught on as quickly as the mobile phone, global sales of which have risen from six million in 1991 to more than 400 million a year now.

The arrival of the mobile phone has transformed our lifestyles so much that men now spend more time on the phone than women, according to the results of our special opinion poll.

Mobile phones are no longer just the domain of the teenager and, in fact, just as many 40- and 50-year olds now own a mobile phone as the 15 to 20 age group (slightly below 70%). Even among the over 65s more than 40% now have a mobile.

The survey found that men with mobile phones (72% of all men) spend more than an hour a day making calls on an average weekday. The average man spends sixty-six minutes on his landline or his mobile, compared with fifty-three minutes before the mobile phone revolution.

But the poll reveals that, while men are using their phones a lot more, women are actually spending less time on the phone. Slightly fewer women (67%) have a mobile phone, and the survey shows that the average amount of time they spend on the phone on a weekday has gone down from sixty-three minutes before they got a mobile to fifty-five minutes now. The explanation might lie in the fact that men love to play with techno toys while women may be more conscious of the bills they are running up.

Innovation in mobile phones has been happening so fast that it's difficult for consumers to change their behaviour. Phones are constantly swallowing up other products like cameras, calculators, clocks, radios, and digital music players. There are twenty different products that previously might have been bought separately that can now be part of a mobile phone. Mobiles have changed the way people talk to one another, they have generated a new type of language, they have saved lives and become style icons.

Obviously, the rich have been buying phones faster than the poor. But this happens with every innovation. Mobile phone take-up among the poor has actually been far quicker than it was in the case of previous products, such as colour television, computers and Internet access. Indeed, as mobile phones continue to become cheaper and more powerful, they might prove to be more successful in bridging the gap between the rich and the poor than expensive computers.

There are obviously drawbacks to mobiles as well: mobile users are two and a half times more likely to develop cancer in areas of the brain adjacent to their phone ear, although researchers are unable to prove whether this has anything to do with the phone; mobile thefts now account for a third of all street robberies in London, and don't forget about all the accidents waiting to happen as people drive with a mobile in one hand. But, overall, mobile phones have proved to be a big benefit for people.

1. **Read the following words and expressions and pay attention to their meaning.**

1. to catch on	становиться модным
2. arrival	появление
3. according to	согласно, в соответствии с
4. opinion poll	результаты опроса
5. domain	область, сфера
6. slightly	слегка, чуть-чуть
7. to own	владеть
8. survey	обзор, отчет об обследовании
9. average	средний
10.landline	стационарная телефонная линия
11.to reveal	открывать, показывать
12.explanation	объяснение
13.to be conscious of	отдавать себе отчет
14.bill	счет
15.to run up	увеличивать
16.consumer	потребитель
17.to swallow	проглатывать, поглощать
18.to generate	вырабатывать
19.obviously	очевидно
20.take-up	рост, распространение
21.to prove	оказываться, доказывать
22.to bridge a gap	ликвидировать разрыв
23.drawback	недостаток
24.as well	также, тоже
25.to develop	разрабатывать
26.adjacent	смежный, примыкающий
27.to account for	объяснять, отвечать за
28.robbery	ограбление
29.overall	общий, повсеместно
30.theft	кража

2. **Read the statements and decide if they are true (T) or false (F). Prove your answers.**

1. Global sales of mobile phones have fallen to six million a year now.
2. The appearance of the mobile phone has changed our lifestyles greatly.
3. Mobile phones are still just the domain of the teenagers.
4. The average man spends now more time on his phone than before the mobile phone revolution.
5. Fewer women have a mobile phone than men.
6. Women are more aware of telephone bills than men.
7. More than 20 different devices can now be inside of a mobile phone.
8. Mobile phones haven’t changed the way people behave.

9. The rich buy mobile phones not so often because they are very expensive.
10. There aren't any disadvantages in mobile phones.

3. Choose the correct ending: a, b, c, d to complete statements 1 – 5.

1. The group with the highest number of people who own a mobile phone is
   a) teenagers.
   b) people between 40 and 50.
   c) men.
   d) women.
2. According to the opinion poll, women
   a) spend more time on the phone than men.
   b) spend less time on the phone than they used to.
   c) like to play with their mobile phones.
   d) don't worry about their phone bills.
3. According to the text, mobile phones
   a) are modified too fast.
   b) are incorporated into cameras.
   c) can now replace many other products.
   d) are more complicated to operate than radios.
4. Among the poor, the demand for mobile phones
   a) has increased more of a gap with the rich.
   b) is higher than among the rich.
   c) follows the pattern of similar innovations.
   d) has grown faster than the demand for computers.
5. One disadvantage of mobile phones that the article does not mention is the
   a) high operating costs.
   b) higher crime rate.
   c) possible health risk.
   d) increased danger to road users.

4. Translate the text Mobile Revolution

VOCABULARY

1. Match the words and translate the word combinations.

1. consumer	a) access
2. opinion	b) television
3. mobile	c) sale
4. colour	d) poll
5. Internet	e) robbery
6. street	f) icon
7. music	g) accident
8. style	h) phone
9. global	i) product
10. road	j) player

2. Match the words with a similar meaning.

1. drawback	1. grow
2. consumer	2. former
3. rise	3. enlarge
4. run up	4. customer
5. previous	5. disadvantage
6. as well	6. drop
7. fast	7. also
8. go down	8. quickly
9. prove	9. go on
10.continue	10.appear

3. Match the words with an opposite meaning

1. cheap	a) latter
2. former	b) expensive
3. fast	c) many
4. digital	d) weekend
5. few	e) slow
6. weekday	f) totally
7. slightly	g) powerless
8. powerful	h) remember
9. forget	i) analogue
10.reveal	j) hide

4. Complete the sentences with the words and expressions from the box.

phone bills mobile phones the rich and the poor swallowing up thefts customers caught on average drawbacks different

1. It's not easy for ..... to change their behaviour.
2. Women are more conscious of the..... they are running up.
3. Many ..... products can now be part of a mobile phone.
4. Mobile phones are bridging the gap between.....
5. .....usage has developed a new type of language.
6. Mobile phones have..... very quickly.
7. Men spend more than an hour a day making calls on an..... weekday.
8. Phones are constantly ..... other products.
9. There are obviously..... to mobiles as well.
10. Mobile ..... now account for a third of all street crimes in London.

GRAMMAR

1. Make up sentences from the following words beginning with the word in bold.

1. **Colour** / spread / as / fast / television / didn't / as / phones. / mobile
2. powerful. / cheaper / more / **Mobile** / are / phones / and / becoming
3. with / like / **Men** / very / to / much. / toys / play / techno
4. crime / is / mobile / among / **One** / thefts. / that / teenagers / is / spread
5. help / people / phones / mobile / in / **Do** / keep / to / touch?

2. Put the verb given in brackets into appropriate form.

1. In 1991 there (to be) about 6 million mobile phones in global sales.
2. Previously you might (to buy) about 20 different products separately that can now be part of a mobile phone.
3. Mobiles (to generate) a new type of language.
4. The rich (to buy) phones faster than the poor.
5. The average amount of time women spend on the phone on a weekday (to go down).
6. According to the opinion poll, women earlier (to spend) more time on the phone than they spend now.

3. Make the following sentences passive.

1. The arrival of the mobile phone has transformed our lifestyles.
2. Men are using mobile phones much more than women.
3. The rich buy phones faster than the poor.
4. Mobiles have changed the way people talk to one another.
5. Mobiles have generated a new type of language.
6. People modify mobile phones too fast.
7. Driving a car with a mobile in one hand causes a lot of accidents.
8. Teenagers own the most amount of mobile phones.
9. Man spent less time on his landline than he spends on his mobile now.
10. Mobiles saved many lives.

4. <u>Underline</u> which answer – A, B or C – best fits each gap.

1. Global sales of mobile phones ..... from 6 million to 400 million a year now.
   A have risen **B** has risen **C** rose
2. Women now spend ..... time on the phone than men.
   A fewer **B** less **C** more
3. .....women have a mobile phone than men now.
   A more **B** less **C** fewer
4. Women .....of the bills they run up.
   A take care **B** don't care **C** are careless
5. Mobile phones bridge the gap between the rich and the poor ..... than expensive computers.

A fast **B** slower **C** faster

6. People driving with a mobile in one hand ..... a lot of accidents.
   A cause **B** has caused **C** didn't cause
7. Mobile thefts now ..... a third of all street robberies in London.
   A are accounting for **B** account for **C** have accounted
8. Mobile phones ..... a new type of language .
   A have made **B** makes **C** make
9. Brain cancer ..... by using mobile phone a lot close to the areas of brain adjacent to the phone ear.
   A are caused **B** is caused **C** was caused
10. About 20 different devices you ..... as a part of a mobile phone.
    A can find **B** can be found **C** can found

5. Complete the table with a suitable part of speech.

noun	**adjective**	**verb**
-	-	explain
	beneficial	
researcher	-	-
-	powerful / powerless	-
-	comparative	-
-		transform
consumption/consumer	-	-
-	changeable	-
generation	-	-
-	-	prove
-	special	-
-		access

6. Choose the best translation.

1. age group	A группа возраста B возрастная группа C возраст группы
2. street robbery	A ограбление на улице B грабительская улица C ограбление улиц
3. Internet access	A доступ в Internet B интернациональный доступ C доступный Internet
4. style icon	A стильная икона B икона стиля C стиль иконы

PART 2
TEXT 1. COMPUTER VIRUSES

READING

On 2 November 1988 Robert Morris, graduate student of informatics faculty of Cornwall University (USA) infected a great number of computers, connected to Internet network. This network unites machines of university centres, private companies and governmental agents, including National Aeronautics Space Administration, as well as some military scientific centres and labs. Network worm struck 6200 machines that formed 7.3% computers to network. Among damaged were NASA, Los Alamos National Lab, exploratory center VMS USA, California Technology Institute and Wisconsin University (200 from 300 systems).

According to "Wall Street Journal", virus infiltrated networks in Europe and Australia, where there were also registered events of blocking the computers. Within 4 hours virus hit over 50 sites. Morris was sentenced to3 months of prison and fine of 270 thousand dollars, but in addition Cornwall University carried a heavy loss, having excluded Morris from its members. Author then had to take part in liquidation of his own creation.

What is a computer virus? It is an executable code able to reproduce itself. Viruses are an area of pure programming, and, unlike other computer programs carry intellectual functions on protection of being found and destroyed. They have to fight for survival in complex conditions of conflicting computer systems. That's why they evolve as if they were alive.

It is necessary to differentiate between reproducing programs and Trojan horses. Reproducing programs will not necessarily harm your system because they are aimed at producing as many copies of their own as possible by means of so-called agent programs or without their help. In the later case they are referred to as 'worms'. Meanwhile Trojan horses are programs aimed at causing harm or damage to PC's.

Certainly it's a usual practice, when they are part of "tech-organism", but they have completely different functions. That is an important point. Destructive actions are not an integral part of the virus by default. However virus-writers allow presence of destructive mechanisms as an active protection from finding and destroying their creatures, as well as a response to the attitude of society to viruses and their authors.

As you see, there are different types of viruses, and they have already been separated into classes and categories. For instance: dangerous, harmless and very dangerous. No destruction means a harmless one, tricks with systems halts mean a dangerous one, and finally with a devastating destruction means a very dangerous virus.

But viruses are famous not only for their destructive actions, but also for their special effects, which are almost impossible to classify. Some virus-writers suggest the following: funny, very funny and sad or melancholy (keeps silence and infects). But one should remember that special effects must occur only after a certain number of contaminations. Users should be given a chance to restrict execution of destructive actions, such as deleting files, formatting hard disks.

Thereby virus can be considered to be a useful program, keeping a check on system changes and preventing any surprises such as of deletion of files or wiping out

hard disks. It sounds quite heretical to say such words about viruses, which are usually considered to be a disaster. The less a person understands in programming and virology, the greater influence will have on him possibility of being infected with a virus.

Who writes computer viruses? They are lone wolves or programmers groups. In spite of the fact that a lot of people think, that to write a computer virus is a hardship, it is not exactly so. Using special programs called “Virus creators” even beginners in computer world can build their own viruses, which will be a strain of a certain major virus. This is precisely the case with notorious virus “Anna Curnikova”, which is actually a worm.

The aim of creation of viruses in such way is pretty obvious: the author wants to become well known all over the world and to show his powers. Somehow, the results of the attempt can be very sad (see a bit of history), only real professionals can go famous and stay uncaught.

Don’t forget that creation, use and spreading harmful programs for PC is a criminal offence, as well as using cracked versions of programs. And be aware that computer viruses came for a long time, unless forever.

1. Read the following words and expressions and pay attention to their meanings.

1. «worm»	червь
2. to strike	поражать, повреждать
3. to infiltrate	проникать
4. to survive	уцелеть, продолжать существовать
5. to evolve	развиваться
6. to reproduce	воспроизводить, возобновить
7. meanwhile	между тем
8. by default	по умолчанию
9. devastating	разрушительный
10. contamination	заражение, инфекция
11. to restrict	ограничивать
12. thereby	таким образом
13. to wipe out	уничтожать, ликвидировать
14. virology	вирусология
15. hardship	трудность
16. strain	разновидность
17. precisely	точно
18. cracked version	взломанная версия
19. system halt	остановка системы
20. Trojan horse	программа «Троянский конь»
21 «tech-organism»	зд.- компьютер
22 agent program	программа - агент
23 keep a check	сдерживать
24 destructive	разрушительный

2. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. Computer virus can be considered to be a useful program.
2. There are different types of viruses.
3. Viruses come for a short time.
4. One should be a real professional to write a computer virus.
5. Only a few computers were damaged because of viruses written by Robert Morris in 1988.
6. Computer virus can reproduce itself.
7. Professionals aren't usually afraid of being infected with a virus.
8. 8. Destructive mechanisms are an active protection from finding and destroying computer viruses.
9. Reproducing programs and Trojan horses both damage PCs.
10. It's a hardship for a virus writer to stay uncaught.

3. Read the text and answer the questions.

1. Why was Robert Morris excluded from the members of Cornwall University?
2. What is a computer virus?
3. What are the different types of viruses?
4. What are computer viruses famous for?
5. What is the aim of creating of viruses?

4. Translate the text COMPUTER VIRUSES.

VOCABULRY

1. Match the words and translate the word combinations.

1. computer	a) destruction
2. reproducing	b) writer
3. destructive	c) agent
4. active	d) effect
5. devastating	e) program
6. keep	f) version
7. governmental	g) virus
8. special	h) a check
9. cracked	i) protection
10. virus	j) actions

2. Match the words with a similar meaning.

1. meanwhile	a). to limit
2. devastating	b). stop
3. contamination	c). accurately
4. to restrict	d). meantime
5. private	e). device
6. halt	f). destructive
7. to strike	g). personal
8. precisely	h). to hit
9. hardship	i). difficulty
10. machine	j). infection

3. Match the words with an opposite meaning.

1. to destroy	a). absence
2. dangerous	b). to die
3. funny	c). optimism
4. presence	d). harmless
5. to survive	e). creation
6. melancholy	f). to accept
7. to exclude	g). group
8. to damage	h). sad
9. lone wolf	i). to repair
10. destruction	j). to create

4. Complete the sentences with the words and expressions from the box. There is one extra word.

powers executable restrict wiping out differentiate lone wolves contaminations uncaught 'tech-organism' destructive system halt

1. Computer virus is an ... code able to reproduce itself.
2. Special effects must only occur after a certain number of …
3. …actions are not an integral part of the virus by default.
4. It's necessary to … between reproducing programs and Trojan horses.
5. Virus can be considered to be a useful program preventing deletion of files or … hard disks.
6. Only real professionals stay …
7. A virus creator wants to show his …
8. … or programmers groups write computer viruses.
9. Trojan horses are part of …
10. Users should be given a chance to … execution of destructive actions.

GRAMMAR

1. Make questions with a question word.

1. Network worm struck 6200 machines that formed 7.3% computers to network. (How many?)
2. Trojan horses are programs aimed at causing harm or damage the computer. (What?)
3. The first computer virus appeared in 1988 in the USA. (When?)
4. It was created by Robert Morris, graduate student of informatics faculty of Cornwall University. (Who?)
5. Morris was sentenced to 3 months of prison. (Why?)
6. Using special programs called "Virus creators" even beginners in computer world can build their own virus. (How?)

2. Underline which answer – A, B or C – best fits each gap.

1. All virus creators would like …well-known.
   A become B becoming C to become
2. Pascal C++ and other high level languages are considered …humiliating.
   A to be B being C be
3. But at least freeware lovers should … that proceeding with the practice could be risky.
   A knowing B to know C know
4. Both children and grown-ups all over the world enjoy …computer games.
   A playing B to play C play
5. Virus-writers must stop … viruses because creating, use and spreading harmful programs for PC is a criminal offence
   A to create B create C creating

3. Make sentences from the following words beginning with the word in bold.

1. are, disaster, usually, a, considered, **computer**, to, viruses, be.
2. aimed, **unlike**, Trojan, are, harm, programs(2), causing, to, reproducing, horses, PCs, at.
3. files, itself, incriminating, already, by, **the other,** were, virus, deleted, the.
4. that, virus, difficult, **in spite**, do, to write, think, that(3), computer, of(2), is, beginners, the, can, fact, a lot, people, a, even.
5. really, some, **to write**, skills, something, have, remarkable, should, new, extra, and(2), programmer, knowledge.

4. Complete the table with a suitable part of speech.

noun	**adjective**	**verb**
protection	-	-
-	-	to consider
-	devastating	-
-	-	to program
-	-	to convert

5. Choose the best translation.

1. lone wolves	A одинокие волки B волки в одиночестве C одиночки
2. governmental agent	A правительственный агент B правительственное учреждение C агент в правительстве
3. keep a check	A держать чек B хранить чек C сдерживать
4. cracked system	A треснутая система B взломанная система C взлом системы

TEXT 2. PROGRAMS

READING

1. In practical terms, a computer program may be just a few instructions or extend to many millions of instructions, as do the programs for word processors and web browsers for example. A typical modern computer can execute billions of instructions per second (gigaflops) and rarely make a mistake over many years of operation. Large computer programs consisting of several million instructions may take teams of programmers years to write, and due to the complexity of the task almost certainly contain errors. Errors in computer programs are called “bugs”.

2. Bugs may be benign and not affect the usefulness of the program, or have only subtle effects. But in some cases they may cause the program to “hang” – become unresponsive to input such as mouse clicks or keystrokes, or to completely fail or “crash”. Otherwise benign bugs may sometimes be harnessed for malicious intent by an unscrupulous user writing an “exploit” – code designed to take advantage of a bug and disrupt a computer’s proper execution. Bugs are usually not the fault of the computer. Since computers merely execute the instructions they are given, bugs are nearly always the result of a programmer error or an oversight made in the program’s design.

3. In most computers, individual instructions are stored as machine code with each instruction being given a unique number (its operation code or opcode for short). The command to add two numbers together would have one opcode the command to multiply them would have a different opcode and so on.

4. The simplest computers are able to perform any of a handful of different instructions; the more complex computers have several hundred to choose from – each with a unique numerical code. Since the computer’s memory is able to store numbers, it can also store the instruction codes. This leads to the important fact that entire programs (which are just lists of these instructions) can be represented as lists of numbers and can themselves be manipulated inside the computer in the same way as numeric data.

5. The fundamental concept of storing programs in the computer’s memory alongside the data they can operate on is the crux of the von Neumann, or stored program, architecture. In some cases, a computer might store some or all of its programs in memory that is kept separate from the data it operates on. This is called the Harvard architecture after the Harvard Mark 1 computer. Modern von Neumann computers display some traits of the Harvard architecture in their designs, such as in CPU caches.

6. While it is possible to write computer programs as long lists of numbers (machine language) and while this technique was used with many early computers, it is extremely tedious and potentially error-prone to do so in practice, especially for complicated programs. Instead, each basic instruction can be given a short name that is indicate of its function and easy to remember – a mnemonic such as ADD, SUB, MULT or JUMP. These mnemonics are collectively known as a computer’s assembly language.

7. Converting programs written in assembly language into something the computer can actually understand (machine language) is usually done by a computer program called an assembler. Machine languages are the assembly languages that represent them (collectively termed low-level programming languages) tend to be unique to a particular type of computer. For instance, an ARM architecture computer (such as may be found in a PDA or a hand-held videogame) cannot understand the machine language of an Intel Pentium or the AMD Athlon 64 computer that might be in a PC.

8. Though considerably easier than in machine language, writing long programs in assembly language is often difficult and is also error- prone. Therefore, most practical programs are written in more abstract high-level programming languages that are able to express the needs of the programmer more conveniently (and thereby help reduce programmer error).

9. High-level languages are usually "compiled" into machine language (or sometimes into assembly language and then into machine language) using another computer program called a compiler. It is therefore often possible to use different compilers to translate the same high level language program into the machine language of many different types of computer. This is part of the means by which software like video games may be made available for different computer architectures such as personal computers and various video games consoles.

10. The task of developing large software systems presents a significant intellectual challenge.

1. Read the following words and expressions and pay attention to their meanings.

1. word processor	текстовый процессор
2. web browser	средство просмотра web-страниц в Интернете.
3. 'exploit'	программа, использующая уязвимость в другой программе
4. instruction code	набор(код)команд
5. crux	проблема, загадка
6. ARM (**A**dvanced **R**ISK **M**achines)	производитель микропроцессоров
7. compiler	компилятор, компилирующая программа
8. CPU	центральный процессор
9. cache	сверхоперативная память, кэш
10. ARM architecture computer	компьютер, построенный на базе архитектуры ARM
11. von Neumann architecture	фон-неймановская архитектура
12. Harvard architecture	гарвардская архитектура (с раздельной памятью хранения программ и данных

1. Read the statements and decide if they are true (T) or false (F). Prove your answer.

1. Over many years of operation a modern computer can make just a few mistakes.
2. 'Bugs' are very harmful viruses that can cause computer to 'hang' or fail.
3. The simplest computers are able to perform hundreds of different instructions.
4. Each instruction is given an individual code.
5. Short names that indicate the functions of the instructions are called assembly language.
6. The technique of writing computer programs as lists of numbers is often used in practice with many complex computers.
7. Converting programs written in assembly language into machine language is done with a computer program called a compiler.
8. Most practical programs written in more abstract high-level programming language help reduce programmer error.
9. Machine languages termed low-level programming languages are unique to a particular type of computer.
10. Compiler is a computer program used to compile abstract high-level languages into machine ones.

