МІНІСТЕРСТВО ОСВІТИ І НАУКИ, МОЛОДІ ТА СПОРТУ УКРАЇНИ
ХАРКІВСЬКА НАЦІОНАЛЬНА АКАДЕМІЯ
МІСЬКОГО ГОСПОДАРСТВА

МЕТОДИЧНІ ВКАЗІВКИ
ДЛЯ ОРГАНІЗАЦІЇ ПРАКТИЧНОЇ РОБОТИ З ДИСЦИПЛІНИ

«ІНОЗЕМНА МОВА (ЗА ПРОФЕСІЙНИМ СПРЯМУВАННЯМ)»
(АНГЛІЙСЬКА МОВА)

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Методичні вказівки для організації практичної роботи з дисципліни «Іноземна мова (за професійним спрямуванням)» (англійська мова) для студентів 1 курсу денної форми навчання напряму 6.050701 «Електротехніка та електротехнології» спеціальності «Світлотехніка і джерела світла»/ Харк. нац. акад. міськ. госп-ва; уклад.: Г. Б. Сергєєва. – Х.: ХНАМГ, 2011 –102с.

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Методичні вказівки призначені для організації самостійної роботи студентів у першому та другому семестрах згідно з затвердженою робочою програмою навчальної дисципліни «Іноземна мова (за професійним спрямуванням)», укладеної відповідно освітньо-кваліфікаційним вимогам до знань і вмінь студентів напряму підготовки «Електротехніка та електротехнології», які в майбутньому будуть працювати у сфері світлотехніки та джерел світла.

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MODULE 1.1

UNIT 1

1 LEAD-IN

1 Why can't you speak everyday English doing your business?

2 Why should you know the difference between everyday English and technical English?

3 Do you know a site or a web page that lists and explains all technical English terms?

4 Does anyone use/know of Simplified Technical English! What industry is it mainly used in?

2 READING

EVERYDAY ENGLISH AND TECHNICAL ENGLISH

At present, the contacts between people of different countries are increasing. This enhances the importance of the study of foreign languages. The matter is that the total number of languages in the world is very large. In different reference books it varies from five to eight thousands. The numerical distribution of people speaking different languages is extremely uneven. There are not many languages in the world each of which is spoken by more than 50 million people. On the other hand, there are languages spoken by only several thousands of people.

Everyone should understand that for the linguist there are no big or small languages. For each people the language is not only a means of communication, but also an embodiment of national and cultural values. Nevertheless, when we have to decide which of the world's languages to study, we take into consideration the differences in the social and functional status of each language.

When we consider English, we have to keep in mind the fact that the English language is spoken by more native speakers than any other language. English is native or the first language for most population of Great Britain, USA, Canada, Australia, New Zealand. Besides, there are many areas, former British colonies

where English is not a native language, but a second language with official status in education and administration, and for communication between speakers of other languages. If we take into account the important factor of speakers of English as a foreign language, it is most widely spread of the world's languages. A quarter of the world currently speaks English. That is one and a half bullion people, two-thirds of whom speak it as a foreign language.

English is one of the five official languages of the UNO (alongside of French, Russian, Spanish and Chinese). It is the working language during the meetings of the General Assembly and Security Council of the UNO. English has rapidly become the first language of business, science and popular culture. Three-quarters of the world's mail is in English. So are four of five e-mails and most of what you find on the Internet.

No wonder that so many people in various countries spare no efforts to acquire English for communication. In a recent survey, 69% of Europeans said they thought everyone should speak English. More than half of them already do. For most it is not a question of choice but of necessity. Higher schools students and postgraduates are trained to have a good knowledge of English, to read and use professional literature in their practical activity.

Technical English is often said to be more difficult to understand. At first sight this may seem true. There are a number of reasons why technical writing is rather difficult. It concerns first of all its vocabulary. The scientific and technical progress has enriched the vocabulary with a great deal of new words, new meanings and new word-combinations. Scientists and technologists also use many ordinary, everyday words to denote new terminological meanings. Each branch of science and technology has its own vocabulary (terminology). Many of them are formed on the basis of Greek or Latin words and are often international. Some technical words, borrowed from everyday English, sometimes cause much greater difficulty than terminology. In addition to terms, a text on some special problem usually contains so-called learned words.

As to grammatical patterns and models, they are the same as in everyday English. There is, certainly, a difference in the frequency with which certain grammatical forms occur. Scientific and technical writing is usually about things, matter, natural processes, and it is impersonal in style. The Passive Voice of verb forms, the constructions Subject and Complex Object are frequently used.

Simple sentences are rarely used, for isolated facts or events are seldom dealt with by the engineer. He has to show what the connection is, not only what happens, but also how it happens, when it happens, why it happens, and what is being affected.

The style of most texts, besides being impersonal, is also very concise. It is because the author-scientist is writing primarily for other scientists.

In order to master technical English the learner must first acquire a thorough knowledge of everyday literary English with its grammar, vocabulary and rules of word formation. Then it will be easy to learn, step by step, the peculiarities of technical English. But understanding and translation of scientific and technical literature requires an additional training connected with knowledge of specific terminology.