2. Read the text and answer the questions.

1. What is a program?
2. How many instructions can a computer perform?
3. Are 'bugs' very harmful for computer programs?
4. What's the difference between machine and assembly language?
5. Which languages are usually used to write long programs? Why?
6. Why are the mnemonics more often used for complicated programs?

VOCABULARY

3. Match the words with similar meaning.

1. instruction	a). method
2. to affect	b). to manipulate
3. to handle	c). to transform
4. benign	d). to use
5. malicious	e). some
6. technique	f). to influence
7. to convert	g). harmless
8. handful	h). command
9. to harness	i). break
10. disrupt	j). unscrupulous

4. Match the words with opposite meaning.

1. significant	a). considerable
2. complicated	b). easy
3. complex	c). unimportant
4. subtle	d). to narrow
5. to extend	e). simple

5. Match the words to complete the phrases and translate the word combinations.

1. error	a). computers
2. numerical	b). instructions
3. early	c). language
4. intellectual	d). programs
5. subtle	e). architecture
6. assembly	f). systems
7. converting	g). effect
8. individual	h). code
9. software	i). -prone
10. computer	j). challenge

GRAMMAR

1. Match the rules a-j for using the tenses.

1. The present simple 2. The present continuous 3. The present perfect 4. The past simple 5. The past continuous	a). actions happened or finished at a definite time in the past b). past actions in progress (when something else happened) c). to express a past action with results in the present d). to express a past action that is now finished. e). development and progress f). a fact which is always true or true for a long time g).intentions for the future h). an action or state that began in the past and continues to the present

2. Match the sentences 1-5 with the Grammar tenses (with uses a-h:

1. A typical modern computer rarely makes a mistake over many years of operation.
2. Computer technology has opened a variety of opportunities for electronics engineers.
3. Martin Alpert was working at designing technical products which could be attached to the personal computers.
4. Robert Noyce graduated from Massachusetts Institute of Technology and in 1955 started working in the field of computer-related business.
5. The Internet is constantly changing and growing.

3. Use the words in the correct order to complete the sentences.

1. **A**(2)/ program/ millions/ be/ instructions(2)./ few/ or/ just/ many/ **computer**/ of/ may
2. almost/ computer/ contain/ programs/ **Large**/ certainly/errors.
3. the / may(2)/ benign/ program/ but/ some/ they/ **Bugs**/ cause/ in/ to hang./ cases/ / be
4. memory/ numbers/ able /codes./ store / to /**Computer's**/ and/ is/ instruction /both
5. concept/ crux/ memory. / von Neumann/ of /storing/ in /**The**(4)/ computer's/ of/ programs /fundamental/ is
6. hundreds/ **Complex**/ are/ perform/ commands/ to each/ with /computers/ a/ unique/ numerical/ code./ able/of
7. as/ programs /of/ represented/ **Entire**/ lists/ numbers. can/ and /be
8. presents/ task./large/software /intellectual/ systems/ **Developing**/ a /significant
9. In / computers/ individual/ most/ instructions/numbers./ given /unique /are
10. fault/ are/ usually/ not/ computer/ **Bugs**/ but/ the(3/ error./ programmer/ result/ of(2)

4. Use the correct form of the verb "to be" to complete the following sentences.

1. Computer virus can … considered … a useful program.
2. There … different types of viruses.
3. How … the model of their computer called?
4. How great… the role of computer in our life?
5. Professionals aren't usually afraid of … infected with a virus.
6. Those who work with adult learners report that these learners don't need … convinced of importance and value of technology in the classroom.
7. Apple Computer had great market opportunities and … widely used for home life and in small business.
8. A variety of opportunities for electronics engineers have…opened by computer technology.
9. It seems that a vast economic crisis … breaking out in America.

10. No one but the author of the virus can bring valuable information on the way it should … treated and cured.

5. Fill in the gaps with definite, indefinite or zero article.

1. Computer virus is … executable code able to reproduce itself.
2. Computer viruses keep … check on … changes.
3. Students who are unfamiliar with … using … mouse will need to be shown how to maneuver it correctly including how to push down on … mouse to hold it steady and how the cursor moves along with … mouse on … screen.
4. … more you go on-line, … more you'll find out about what's out there.
5. AskERIC is … free, personalized, Internet-based question-answering service for … professional educators.
6. Everyone can become … member of … club, if he creates viruses, studies them for … reason of … creation and spreading.
7. … aim of creation of … computer viruses is quite obvious: … author wants to become famous all over … world and show … his power.
8. This is called … Harvard architecture after … Harvard Mark 1 computer.
9. In some cases, … computer might store some or all of its programs in … memory.

6. Complete the sentences with appropriate words and expressions from the box. There is one extra word.

crux compiled the Harvard architecture database numerical error prone assembler malicious instructions compiler computer

1. Actually you don't have to know any … language to become a member of the group.
2. … is quite difficult to understand especially for beginners.
3. One of the fundamental concepts of storing programs in the computer memory is the … of the von Neumann.
4. A typical modern computer can execute billions of … per second.
5. More complex computers have several hundreds of instructions – each with a unique … code.
6. High-level languages are usually … into machine language using a computer program called a … .
7. The ERIC … is world's largest source of education information.
8. Writing long programs in assembly language is often difficult and also … .
9. Some traits of … are displayed in the designs of modern von Neumann computers.

7. Use Active or Passive Voice to complete the sentences.

1. Billions of instructions per second can … by a modern computer.
A). execute B). be executed C). be execute
2. A typical modern computer can rarely … a mistake over many years of operation.
A). make B). made C). be made
3. Users should … a chance to restrict execution of destructive actions.
A). be given B). give C). to give
4. Programming in Assembler … .
A). prefers B). be preferred C). is preferred
5. IBM Corporation … recently … its new invention – an automated broker.
A). have presented B). has been presented C). has presented
6. The military Arpanet … into a total digital world called the Internet by the present generation of hackers.
A). has transformed B). transformed C). was transformed
7. The names of hackers … with the invention and production of PCs.
A). associate B). are associated C). associated
8. The microprocessor made it possible for a large computer system … on a small chip.
A). to contain B). be contained C). to be contained
9. Being a professional doctor and a man who was interested in electronics, Martin Alpert … a number of medical instruments.
A). has design B). was designed C). designed
10. Other high-level languages … humiliating.
A). consider to be B). are considered being C). are considered to be

8. Complete the table.

verb	**adjective**	**noun**
	processed	
to instruct		
		execution, executioner
to multiply	multiplying	
		separation
	practised	
	manipulated, manipulative	

TEXT 3. HOW BUSINESS IS ORGANIZED

READING

In business there are many legal forms of organization. The form of organization means the type of ownership. The main differences between the types of ownership are in their ability to raise capital, the size and continuality of the enterprise, the disposition of profits, and the legal obligations in the event of bankruptcy. Each form has certain advantages and disadvantages. The three forms are the sole proprietorship, the partnership, and the corporation.

The form which requires the least amount of capital and personnel is the sole proprietorship. Sole means single, and the proprietor is a business owned and operated by a single person. This single person can start a business by simply purchasing the necessary goods and equipment and opening up shop. There are very few government and legal regulations to comply with. The sole proprietor owns all the business assets, makes all the decisions, takes all the risks, and keeps all profits of the business. The business itself pays no tax, but the owner must pay personal income taxes on his profits. If a sole proprietor is successful, he takes a lot of personal satisfaction in his enterprise. If he is not successful and he wants to close his business and start a new one, he simply has to sell his inventory and equipment, pay his bills, close up his shop, and begin new activities.

A partnership presents a completely different set of problems. A partnership consists of two or more people who share the ownership of a business. A partnership should begin with a legal agreement covering the various aspects of the business. Two important items that need to be covered are exactly which assets each partner is contributing, as well as how the partnership can be changed or terminated. This agreement is called the articles of co-partnership. It is not as complicated as the articles of incorporation. However, the articles of co-partnership indicate that the initiation of a partnership is not as easy as the beginning of a sole proprietorship. Partners are like sole proprietors because they own all the assets, owe all the debts, make the decisions, and share the profits. If each partner has a different expertise in an important business area, the partnership has an advantage over the sole proprietorship in managerial ability.

A partnership usually has more capital than a sole proprietorship. In a partnership the personal wealth of all the partners can be used to secure loans and credit. This personal wealth may also be used to settle the debts of the business. Like the sole proprietorship, the partnership has unlimited financial liability in the event of bankruptcy. Unlike the sole proprietorship where one owner-manager makes all the decisions, the smooth operation of a partnership requires both owners to agree on management policy. If a partnership wished to cease doing business, the owners would have to agree on how to dissolve it.

The corporation is very different from both a sole proprietorship and a partnership. First of all, the corporation is a legal entity, which chartered by the state in which it is incorporated. In other words, any Russian corporation is incorporated under the laws of Russia. As a legal entity, the corporation can own

property that is not a personal wealth of its owners. It also means that the corporation can enter into the business agreements on its own. Forming corporation is not easy. There are many legal procedures to follow. A corporation raises capital in a different way from the proprietorship or partnership. The ownership of the corporation is divided into shares of stock. One stockholder or shareowner can buy, sell, and trade his shares without permission from the other owners. A corporation can raise large amount of capital by selling shares or stocks. The stock owners vote for a board of directors who hire a president or chief executive officer to run the company. The board of directors also decides what to do with the corporation's profits. It usually retains part of the profits for reinvestment in the company and distributes the other part to the shareholders as dividends. Unlike the sole proprietorship and the partnership, the liability of the corporation is limited to the value of assets of the company. The personal wealth of the stockholders cannot be used to pay debts in case of bankruptcy. Corporations do not operate like other forms of business because the ownership can be easily transferred through stock sales.

The three types of legal organization show different possibilities and limitations. The best form for particular enterprise depends on its capital requirements and the number of owners.

1. **Read the following words and expressions and pay attention to their meaning.**

1. tax	1. налог
2. disposition	2. расположение, размещение
3. equipment	3. оборудование
4. profit	4. прибыль
5. terminate	5. завершать(ся). увольнять
6. inventory	6. зд. товарно-материальные запасы
7. debts	7. долги
8. share	8. доля акций
9. stockholder	9. держатель акций
10. dissolve	10.расторгать, разрушать
11. chef executive officer	11 .руководитель, директор
12.uncorporate	12.объединяться, (зд.) регистрироваться

2. **Read the text and complete the table using information from the text.**

	Sole proprietorship	Partnership	Corporation
1. The number of owners			
2. Operating the business			
3. Legal obligation in the case of bankruptcy			
4. Personal rights			
5. The successful business			

3. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. Any partner can buy or sell his shares without permission from the other owners in a partnership.
2. The property of a partnership is the personal wealth of its owners.
3. The partnership pays owners' personal income taxes as well as their business taxes.
4. A sole proprietor must not pay more than his investment in business in case of bankruptcy.
5. The total bank credit for the business expansion is limited in a case of corporation.
6. One should take all the risks and full responsibility for all results from the decisions made.
7. The stability of the business greatly depends on individual behavior and abilities especially in the case of corporation.
8. It is difficult to determine one's share in the business and to recover money if the business dissolves.

4. Match the words and definitions.

1. assets	a. a share of the profits of a corporation which is given to the stockholders
2. bankrupt	b. a group of persons
3. capital	c. a tax which is based on the amount of money a person or company receives for labor, services, or products, and which cannot be added to the price of the labor, services, or products
4. corporation	d. a separate unit for ownership or legal purposes
5. debts	e. the amount of income above costs.
6. dividends	f. unable to pay one's debts and legally released from the liability.
7. entity	g. special knowledge or ability
8. expertise	h. anything of value to a company. Anything which can be sold or converted into cash.
9. income tax	i. the money which owners or stockholders invest in a business
10. profits	j. money which must be paid to someone for a service or product received

VOCABULARY

1. Find the words with similar meaning in the text.

1. to obey, line 11	6. organization, line 48
2. individual, line 11	7. owner, line 46
3. property, line 25	8. responsibility, line 53
4. to pay, line 33	9. change, line 56
5. to break up, line 37	10. event, line 58

2. Match the words with opposite meaning.

1. bankruptcy	a. stabilize
2. easy	b. poverty bareness)
3. wealthy	c. prosperity (well-being)
4. purchase	d. failure
5. profit	e. difficult
6. least	f. poor
7. to dissolve	g. sell
8. change	h. to give up (return)
9. wealth	i. much\many
10. to borrow	j. to set up (to start business)

3. Match the words to complete the phrases and translate the word combinations.

1. To settle	a. wealth
2. Sole	b. ability
3. Personal	c. the debts
4. Income	d. regulations
5. Managerial	e. exchange
6. Legal	f. the bills
7. Business	g. proprietor
8. To pay	h. taxes
9. Stock	i. a business
10. Start	j. assets

4. Select the world which most nearly means the same as the underlined world.

1. The sole proprietor is liable for all the debts of his enterprise. He owns all the assets, but he owes all the <u>liabilities.</u>
   a. inventory b. proprietorship c. capital d. debts

2. The different forms of organization are taxed differently on their profits. They also have different legal obligations with regard to their debts in the event of bankruptcy.
   a. case b. aspect c. cost d. failure
3. His personal assets can be used to settle the debts.
   a. wealth b. capital c. freedom d. inventory
4. The articles of co-partnership explain how the partnership is started and how it should be dissolved.
   a. initiated b. sold c. ended d. regulated
5. When the sole proprietor stops doing business, he simply sells his inventory and equipment.
   a. labour b. machines for making goods c. debts d. profits
6. In addition to the benefits of running a sole proprietorship, there are also some unfavorable aspects.
   a. profits b. disadvantages c. assets d. satisfaction.
7. He has freedom to make his own decisions, but he bears sole responsibility for errors when he makes a wrong choice.
   a. profits b. loses c. takes all the blame d. does not have freedom.
8. His responsibility for debt can be greater than his investment in the business.
   a. partnership b. assets c. profits d. capital
9. A partnership does not have some of the disadvantages of a sole proprietorship, but it shares some similarities.
   a. benefits b. problems c. agreement c. association
10. If the owners of a partnership wished to stop doing business, both managers would have to agree on how to dissolve the partnership.
   a. partners b. corporations c. shops d. profits.

GRAMMAR

1. Match rules a-j for using the tenses.

We use 1. The present simple 2. The present continuous 3. The past simple 4. The past continuous 5. The present perfect for:	a) changes, development and progress; b) to express a past action that is now finished c) the action happened at an indefinite time in the past d) a fact which is always true or true for a long time e) an action or state which began in the past and continues to the present f) actions happened or finished at a definite time in the past g) to express a past action with results in the present. h) future calendar or timetable events i)definite intentions for the future j)Past actions in progress when something else happened

2. Match the sentences 1-10 with the Grammar tenses (with uses a-j).

1. In the 1980s and 1990s, Nokia became a global leader in digital communication technologies.
2. Since the economy bottomed out mid-2009, the number of job openings has risen more than twice.
3. Nearly 1 in 10 Americans is unemployed and 4.4 million of them have been out of a job at least a year. They're still looking for work.
4. Like a number of older workers, Mr. Denton has decided to leave the work force rather than accept a lower-paying job.
5. Similar ads he placed before the recession attracted more than a dozen candidates.
6. Some workers agree that unemployment benefits make them less likely to take whatever job comes along, particularly when those jobs don't pay much.
7. Michael Hatchell, a 52-year-old mechanic turned down more than a dozen offers during the 53 weeks he was unemployed he was collecting in benefits.
8. I'm not going to put myself in a situation where I'm making that small of a wage, Mr.Hatchell says.
9. We already own 30% of the company shares and we intend to purchase at least another 20% in the coming year.

3. Make the possible sentences. Pay attention to the modal verbs.

If you want to start a new business If the business is unsuccessful	People Any person Entrepreneur You The owners The corporation	should have to can must may can't don't have to must not	start a new business. start a new business if he \ she has managerial ability. overcome some government restrictions to start a new business. decide to cease doing business. start a new business by purchasing the necessary goods. follow legal and tax regulations. use additional investment. pay personal income tax on the dividends. have good organization for efficient operation. use personal property to settle the debts.

4. Choose the necessary word. Complete the sentences using –ing or infinitive.

Replace, advertise, speak, cancel, buy, put, choose, write, lower, increase, design.

1. His partner suggested … an advertisement for Coca-Cola in the Atlanta Journal in 1886.
2. It is important to reduce capital investments in the production process in order … the cost of production.
3. They decided … new brand over a large area to reach many customers.
4. Sam really enjoys … this new project.
5. The customer wanted … to the manager.
6. Jill forgot about … her appointment.
7. It is necessary … this inefficient equipment with the new one.
8. The price of the good became high enough for society to stop … it for every day.
9. They didn't intend … shares of a new company.
10. They have completed …. the report this week.

5. Choose the correct variant.

1. The government _____ traditional measures to get the economy growing more effectively.

A. exhausted B has exhausted C has been exhausted D was exhausted

2. In low-income countries, 70 per cent or more of the labour force _____ on the land.

A has worked B work C is working D works

3. His personal property _____ be used to settle the debts.

A can B must C should D have to

4. It is necessary _____ this inefficient equipment with the new one.

A replacing B to replace C to have replaced D having replaced

5. The company _____ to transform its global network when Roberts Woodcruft was elected president of the company in 1923

A begin B has begun C began D begun

6. They _____ partnership, and started each on his own business.

A dissolved B dissolve C have dissolved D are dissolving

7. The government _____ out more money than ever before to people out of work.

A pay B is paying C are paying D are paid

8. A sole proprietorship is _____ to initiate or to terminate.

A easier B the most easy C the easiest D the easier

9. The articles of co-partnership _____ also provide a method of selling the business.

A should B has to C mustn't D must

10. The board of directors has decided to pay a dividend of $5 per share.

A decided B decides C has decided D have decided

6. Use the words in the correct order to complete the sentences. (10 points)

1. This year \ the company \ investors \ by announcing \ has\ an unexpected loss.\ disappointed
2. Personal \ the business debts. \ for \ sold \ assets \ be \ can
3. The stockholders \ income \ profits \ pay \ taxes \ personal \on their \ from \ stock.
4. Can \ personal \ used \ pay \ the debts \ to \ be \ bankruptcy? \ of \ in the event \ wealth
5. The board \ the corporation \ has\ a new chief executive officer \ hired \ for \ of \ directors
6. The sole \ his \ has \ all \ business. \ of \ liabilities \ proprietor \ the
7. Does \ a lot of \ a \ managers? \ corporation \ have \ large
8. The articles \ the business. \ selling \ method \ a \ should \ of \ provide \
9. We \ new production \ capital \ in order to \ some \ need \ purchase \ equipment.
10. The owner \ personal \ his profit. \ on \ of \ a \ pays \ sole proprietorship

7. Complete the table.

Verbs	Nouns	Verbs	Nouns
differ		bankrupt	
	continuity		decision
	equipment	own	

8. Use the words from the table to complete the sentences:

1. The sole proprietor can _____ for himself if he wants to form a new business.
2. The _____ can keep all of the profits of the business.
3. The proprietor made a _____ to purchase some new _____ .
4. The sole proprietorship, partnership, and corporation _____ in the manner in which they raise capital.
5. If the owner makes the wrong decision, it may _____ the business.
6. The proprietor doesn't wish to _____ his enterprise, because he has been unsuccessful.
7. We try to satisfy the customers so that they will _____ to shop here.

TEXT 4. TWO METHODS OF PRODUCTION

READING

Production is the process of making something of value. It means bringing together materials, machinery, and workers to make goods. The process of production makes the materials more valuable.

There are four types of production: analysis, synthesis, extraction, and fabrication. Analysis is the process of separating a raw material into several parts. For example, in petroleum refining, oil is separated into gasoline, kerosene, fuel oil, asphalt, and many other products. Synthesis is the process of putting together two or more raw materials into one finished product. For example, glass is made by joining together lime, soda, potash, and other chemicals. All of the raw materials used in production are extracted from the land, the sea, or the air. Fabrication is the process of making products of more value from already manufactured materials. The materials may be cut, machined, woven, knitted, shaped, or put together with other materials. For example, cloth is made from thread. Automobiles are made from already manufactured parts.

There are two basic methods of production: intermittent and continuous. In intermittent production, several of the same type of items are produced. Then production of that item stops and production of another item begins. Labour and equipment work on one particular product for a short period of time. When the job is finished, the machinery is taken apart or reset for a different job.

With intermittent production many designs and styles are possible, so a large variety of goods can be produced. The design can easily be changed to suit each individual customer. When goods are made to customer specifications, they are called custom-made. One of the reasons that custom-made goods are popular is that they are expensive; if someone owns one, it shows that he has money.

In continuous production, labour and equipment work continuously, making one type of product for a long period of time. The company buys specialized machinery, or they adjust their machinery for a production period that will probably continue for a months. The products must be standardized and the volume must be large. The assembly line method of manufacturing is one way of using continuous production. Coordination is more necessary in continuous production than in intermittent production, because if there is a break at any step in production, it can halt the whole process.

Continuous production is generally less flexible than intermittent production. Standardization is necessary in order to get the greatest benefit from continuous production. Therefore, there can be only a few models, styles, and designs. To say it another way, if the number of models and styles of a product increases, the volume must also increase in order to use the continuous process efficiently. Because the major automobile manufacturers have a very large volume of production, they can produce several body designs, engine sizes, and style series and still use the continuous process of manufacturing. In addition to car manufacturers, many other factories use continuous production. For example, it is used in making consumer

appliances, producing cement, making paper, refining sugar, refining petroleum, and weaving cloth.

Standard goods are generally manufactured using the continuous type of production process. They are made to the manufacturer's specifications, not the customer's. In order to sell goods, it is necessary to make items that the customers will buy; however, standard goods are made not for a specific customer, but for a group of them. We can say that standard design is produced, as a practical matter it is necessary to make goods to suit the average customer.

Standard goods usually carry the manufacturer's brand and are advertised over a large area to many customers.

In deciding on the type of production to use in a plant, the important factors are volume and the number of models and designs. Intermittent production can be used if volume is small or there are many designs. Often a company begins production with job lots using intermittent production. As the company grows and the volume increases, it is more efficient to use continuous production.

1. Read the following words and expressions and pay attention to their meaning.

1. machinery	1. техника, механизмы
2. gasoline	2. бензин
3. cut	3. резать, разрезать
4. weave	4. плести, ткать
5. knit	5. вязать
6. shape	б. придавать форму
7. soda	7. сода, углекислый газ
8. lime	8. известь
9. potash	9. гидроксид калия
10.take apart	10.разбирать на части
11 .reset	11.переустанавливать, сделать снова
12. refine	12.очищать, улучшать
13.halt	13.остановка, останавливать
14. cloth	14. ткань
15. thread	15.нить
16. custom-made	16.сделанный на заказ
17.job lot	17.партия разрозненных товаров
18.appliance	18.приборы

2. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. Production involves bringing together workers, machinery, and raw materials to make goods.
2. By means of synthesis many important fuels can be produced from crude oil.

3. Intermittent production is usually more flexible than continuous production.
4. The continuous process is much more productive method of manufacturing certain goods than the intermittent process.
5. In intermittent production labour and equipment work nonstop, producing a high volume of standard product.
6. Many synthetic products are made from oil.
7. Intermittent production is the process of making the same product for a long period of time.
8. Production is the process of changing the form of products using the value of material.
9. Intermittent production can't be used if volume is large and there aren't many designs.
10. Standardization is hardly ever necessary in order to get the greatest advantages from continuous production.

3. Study the words and expressions in their context and tick the correct definition. More than one variant is possible.

1. Analysis
   a the separation of a whole into various pails
   b the process of putting together some raw materials into one finished product
2. Production
   a the volume of manufactured goods
   b the act of manufacturing
3. Standard goods
   a products manufactured for the general market not for a particular individual
   b special products made exactly to a given set of specifications.
4. Custom-made goods
   a products are made by customers
   b goods are made according to customer's specifications
   c goods produced to suit individual customers
5. Goods
   a raw materials
   b manufactured products
6. Volume

a the number of units produced in a given period of time
b the number of employees worked for a company or enterprise

7. The intermittent method of production
   a the machinery is set to produce identical products for a long period of time
   b the machinery is set to produce a certain number of units.

4. Find the words to the next definitions:

1. The process of removing raw materials from the earth.
2. Control and orderly arrangement of workers, machines, and materials working together efficiently

3. Materials in their natural or unmanufactured state which will be synthesized or analyzed to produce marketable products.
4. The arrangement of pans or details according to plan.
5. A certain number of produced units \\ a group of mass produced goods all manufactured at the same time to the same exact specification.
6. The process of making something nonstop, without interruption.

VOCABULARY

1. Find in the table and match the words with the similar meaning.

customer, extract, item, worker, suit, expensive, popular, own, refine, change, produce, efficient

p	r	o	d	u	c	t	g	i	e	e
e	e	p	I	n	a	c	e	m	d	c
m	p	e	n	a	t	o	n	p	u	0
p	u	r	c	h	a	s	e	r	c	n
1	t	a	r	a	k	t	r	o	a	o
o	a	n	e	v	e	1	a	v	t	m
y	t	S	a	e	1	y	1	e	i	i
e	i	f	s	a	t	i	s	f	y	c
e	n	o	e	s	t	a	b	1	i	a
t	a	r	e	v	o	1	u	m	e	1
m	o	m	o	d	i	f	y	y	s	0

2. Replace the words in italics with expressions from the test which have the same meaning:

1. Mining and petroleum production *take* raw materials from the earth.
2. In continuous production, the products must be similar and the *quantity* must be large.
3. Continuous production is used in making *appliances* for the home.
4. As production increases, it will become more *economical* to use continuous production.
5. Standard goods are made according to *what the manufacturer rogues.*
6. Gasoline and kerosene are made by *separating* crude oil into its *component parts.*
7. *Assembly* is the process of putting together manufactured parts.
8. The company produces a product because a *bmer* has ordered it.
9. When goods are made to a customer's specifications, they are called *special orders.*
10. Using intermittent production, a manufacturer produces *one order.*

3. Match the words with opposite meaning.

1. separate	a) unique	6. finish	f) general
2. particular	b) permanent	7. continuous	g) begin
3. grow	c) intermittent	8. manufacture	h) combine
4. standard	d) handicraft	9. more	i) less
5. change	e) small	10. large	j) reduce

GRAMMAR

1. Put the sentences in the table into Passive or Active:

Active	Passive
1. The difficulty finding workers limits the economy's ability to grow.	1.
2.	2. Barack Obama was raised by a single mother and his grandparents
3. The company has made a decision to start producing new machines.	3.
4.	4. Its shares are listed on sixteen stock exchanges in nine countries.
5,	5. The foundations of the world" s biggest electronic company were laid in 1891 when Gerard Philips established the first one.
6. Wayne Calloway will make a presentation of the new product next week.	6.
7. The company designers are continually developing and creating new product.	7.
8. As a result of the recession, we have had to reduce the amount of money we spend on research and developed.	8.
9.	9. A company can be formed with a minimum of two people becoming shareholders.
10.	10. Exclusive rights to several products will be given this company.

2. Put the correct form of the passive:

1. The new technology used now in less developed countries ... from the developed ones, (take)
2. Candidates for executive positions ... on their technical skills since last board election, (evaluate)
3. Factors of production ... together in different proportions in order to produce output, (combine)
4. The equipment is too sophisticated. It cannot... by a worker, (operate)
5. The enterprise is too big ... in the city centre.
6. The launch of a new production (output) ... at the board of directors just now. (discuss)
7. The most interesting inventions... in the magazine in April, (describe)

3. Choose the correct variant.

1. The annual Young Inventors Conference ... in Novosibirsk two days ago.
   A was opened B is opened C opened D has opened
2. Clothing manufacturers ... the style of their products every year.
   A change B is changed C changed D has changed
3. High volume production ... reduce the cost of each item produced.
   A must B ought to C can D have to
4. All EU member countries ... exhibits and young inventors to the competition final in Brussels.
   A are sending B were sending C are send D sent
5. The special musical instruments are sold to tourists and they have been adopted ... modern musicians and used in rock band.
   A with B on C by D to
6. Continuous production is ... flexible than intermittent production.
   A more B the most C the least D less
7. The new trend is going ... people.
   A exciting B to be excited C to excite D excite
8. Coordination is ... necessary in continuous production than in intermittent production.
   A more B the most C less D the least
9. It ... while they... off their collection.
   A happens, show; B happened, are showing C has happened, were showing; D happened, were showing
10. We have reduced our prices ... 10%.
    A over B with C on D by

4. Put the words in the correct order to make sentences.

1. Physical \ financial \ for \ more \ than \ is \ capital \ important \ production \ one.
2. Production\ make \machinery \means \workers \materials \to \together \bringing \ and \ goods.
3. The \ income \ government \ tax. \ increased \ has
4. The\ the\ to\ of\ by\ has decided \ costs\ numberN employees Л company\increasing \ cut
5. Fixed \ production \ as \ of \ landA capital \ such\ durable means \ includes
6. Oil \extraction. \metals \process \are \other materials \the \of \obtained \through \ and
7. We \the \by Mower Mess \raw \can \unit \using \expensive \cost \materials. S. My \ my \ from \ been \ car. \ has \ briefcase \ stolen
8. Standard \type \production process \are \manufactured \using \the \of \type \goods \ continuous

5. Complete the table.

Verb	**noun**	**adjective**	**verb**	**noun**	**adjective**
continuous	-	-	-	synthesis	-
-	-	standard	analyze	-	-
-	-	assembly	-	manufacturer	-
extract	-	-	proceed	-	-
-	-	productive	-	specific	-

6. Read the following sentences and supply the correct form of the word. Use the words from the table.

1. In _____ production labour and equipment work nonstop, producing a high volume of standard products.
2. The line was first used by Henry Ford for automobiles.
3. _____parts are produced by the manufacturer because he believes that someone will buy them. The_____of paits enabled manufacturers to produce in a continuous process.
4. The_____of oil from underneath the ocean floor requires expensive equipment.
5. The continuous process is a much more_____method of manufacturing certain goods than the intermittent process.
6. Many_____products are made from oil.
7. By means of_____many important fuels can be produced from crued oil.
8. These items were_____in Switzerland.
9. We shall use the new_____developed by our research staff.
10. The customer_____how he wanted the product designed. We must build it to his

TEXT 5. DISABLED PEOPLE AT WORK

READING

The Disability Discrimination Act (DDA) defines a disabled person as someone who has a physical or mental impairment that has a strong and long-term negative effect on his or her ability to carry out normal day-to-day activities. Often society can disable people more than health condition or disability, preventing people from reaching their work-related goals.

The following data can be shown from the recent survey carried out by the Institute for Employment Studies in Britain. There are currently 1.3 million disabled people in the UK who are available for and want to work. Only half of disabled people of working age are in work compared to 80% of non-disabled people.

Employment rates vary greatly according to the type of impairment a person has; only 20% of people with mental health problems are in employment. So, 80% of people having a mental impairment are out of work. Despite everything unemployed disabled people generally have a positive outlook on getting work. They agree strongly that getting a job is important to them, though a lot of disabled people have been rejected over and over. Disabled people are more likely that non-disabled people to work in manual and low-skilled occupations, and less likely to work in managerial, professional and high-skilled occupations. More severely disabled people are particularly concentrated in lower level ones.

It is hard for physically challenged people to function in a world that is designed for people who are not disabled. Many find the difficulties of the work environment more than they can handle. Adaptations can often play a role in keeping disabled people in work. Many employers are willing to make reasonable changes to have a more functional work place to accommodate a disabled person. Besides, the most common adaptations required are lifts and handrails. In addition disabled employees may require flexible working arrangements or regular breaks outside normal lunch or tea breaks as a result of their disability. Of disabled people in employment, requiring some form of support or assistance in the workplace, most say that their needs are fully met.

Some disabled people who are or have been economically active say that they have experienced discrimination or unfair treatment in a work-related context. Most of these report that they have been discriminated against by an employer and/or a potential employer. The most common forms of discrimination reported are: assumptions at an interview that a disabled job applicant would not be able to do the job as well as a non-disabled person; job interviews which focus on the disability, rather than the applicant's ability to do the job; cases where a disabled person has been dismissed because of their disability.

Nevertheless, disabled people who are or have been in work, report being broadly content with their jobs, and the way they have been treated.

5. Read the following words and expressions and pay attention to their meaning.

1. impairment	расстройство, повреждение
2. to carry out	выполнять, осуществлять
3. day-to-day	повседневный
4. to prevent	препятствовать
5. related	связанный
6. currently	теперь, в настоящее время
7. survey	обзор, отчет об обследовании
8. average	средний
9. over and over	неоднократно
10. despite	. несмотря на, вопреки
11. though	. хотя
12. in addition	. кроме того, помимо всего прочего
13. nevertheless	. тем не менее

6. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1.A disabled person can freely perform his or her day duties.
2.There are less disabled people who work than non-disabled.
3.Physically challenged people have a job less frequently than people with mental impairment.
4.Many disabled people are refused when applying a job.
5.Only few disabled people face problems at work place.
6.Work place adaption is rather important means of disabled people accommodation.
7.Most employers do not fulfill their disabled employees' needs.
8. Generally, most disabled people are happy with their working position.

7. Read the text and answer the questions.

1. Why is getting a job so important for disabled people?
2. What positions do disabled people usually have?
3. What can help disabled employees to adapt at the work place?
4. Why do disabled people want to have more flexi-time?
5. How can disabled people be usually discriminated at job-interviews?

8.Translate the text DISABLED PEOPLE AT WORK

VOCABULARY

1. Match the words and translate the word combinations.

).disabled	active
.mental	term
.positive	skilled
.low	) person
.severely	impairment
.physically	challenged
.work	arrangement
.long	place
.working	disabled
10. economically	j) outlook

2. Match the words with a similar meaning.

. impairment	.realize
. effect	.obstruct
. carry out	.change
. prevent	.hand-operated
. vary	.operate
. content	.worsening
. manual	.impact
. function	.manage
. handle	.help
. assistance	.satisfied

3. Complete the sentences with the words and expressions from the box.

disabled people employment rejected accommodate employees workplace discrimination job applicant dismissed treatment

1. It's essential to ..... the worksite for physically challenged people.
2. The ..... people in our company get an unemployment benefit.
3. The cases of uneven ..... to pregnant women were recorded in the department.
4. The adaptation of the ..... is strongly recommended.
5. ..... is getting down this year.
6. It can be difficult for ..... to adjust to the surrounding world.
7. Personnel department has to hire ..... .
8. All .....need to have a resume.
9. The company has ..... most of its office staff.
10. A lot of physically challenged people are subjected to ..... at work.

GRAMMAR

1. Make up sentences from the following words beginning with the word in bold.

1. **Physically** / face / people / discrimination / challenged / at / work. / can
2. should / hours/ be / **Flexible** / to / working / granted/ the / disabled.
3. disabled / **How many** / are / people / employed?
4. are / equally/ job / not / **Disabled** / treated. / applicants
5. can / or / disabled / have / **The** / mental/ physical / problems.

2.Make the following sentences passive.

1. The scientists have recently conducted the research in discrimination.
2. They can show accurate data in this question.
3. The employer has already made changes to accommodate the workplace.
4. Society can disable people more often than health condition.
5. Employees discriminate disabled workers in many countries.
6. The government has recently issued the disabled protection law.
7. The company dismissed hundreds of employers last year.
8. Will they make any changes in the Disabilities Act?

3. Use Active or Passive voice to complete the following sentences.

1. Two hundred people ..... (reject) last year in the corporation.
2. Disabled people..... (need) particular attention .
3. Different adaptations can ..... (do) at workplace.
4. Sheltered employment may ..... (be) any type of services.
5. Having disabled as employees ..... (require) certain adaptations.

4. Use Participle I or Participle II in the following sentences.

1. The poll ..... (carry out) last year showed the following data.
2. Not ..... (be able) to move freely the disabled need some assistance.
3. Some amendments, ... (lead) to substantial changes, were introduced into the Disabilities Act.
4. The interview procedure was ..... (humiliate).
5. The ..... (require) facilities should be install in the office.

5. Complete the table with a suitable part of speech.

noun	**adjective**	**verb**
-	-	disable
prevention	-	-
-	-	vary
-	comparable	-
rejection	-	-
-	managerial	-
concentration	-	-
-	functional	-
-	-	discriminate
-	-	treat

6. Choose the best translation.

1. employment rates	A занятость уровня B уровень занятости C уровневая занятость
2. work environment	A работающая обстановка B работать в обстановке C рабочая обстановка
3. work arrangement	A форма занятости B рабочая систематизация C работать в занятости

TEXT 6. SOCIAL WORKERS

READING

1. Social work is a profession for those with a strong desire to help improve people's lives. Social workers assist people by helping them cope with and solve issues in their everyday lives, such as family and personal problems and dealing with relationships. Some social workers help clients who face a disability, life-threatening disease, social problem, such as inadequate housing, unemployment, or substance abuse. Social workers also assist families that have serious domestic conflicts, sometimes involving child or spousal abuse.

2. Child, family, and school social workers provide social services and assistance to improve the social and psychological functioning of children and their families. Workers in this field assess their client's needs and offer assistance to improve their situation. This often includes coordinating available services to assist a child or family. They may help single parents in finding day care, arrange adoptions, or help find foster homes for neglected, abandoned, or abused children.

3. In schools, social workers often serve as the link between students' families and the school, working with parents, guardians, teachers, and other school officials to ensure that students reach their academic and personal potential. They also assist students in dealing with stress or emotional problems. Many school social workers work directly with children with disabilities and their families. In addition, they address problems such as misbehavior, truancy, teenage pregnancy, and drug and alcohol problems and advise teachers on how to cope with difficult students.

4. Medical and public health social workers provide psychosocial support to individuals, families, or vulnerable populations so they can cope with chronic, acute, or terminal illnesses, such as Alzheimer's disease, cancer, or AIDS. They also advise family caregivers, counsel patients, and help plan for patients' needs after discharge from hospitals. They may arrange for at-home services, such as meals-on-wheels or home care. Some work on interdisciplinary teams that evaluate certain kinds of patients, such as geriatric or organ transplant patients.

5. [J] Mental health and substance abuse social workers assess and treat individuals with mental illness or substance abuse problems. Such services include individual and group therapy, outreach, crisis intervention, social rehabilitation, and teaching skills needed for everyday living. They also may help plan for supportive sendees to ease clients' return to the community when leaving in-patient facilities. They may provide services to assist family members of those who suffer from addiction or other mental health issues.

6. No matter their focus, social workers help people overcome problems and make their lives better. It is important to understand that this work can be very demanding and emotionally challenging, however.

1. Read the following words expressions and pay attention to their meanings.

1. abuse	1. жестокое обращение
2. substance abuse	2. злоупотребление алкоголем или наркотиками
3. provide	3. обеспечивать: предоставлять
4. assess	4. оценивать
5. ensure	5. удостовериться
6. in addition	6. к тому же; кроме того
7. discharge	7. выписка из больницы
S. geriatric	8. старческий: престарелый
9. outreach	9. программа поддержки или помогли

2. Read the text and answer the questions.

1. What spheres can social workers be employed in?
2. What people do social workers help?
3. What kind of help can school social workers provide?
4. How can school social workers help single parents?
5. What problems can children face at school?
6. How can school social workers help teachers?
7. What kind of help do medical social workers provide?
8. Who can medical social workers assist?
9. What service do mental health social workers offer?
10. In what way is social work difficult?

3. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. Social workers help people to cope with their problems.
2. Social workers don't find foster homes for abused children.
3. School social workers help parents and children to communicate.
4. Only children who have academic problems can get social workers' support.
5. Social workers help not only people who have problems but their families as well.

4. Which paragraph(s):

1. says about the importance of the profession of a social worker?
2. says about the help that people with health problems may need?
3. describes the problems that children can face at school?
4. gives the information about adoption arrangement?
5. says about the treatment methods for drug addictives?

5. Translate the text SOCIAL WORKERS

VOCABULARY

1. Match the words and translate the word combinations.

1. social	a) care
2. single	b) parent
3. overcome	c) illness
4. chronic	d) problems
5. home	e) service
6. domestic	f) conflicts

2. Match the words with similar meaning.

1. help	a) organize
2. issue	b) achieve
3. arrange	c) problem
4. reach	d) assist
5. assess	e) evaluate

3. Match the words with opposite meaning.

1. chronic	a) insignificant
2. mental	b) exclude
3. individual	c) physical
4. include	d) transmit
5. serious	e) group

GRAMMAR

1. Make sentences from the following words beginning with the word in bold.

1. help / personal / clients / solve / Social' problems. / workers / the / their/
2. arranged / social / may / be / by / workers. / Adoptions
3. Is / vulnerable / psychological / offered/ to / populations? / support
4. therapy / service. / can / Group / as / be / social / considered
5. To / is / workers' / one / arrange / of/ tasks. / adoptions / social

2. Make negatives and general questions from the statements.

1. Social worker has become a very popular profession.
2. Disabled people can be assisted by social workers.
3. Social services have been provided for many years in our company.
4. Truancy is considered to be one of the most crucial problems at school.
5. Psychological support is offered to abandoned children at orphanages.

3. Fill in the gaps with definite, indefinite or zero article.

Social work is (1)_____professional and academic discipline served to the pursuit of (2)_____social welfare. (3)_____social change and (4) _____social justice. Social workers cany out (5)_____research and (6) _____practice to improve (7)_____quality of life. They promote (8) _____development of (9)_____potential of each individual, group and community of (10)_____society.

4. Choose the best translation.

1. everyday life	A жизнь каждый лень B повседневная жизнь C каждый день жизни
2. daycare	A день заботы B забота днем C дневной уход
3. group therapy	A групповая психотерапия B психотерапия группы C групповой психотерапевт

5. Divide the following words into 3 groups.

Desire	improve	issue	domestic assistance	available
abandoned	single	official	potential truancy	cope with
vulnerable	evaluate	treat	rehabilitation ease	overcome

1. noun	2. adjective participle	3. verb

6. Complete the table with я suitable part of speech.

Noun	adjective participle	verb
-	-	assist
-	personal	-
service	-	-
-	-	asses
adoption	-	-
-	neglected/neglecting	-
-	-	provide
support	-	-
-	-	arrange
intervention	-	-

TEXT 7. INSIDE A PLASMA DISPLAY

READING

1. The xenon and neon gas in a plasma television is contained in hundreds of thousands of tiny cells positioned between two plates of glass. Long electrodes are also sandwiched between the glass plates, on both sides of the cells. The address electrodes sit behind the cells, along the rear glass plate. The transparent display electrodes, which are surrounded by an insulating dielectric material and covered by a magnesium oxide protective layer, are mounted above the cell, along the front glass plate.

2. Both sets of electrodes extend across the entire screen. The display electrodes are arranged in horizontal rows along the screen and the address electrodes are arranged in vertical columns. The vertical and horizontal electrodes form a basic grid.

3. To ionize the gas in a particular cell, the plasma display's computer charges the electrodes that intersect at that cell. It does this thousands of times in a small fraction of a second, charging each cell in turn.

4. When the intersecting electrodes are charged (with a voltage difference between them), an electric current flows through the gas in the cell. The current creates a rapid flow of charged particles, which stimulates the gas atoms to release ultraviolet photons.

5. The released ultraviolet photons interact with phosphor material coated on the inside wall of the cell. Phosphors are substances that give off light when they are exposed to other light. When an ultraviolet photon hits a phosphor atom in the cell, one of the phosphor's electrons jumps to a higher energy level and the atom heats up. When the electron falls back to its normal level, it releases energy in the form of a visible light photon.

6. The phosphors in a plasma display give off colored light when they are excited. Every pixel is made up of three separate subpixel cells, each with different colored phosphors. One subpixel has a red light phosphor, one subpixel has a green light phosphor and one subpixel has a blue light phosphor. These colors blend together to create the overall color of the pixel.

By varying the pulses of current flowing through the different cells, the control system can increase or decrease the intensity of each subpixel color to create hundreds of different combinations of red, green and blue. In this way, the control system can produce colors across the entire spectrum.

7. The main advantage of plasma display technology is that you can produce a very wide screen using extremely thin materials. And because each pixel is lit individually, the image is very bright and looks good from almost every angle. The image quality isn't quite up to the standards of the best cathode ray tube sets, but it certainly meets most people's expectations.

8. The biggest drawback of this technology has been the price. However, falling prices and advances in technology mean that the plasma display may soon edge out the old CRT sets.

1. **Read the following words and expressions and pay attention to their meanings.**

1. both	оба, обе
2. along	вдоль, по
3. entire	весь, полный
4. particular	отдельный, отдельно взятый
5. in a fraction of a second	за долю секунду
6. in turn	по очереди
7. to give off	выделять
8. to be exposed to	подвергаться воздействию
9. to hit	ударять, сталкиваться с
10.to jump to	попадать, подниматься, подпрыгивать
11.to fall back	возвращаться, отпадать
12.in the form of	в виде чего-то
13.to be made up of	состоять из, быть составленным из
14.overall	общий
15.intensity	интенсивность
16.to be lit	освещаться
17.to be quite up to	соответствовать
18.to meet expectations	отвечать ожиданиям
19.to edge out	вытеснять
20.extremely	чрезвычайно

2. **Read the following statements and decide if they are True (T) or False (F). Prove your answers.**

1. The two types of electrodes are arranged in the same place on the cell.
2. Phosphors are substances which reflect light when they are exposed to it.
3. The colors of sub pixels are red, blue and black.
4. Varying the pulses of current it is possible to create all colors of the spectrum.
5. The image quality of plasma TV is better than of CRT TV sets.

3. **Answer the questions on the text.**

1. What are the main parts of the plasma display?
2. What is the function of electrodes?
3. What does phosphor material do?
4. How are thousands of colors created?
5. What are the drawbacks of plasma TV sets?

4. **Translate the text.**

VOCABULARY

1. Match the words to make combinations seen in the text and translate them.

1. address	a) photon
2. display	b) material
3. dielectric	c) system
4. plasma	d) electrode
5. protective	e) display
6. ultraviolet	f) photon
7. visible light	g) tube
8. phosphor	h) layer
9. cathode ray	i) material
10. control	j) electrode

2. Match the opposites and translate.

1.rear	a) rising
2.in turn	b) discharge
3.inside	c) front
4.increase	d) outside
5.advantage	e) huge
6.thin	f) decrease
7.falling	g) dull
8.tiny	h) out of turn
9.charge	i) drawback
10.bright	j) thick

3. Match the words with their definitions. Translate them.

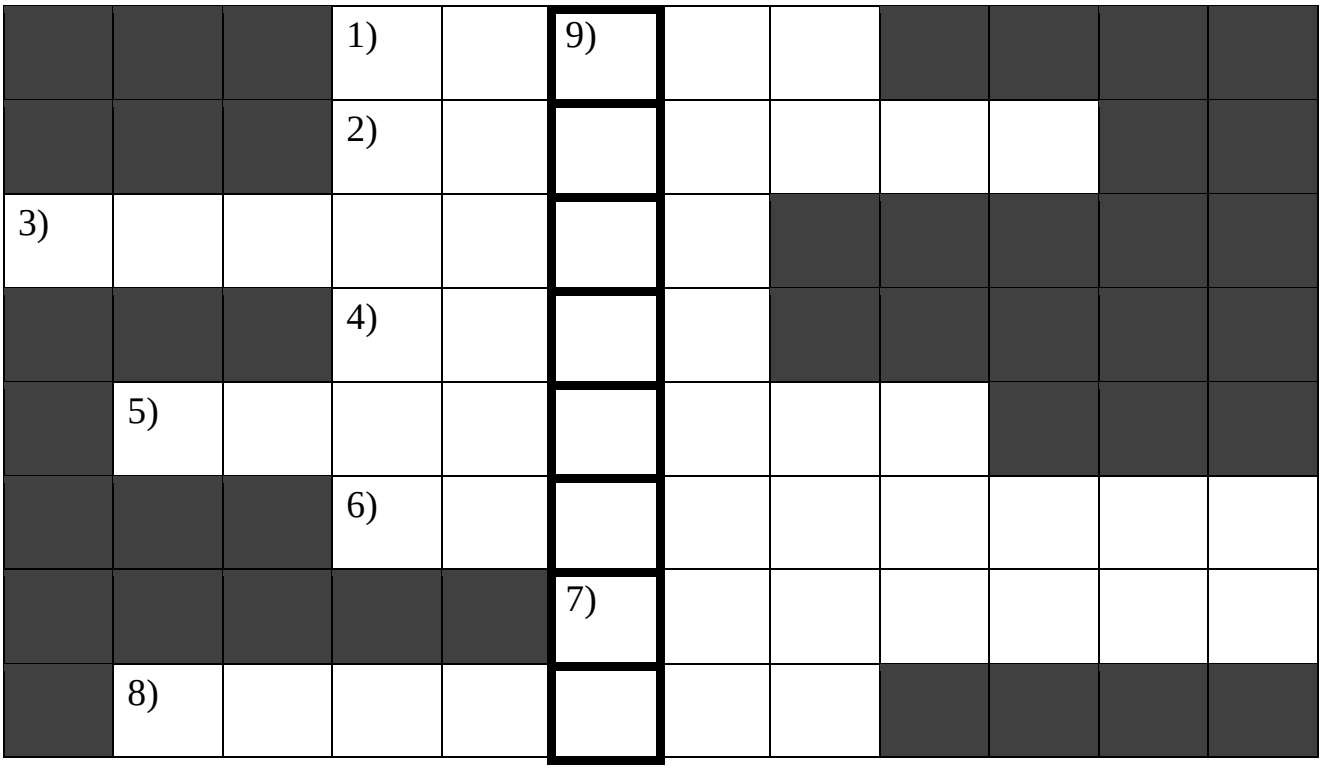
1. to sandwich	a. a line of numbers or things under each other
2. row	b. to place between
3. column	c. to form ions
4. to charge	d. to combine different things
5. excited	e. let something go free
6. to blend	f. a line of people or things next to each other
7. to release	g. activated
8. transparent	h. clear
9. insulating	i. protecting something with a material
10.to ionize	j. to fill with electricity

4. Complete the gaps with appropriate particles or adverbs from the box and translate the phrasal verbs. There is one extra particle.

with	in	through	back	up	out	behind	on	off	across	away

1. Phosphor atoms heat … when they are hit by ultraviolet photons.
2. After the electrodes are charged an electric current flows … the gas in the cell.
3. To watch modern 3-D TV sets you need to put … special glasses.
4. The first type of electrodes sits … the cells, while the second is mounted above them.
5. Being exposed to one type of light, phosphor material gives … another light.
6. The electron releases visible light photons when it falls … to its normal level.
7. Falling prices of LED-TVs are likely edge … LCD-TVs.
8. The ultraviolet photons, which were released by gas atoms, interact … phosphor material, which is coated on the inside wall of the cell.
9. Both address and display electrodes extend … the entire plasma screen.
10. 10)The electrodes are arranged … different ways.

5. Complete the crossword with the words similar to the given ones.



1. fast (para 4)
2. fabricate (para 7)
3. issue (para 4)
4. matrix (para 2)
5. part (para 3)
6. encourage (para 4)
7. including everything (para 6)
8. discovery (para 8)
9. put carefully (para 1)

GRAMMAR

1. Use Active or Passive voice to complete the following sentences.

1. It's a big corporation. Five thousand people … (employ) there.
2. This article … (post) to the scientific journal a week ago and it … (arrive) yesterday.
3. The company is not independent. It … (own) by a much larger company.
4. Originally the book … (write) in Spanish, and a few years ago it … (translate) into English.
5. A decision … (make) until the next meeting.
6. A new research center … (build) near the airport.
7. My briefcase has disappeared. Somebody … (take) it.

2. Use the correct form of the verb "to be" to complete the sentences with Passive voice.

1. Two types of gas … contained in the cells of plasma television.
2. Each intersecting electrode … charged with a voltage.
3. After this phosphor material … exposed to light, it started to give off a green light.
4. The surface … usually coated with a thick layer of conducting material.
5. The aerial … just mounted on the roof of the highest building of the town.

3. Make up sentences from the following words, begin with the words in bold.

1. are / by / plasma /**The electrodes** / display's / charged / the / computer.
2. coated / wall / **Phosphor** / is / on / inside / material /cell / the / of / the.
3. individually / pixel / lit / **Each** / is.
4. plasma / **The quality** / image / meets / people's / of / expectations / in / displays.
5. flow / particles / charged / **The current** / a / rapid / of / creates.

4. Correct mistakes in the following sentences and explain them. Each sentence has only one grammar mistake.

1. The display electrodes are surrounded by an insulated dielectric material.
2. These two types of electrodes are arranged in vertical columns and horizontal rows in the screen.
3. The electrodes, that intersect at the cell, are charged for ionize the gas in this cell.
4. When the electrodes charge, an electric current flows through the gas in the cell.
5. The energy is released in the shape of a visible light photon.

6. By varying the pulses of current, the control system can to increase or decrease the intensity of sub pixel color.
7. You can produce a very wide screen using the extremely thin materials.
8. The most big disadvantage of plasma technology is its price.

5. Choose the best preposition A, B or C to complete the following sentences.

1) Hundreds of thousands of tiny cells are positioned … two plates of glass.
   A in B on C between
2) The intersecting electrodes are charged … a voltage difference between them.
   A to **B** with **C** from
3) Due to the fact that each pixel is lit individually, the image looks good … almost every angle.
   A on **B** with **C** from
4) The address electrodes are arranged … vertical columns.
   A in **B** under **C** off
5) The phosphor's electrons jump … a higher level, when ultraviolet photons hit them.
   A on **B** to **C** through
6) The display electrodes are mounted … the cell.
   A in **B** under **C** above
7) An electric current flows … the gas in the cell.
   A across **B** through **C** between
8) The intensity … each subpixel color can be increased and decreased by the control system.
   A of **B** at **C** in

6. Fill in the gaps with definite, indefinite or zero article.

When 1)_____ large number of pixels are needed in a display, it is not technically possible to drive each directly since then each pixel would require 2)_____ independent electrodes. Instead, the display is *multiplexed*. In 3)_____ multiplexed display, electrodes on one side of 4)_____ display are grouped and wired together (typically in columns), and each group gets its own voltage source. On the other side, 5)_____ electrodes are also grouped (typically in 6)_____ rows), with each group getting a voltage sink. The groups are designed so each pixel has 7)_____ unique, unshared combination of source and sink. The electronics, or the software driving the electronics then turns on sinks in sequence, and drives sources for the pixels of each sink.

WORD FORMATION

1. **Complete the following chart with appropriate derivatives.**

Noun	**Adjective**	**Verb**
1)	2)	Protect
Horizon	3)	-
Ion	-	4)
5)	6)	Differ
Vision	7)	8)
Intensity	9)	10)
11)	12)	Combine
13)	14)	Expect
15)	16)	Insulate

2. **Complete the sentences with the necessary words from the chart above.**

1. There are many … technologies used in production of TVs.
2. After being exposed to light, phosphors themselves produce … light.
3. The display electrodes are placed in … rows across the screen.
4. The … of all modern technologies helps create the most advanced electronics.
5. The great award … his further activity.
6. The results of the experiment were above all our …
7. There are many devices nowadays which help to … air in homes.
8. He took an active part in … of environment.
9. This the most reliable type of … .

TEXT 8. WORKING PRINCIPAL OF OLEDS

READING.

A typical OLED is composed of a layer of organic materials situated between two electrodes, the anode and cathode, all deposited on a substrate. The organic molecules are electrically conductive as a result of delocalization of pi electrons caused by conjugation over all or part of the molecule. These materials have conductivity levels ranging from insulators to conductors, and therefore are considered organic semiconductors. The highest occupied and lowest unoccupied molecular orbitals (HOMO and LUMO) of organic semiconductors are analogous to the valence and conduction bands of inorganic semiconductors.

Originally, the most basic polymer OLEDs consisted of a single organic layer. One example was the first light-emitting device synthesized by J. H. Burroughes, which involved a single layer of poly . However multilayer OLEDs can be fabricated with two or more layers in order to improve device efficiency. As well as conductive properties, different materials may be chosen to aid charge injection at electrodes by providing a more gradual electronic profile, or block a charge from reaching the opposite electrode and being wasted. Many modern OLEDs incorporate a simple bilayer structure, consisting of a conductive layer and an emissive layer.

During operation, a voltage is applied across the OLED such that the anode is positive with respect to the cathode. A current of electrons flows through the device from cathode to anode, as electrons are injected into the LUMO of the organic layer at the cathode and withdrawn from the HOMO at the anode. This latter process may also be described as the injection of electron holes into the HOMO. Electrostatic forces bring the electrons and the holes towards each other and they recombine forming an exciton, a bound state of the electron and hole. This happens closer to the emissive layer, because in organic semiconductors holes are generally more mobile than electrons. The decay of this excited state results in a relaxation of the energy levels of the electron, accompanied by emission of radiation whose frequency is in the visible region. The frequency of this radiation depends on the band gap of the material, in this case the difference in energy between the HOMO and LUMO.

As electrons and holes are fermions with half integer spin, an exciton may either be in a singlet state or a triplet state depending on how the spins of the electron and hole have been combined. Statistically three triplet excitons will be formed for each singlet exciton. Decay from triplet states (phosphorescence) is spin forbidden, increasing the timescale of the transition and limiting the internal efficiency of fluorescent devices. Phosphorescent organic light-emitting diodes make use of spin–orbit interactions to facilitate intersystem crossing between singlet and triplet states, thus obtaining emission from both singlet and triplet states and improving the internal efficiency.

Indium tin oxide (ITO) is commonly used as the anode material. It is transparent to visible light and has a high work function which promotes injection of holes into

the HOMO level of the organic layer. A typical conductive layer may consist of PEDOT: PSS as the HOMO level of this material generally lies between the work function of ITO and the HOMO of other commonly used polymers, reducing the energy barriers for hole injection. Metals such as barium and calcium are often used for the cathode as they have low work functions which promote injection of electrons into the LUMO of the organic layer. Such metals are reactive, so require a capping layer of aluminum to avoid degradation.

Single carrier devices are typically used to study the kinetics and charge transport mechanisms of an organic material and can be useful when trying to study energy transfer processes. As current through the device is composed of only one type of charge carrier, either electrons or holes, recombination does not occur and no light is emitted. For example, electron only devices can be obtained by replacing ITO with a lower work function metal which increases the energy barrier of hole injection. Similarly, hole only devices can be made by using a cathode comprised solely of aluminum, resulting in an energy barrier too large for efficient electron injection.

1. Are the following sentences true (T) or false (F)?

1. Modern OLEDs can have more than 2 layers.
2. A current can flow from cathode to anode or from anode to cathode.
3. Barium and calcium have high work functions so they are used for the cathode.
4. Aluminium capping can prevent degradation of OLEDs.
5. Phosphorescent OLEDs improve the internal efficiency because they use spin-orbit interactions.

2. Answer the following questions.

1. What is the similarity between the organic and inorganic semiconductors?
2. What are the advantages of phosphorescent OLEDs?
3. What materials are used to make anode and cathode?

VOCABULARY

1. Read the words and phrases from the text and pay attention to their meaning.

1. be composed of	состоять из
2. substrate	подложка, основа
3. conjugation	сопряженность, соединение
4. molecular orbital	молекулярная орбиталь
5. valence	валентность
6. poly	поликристалл

7. electronic profile	электронный контур, профиль, сечение
8. conductive layer	проводящий слой
9. emissive layer	излучающий слой
10.with respect to	что касается…, по отношению …
11.withdraw	извлекать
12.bound state	связное состояние
13.decay	затухание, распад
14.relaxation	ослабление, спадание
15.fermion	фермион, ферми-частица
16.integer spin	целочисленный спин
17.singlet state	синглетное состояние
18.triplet state	триплетное состояние
19.spin-orbit interaction	спин-орбитальное взаимодействие
20.work function	работа выхода
21.either…or…	или…или…, либо…либо…
22.solely	единственно, исключительно
23.result in	приводить к …
24.similarly	так же, подобным образом

2. Match the words and phrases with their definitions.

1. Molecular orbital	a) a mobile concentration of energy in a crystal formed by an excited electron and an associated hole
2. anode	b) the time allowed for or taken by a process or sequence of events
3. cathode	c) the negatively charged electrode by which electrons enter an electrical device
4. electron	d) the branch of chemistry or biochemistry concerned with measuring and studying the rates of reactions
5. hole	e) the lack of an electron at a position where one could exist in an atom
6. exciton	f) a mathematical function describing the wave-like behavior of an electron in a molecule
7. fermion	g) a subatomic particle, such as a nucleon, which has half-integral spin and follows the statistical description given by Fermi and Dirac
8. timescale	h) the positively charged electrode by which the electrons leave an electrical device
9. kinetics	i) a stable subatomic particle with a charge of negative electricity, found in all atoms and acting as the primary carrier of electricity in solids

10.charge carrier	j) a mobile electron or hole by which electric charge passes through a semiconductor

3. Match the words from the text with their synonyms.

1. substrate	a. produce
2. analogous	b. help
3. fabricate	c. encourage
4. aid	d. similar
5. relaxation	e. luminous
6. transition	f. changing for worse
7. fluorescent	g. covering
8. promote	h. wafer, base
9. degradation	i. transfer
10. capping	j. attenuation

4. Complete the two boxes with the appropriate words.

Noun	**Adjective**		**Verb**	**Noun**
type			conduct	
	different			insulator
emission				operation
	efficient		radiate	
reaction				facility
vision			degrade	
	fluorescent		recombine	
			inject	

5. Match the words and make phrases from the text. Translate them.

A	**B**
organic conductive electrostatic band light-emitting energy bilayer conduction triplet molecular	orbital gap layer transfer state structure semiconductor forces diode band

6. Complete the following sentences with the words and phrases from the text.

1. The first … was the example of a single organic layer OLED.
2. Unlike cathode, … is positively charged electrode.
3. … forces bring the electrons and holes towards each other.

4. During the … of the excited state, there occurs the emission of radiation.
5. Three triplet excitons will be formed for each … exciton.
6. … lasts longer than fluorescence.
7. Barium and calcium are reactive, so they require a … layer of aluminium to avoid degradation.
8. Modern OLEDs have a simple … structure.
9. Multilayer OLEDs can be produced with two or more layers to improve … .
10. In organic semiconductors … are more mobile than electrons.

7. What are these words refer to in the text?

1. **These** materials have conductivity level … (para 1)
2. **This latter** process may also … (para 3)
3. **This** happens closer to … (para 3)
4. **It** is transparent to visible light … (para 5)
5. **Such** metals are reactive, … (para 5)

GRAMMAR.

1. Use Active or Passive Voice to complete the following sentences.

1. A typical OLED … (consist) of a layer of organic materials, situated between two electrodes.
2. Insulators and conductors … (consider) organic semiconductors.
3. Different materials may … (choose) to aid charge injection at electrodes.
4. A current of electrons … (flow) through the device from cathode to anode.
5. The frequency of radiation … (depend) on the band gap of the material.
6. Electrostatic forces … (bring) the electrons and the holes towards each other.
7. Indium tin oxide … (use) commonly as the anode material.
8. Barium and calcium … (require) a capping layer of aluminum.
9. If there is no recombination, the light … (not emit).
10. The formation of an exciton, a bound state of the electron and the hole … (happen) closer to emissive layer.

2. Use "-ed" or "–ing" forms of the verbs in brackets.

1. Organic materials have conductivity levels … (range) from insulators to conductors.
2. The first light-emitting devices, … (synthesize) by J.H.Burroughes, consisted of a single organic layer.
3. The electrons and the holes recombine, … (form) an exciton, a bound state of the electron and the hole.
4. The decay of the … (excite) state results in a relaxation of the energy levels of the electrons.

5. Electron only devices can be obtained by … (replace) ITO with lower work function metal.

3. Use the following infinitives in the sentences. There is one extra infinitive.

to facilitate	to improve	to charge	to avoid	to aid	to study

1. Multilayer OLED can be produced with two or more layers … device efficiency.
2. Different materials may be chosen … charge injection at electrodes by providing a more gradual electronic profile.
3. Phosphorescent organic LED make use of spin-orbit interactions … intersystem crossing between singlet and triplet states.
4. Reactive materials require a capping layer of aluminum … degradation.
5. Single carrier devices are used … the kinetics and charge transport mechanisms of an organic material.

4. Make up sentences from the following words; begin with the words in bold.

1. modern / incorporate /OLEDs / structure /**Many** / a / bilayer.
2. this /on / gap / frequency / of / radiation / depends / **The** / the / the / material /band / of.
3. three / formed / each / **Statistically** /triplet / will / singlet / exciton / excitons / be / for.
4. can / **Single** / study /processes / devices / be / trying / transfer / carrier / useful / when / to / energy.
5. **Hole** / made / aluminum / a / cathode / only / solely / of / by / be / can / using / devices / comprised.

5. Find mistakes in the following sentences.

1. The high occupied and low unoccupied molecular orbitals of organic semiconductors is analogous to the valence and conduction bands by inorganic semiconductors. (3)
2. During operation, a voltage is applied on the OLED for that the anode is positive with respect at the cathode. (3)
3. An exciton may either be with a singlet state or a triplet state depending from how the spins of the electron and the hole have been combining. (3)
4. ITO is transparent in visible light and has a high working function who promotes injection of holes into the HOMO level of the organic layer. (3)
5. As current through the device is composed of only one type of charge carrier, recombination do not occur and no lights are emitted. (3)

TEXT 9. 3D PRINTING

READING

3D printing is a form of additive manufacturing technology where a three dimensional object is created by successive layers of material. 3D printers are generally faster, more affordable and easier to use than other additive manufacturing technologies. 3D printers offer product developers the ability to print parts and assemblies made of several materials with different mechanical and physical properties in a single build process. Advanced 3D printing technologies yield models that closely emulate the look, feel and functionality of product prototypes.

In recent years 3D printers have become financially accessible to small- and medium-sized business, thereby taking prototyping out of the heavy industry and into the office environment. It is now also possible to simultaneously deposit different types of materials.

Previous means of producing a prototype typically took many horn's- tools, and skilled labor. For example, after a new street light luminary was digitally designed, drawings were sent to skilled craftspeople where the design on paper was painstakingly followed and a three-dimensional prototype was produced in wood by utilizing an entire shop full of expensive wood working machinery and tools. This typically was not a speedy process and costs of the skilled labor were not cheap, hence the need to develop a faster and cheaper process to produce prototypes. As an answer to this need, rapid prototyping was born.

One variation of 3D printing consists of an inkjet printing system. A 3D CAD tile is imported into the software. The software slices the file into thin cross-sectional slices, which are fed into the 3D printer. The printer creates the model one layer at a time by spreading a layer of powder (plaster, or resins) and inkjet printing a binder in the cross-section of the part. The process is repeated until every layer is printed. This technology is the only one that allows for the printing of full colour prototypes. It is also recognized as the fastest method.

Standard applications include design visualization. prototyping/CAD. metal casting, architecture, education, geospatial. healthcare, entertainment/retail, etc. Other applications would include reconstructing fossils in paleontology, replicating ancient and priceless artifacts in archaeology, reconstructing bones and body parts in forensic pathology and reconstructing heavily damaged evidence acquired from crime scene investigations.

3D printers offer tremendous potential for production applications as well. The technology also finds use in the jewellery, footwear, industrial design, architecture, engineering and construction (AEC). automotive, aerospace, dental and medical industries.

3D printing technology is currently being studied by biotechnology firms and academia for possible use in tissue engineering applications where organs and body parts are built using inkjet techniques. Layers of living cells are deposited onto a gel

medium and slowly built up to form three dimensional structures. Several terms have been used to refer to tins field of research: Organ printing, ЬІо-printing, and computer-aided tissue engineering among others.

The use of 3D scanning technologies allow the replication of real objects without the use of molding techniques, that in many cases can be more expensive, more difficult, or too invasive to be performed.

1. Read the following words and expressions and pay attention to their meaning

1. successive	1. последовательный
2. three dimensional object	2. трехмерный объект
3. assembly	3. блок, конструкция
4. yield	4. производить, выпускать
5. emulate	5. имитировать, копировать
6. prototype	б. прототип, модель, аналог
7. to become accessible	7. становиться доступным
8. take out	8. вынимать, забирать
9. simultaneously	9. одновременно
10 skilled labor	10. квалифицированные рабочие
11 luminary	11. искусственный источник света, фонарь
12 to be digitally designed	12. быть спроектированным в цифровом виде
13 painstakingly	13. тщательно, кропотливо
14 shop	14. цех. предприятие
15 hence	15. отсюда, следовательно
16 inject printing system	16. струйный принтер
17 CAD file	17. система проектирования
18 slice	18. разрезать
19 cross-sectional slices	19. разрезы в поперечном сечении
20 at a time	20. за один раз, единовременно
21. binder	21. связующее вещество
22. design visualization	22. визуализация дизайна, придание видимой формы дизайну
23. metal casting	23. металлическая отливка, литье метала
24 fossil	24. окаменелость, ископаемое
25. cell	25. клетка, элемент
26. invasive	26. долгий, кропотливый
27. molding	27. прессование, формовка

2. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. 3D printers are as fast and easy to use as any other addictive manufacturing technology.
2. Nowadays people can use 3D printers in offices.
3. 3D printers can produce parts and assemblies made of only one material.
4. 3D CAD is a program that helps to create a prototype.
5. 3D printers are not used in medicine.
6. Biotechnology firms have recently started to use 3D printing technology.
7. Molding techniques are not as expensive as 3D scanning technologies.
8. 3D printers help to investigate crimes.
9. It's impossible to use 3D printing in archeology.

3. Choose the correct ending: a, b, c, d to complete statements 1-5

1. 3D printers have become financially accessible to
a) heavy industries
b) small business
c) any person who needs it
d) skilled craftspeople
2. 3D printers appeared because previous means of a prototype production
a) were not speedy
b) were not effective
c) needed a lot of wood
d) needed much place
3. 3D printers give the opportunity to print parts and assemblies made of
a) wood
b) metal
c) two and more materials
d) three different materials
4. 3D printing helps to reconstruct
   a) living cells
   b) drawings
   c) body parts
   d) street light luminary
5. Ail mkjet printing system is
   a) a part of software
   b) an inkjet printing system
   c) a model of layer
   d) a layer of powder (plaster or resins)

VOCABULARY

1. Match the words and translate the words combinations

1. heavy	a) accessible
2. simultaneously	b) structure
3. financially	c) technology
4. speedy	d) machinery
5. design	e) business
6. printing	i) industry
7. three dimensional	g) method
S. expensive	h) deposit
9. medium-sized	i) visualization
10.the fastest	j) process

2. Match the words with a similar meaning

1. speedy	a) high- priced
2. manufacture	b) recently
3. accessible	c) qualified
4. simultaneously	d) contain
5. create	e) fast
6. expensive	i) affordable
7. currently	g) produce
S. include	h) copy
9. skilled	i) design
10. emulate	**j)** at a time

3. Match the words with an opposite meaning

1. rapid	a) cheap
2. heavy	b) unqualified
3. skilled	c) few
4. many	d) light
5. expensive	e) destroy
6. reconstruct	i) mental
7. allow	g) impossible
S. physical	h) easy
9. possible	i) slow
10. difficult	j) forbid

4. Complete the sentences with the words and expressions from the box. There are two extra words

hours	techniques	printed	materials	answer
office environment		manufacturing technology		difficult
printing system	visualization	medium		speedy process

1. 3D printing is a form of additive.....
2. One variation of 3D printing consists of an inkjet.....
3. Previous means of producing a prototype took many.....
4. 4. Standard applications include design.....
5. The process is repeated until every layer is.....
6. Layers of living cells are deposited onto a gel....
7. The use of 3D printing allows the replication of real objects without the use of molding.....
8. Molding techniques are more expensive and more.....
9. 3D printing makes it possible to deposit simultaneously different types of.....
10. Rapid prototyping was bom as an.....to the need of developing a faster and cheaper process.

GRAMMAR

1. Make up sentences from the following words beginning with the word in bold

1. financially/ and/ 3D/ have/ business./ recently/accessible / become/ to/ small- / medium-sized/ printers
2. feel/ Advanced/ printing/ of/ models/ that/ the/ technologies/ yield' look./ and /functionality/ prototypes./ 3D /product /emulate
3. an/ consists/ variation/ 3D/ printing /off inkjet/ printing/ One /of/system.
4. by/ 3D/ technology /currently /being /is /studied/ firms, /biotechnology /printing
5. A/imported/ the/ CAD/ is /file /software. /3D /into/

2. Put the verb given in brackets into appropriate form

1. It (to be) now also possible to simultaneously deposit different types of materials.
2. A new street light luminary (to be) digitally designed many years ago.
3. The software (slice) the files into thin cross-sectional slices.
4. This (to be) not a speedy process and costs of skilled labor (to be) not cheap.
5. This technology (allow) for the printing of full color prototypes.

3. Make the fallowing sentences passive

1. They took prototyping out of heavy industry.

2. The software slices the file into cross- sectional slices.
3. New models closely emulate the look, feel and functionality of product prototypes.
4. They simultaneously deposit different types of materials.
5. They have used several terms to refer to this field of research: Organ printing, bio-printing, and computer-aided tissue engineering among others.
6. Academia and biotechnology firms are studying 3D printing technology.
7. They designed a new street light luminary.
8. They import a 3D CAD file into the software.
9. With the help of 3D printing we create a three dimensional object.
10. The program repeats the process until every layer is printed.

4. Which answer a, b, c or d best fits each gap

1 Many years ago producing a prototype ... many hours, tools, and skilled labor
a) took b) taken c) taked d) has taken
2. 3D printers create produce prototypes.....than any other technology
a) fast b) faster c) the fastest d) the faster
3. Layers of living cells.. ..deposited onto a gel medium.
a) is b)are c) was d) be
4. The process is repeated .... every layer is printed
a) till b) for c) during d) until
5. The.....of skilled labor is expensive
a) cost b) price d) pay c) salary
6. Nowadays 3D printers .... product developers the ability to print parts and assemblies made of several materials in a single build process.
a)offered b) make c) offer d)made
7. The molding techniques are.....than the use of 3D printing
a) less expensive b) much cheaper c) more expensive d) the cheaper
8. 3D printers offer.....potential for production applications as well.
a) great b) tenible c) terrific d) precious
9. Organs and body pails are built using.....
a) 3D CAD b) inkjet techniques c) skilled labor d) computer software
10. A three dimensional object.....by successive layers of material
a) are created b) created c) is create d) is created

5. Complete the table with a suitable part of speech

noun	adjective	verb
-	-	replace
usage	-	-
-	possible	-
-	-	develop
visualization	-	-

TEXT 10. CONDUCTORS AND INSULATORS

READING

Conductors are materials having a low resistance so that current easily passes through them. The lower the resistance of the material, the more current can pass though it.

The most common conductors are metals. Silver and copper are the best of them. The advantage of copper is that it is much cheaper than silver. Thus copper is widely used to produce wire conductors. One of the common functions of wire conductors is to connect a voltage source to a load resistance. Since copper wire conductors have a very low resistance a minimum voltage drop is produced in them. Thus, all of the applied voltage can produce current in the load resistance. It should be taken into consideration that most materials change the value of resistance when their temperature changes.

Metals increase their resistance when the temperature increases while carbon decreases its resistance when the temperature increases. Thus metals have a positive temperature coefficient of resistance while carbon has a negative temperature coefficient. The smaller is the temperature coefficient or the less the change of resistance with the change of temperature, the more perfect is the resistance material. Materials having a very high resistance are called insulators. Current passes through insulators with great difficulty.

The most common insulators are air. paper, rubber, plastics. Airy insulator can conduct current when a high enough voltage is applied to it. Currents of great value must be applied to insulators in order to make them conduct. The higher the resistance of an insulator, the greater the applied voltage must be.

1. Read the following words and expressions and pay attention to their meaning

1. conductor	1. проводник
2. low resistance	2. низкое сопротивление
3. current	3. электрический ток
4. copper	4. медь
5. to be widelv used	5. широко применяться
6. wire conductor	6. провод
7. Voltage source	7. источник напряжения
S. voltage drop	S. падение напряжения, перепад напряжения
9. load resistance	9. нагрузочное сопротивление
10.To take into consideration	10.брать во внимание
11. value	11. величина
12.carbon	12.угольный электрод, уголь
13. insulator	13.изолятор, диэлектрик, непроводник

14.rubber	14.резина
15.conduct current	15.проволить ток

2. Read the statements and decide if they are true (T) or false (F). Prove your answers.

1. Current doesn't pass through the conductors.
2. There are more conductors among metals than among other materials.
3. Silver is more expensive than copper.
4. A voltage source is connected to load resistance with a wire conductor.
5. There is a high resistance in wire conductors.
6. Changes in temperature cannot change the value of resistance.
7. Metal increases its resistance if the temperature becomes higher. S. Perfect resistance materials have a small temperature coefficient.
9. Insulators are materials with a small temperature coefficient.
10. Some insulators do not conduct current at all.

3. Choose the correct ending: a, b, c to complete statements 1-5

1. The lower the resistance of the material
   a) The better conductor it is
   b) The lower its cost
   c) The less current passes through it
2. The advantage of copper is that it's
   a) the cheapest material
   b) a good conductor
   c) cheaper than silver
3. If the temperature changes most materials
   a) do not change their value of resistance
   b) change their value of resistance
   c) do not conduct the current.
4. Insulators are materials which
   a) do not conduct the current at all
   b) have a great resistance when conducting the current
   c) need to decrease the temperature to conduct the current
5. Paper has
   a) a low current resistance
   b) a high current resistance
   c) has not any current resistance at all

VOCABULARY

1. Match the words and translate the words combinations

1 low	A resistance material
2 wire	B coefficient
3 perfect	C function
4 great	D voltage
5 temperature	E source
6 high	F conductor
7 voltage	G difficulty
S wildly	H used
9 common	I resistance
10 pass	J through

2. Match the words with a similar meaning

1 low	A transform
2 common	B raise
3 change	C big
4 great	D short
5 material	E excellent
6 perfect	F drop
7 increase	G join
S decrease	H frequent
9 connect	I generate
10 produce	J substance

3. Match the words with an opposite meaning

1 increase	A low
2 negative	B decrease
3 high	C cheap
4 great	D positive
5 expensive	E stabilize
6 insulator	Fbig
7 change	G conductor
S small	H little
9 perfect	I separate
10 connect	J imperfect

4. Complete the sentences with the words and expressions from the box. There are two extra words

negative air great passes silver insulators wire positive resistance value conduct metal

1. Conductors are materials which have low.....
2. Current.....through a conductor
3. Copper is cheaper than....
4. Most materials change the .... of resistance when their temperature changes.
5. Materials with a very high resistance are.....
6. One of the most common insulators is.....
7. Metals have a.....temperature coefficient.

S. Carbon has a.....temperature coefficient

9. When a high voltage is applied any insulator can . ...current. 10.Copper is used to produce .... Conductors

GRAMMAR

1. Make up sentences from the following words beginning with the word in bold

1. best copper the **Silver** and conductors. Are
2. a insulators. **Materials** very resistance are high having called
3. temperature the their **Metals** resistance increases when increase
4. resistance coefficient. **The** temperature more is the material, smaller the is perfect the
5. of much advantage **The** is that it is silver copper cheaper than

2. Put the verb given in brackets into appropriate form

1. Metal (increase) its resistance when the temperature (increase).
2. Rubber (be) one of the most common insulator.
3. Current easily (pass) through a conductor.
4. Copper wire conductor (have) a very low resistance.
5. The advantage of copper is that it (be) cheap.

3. Make the following sentences passive

1. People use copper to produce wire conductors.
2. Most materials change the value of resistance when their temperature changes.
3. If a material has a very high resistance we call it insulator.
4. Voltage can produce current in the load resistance.
5. Wire conductors connect a voltage source to a load resistance.

6. We must apply currents of great value to insulators in order to make them conduct.

4. Which answer a, b, c or d best fits each gap.

1. Silver and copper are.....conductors
   a) the best b) the better c) best d) more better
2. Wire conductors ... a voltage source to a load resistance
   a) connects b) connect c) is connecting d) are connected
3. ... is the temperature coefficient. ... is the resistance material.
   a) The smaller, the more perfect b) Smaller, more perfect c) The small, the most perfect d) Small, perfect
4. Materials having a very high resistance ....insulators
   a) is called b) being called c) called d) are called
5. Carbon ... a negative temperature coefficient
   a) have b) has c) is having d) haves
6. The most common insulators ... air paper, rubber, plastics,
   a) is b) have c) has d) are
7. Any insulator ... conduct current when a high enough voltage is applied to it.
   a) can b) must c) able d) may

8) Copper is widely.....to produce wire conductors.
   a) used b) use c) has been used d) using

5. Complete the table with a suitable part of speech

noun	**adjective**	**verb**
production	-	-
-	insulating	-
-	-	conduct
-	resistant	-
change	-	-

READER

TEXT 1. SUPERCONDUCTIVITY

Superconductivity is a phenomenon observed in several metals and ceramic materials. When these materials are cooled to temperatures ranging from near absolute zero (0 degrees Kelvin, -273 degrees Celsius) to liquid nitrogen temperatures (77 K, -196 C), their electrical resistance drops with a jump down to zero.

The temperature at which electrical resistance is zero is called the critical temperature and this temperature is a characteristic of the materials, such as zinc, mercury, tin and aluminum. Superconductivity can also occur in various metallic alloys and some heavily-doped semiconductors. Superconductivity does not occur in noble metals like gold and silver, nor in pure samples of ferromagnetic metals. The ceramic critical temperature is much higher than metal one. The value of the critical temperature is dependent on the current density and the magnetic field.

The cooling of the materials is achieved using liquid nitrogen or liquid helium for even lower temperatures. While superconductivity at low temperature is well understood, there is no clear explanation as yet of this phenomenon at 'high temperatures'.

The critical temperature is known to be inversely proportional to the square root of the atomic mass.

Electrical resistance in metals arises because electrons moving through the metal are dispersed due to deviations from translational symmetry. These are produced either by admixtures or by the vibrations of the matrix in the metal.

In a superconductor below its critical temperature, there is no resistance because these dispersing mechanisms are unable to stop the motion of the electrons. As a negatively-charged electron moves through the space between two rows of positively-charged atoms, it pulls inward on the atoms of the lattice. This distortion attracts a second electron to move in behind it. An electron in the matrix can interact with another electron by exchanging acoustic quanta called phonon. Phonons in acoustics are analogous to photons in electricity. The energy of a phonon is usually less than 0.1 eV (electron-volt) and thus is one or two orders of magnitude less than that of a photon.

The two electrons forming a weak attraction travel together in a pair and encounter less resistance. In a superconductor, electron pairs are constantly forming, breaking and reforming flow with little or no resistance. The current is carried then by electrons moving in pairs called Cooper pairs. The second electron encounters

less resistance, much like a passenger car following a truck on the motorway encounters less air resistance.

Below the critical temperature these superconducting materials have no electrical resistance and so they can carry large amounts of electrical current for long periods of time without losing energy as heat. For example, loops of superconducting wire have been shown to carry electrical currents for several years with no measurable loss. In recent years the scientists have made many discoveries regarding the novel nature of superconductivity. In 1997 researchers found that at a temperature very near absolute zero an alloy of gold and indium was both a superconductor and a natural magnet. Conventional wisdom held that a material with such properties could not exist. Recent years have also seen the discovery of the first high-temperature superconductor that does not contain any copper. In 2008 it was discovered by Valerii Vinokur and Tatyana Baturina that the same mechanism that produces superconductivity could produce a superinsulator state in some materials, with almost infinite electrical resistance. This property offers tremendous challenges and opportunities in the modern world.

TEXT 2. FUNDAMENTALS FOR KEEPING INFORMATION SAFE

There is a saying in IT that the only secure computer is one that's turned off. Because this isn't feasible, data security becomes another unavoidable part of doing business in today's world. Data security is the protection of data from unauthorized, accidental, or deliberate modification, destruction, or disclosure.

Organizations today must not only protect their data from internal harm, but from harm within the myriad networks to which it is connected. The scope of those networks has resulted in the largest number of potential security holes to date. They include threats to wired and wireless networks via attacks by hackers and by new virus types.

One key mistake made by companies implementing a wireless network is assuming it will be secure directly out of the box. Unfortunately, default security settings are often set at a lower-than-adequate threshold to protect an internal network from compromise.

After a successful install, it is essential that administrators raise security settings to meet the organization's individual needs. Measures such as strong encryption and virus protection tend not to be imposed as readily in wireless networks as in wired networks and are just as critical, if not more.

Outsourcing has a number of benefits in terms of cost savings for an organization, including letting it offload tasks that aren't a core part of its business so that it may focus on what it does best.

Organizations have every right to know exactly how their data will be handled and protected. Additionally, be sure that the integrity of your data are guaranteed in writing in your contract or service level agreement.

There is often a disconnection between an outsourcing vendor and its client regarding the sensitivity of information. We've seen this with the application source code that is developed by software service companies. A client may wish to treat it as confidential, whereas the vendor may end up classifying it as internal, which means that code developed for one client can be put into a general knowledge base and shared with developers working on code for another client. So if explicit data classification guidelines are not in place, you could have serious security vulnerabilities creep in.

An important consideration is the level of certification provided by the outsourced vendor. The company must ensure that its service level agreement with the vendor allows it to carry out security audits of the vendor's infrastructure as part of their business relationship.

The biggest threats to security, in addition to insider attacks, arise from code with malicious intent. Maintaining current antivirus software helps in the fight against the sort of code that deletes files, opens back doors for intruders, or otherwise breaches your computer.

Maintaining security becomes more challenging, but nonetheless necessary. Remote users who fail to properly secure remote computers with personal firewalls and up-to-date antivirus software pose a great threat to corporate networks. Experts advise businesses to carry out regular and thorough risk assessment to address the security threats posed by home workers. System administrators must ensure that all notebook and desktop computers used by home workers are using firewalls and up-to-date virus protection, as viruses and worms can easily rely on these devices to enter your business.

From the moment the device is plugged in and connected to a network, you begin to trade security for functionality. It always requires you to determine how much functionality you are willing to sacrifice for increased security or vice versa. Wireless, remote access and outsourcing solutions present many key barriers to security and, if not managed correctly, can expose a corporate network to unlawful intrusion. These threats, however, can be avoided if the proper precautions are taken.

TEXT 3. THE IMPORTANCE AND ROLE OF THE PERSONNEL DEPARTMENT

Personnel refer to all the people who work for a firm. Most large companies have special personnel departments which are responsible for employer-employee relations. The personnel department is a staff department, which means that it is not directly involved with production, but that it provides a service to the managers. The most important services which the personnel department provides are recruiting, that is, finding new workers or managers for the company, deciding which applicants are most suitable for employment by the firm, and developing and implementing personnel policies and procedures for the benefit of the company as well as the employees.

Most businesses continually need to recruit good personnel to replace workers who retire or quit and to fill new jobs created when the company expands. After management has determined the goals of the company and the positions needed, the personnel department must find qualified people to fill those positions.

Depending upon management policy and the nature of the position, recruiting may be done internally or externally. Internal requirement means that the person chosen for the position is selected from the current employees of the company. This is either by promotion or transfer. Promotion means an employee receives a job with more authority and responsibility than his present job. The employee usually expects to receive an increase in salary along with the new position. A transfer refers to a job or department change for a worker. A transfer without promotion is a lateral transfer. It may involve different working conditions or different hours. Companies that recruit internally often promote internally, which means that the managers have worked their way up from lower positions. It may also mean that the company may hire new employees only at lower positions.

External requirement means that the company is looking for new employees from outside the firm. All companies do some type of external requirement. If they are looking for employees with special training or education, they will often recruit at university campuses. They make arrangements with the placement office at the campus to interview graduating students. Sometimes they are seeking top level managers who they will recruit from other firms, often from their competitors. Other methods of recruiting involve the use of advertising in newspapers and professional publications, and even paying a fee or commission to an executive placement service.

Most recruiting involves a job announcement containing a description of the job. The personnel department produces a formal job description. If the firm is not well known the job description may begin with some basic information about the company and its products. This is usually followed by the title of the position of the company wants to fill, for example, Design Engineer of Vice President in Charge of Finance. Then the duties and responsibilities of the job are given, as well as where that

position fits in the organizational chart (that is, who the person reports to and who the person supervises). Next appear the qualification for the job, such as, the professional training or skills needed. The salary and fringe benefits paid for by the company should also be mentioned. Finally, the job description will tell the applicant exactly what to do if he is interested in the position.

The personnel department should have a method for choosing the best candidate from among the applicants for the position. In some companies this may involve testing prospective employees. Civil service or government jobs often require applicants to compete with each other on written tests. Those applicants with the highest scores are selected for an interview.

Other companies may assign points for certain items on the application form, such as experience or education. They may then total the points and select the applicants with the highest totals. After the applications have been evaluated, the best qualified applicant's personality and ability to work with others may be judged.

Some people feel the most important function of the personnel department is the development of personnel policies.

TEXT 4. AUTOMATION

Automation is the use of control systems (such as numerical control, programmable logic control, and other industrial control systems), in concert with other applications of information technology (such as computer-aided technologies), to control industrial machinery and processes, reducing the need for human intervention.

Automation plays an increasingly important role in the world economy and in daily experience. It has had a notable impact on a wide range of industries beyond manufacturing. Telephone operators have been replaced largely by automated telephone switchboards and answering machines. Medical processes such as radiography and laboratory analysis of human genes, cells, and tissues are carried out at much greater speed and accuracy by automated systems. Automatic teller machines have reduced the need for bank visits to obtain cash and carry out transactions. In general, automation has been responsible for the shift in the world economy from agrarian to industrial in the 19th century and from industrial to services in the 20th century.

Among the main advantages of automation are: replacing human operators in tedious tasks; replacing humans in tasks that should be done in dangerous environments (i.e. fire, space, volcanoes, nuclear facilities, underwater, etc); hazardous operations, such as oil refining, the manufacturing of industrial chemicals, and all forms of metal working; making tasks that are beyond the human capabilities such as handling too heavy loads, too large objects, too hot or too cold substances or the requirement to make things too fast or too slow; economy improvement.

Currently, for manufacturing companies, the purpose of automation has shifted from increasing productivity and reducing costs, to broader issues, such as increasing quality and flexibility in the manufacturing process. For example, automobile and truck components used to be installed into engines manually. The error rate for manual installment was around 1-1.5%, but has been reduced to 0.00001% with automation. Another major shift in automation is the increased emphasis on flexibility and convertibility in the manufacturing process. Manufacturers are increasingly demanding the ability to easily switch from manufacturing Product A to manufacturing Product B without having to completely rebuild the production lines.

Still, automation has some disadvantages. Current technology is unable to automate all the desired tasks. Tasks requiring subjective assessment or synthesis of complex sensory data, such as scents and sounds, as well as high-level tasks such as strategic planning, currently require human expertise. The research and development cost of automating a process is also difficult to predict accurately beforehand. The automation of a new product requires a huge initial investment.

Although today in many cases the use of humans is more cost-effective than mechanical approaches, automation of the workforce is quite advanced, and will continue to advance increasingly more rapidly throughout the world and will penetrate in ever more skilled jobs.

PART III

TEXT 1 COMPUTER ÜBERSETZT GEHIRNSIGNALE

LESEN

1. Wenn die **Nervenverbindung** zwischen **Gehirn** und Muskeln unterbrochen ist, kann eine elektronische **Umgehung** zumindest einen Teil der Beweglichkeit **wiederherstellen**. Das zeigen Versuche an Affen, die amerikanische Mediziner durchgeführt haben. Die Tiere konnten mit einem Ball **hantieren**, indem die Steuersignale ihres Gehirns per Computer in **Reizströme** für die Armmuskeln übersetzt wurden.

2. „Dieser Erfolg ist ein wichtiger Schritt hin zur **Wiederherstellung** der Handfunktion bei menschlichen Patienten", sind Lee Miller von der Northwestern University in Chicago und seine Kollegen überzeugt. Obwohl **lediglich** drei **Beugemuskeln angesteuert** wurden, konnten die Affen einen **beschwerten** Gummiball greifen, aufnehmen und in einer **Ablage deponieren**, berichten die Forscher im Magazin „Nature".

3. Miller und Kollegen führten ihre Versuche mit zwei Rhesusaffen durch. Die Tiere trugen eine dünne Elektrodenmatrix auf jenem Bereich der **Großhirnrinde**, der für die Kontrolle der Muskeln im rechten Arm zuständig ist. Außerdem waren ihnen **hauchfeine** Drähte in die zugehörigen Hand- bzw. Fingerbeuger im rechten Unterarm implantiert worden.

4. Während die Affen mit dem Ball hantierten, konnten die Forscher auf diese Weise die Steuersignale im Gehirn und die resultierende Muskelreizung messen – und mit dieser Information ein automatisches Übersetzungsprogramm trainieren. Dessen **Leistungsfähigkeit** stellten sie auf die Probe, indem sie **die Nerven** im Arm vorübergehend **betäubten**. Obwohl die Muskeln jetzt nur noch indirekt, via Computer-Übersetzung, vom Gehirn kontrolliert wurden, **meisterten** die beiden Affen die Aufgabe in 80 bzw. 90 Prozent der Versuche. Wurden die Muskelelektroden deaktiviert, gelang ihnen dies noch in bestenfalls 5 Prozent der Fälle. Und nicht nur das Muster der **Muskelkontraktionen**, auch die von den Muskeln ausgeübte Kraft ließ sich auf diese Weise steuern.

5. Grundsätzlich könnte mit einem solchen elektronischen Bypass auch Patienten mit **Querschnittslähmung** geholfen werden, hoffen Miller und Kollegen. Hier sei die **Ausgangslage** zwar komplizierter, da sich im Laufe der Zeit Probleme wie Muskelschwund und Spastiken einstellen könnten. Abgesehen von dem **erheblichen** Zugewinn an Unabhängigkeit könnte die erneute Aktivierung der Muskulatur aber auch helfen, solche Probleme zu beseitigen.

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1. Lesen Sie die folgende Wörter und beachten Sie die Übersetzung:

1. ansteuern – зд. управлять
2. Ausgangslage, f – исходное положение
3. beschwert – утяжеленный
4. Beugemuskel, m – сгибательная мышца
5. Bypass, m – байпас, функция в электронном устройстве, позволяющая выполнить коммутацию входного сигнала непосредственно на выход, минуя все функциональные блоки.
6. einen Nerv betäuben - умертвить нерв
7. einstellen sich - появляться
8. erheblich – значительный, важный
9. Gehirn, n - мозг
10. Großhirnrinde, f – кора головного мозга
11. hantieren - манипулировать
12. hauchfein – очень тонкий, тончайший
13. in einer Ablage deponieren – класть на место
14. lediglich – только, исключительно
15. Leistungsfähigkeit, f - работоспособность
16. meistern - справляться
17. Muskelkontraktion, f – сокращение мускулов
18. Nervenverbindung, f - нервная связь
19. Querschnittslähmung, f – поперечный миелит (болезнь, приводящая к параличу)
20. Reizstrom, m - возбуждающий сигнал (к мышце)
21. Umgehung, f – обход, обходной путь
22. wiederherstellen - восстанавливать
23. Wiederherstellung, f – восстановление
24. der Zugewinn - выигрыш, выгода

2. Lesen Sie den Text und entscheiden, ob die Aussagen richtig oder falsch sind:

1. Die Steuersignale des Gehirns wurden durch den Computer zu den Muskeln gesendet.
2. Die Wissenschaftler konnten die Beweglichkeit einiger Armmuskeln mit der Hilfe der elektronischen Umgehung zwischen den Gehirn und Muskeln wiederherstellen.
3. Die Affen konnten einen leichten Ball greifen, aufnehmen und in einer Ablage deponieren.
4. Die Affen trugen dünne Elektrodenmatrix auf dem Bereich der Großhirnrinde, der die Muskeln im linken Arm kontrolliert.
5. Die Wissenschaftler implantierten die Drähte im Gehirn der Affen.
6. Aufgrund der Information, die während des Experiments bekommen wurde, schufen die Forscher ein Übersetzungsprogramm.

7. Die Armnerven den Affen wurden völlig betäubt.
8. Wenn die Muskeln via Computer-Übersetzung kontrolliert wurden, meisterten die Affen die Aufgabe nur in 5% der Versuche.
9. In der Zukunft hoffen die Forscher der Patienten mit den Beweglichkeitsproblemen helfen.
10. Im Laufe der Zeit bei den Patienten solche Probleme wie Spastiken entstellen können.

3. Lesen Sie den Text noch einmal und stellen Sie den passende Titel jedem Absatz gegenüber:

a. Der Bericht von den Forschern.
b. Die implantierte Materialen.
c. Die Resultate.
d. Die Versuche von den amerikanischen Wissenschaftlern.
e. Die zukünftigen Möglichkeiten.

4. Übersetzen Sie den Text.

WORTSCHATZ

5. Stellen Sie die Wörter gegenüber und übersetzen Sie die Wortverbindungen:

1.	einen Versuch	a.	messen
2.	auf die Probe	b.	stellen
3.	im Laufe	c.	beseitigen
4.	die Probleme	d.	durchführen
5.	auf diese	e.	Weise
6.	die Signale	f.	der Zeit

6. Setzen Sie die gegebenen Wörter im richtigen Satz ein, ein Wort müssen Sie nicht gebrauchen.

der Forscher	der Draht	steuern	die Verbindung
der Bereich	der Versuch	das Problem	zeigen
zuständig	gelungen	abgesehen	

1. Während des Experiments schufen die … ein Übersetzungsprogramm.
2. Er ist heute eines der führenden Forscher im … des Energie.
3. Der Computer, der für die Signalübertragung … ist, befindet sich im nächsten Zimmer.
4. Im vorigen Jahr wurden alle Information nur durch den … übertragen, jetzt aber haben wir Wi-Fi.
5. Im Labor wurden die komplizierte … durchgeführt.
6. Es … der Wissenschaftler, die Arbeit zur rechten Zeit zu beenden.

7. Der Operator … sein Gerät mit der zahlreichen Knöpfen.
8. Bei dem Experiment lösten die Forscher ein wichtigen … .
9. … von einem Fehler die Arbeit ist ziemlich gut.
10. Die … zwischen den Tatsachen ist nicht völlig verständlich.

7. Stellen Sie die Wörter gegenüber und bilden Sie die Zusammensetzungen, einige Varianten sind möglich:

1. das Problem	a. die Forschung
2. die Muskeln	b. das Programm
3. die Übersetzung	c. die Lösung
4. die Nerven	d. die Verbindung
5. steuern	e. das Signal
6. das Signal	f. der Draht

GRAMMATIK (Präsens und Präteritum den schwachen Verben)

8. Wählen Sie die richtige Antwort:

1. Die amerikanische Mediziner … die Versuche an Affen im vorigen Jahr.
   a. durchführen b. durchgeführen c. führten durch
2. Die Versuche … dass man diese Probleme mit dem Hilfe des Computers lösen kann.
   a. zeigten b. zeigte c. gezeigten
3. Die Wissenschaftler … überzeugt.
   a. ist b. sein c. sind
4. Das Magazin „Nature“ … über das Experiment.
   a. berichten b. berichtete c. berichtet
5. Der Draht, der für die Verbindung zwischen den Computer und Muskeln zuständig … , führt die Signale durch.
   a. sind b. ist c. war
6. Der Forscher … den Affen eine dünne Elektrodenmatrix.
   a. implantieren b. implantiert c. implantierteten
7. Gestern … die Lernende mit der Aufgabe besser als heute.
   a. meistern b. meisterte c. meistertet
8. Der Computer … die von den Muskeln ausgeübte Kraft.
   a. steuern b. steuerte c. gesteuern
9. Die Wissenschaftler … die Probleme mit der Signaldurchführung.
   a. beseitigten b. beseitigte c. beseitigt
10. Diese Erforschung … den anderen Untersuchungen in diesem Bereich.
   a. aktivieren b. aktiviert c. aktivierten

9. Stellen Sie die Verben in Klammern in Präsens oder in Präteritum:

1. In diesem Jahr (durchführen) die Forscher viele Versuche.
2. Die Ingenieure (stellen) das neue Gerät auf die Probe.

3. Diese Methode (beseitigen) viele Probleme.
4. Der Lehrer (zeigen) den Studenten gestern das Labor und heute (durchführen) sie einige Versuche.
5. An das Programm (arbeiten) viele Menschen, das war der Grund seines Erfolges.
6. Die Dateien, die der Computer (sammeln), wurden sofort an dem Monitor gezeigt.
7. Der Computer (steuern) der Muskeln.
8. Die Forscher (finden) einen Weg, den Kranken mit Beweglichkeitsproblemen zu helfen.
9. Ein Spezialprogramm (übersetzen) die Gehirnsignale und (senden) ihnen zur Muskeln.

10.Stellen Sie die Sätzen in der negativen und interrogativen Form:

1. Ein Programm übersetzt die Gehirnsignale.
2. Wir führten die komplizierte Versuche durch.
3. Der Wissenschaftler beendete die Arbeit zur rechten Zeit nicht.
4. Der Operator … sein Gerät mit der zahlreichen Knöpfen.
5. Die Forscher lösen die komplizierte Probleme der heutigen Wissenschaft.

11. Ergänzen Sie die Tabelle:

das Verb	das Substantiv (m)	das Substantiv (f)	das Substantiv (n)	das Adjektiv
arbeiten				
lesen				
helfen				
übersetzen				
führen				
erfinden				
eröffnen				

12. Setzen Sie die Wörter in der richtigen Ordnung und bilden Sie die Sätzen:

1. aufgrund, der gegebenen Information. Die Forscher, ein Übersetzungsprogramm, schufen,
2. Der Computer, die Steuersignale, sendet, zu den Muskeln.
3. der Muskeln. die Beweglichkeit, Die Wissenschaftler, wiederherstellten,
4. auf dem bestimmten, Bereich, des Gehirns. Die Affen, dünne Elektrodenmatrix, trugen,
5. die Muskeln, Ein Computer, kann, steuern.

TEXT 2 INFORMATIKER DER TECHNISCHEN UNIVERSITÄT DARMSTADT ENTWICKELN INTELLIGENTE CODE-VERVOLLSTÄNDIGUNG

LESEN

1. Im Gegensatz zu **herkömmlichen Vervollständigungs**-Funktionen bietet „Code Recommenders“ nicht alle **verfügbaren** Optionen an, sondern schlägt dem Entwickler gezielt nur die bequemsten Alternativen vor. Eine Open-Source-Version von „Code Recommenders“ können alle Eclipse-Nutzer jetzt herunterladen.
2. Schneller, einfacher und mit weniger Fehlern programmieren – das können Software-Entwickler zukünftig mit Hilfe einer intelligenten Code-Vervollständigung der Technischen Universität Darmstadt. „Herkömmliche Code-Vervollständigungen bieten den Nutzern in der Regel alle verfügbaren Optionen an – egal, wie **naheliegend** oder **abwegig** diese in der **jeweiligen** Situation sein mögen“, erklärt Marcel Bruch vom Fachgebiet Softwaretechnik.
3. Um die Software-Entwickler besser zu unterstützen, entwickelte Bruch unter der Leitung von Prof. Dr. Mira Mezini das Tool „Code Recommenders“. „‘Code Recommenders‘ erkennt, welche Optionen dem Programmierer am besten helfen. Daher schlägt das Tool nicht mehr **Dutzende** oder **gar** über hundert Alternativen vor, sondern nur noch die zwei oder drei **sinnvollsten**“, so Bruch.
4. Damit der Programmierer **stets** die richtigen Alternativen **erhält**, analysiert „Code Recommenders“ das Muster des entwickelnden Programms und vergleicht es mit **bereits existierender** Software. Und auch erlernt das Tool im Laufe der Zeit die **Vorlieben** und **Routinen** des individuellen Entwicklers. Mit Hilfe dieser Daten **ermittelt** „Code Recommenders“ dann die Alternativen, die dem Entwickler in der **jeweiligen** Situation am wahrscheinlichsten weiterhelfen.
5. Die Open-Source-Version von „Code Recommenders“, das im April mit dem "**Eclipse Community Award 2012**" als "**Most innovative Eclipse Project**" ausgezeichnet wurde und wird bald als fester Bestandteil der Eclipse Java Entwicklungsumgebung **ausgeliefert** und steht somit jedem Softwareentwickler kostenlos zur Verfügung.
6. Neben der Open-Source Variante arbeitet das Code Recommenders Team an einer Reihe kommerzieller **Angebote** und ist derzeit auf der Suche nach **Pilotkunden**, die „Code Recommenders“ für ihre eigenen Software-Bibliotheken nutzen wollen. Für die Unternehmensgründung erhält das Projekt **Fördermittel** aus dem **Exist-Forschungstransfer-Programm** des Bundesministeriums für Wirtschaft und Technologie (BMWI). Das BMWI unterstützt „Code Recommenders“ für **mindestens** 18 Monate bei dem Transfer aus der Forschung zum **Start-up** und stellt dafür Mittel für **Personal**- und **Sachkosten** bereit.

Anmerkungen zum Text:
Eclipse Community - Eclipse ist eine Community für Einzelpersonen und Organisationen, die auf kommerziell-freundliche Open-Source-Software zusammenarbeiten möchten.
Most innovative Eclipse Project - das innovativste Eclipse Project
Exist-Forschungstransfer-Programm - ein Förderprogramm des BMWI, unterstützt hervorragende forschungsbasierte Gründungsvorhaben, die mit aufwändigen und risikoreichen Entwicklungsarbeiten verbunden sind.

10. Lesen Sie die folgende Wörter und beachten Sie die Übersetzung:

1. abwegig	ложный, ошибочный
2. Angebot, n	предложение
3. ausliefern	выпускать
4. bereits	уже
5. Dutzend, n	дюжина
6. Entwicklungsumgebung, f	инструментальная среда
7. erhalten	получать
8. ermitteln	выяснять, определять
9. existieren	существовать
10. Fördermittel, n	стимулирующие средства
11. gar	совсем, совершенно
12. herkömmlich	обычный, традиционный
13. jeweilig	данный; соответствующий
14. mindestens	по меньшей [крайней] мере
15. naheliegen	быть естественным [понятным]
16. Personal- und Sachkosten	расходы по содержанию персонала и материальные затраты
17. Pilotkunde, m	пилотный [пробный, контрольный] клиент
18. Routine, f	заведённый порядок, шаблон
19. sinnvoll	рациональный, осмысленный
20. Softwaretechnik, f	техника программного обеспечения
21. Software-Bibliothek	сборник подпрограмм или объектов, используемых для разработки программного обеспечения
22. Start-up	стартап, новая компания, созданная для промышленной разработки какой-либо новаторской идеи
23. stets	всегда, постоянно

24. verfügbar	имеющийся в распоряжении, наличный
25. Vervollständigung, f	дополнение, усовершенствование
26. Vorliebe, f	предпочтение

11. Lesen Sie den Text und entscheiden, ob die Aussagen richtig oder falsch sind:

1. „Code Recommenders“ bietet dem Entwickler alle verfügbaren Optionen an.
2. Eine Open-Source-Version von dem Programm können alle herunterladen.
3. Fast alle Code-Vervollständigungen bieten den Nutzern in der Regel allen möglichen Optionen, unabhängig von der Situation.
4. Prof. Dr. Mira Mezini entwickelte das Tool „Code Recommenders“ um die Software-Entwickler besser zu unterstützen.
5. „Code Recommenders“ erkennt, welche Optionen dem Programmierer am besten helfen und dann schlägt nur die zwei oder drei sinnvollsten vor“
6. Im Laufe der Zeit erlernt das Tool die Vorlieben und Routinen des individuellen Entwicklers.
7. Dieses Project bekam viele Auszeichnungen.
8. Das Tool wird als Bestandteil der Java Entwicklungsumgebung ausgeliefert.
9. Neben der Open-Source Variante wird auch ein kommerzielles Projekt entwickelt.
10. Das BMWI bezahlt Personal- und Sachkosten bei dem Transfer aus der Forschung zum Start-up.

12. Lesen Sie den Text und antworten Sie auf die Fragen:

1. Was ist „Code Recommenders“?
2. Ist dieses Tool kostenlos?
3. Wer kann dieses Tool herunterladen?
4. Für wen ist dieses Tool entwickelt?
5. Wer entwickelte es?
6. Auf welche Weise hilft das Tool dem Nutzer?
7. Wie bekommt das Tool die Dateien, um Nutzer zu helfen?
8. Welche Auszeichnung bekam „Code Recommenders“?
9. Wird es als Einzelprogramm oder als Bestandteil eines anderen Softwareprodukts ausgeliefert?
10. Unterstützt der Staat dieses Unternehmen?

13. Lesen Sie den Text noch einmal und stellen Sie den passende Titel jedem Absatz gegenüber:

1. Algorithmus der Arbeit.
2. Die kostenlose Version.
3. Ein neues Tool.

4. Herkömmliche Code-Vervollständigungen.
5. Nur rationale Alternativen.
6. Weitere Möglichkeiten.

14. Übersetzen Sie den Text.

WORTSCHATZ

15. Stellen Sie die Wörter und die Definitionen gegenüber:

herunterladen; der Nutzer; der Software-Entwickler; das Tool; die Software

1. Ein Programm oder eine Datei von einem anderen Computer, einem Server im Internet auf den eigenen Computer kopieren.
2. Ein User eines Internet-Dienstes, einer Anwendung oder einer Datenbank.
3. Ein Fachmann, der Computerprogrammen ausarbeitet.
4. Programm, mit dessen Hilfe das Programmieren bestimmter Abläufe erleichtert wird, Hilfsprogramm.
5. Die Informationen und Befehle in Form von Programmen, mit denen ein Computer arbeiten kann.

7. Setzen Sie die gegebenen Wörter im richtigen Satz ein.

entwickeln	verfügbar	zur Verfügung stehen
im Gegensatz zu (+D)	das Fachgebiet	ermitteln
vorschlagen	unterstützen	

1. … den herkömmlichen Software-Produkten ist dieses Programm ziemlich teuer.
2. Das Programm … mehrere Alternativen …, aber nur die zwei oder drei sind sinnvoll.
3. Das Staat … innovative Projekte durch Finanzierungen.
4. Die neue Version der Programm wurde ausgeliefert und … jedem Nutzer ….
5. Er ist ein berühmter Fachmann in seinem ….
6. Leider nicht alle Softwaren sind kostenlos … .
7. Mit Hilfe des Computervirus können die Hacker private Information ….
8. Mit Hilfe dieses Tools kann man neue Programmen ….

GRAMMATIK (Steigerungsstufen des Adjektivs, Konjugation der Verben mit trennbaren und nicht trennbaren Präfixen)

8. Setzen Sie die Verben in Klammern in richtigen Form ein:

1. Die Software-Entwickler … mehrere Neuerscheinungen … (anbieten).

2. In der Zukunft … ich unbedingt einen Beruf des Ingenieurs … (erlernen)
3. Mit Hilfe dieser Daten … „Code Recommenders“ dem Entwickler in der jeweiligen Situation … (weiterhelfen).
4. Der Staat … für das Projekt 20 Millionen Euro…(bereitstellen).
5. Die Firma … vor kurzem die Open-Source-Version der Programm … (ausliefern)
6. Er … einige Lösungen der Problem, aber nur einzelne passte (vorschlagen).
7. Sie können diese Datei vom Internet … (herunterladen).
8. Das Ministerium … viele Forschungen miteinander, aber wählte nur einige.
9. Viele Start-ups … vom Staat … (unterstützen).
10. Das Projekt hat viele Auszeichnungen … (erhalten).

9. Stellen Sie die Sätzen in der negativen und interrogativen Form:

1. Unsere Firma unterstützt die neue Projekte jungen Wissenschaftler.
2. Im nächsten Jahr wir werden viele Neuerscheinungen anbieten.
3. Ich habe ein neues Programm heruntergeladen.
4. Der Entwickler schlug eine neue Vervollständigung vor.
5. Wir haben vom Ministerium eine Mitteilung über Auszeichnung erhalten.

10. Setzen Sie die Adjektiven im Komparativ und Superlativ ein und ergänzen Sie die Tabelle:

Positiv	**Komparativ**	**Superlativ**
bequem		
schnell		
einfach		
wenig		
gut		
sinnvoll		
wahrscheinlich		
hoch		
viel		
nah		

11. Setzen Sie die Adjektive in Klammern in richtigen Form, Komparativ oder Superlativ ein:

1. (Wahrscheinlich) wird das Team der Universität diese Auszeichnung bekommen.
2. (Wenig) wie denken über das Kosten, für uns ist die Bequemlichkeit (wichtig).
3. Der Entwickler wählte die (bequem) Alternative.
4. Es wäre (sinnvoll), zuerst eine Open-Source-Version ausliefern.
5. Mit dieser Vervollständigungs-Funktion sind unsere Möglichkeiten (gut).
6. Mit Hilfe dieses Programm kann man (schnell) arbeiten.
7. Obwohl dieses Tool (einfach) als unsere ist, hat es (viele) Funktionen.
8. Qualität des Produkts wurde (hoch) nach einigen Vervollständigungen.
9. Wir werden unser Produkt am (nah) Sommer ausarbeiten.

12. Wählen Sie die richtige Antwort:

1. Das Angebot unserer Firma war besser … ihrer.
   a. – b. als c. wie
2. Dieses Programm hilft die Datei … als früher kopieren.
   a. am schnellsten b. schnell c. schneller
3. Dieses Tool hilft dem Entwickler ….
   a. am besten b. best c. bester
4. Das Tool schlagt dem Entwickler die … Alternativen vor.
   a. am sinnvollsten b. sinnvoll c. sinnvollsten
5. Beim Wettbewerb zeigte unser Team … Ergebnisse.
   a. hoch b. hochere c. höchste
6. Hier sind die … Projekte dargestellt.
   a. neu b. neuer c. neuesten
7. Mit Hilfe der heutigen Software kann jeder … Programme entwickeln.
   a. einfacher b. einfacheren c. einfachste
8. Das Tool „Code Recommenders“ hilft dem Entwickler … Fehler machen.
   a. wenige b. am wenigsten c. wenig

13. Bilden Sie die Verben mit folgenden Präfixen, und übersetzen Sie ins Russische:

be-, ge-, er-, ver-, zer-, ent-, emp-, miß-, vor-, ab-, an-, auf-, aus-, ein-, mit-, nach-, zu-, zurück-, zusammen-

Kommen, hören, fahren, schreiben, fallen, machen, stehen, gehen, setzen, holen, tragen, ziehen.

14. Bestimmen Sie die Bestandteile der Komposita und übersetzen Sie die Wörter ins Russische:

1. Die Code-Vervollständigung;
2. die Vervollständigungs-Funktion;
3. naheliegen;
4. das Fachgebiet;
5. die Softwaretechnik;
6. weiterhelfen;
7. die Open-Source-Version;
8. der Bestandteil;
9. die Entwicklungsumgebung;
10. der Softwareentwickler;
11. die Personalkosten;
12. die Sachkosten;
13. das Fördermittel;
14. der Forschungstransfer;
15. das Bundesministerium;
16. die Unternehmensgründung.

TEXT 3 AUS DER GESCHICHTE DER MAUS

LESEN

1. Die **Maus** ist eines der wichtigsten Eingabegeräte (Befehlsgeber) bei modernen Computern. Die Bezeichnung „Maus“ entstand durch die Ähnlichkeit des Geräts mit einer **echten** Maus.

Die Entwicklung grafischer **Benutzeroberflächen** hat die Computermaus zu einem heute **Standardeingabegerät** gemacht, der praktisch an jedem PC verfügbar ist. Die Alternativen sind die Bedienung des Rechners über einen Trackball, eine Tastatur, einen Touchscreen oder ein Grafiktablett.

2. Die Bewegung der Maus (normalerweise mit der Hand) auf dem Tisch oder einer speziellen **Unterlage**, dem Mousepad, wird über einen Sensor in der Maus aufgenommen, digitalisiert und über eine **Schnittstelle** an den **angeschlossenen** Computer übertragen. Das **Betriebssystem** setzt diese zweidimensionale Bewegungsinformation in eine gleichartige Bewegung des Mauszeigers auf dem Bildschirm um. Durch **Betätigung** der Tasten oder **zusätzlicher** Elemente der Maus kann der Nutzer verschiedene Aktionen in dem Betriebssystem oder **Anwendungsprogramme** durchführen. Die **Einführung** der Computermaus kann als ein **entscheidender** Durchbruch in der Verbesserung der Benutzerfreundlichkeit von Computern **angesehen** werden. Im Jahre 2005 wurden ungefähr mehr als eine Milliarde „Mäuse“ weltweit verkauft.

3. Seit Anfang der 1990er Jahre bildet die Maus somit mit dem Monitor und der Tastatur eine der wichtigsten Mensch-Maschine-**Schnittstellen**.

1963/1964 arbeitete ein Team um Douglas C. Engelbart und William English am **Augmentation Research Center (ARC)** des **Stanford Research Institute (SRI)** an verschiedenen experimentellen Zeigergeräten, unter anderem auch an einer Computermaus. Im Dezember 1968 wurde sie auf der Konferenz der **American Federation of Information Processing Societies (AFIPS)** der Öffentlichkeit präsentiert. Sie fand wenig **Beachtung**, da es noch keine grafischen **Benutzeroberflächen** gab, und die Menschen, die mit Computern zu tun hatten, mit der **Eingabe** von **Kurzbefehlen** per Tastatur vertraut waren.

4. Die erste Kugelmaus wurde 1973 zum ersten Mal beim **Xerox Alto eingesetzt**, der auch erstmals eine grafische Benutzeroberfläche besaß. Kommerziell verwendet wurde die Maus 1981 im Rechner „Xerox Star“, doch das System hatte kein wirtschaftlicher Erfolg – die Maus kostete 400 US-Dollar und die entsprechende **Schnittstelle** im Computer 300 US-Dollar.

Apple lizenzierte diese Technik und **beauftragte** das kalifornische Design- und Ingenieurbüro Hovey-Kelley Design (heute IDEO) mit der Entwicklung einer verbesserten, industriell herzustellenden Maus für 25 US-Dollar. Die von Apple und

IDEO entwickelte Kugelmaus wurde zum **vorherrschenden** Funktionsprinzip für Mäuse während der 1980er und 1990er Jahren.

5. 1980 begann die Entwicklung optischer Mäuse. Steve Kirsch bei der Firma Mouse Systems und Richard Francis Lyon bei Xerox entwickelten unterschiedliche **Ansätze**. Deren Durchbruch kam aber erst mit **günstigen** und **leistungsfähigen** Chips zur Bildverarbeitung. Ende der 1990er begannen die optischen Mäuse die auf Kugelmechanik basierenden Mäuse zu **verdrängen**. Ab Ende 1998 **tauchten** auch die ersten Mäuse **auf**, die über den 1996 **im Wesentlichen** von Intel spezifizierten **USB-Anschluss** mit dem Computer verbunden und in Windows 95, Windows 98 und in Apple iMac **betrieben** werden können.

6. Das mitunter die Bewegungsfreiheit **einschränkende** Kabel führte zur Entwicklung drahtloser Mäuse. 1984 stellte Logitech eine Maus basierend auf **Infrarottechnologie** vor. Seit 1991 sind kabellose Mäuse verfügbar, die über **Funk** mit dem Computer kommunizieren. Ende 2002 wurde von Microsoft und Logitech eine Maus vorgestellt, die über Bluetooth per **HID-Profil** mit dem PC kommuniziert.

Adaptiert von *http://de.wikipedia.org*

Anmerkungen zum Text:

American Federation of Information Processing Societies (AFIPS) - американская федерация обществ по обработке информации;

Augmentation Research Center (ARC) – исследовательский центр на базе Стендфордского института, созданный Дугласом Энгельбартом;

Der Xerox Alto – один из первых компьютеров фирмы Ксерокс;

HID - human interface device человеко-машинный интерфейс;

Stanford Research Institute (SRI) – Стендфордский исследовательский институт

16.Lesen Sie die folgende Wörter und beachten Sie die Übersetzung:

1. Ansatz, m	подход
2. anschließen	присоединять, подключать
3. ansehen	рассматривать
4. Anwendungsprogramm, n	приложение
5. auftauchen	появляться
6. Beachtung, f	внимание
7. beauftragen mit D	поручать
8. Benutzeroberfläche, f	интерфейс, пользовательская оболочка
9. Betätigung, f	управление, оперирование
10.betrieben	эксплуатировать
11.Betriebssystem, n	операционная система
12.echt	настоящий
13.Einführung, f	введение, ввод

14.Eingabe, f	ввод (данных в вычислительную машину)
15.Eingabegerät, n	устройство ввода (данных)
16.eingesetzt	вводить в действие
17.einschränkende	ограничивать
18.entscheiden	решать
19.Funk, m	радиовещание
20.günstig	удобный
21.im Wesentlichen	в основном
22.leistungsfähig	мощный; производительный
23.Rechner, m	компьютер, электронно-вычислительная машина
24.Schnittstelle, f	интерфейс, переходник
25.Unterlage, f	подставка, подстилка
26.USB-Anschluss, m	USB вход
27.verdrängen	вытеснять
28.vorherrschen	преобладать
29.zusätzlich	дополнительный

2. Lesen Sie den Text und entscheiden, ob die Aussagen richtig oder falsch sind:

1. Die Bezeichnung „Maus“ entstand aus Englischen.
2. Die Alternativen zur Maus sind die einen Trackball, eine Tastatur, einen Touchscreen oder ein Grafiktablett.
3. Das Betriebssystem setzt die dreidimensionale Bewegungsinformation der Maus in eine gleichartige Bewegung des Mauszeigers auf dem Bildschirm um.
4. Die Einführung der Computermaus führte zur Verbesserung der Benutzerfreundlichkeit von Computern.
5. Die Maus fand wenig Beachtung in der 1970er, weil die Menschen mehr der Tastatur vertrauten.
6. Die erste Kugelmaus hatte kein wirtschaftlicher Erfolg wegen des hohen Preises.
7. Die Kugelmaus von Apple hatte wenig Erfolg.
8. 1980 wurden günstigen und leistungsfähigen Chips zur Bildverarbeitung entwickelt.
9. Ab Ende 1998 erschienen die ersten USB-Mäuse.
10. Die drahtlosen Mäuse kommunizieren mit dem Computer per Funk oder Bluetooth.

3. Lesen Sie den Text und antworten Sie auf die Fragen:

1. Was ist eine Maus?
2. Wie entstand die Bezeichnung „Maus“?
3. Welche Alternativen gibt es zur Maus?
4. Auf welche Weise wird die Bewegung der Maus an den Computer übergetragen?

5. Warum führte die Einführung der Computermaus zu einer entscheidenden Verbesserung der Benutzerfreundlichkeit von Computern?
6. Wann und wer präsentierte die erste Maus?
7. Warum hatte die erste Kugelmaus kein wirtschaftlicher Erfolg?
8. Wie änderte sich der Preis für die Computermaus mit der Zeit?
9. Wann erschienen die ersten USB-Mäuse?
10. Welche Technologien sind bei den drahtlosen Mäusen verwendet?

4. Lesen Sie den Text noch einmal und stellen Sie den passende Titel jedem Absatz gegenüber:

1. Definition
2. Wirkungsprinzip
3. Entstehung
4. Kugelmaus
5. Optische Maus
6. Kabellose Maus

5. Übersetzen Sie den Text.

WORTSCHATZ

6. Stellen Sie die Wörter und die Definitionen gegenüber:

das Eingabegerät; das Mousepad; Bildschirm; das Betriebssystem; USB; das Infrarot; der Funk; die Schnittstelle;

1. Der Teil eines Fernsehgeräts oder eines Computers, auf dem das Bild oder der Text erscheint.
2. Ein Gerät, über das Daten in den Computer manuell eingegeben oder automatisch eigelesen werden.
3. Ein Programm oder technisches Teil, das möglich macht, dass Computer, Programme, Drucker usw. zusammen benutzt werden können.
4. Ein Programm, das ein Computer braucht, um überhaupt zu arbeiten und andere Programme bearbeiten zu können.
5. Eine relativ weiche Unterlage, auf der man die Maus hin und her bewegt.
6. Schnittstelle zum Anschluss von Peripheriegeräten, ohne den Rechner neu starten zu müssen
7. Übermittlung von Informationen durch elektromagnetische Wellen.
8. Warme Strahlen, die im Lichtspektrum hinter den roten Strahlen liegen und nicht mehr zu sehen sind.

7. Geben Sie Definition zu den folgenden Wörter:

1. digitalisieren
2. zweidimensional
3. die Benutzerfreundlichkeit
4. die Kugelmaus

5. kommunizieren
6. kabellos
7. leistungsfähig
8. HID-Profil

8. Setzen Sie die gegebenen Wörter im richtigen Satz ein:

aufnehmen; zweidimensional, kommunizieren; anschließen; das Betriebssystem; die Einführung; leistungsfähig; die Benutzeroberfläche; die Bildverarbeitung

1. Computer und Internet lassen uns mit den Menschen aus den ganzen Welt …
2. Das Betriebssystem führt keinen ordnungsgemäßen Systemabschluss aus.
3. Der Computer und alle … Peripheriegeräte brannten wegen des Blitzes.
4. Die … der Chips war ein entscheidender Durchbruch in Elektrotechnik.
5. Die … Zeichentrickfilme sind nicht so populär wie die 3D Filme.
6. Die alten Computer in unserem Labor wurden gegen … ausgewechselt.
7. Die Information wird über einen Sensor …, digitalisiert und an den Computer übertragen.
8. Microsoft Windows 95 war die erste … mit der grafische Benutzeroberfläche für IBM PC.
9. Mit der Entwicklung der grafischen … wurde der Gebrauch der Maus bequem.
10. Viele Künstler und Designer gebrauchen ein grafisches Tablett für ….

GRAMMATIK (Partizip I und II)

9. Bilden Sie die Partizipien I und II von den folgenden Verben:

machen	entscheiden	lizenzieren
aufnehmen	ansehen	entwickeln
digitalisieren	arbeiten	basieren
anschließen	präsentieren	betrieben
übertragen	verwenden	kommunizieren
durchführen	einsetzten	

10. Bilden Sie aus den Partizipialkonstruktionen Relativsätze wie im Muster. Beachten Sie ob es Partizip I oder II ist:

Muster: Ein komplizierte Arbeit machende Student – Ein Student, der eine komplizierte Arbeit macht. Eine vom Student gemachte Arbeit – Eine Arbeit, die der Student macht.

1. Die über einen Sensor in der Maus aufgenommene Bewegung.
2. Die über eine Schnittstelle an den angeschlossenen Computer übertragene Bewegung.
3. Der die Bewegung aufnehmende Sensor in der Maus.
4. Die mit dem Computer digitalisierte Datei.

5. Der digitalisierende Datei Computer.
6. Das die zweidimensionale Bewegungsinformation umsetzende Betriebssystem.
7. Die mit dem Betriebssystem umgesetzte zweidimensionale Bewegungsinformation.
8. Der der Tasten oder zusätzlicher Elemente der Maus betätigende Nutzer.
9. Die vom Nutzer betätigte Tasten.
10. Die beim Xerox Alto eingesetzte Kugelmaus.
11. Die von Apple und IDEO entwickelte Kugelmaus.
12. Die auf Kugelmechanik basierenden Mäuse.
13. Der von Intel spezifizierte USB-Anschluss.
14. Die von Apple und IDEO entwickelte Kugelmaus.
15. Das die Bewegungsfreiheit einschränkende Kabel.

11. Bilden Sie aus den Relativsätzen Partizipialkonstruktionen:

1. Eine Milliarde „Mäuse“, die im 2005 produziert wurden, wurden weltweit verkauft.
2. Ein Team, das an verschiedenen experimentellen Zeigergeräten arbeitete.
3. Die Maus, die im Dezember 1968 auf der Konferenz präsentiert wurde.
4. Xerox Alto, der auch erstmals eine grafische Benutzeroberfläche besaß.
5. Die Maus, die 1981 im Rechner „Xerox Star“ kommerziell verwendet wurde.
6. Die Maus, die 400 US-Dollar kostete.
7. Steve Kirsch und Richard Francis Lyon, die unterschiedliche Ansätze entwickelten.
8. Logitech, das 1984 eine Maus basierend auf Infrarottechnologie vorstellte.
9. Die Mäuse, die über Funk mit dem Computer kommunizieren.
10. Eine Maus, die Ende 2002 von Microsoft und Logitech vorgestellt wurde.

12. Bilden Sie aus den in Klammern stehenden Verben das fehlende Partizip I oder Partizip II.

1. Das auf neuem Chip … Gerät. (basieren)
2. Der auf der Konferenz … Bildschirm. (präsentieren)
3. Die per Skype … Menschen. (kommunizieren)
4. Die ein Experiment … Fachleute.
5. Die in einer Schnittstelle … Maus. (einsetzten)
6. Die mit dem Sensor … Information. (aufnehmen)
7. Die nicht … Maus. (arbeiten)
8. Die verschiedene Mittel zur Bildverarbeitung … Nutzer. (verwenden)
9. Ein von mehreren Programmierer … Programm. (entwickeln)
10. Eine nicht mehr … Kugelmaus. (betrieben)

TEXT 4 DAS NEUE STROMZEITALTER – LICHTLEITER

LESEN

A. Sonnenlicht einzufangen und woanders zu nutzen, ist ein alter Menschheitstraum. Zusammen mit einer Nürnberger Hochschule entwickelt die Firma Osram ein Lichtsystem, das **Lichtwellenleiter** mit **LED-Technologie** verbindet.

Prof. Hans Poisel, Lichtexperte an der Georg-Simon-Ohm-Hochschule in Nürnberg, arbeitete in den letzten vier Jahren mit seinen Studenten an einem Projekt „Sollektor", der schon bald auf Hausdächern installiert sein soll. Auf einer quadratischen Platte, deren Seiten etwa so lang wie ein Arm sind, **befinden sich** 900 Linsen, die das Sonnenlicht **bündeln** und in Polymer-optische **Faserstränge** leiten, wie man sie sonst von der Datenübertragung kennt. Innerhalb dieser **Kunststofffasern** wird das Licht entlang geleitet, bis es an einer **Deckenleuchte** im **Gebäudeinneren** wieder austritt. Dabei wird nur der für das Auge sichtbare Anteil des Lichts übertragen, die schädliche UV-Strahlung bleibt genauso wie die Wärme des infraroten **Spektralbereichs** draußen.

B. Wenn man mit **Solarzellen** Strom **erzeugt** und diesen wieder in Kunstlicht **umwandelt**, **gehen** rund 99 Prozent der Sonnenenergie **verloren**. Der Sollektor dagegen erreicht einen Wirkungsgrad von über 50 Prozent.

Unsere Gebäude beleuchten wir nicht effizient. **Sobald** im Sommer die Sonne auf die Fenster scheint, gehen die Jalousien herunter und der **Lichtschalter** an. Das gilt **umso mehr** für Regionen der südlichen **Hemisphäre**. 90 Prozent unseres Lebens verbringen wir in geschlossenen Räumen, arbeiten und leben unter Kunstlicht. Fast ein Fünftel des weltweiten **Strombedarfs** geht so in die **Ausleuchtung** von Innenräumen – auch **tagsüber**.

C. Das **Einsparpotenzial** eines einzelnen Sollektors kann man an einer **flächendeckenden** Integration der Erfassung des Tageslichts sehen: Bei vollem Sonnenschein reicht die transportierte **Lichtmenge** aus, um zwölf 60-Watt-Glühbirnen zu **ersetzen**. Während der 1.700 Stunden, die die Sonne pro Jahr in Deutschland scheint, ließen sich somit mit einem einzigen Sollektor bis zu 1.200 Kilowattstunden elektrische Energie **einsparen**.

D. Aber auch dem **Lichtwellenleiter** sind Grenzen gesetzt. Ist die Sonne untergegangen, ist eine elektrische Alternative **unverzichtbar**. Daher kooperieren die Nürnberger Entwickler mit Osram, um das Beste aus zwei Welten zu vereinen. Ziel ist eine Lösung, bei der dem Tageslicht je nach **verfügbarer** Lichtintensität variables Kunstlicht zugemischt wird – mit Hilfe intelligenter Sensortechnik. Das System lässt sich in eine einzige Deckenleuchte integrieren.

Hierfür **setzt** Osram **auf** LED-Technik. Die Elektrolumineszenzdiode sollen nicht nur das natürliche Tageslicht ergänzen, sondern die Beleuchtung in einem

flexiblen **Farbtemperaturverlauf** so **gestalten**, dass es dem **Wohlbefinden** und der Gesundheit dient. Besonders die Blauanteile im natürlichen Licht beeinflussen die innere Uhr des Menschen und seinen Schlaf und **Wachrhythmus**. „Um diesen Effekt in Innenräumen **abzubilden**, müssen das Farbspektrum des Lichts und die Beleuchtungsstärke **kontinuierlich** dynamisch **angepasst** werden“, erklärt Henry Feil, Innovationsmanager bei Osram in München. In den Morgen und Abendstunden wird daher der Blauanteil in der Kunstlichtquelle **heruntergefahren** und Rot **beigemischt**.

E. Das **Ergebnis** der Zusammenarbeit zwischen der Ohm-Hochschule und Osram ist eine Kombination aus Energieeffizienz und dem Faktor Lebensqualität sowie aus jungem Forschergeist und **etablierter** Branchenexpertise. Henry Feil bewegt sich als Innovationsmanager in einem Netzwerk junger Entwickler. „Ideen befinden sich im Wettbewerb miteinander“, sagt er. „Man muss seine **Fühler ausstrecken**, um Kontakt aufzunehmen. Jeder, der gute Ideen bringt, verdient es, **gefördert** zu werden.“ Osram unterstützt die jungen Forscher mit **Knowhow** sowie mit neuester LED-Technologie und intelligenter Sensorik. „

Adaptiert von http://www.siemens.com/

Anmerkungen zum Text:

Knowhow – «ноу-хау» с англ. «знаю как» (совокупность научно-технических знаний, технического и производственного опыта, секретов производства, являющаяся предметом лицензионных сделок)

17.Lesen Sie die folgende Wörter und beachten Sie die Übersetzung:

1. abbilden	воспроизводить
2. anpassen	приводить в соответствие
3. aufsetzen	делать ставку
4. Ausleuchtung, f	освещение
5. bündeln	фокусировать (луч, волну)
6. Deckenleuchte, f	потолочный плафон
7. Einbindung, f	врезной элемент
8. Ergebnis, n	результат
9. erzeugen	производить, вырабатывать
10.etabliert	заслуживающий доверия
11.Farbtemperaturverlauf, m	цвето-температурный режим
12.Faserstränge, f	волокно
13.flächendeckend	повсеместный, всеохватывающий
14.Fühler ausstrecken	зондировать почву
15.Gebäudeinnere, n	внутренняя часть помещения
16.fördern	способствовать, содействовать
17.Forschergeist, m	исследователь
18.gestalten	разрабатывать
19.leuchtender Halbleiterdiod	светодиод

20.Hemisphäre, f	полушарие
21.kontinuierlich	непрерывно
22.Kunststofffaser, m	синтетическое волокно
23.LED	LED <Abk. für engl.> light-emitting diode (Licht aussendende Diode), светодиод
24.Lichtmenge, f	световая энергия
25.Lichtschalter, m	выключатель
26.Lichtwellenleiter, m	оптоволокно
27.sobald	как только
28.Solarzelle, f	солнечный элемент
29.Spektralbereich	область спектра
30.Strombedarf, m	потребность в электроэнергии
31.umso mehr	тем более
32.umwandeln	превращать, преобразовывать
33.unverzichtbar	обязательный, непременный
34.verfügbar	имеющийся в распоряжении
35.Wachrhythmus	режим бодрствования

8. Lesen Sie den Text und entscheiden, ob die Aussagen richtig oder falsch sind:

1. Sollektor ist ein Lichtsystem, das Lichtwellenleiter mit LED-Technologie verbindet.
2. Das System besteht aus Linsen und eine Deckenleuchte.
3. Für Sollektor benutzt man Polymer-optische Fasern, die auch für Datenübertragung dienen.
4. Bei der Lichtübertragung wird die schädliche Strahlung filtriert.
5. Mit Solarzellen gehen etwa 50% der Energie verloren.
6. Fast 20% des weltweiten Strombedarfs geht so in die Ausleuchtung von Innenräumen.
7. Die Nürnberger Entwickler arbeiten mit Osram an einer System, die Sonnenlicht mit Kunstlicht ergänzt..
8. Das Farbspektrum des Lichts und die Beleuchtungsstärke müssen kontinuierlich dynamisch angepasst werden um die innere Uhr des Menschen günstig zu beeinflussen.
9. Das Projekt der zwei Universitäten fördert jungen Entwickler.

9. Lesen Sie den Text und antworten Sie auf die Fragen:

1. Wer entwickelt das Projekt „Sollektor“?
2. Woraus besteht dieses Gerät?
3. Wie wird das Licht innerhalb das Raum geleitet?
4. Welcher Anteil des Lichtes wird übertragen?

5. Welcher Anteil der Sonnenenergie geht bei der Stromerzeugung mit den Solarzellen?
6. Wie viel kann man mit einem Sollektor einsparen?
7. Warum muss man Kunstlicht und Tageslicht mischen?
8. Auf welche Weise werden Farbspektrum des Lichts und die Beleuchtungsstärke dynamisch angepasst?
9. Wen unterstützt Osram?
10. Wird dieses System in Sibirien auch so effizient arbeiten?

10. Lesen Sie den Text noch einmal und stellen Sie den passende Titel jedem Anteil des Textes gegenüber:

1. Ein neues Gerät
2. Effizienz und Bedarf
3. Einsparpotenzial
4. Die Sorgen für die innere Uhr
5. Neue Ideen fördern

11. Übersetzen Sie den Text.

WORTSCHATZ

13. Bestimmen Sie die Bestandteile der Komposita und übersetzen Sie die Wörter ins Russische. Bestimmen Sie das Geschlecht:

1. Lichtwellenleiter
2. Fasersträngе
3. Datenübertragung
4. Kunststofffasern
5. Gebäudeinneren
6. Spektralbereichs
7. Wirkungsgrad
8. Lichtschalter
9. Strombedarfs
10. Einsparpotenzial
11. Lichtmenge
12. unverzichtbar
13. Lichtintensität
14. Sensortechnik
15. Elektrolumineszenzdiode
16. Farbtemperaturverlauf
17. Wohlbefinden
18. Wachrhythmus
19. Kunstlichtquelle
20. Energieeffizienz

14. Bilden Sie so viel wie möglich Zusammensetzungen mit den folgenden Wörter:

Beispiel: das Licht – Die Lichtmenge, das Lichtspektrum usw.

das Licht	sparen
die Wellen	der Strom
die Energie	die Technik
das Potenzial	das Spektrum
die Faser	die Farbe

15. Setzen Sie die gegebenen Wörter im richtigen Satz ein.

Lichtwellenleiter; ersetzen; einsparen; Strombedarf; anpassen; Strom; effizient; Entwickler; ergänzen; installieren

1. Das Licht von Sollektor muss der inneren Uhr des Menschen … werden.
2. Die Arbeiter … die Lichtleitung in neuem Gebäude.
3. Die jungen… haben ein neues Gerät ausgearbeitet.
4. Die neue Lampe … Interieur besonders gut.
5. Die neuen Solarzellen helfen uns, … sparsam verbrauchen.
6. Mit Sollektor können wir die Sonnenenergie … verbrauchen.
7. In der Zukunft werden gewöhnliche Energiequelle durch alternativen Quellen … .
8. Information wird oft via … vermittelt.
9. Mit der Zeit … bekommt höher und höher.
10. Mit Sollektor kann man bis zu 1.200 Kilowattstunden elektrische Energie … .

12. Stellen Sie die Wörter und die Definitionen gegenüber:

Wohlbefinden; Netzwerk; UV-Strahlung; infrarot; Farbspektrum; Solarzelle; Strom; Kunstlicht; Kilowattstunde

1. Der Zustand, in dem man sich körperlich und seelisch gut fühlt.
2. Zusammenschluss von mehreren Rechnern, beispielsweise in Unternehmen.
3. Teil des Spektrums der elektromagnetischen Wellen, der zwischen dem sichtbaren Licht und den Röntgenstrahlen liegt.
4. Elektromagnetische Strahlung, die im elektromagnetischen Spektrum den Frequenzbereich direkt unterhalb des sichtbaren roten Lichts belegt.
5. Wellenlänge des sichtbaren Lichtes zwischen 380 und 780 nm mit allen in der Natur vorkommenden Farbnuancen zwischen Blau, Dunkelblau, Grün, Gelb, Orange und Rot.
6. Ein elektrisches Bauelement, das kurzwellige Strahlungsenergie, in der Regel Sonnenlicht, direkt in elektrische Energie umwandelt.
7. die Bewegung von geladenen Trägern wie Ionen oder Elektronen in einem Vakuum oder Stoff.
8. Künstliche Beleuchtung, als Ergänzung oder Ersatz des natürlichen Tageslichts.
9. Einheit zur Messung von Energiemengen.

GRAMMATIK (Infinitiv mit und ohne „zu“, Wortbildung)

16. Setzen Sie das Partikel „zu“ im Satz ein, wenn es nötig ist:

1. Es ist ein alter Traum, mehr Energie … sparen.
2. Es ist nicht leicht, neue Technologie … integrieren.

3. Es ist ein System, das das Sonnenlicht direkt in den Raum … leitet.
4. Sollektor besteht auch aus einer quadratische Platte, in der 900 Linsen … installiert … werden … sollen.
5. Übertragen … wird nur das Anteil des Lichts, die für das Auge sichtbar ist.
6. Mit den Solarzellen gehen 99 Prozent der Energie … verloren.
7. Effizienz des Systems kann man sofort … sehen.
8. Die Halbleiter lassen sich fast in jedem System … integrieren.
9. Die Entwickler, die neue Geräte ausarbeiten, hoffen gut … verdienen.

17. Kombinieren Sie die Sätze, indem Sie "um ... zu" oder "ohne ... zu" oder "statt ... zu" benutzen.

1. Sie zündeten die Kerzen an. Sie ersetzen die Glühbirnen nicht.
2. Der Monteur reparierte das Licht. Er ersetze keine Glühbirnen.
3. Das System erzeugt genug Energie. Es kann 10 Glühbirnen ersetzen.
4. Die jungen Entwickler kooperieren miteinander. Sie arbeiten ein neues Gerät aus.
5. Der Entwickler bevorzugte allein zu arbeiten. Er kooperierte mit den anderen nicht.
6. Die Firma lieferte ein neues Produkt. Sie kooperierte mit den anderen nicht.
7. Er nutzt die Windenergie. Er installierte Solarzellen.
8. Wie sparen Energien. Aber wie installierten keine Solarzellen.
9. Wie installierte Solarzellen. Wie möchten mehr Energie sparen.

10. Machen Sie vollständige Sätze aus den Elementen. Benutzen Sie "zu" wenn nötig:

1. Ist es wichtig, (neue Energiequellen, suchen)?
2. Universität hilft es den jungen Entwickler, (neue Ideen, realisieren)
3. Menschen immer wollen (Sonnenlicht einfangen und nutzen)
4. Neue Sensortechnik macht es möglich, (das Farbspektrum des Lichts, die Beleuchtungsstärke, anpassen)
5. Das neue System soll (das natürliche Tageslicht ergänzen, das Wohlbefinden, nicht stören)
6. Die Polymer-optische Faserstränge werden auch (für, Datenübertragung, nutzen)
7. Es war nicht leicht (ein Lösung, finden)
8. Bei der Übertragung wird (Energie, verlorengehen)
9. Die Wissenschaftler versuchen (die Sonnenenergie, effizient, nutzen)
10. Die Fachleute finden es möglich, (Wirkungsgrad, der Sonnenenergienutzung, steigern)

ПРИЛОЖЕНИЕ 1

Наиболее употребительные предлоги, союзы, союзные слова, наречия и сочетания, выполняющие их функции

A(a)

about	о; об: приблизительно: около: по
above(предлог)	выше: свыше: над
above(наречие)	наверху
above all	прежде всего: сверх того: больше всего
according to	согласно; в соответствии с
accordingly	соответственно
across	через: поперёк
after (предлог)	после: за
after (союз)	после того как
after (наречие)	после: потом
after all	в конце концов
after the maimer	по способу
again	снова; опять
against	против: на: по отношению; в зависимости от
almost	почти
along	вдоль: по
along with	вместе: наряду с
alongside with	вместе: наряду с
also	также
although (though)	хотя
altogether	вообще: всецело; полностью
always	всегда
among	среди
and	и: а
and/or	или оба вместе: или в отдельности
and so on	и так далее
and the like	и тому подобное
anyhow	во всяком случае
apart from (предлог)	помимо: кроме
apart (наречие)	врозь; отдельно; на расстоянии
around (round) (предлог)	вокруг
around (наречие)	кругом
as(предлог)	как: в качестве
as (союз)	так как: когда: в то время как
as against	по сравнению с

ПРИЛОЖЕНИЕ 2

Наиболее употребительные суффиксы и префиксы английского языка

Большое количество суффиксов и префиксов латинского и греческого происхождения имеют интернациональный характер. Поэтому словообразовательные функции этих заимствованных аффиксов в английском и русском языке часто совпадают. Приведенный ниже список наиболее употребительных аффиксов английского языка сопровождается примерами русских слов, образованных при помощи тех же аффиксов.

Суффиксы

1. Суффиксы существительных:

а) для обозначения действующего лица

- er	teacher, worker, driver, producer (ср. с русскими - репортер, режиссер)
- or	translator, actor, inventor (ср. с русскими - оператор, профессор)
-ist	artist, specialist, communist (ср. с русскими - радист, специалист)

b) для обозначения отвлеченных (иногда конкретных) существительных

- ism	socialism, communism (ср. с русскими - социализм, коммунизм)
- ion	construction, discussion, suspicion, opinion, region
- ment	development, agreement, improvement, document, instrument (ср. с русскими - инструмент, документ)
-ance. - ence	importance, resistance, difference, insistence
- tv	certainty, activity, possibility
- IT	century, country, inquiry
- cv	accuracy, policy, efficiency
- ure	culture, pressure, measure, figure (ср. с русскими - культура, архитектура, цензура. фигура)
-age	language, marriage, village, baggage, luggage (ср. с русскими - багаж, репортаж, фиксаж)
- iiess	darkness, kindness, blindness, weakness
-th	truth, depth, growth, death, path
- tilde	attitude, longitude, altitude
- ship	friendship, membership, leadership

Приложение 3
Таблица образования времен действительного и страдательного залогов
Действительный (активный) залог

Времена группы **Simple** Утвердительная форма

Present simple	Past Simple	Future Simple
I ask	I asked	I will ask
You ask	You asked	You will ask
He asks	He asked	He will ask
She asks	She asked	She will ask
It asks	It asked	It will ask
We ask	We asked	We will ask
You ask	You asked	You will ask
They ask	They asked	They will ask

Вопросительная форма

Do I ask?	Did I ask?	Will: ask?
Do you ask?	Did you ask?	Will you ask?
Does he ask?	Did he ask?	Will he ask?
Does she ask?	Did she ask?	Will she ask?
Does it ask?	Did it ask?	Will it ask?
Do we ask?	Did we ask?	Will we ask?
Do you ask?	Did you ask?	Will you ask?
Do they ask?	Did they ask?	Will they ask?

Отрицательная форма

I don't (do not) ask	I didn't (did not) ask	I won't (will not) ask
You don't (do not) ask	You didn't (did not) ask	You won't (will not) ask
He doesn't (does not) ask	He didn't (did not) ask	He won't (will not) ask
She doesn't (does not) ask	She didn't (did not) ask	She won’t (will not) ask
It doesn't (does not) ask	It didn't (did not) ask	It won't (will not) ask
We don't (do not) ask	We didn't (did not) ask	We won't (will not) ask
You don't (do not) ask	You didn't (did not) ask	You won't (will not) ask
They don't (do not) ask	They didn't (did not) ask	They won't (will not) ask

Времена группы **Continuous** Утвердительная форма

Present Continuous	Past Continuous	Future Continuous
I am asking	I was asking	I will be asking
You are asking	You were asking	You will be asking
He is asking	He was asking	He will be asking
She is asking	She was asking	She will be asking
It is asking	It was asking	It will be asking
We are a slang	We were asking	We will be asking
You are asking	You were asking	You will be asking
They are asking	They were asking	They will be asking

ПРИЛОЖЕНИЕ 4

Неличные формы глагола

Infinitive	**Active**	**Passive**
Simple	to ask	to be asked
Continuous	to be asking	to be being asked
Perfect	to have asked	to have been asked
Perfect Continuous	to have been asking	-
Gerund	**Active**	**Passive**
Simple	asking	beina asked
Perfect	have been asking	having been asked
Participle	**Active**	**Passive**
Present	asking	beina asked
Past	-	asked
Perfect	having asked	having been asked

Примечание: отрицание not ставится перед инфинитивом, герундием и причастием: *to go - not to go, having done - not having done.*

ПРИЛОЖЕНИЕ 5

Инфинитив, его функции в предложении н способы перевола на русский язык

Примеры	**Перевод**	**Функция в предложении**	**Перевод на русский язык**
To **read** literature on specialty is useful for all the students.	**Читать (чтение**) литературу (литературы) по специальности полезно для всех студентов.	Подлежащее	Инфинитив, существительное

I

1. a) The problem was **to come** to the lecture in time. b) The best way learn English language is **to join** an English Teaching School.	Задача *состояла в том, чтобы* прийти на лекцию вовремя. Лучший способ изучить английский язык - *это* записаться в языковую школу по изучению английского языка.	2-я часть сложного сказуемого после глагола-связки	Инфинитив (глагол-связка переводится словами *состоять. (заключаться) е том чтобы* или словом *это;* в настоящем времени может не переводится)
2. a) He was **to learn** computer science in accordance with his individual plan. b) Such important question is **to be discussed** at the conference.	Он *должен был* изучать информатику согласно своему индивидуальном)* плану. Такой важный вопрос *можно* обсудить на конференции.	2-я часть сложного сказуемого после модального глагола	Инфинитив

ПРИЛОЖЕНИЕ 6

Объектный падеж с инфинитивом

Пример	**Перевод**
We believe (believed) **him** to finish this work Tomorrow.	Мы полагаем (полагали), что он закончит работу завтра.
We believe (believed) **him** to be finishing this work tomorrow.	Мы полагаем (полагали), что он заканчивает работу сейчас.
We believe (believed) him to have (already) finished this work.	Мы полагаем (полагали), что он (уже) закончил работу.
We believe (believed) **him** to be sent to the conference.	Мы полагаем (полагали), что его пошлют на эту конференцию.
We believe (believed) **him** to have been sent to the conference as our representative.	Мы полагаем (полагали), что его послали на эту конференцию в качестве нашего представителя.

ПРИЛОЖЕНИЕ 7

Герундий, его функции в предложении и способы перевода на русский язык.

Пример	Перевод	Функции в предложении
I		
Reading and understanding articles in English is difficult but useful	Чтение и понимание статей на английском трудно, но полезно.	Подлежащее
II		
My dream is graduating from the university with excellent results.	Моя мечта - это окончание университета с отличными результатами.	2-я часть сложного сказуемого
III		
1. a) Hike speaking English with a native speaker. b) I remember having met (meeting) this man. 2. a) I am pleased with his attending all the lectures. b) We insisted on the meeting being at 2 p.m. precisely.	Я люблю (мне нравится) разговаривать по-английски с носителем языка. Я помню, что встречал этого человека. Я доволен тем. что он посещает все лекции. Мы настаивали на том, чтобы собрание провели точно в два часа дня.	Прямое дополнение Косвенное предложение
IV		
a) I like her manner of talking to people. b) I had the pleasure of knowing Professor Smirnov personally.	Мне нравится её манера общения (общаться) с людьми. Я имел удовольствие знать профессора Смирнова лично.	Определение (обычно с предлогом of, for после существительного)

ПРИЛОЖЕНИЕ 8

Значения формы - ing

В англ. языке	В русском языке	Примеры	Перевод на русский язык
Причастие (Participle) в составе сказуемого одного из продолженных (continuous) времен.	Личная форма глагола	When I was **writing** my report, I remembered about tomorrow meeting.	Когда я **писал** свой доклад, я вспомнил о завтрашней встрече.
Причастие (participle) как обстоятельство	деепричастие	**Doing** my homework in English, I learnt some new words.	**Выполняя** (**делая**) домашнее задание по английскому, я выучил несколько новых слов.
Причастие (participle) как определение	Причастие	Students **taking** part in community work of the university are rewarded by Diplomas.	Студенты, **принимающие** участие в общественной работе университета, награждаются грамотами.
Герундий (gerund)	отглагольное существительное	**Doing** homework usually takes two hours.	**Выполнение** домашнего задания занимает два часа.
Прилагательное (adjective)	прилагательное	The use of **writing** materials helps improve any language.	Использование **письменных** материалов способствует улучшению любого языка.

ПРИЛОЖЕНИЕ 9

Структура английского повествовательного предложения

Подлежащее	сказуемое	косвенное дополнение	прямое дополнение	предложное дополнение	обстоятельство
He	**has**		**Physics**		**every day**.
My **friend**	gave	me	**this book**		**yesterday.**
Mv friend	зале		**this book**	**to** me	**last week.**