2.1 Reading Comprehension. Mark statement as true (T) or false (F).

1 There are as many different languages in the world as there are people. ___

2 With the help of language people can not only communicate but also express their natural and cultural values. ___

3 A half of the world currently speaks English and that is a half billion people. ___

4 English is sometimes used in many spheres of everyday life. ___

5 The English language it is not a question of choice but of necessity. ___

6 Compared to everyday English technical writing in English is rather difficult. ___

7 The branches of science and technology have different vocabularies. ___

8 Grammatical patterns and models of technical English also differ greatly from everyday English. ___

9 If a person wants to master technical English they must read scientific and technical literature. ___

3 VOCABULARY

3.1 Match the following word pairs from the above given text to make word partnerships.

1	native	**a**	values
2	cultural	**b**	language
3	special	**c**	status
4	social	**d**	problem
5	recent	**e**	activity
6	practical	**f**	survey
7	natural	**g**	distribution
8	numerical	**h**	processes
9	word	**i**	knowledge
10	thorough	**j**	formation

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…; 9-…; 10-…

3.2 What is the abstract noun related to each of the following adjectives.

cultural	_____	practical	_____
native	_____	natural	_____
functional	_____	scientific	_____

3.3 Which verbs are related to these abstract nouns?

administration	_____	construction	_____
connection	_____	combination	_____
consideration	_____	communication	_____

3.4 Fill in the remaining gaps in the table.

noun	*verb*	*adjective*	*person*
communication	communicate	_____	_____
practice	practise	_____	_____
wonder	_____	wonderful	_____
model	_____	model	_____
borrow	_____	_____	_____
account	_____	_____	_____

3.5 Choose the right words to fit into the following paragraph.

process way writing technical people understand of facts

Technical writing is used as efficient and clear (1)_____ of explaining a product or (2)_____ aspect of production and how it works. Although the average many cannot (3)_____ this style and all of the jargon involved in this genre, technical (4)_____ is the preferred style by many industries. Technical writing is commonly read by a group of (5)_____ with a shared, advanced knowledge (6)_____ a particular subject. Technical writing is focused on explaining something or some (7)_____ in an industry, such as the product manufacturing procedure, the testing protocols, and giving the (8)_____ of an industry report.

4 LANGUAGE REVIEW

Grammar: •Word classes: nouns, verbs, adjectives, etc. •Sentence structure •Direct and indirect objects •Present Simple •Adverbs of frequency •Personal (subject and object pronouns) •Possessives

4.1 Match the sentences in the Present Simple with the correct description.

1	Skill comes with practice.	**a**	repeated or habitual actions
2	He kicks the ball and passes it to	**b**	general truths or laws of nature

Hill.

3	The plane to London takes off at 6:50 am.	**c**	permanent situations or states
4	She regularly participates in scientific conferences.	**d**	timetables and programmes (future meaning)
5	She regularly participates in scientific conferences.	**e**	subordinate clauses of time and condition
6	He works for one of the leading electric engineering companies.	**f**	state verbs describing a state rather than an action (verbs of perception, senses, some other verbs)
7	The cargo weighs 50 kg.	**g**	sports commentary, review, narration
8	I suppose their decision is right.	**h**	facts

1- …; 2 - …; 3 - …; 4 - …; 5 - …; 6 - …; 7 - …; 8- …

4.2 Jane introduces Claude to Manfred in London. Complete the dialogue by putting each of the verbs in brackets into the correct form of the present simple. Reproduce the dialogue in groups of 3.

Jane: Claude, (1) _____ (***you/know***) Manfred?
Manfred (2)_____(***be***) from Essen, but we met at the conference in Leeds last year. He (3) _____ (***know***) a lot about your company's operation.

Claude: Really! Well I (4) _____ (***be***) very pleased to meet you, Manfred.

Manfred: Pleased to meet you too, Claude.

Claude: So, what exactly (5) _____ (***you/do***)?

Manfred: I (6) _____ (***work***) for a German electric power and natural gas public utility company. Our company(7)_____ (***contribute***) electricity and gas to more than 20 million electricity customers and 10 million gas customers, principally in Europe.

Claude: Oh, so you (8) _____ (***be***) pretty big?

Manfred: Yes, RWE (9) _____ (***be***) the second largest electricity producer

in Germany. We (10) _____ (***have***) a number of subsidiaries and (11)_____ (***employ***) more than 70,000 people. My job (12) _____ (***involve***) studying market trends and dealing with permanent customers.

Claude: Oh, that (13) _____ (***be***) a lot of responsibility.

Manfred: Well, yes. And what about you?

Claude: I (14) _____ (***work***) for Électricité de France which (15) _____ (***be***) one of the world's largest producers of electricity. EDF (16) _____ (***operate***) a diverse portfolio of 120,000+ megawatts of generation capacity in Europe, Latin America, Asia, the Middle-East and Africa.

Manfred: Oh, really? And (17) _____ (***you/often/come***) to London?

Claude: Yes, quite often. My company (18) _____ (***have***) an office here. It (19) _____ (***not/take***) long to get here now, if you travel by Eurostar. Could I give you my card?

Manfred: Oh, yes. And I'll give you mine.

4.3 Place the adverbs in the box on the scale from the most to the least frequent and then add them to each sentence so that it is true for you.

almost always	*seldom*	*frequently*	*occasionally*
rarely	*hardly ever*	*never*	*almost never*
often	*usually*	*always*	

100% ***50%*** ***0%***

sometimes

1	I drive to the academy.	**7**	I go out on weekdays.
2	I get home late.	**8**	I chat to people online.
3	I feel bored with my study.	**9**	My computer crashes.
4	I find time to relax and enjoy myself.	**10**	My friends go clubbing at weekends.
5	I have arguments with my relatives.	**11**	We read scientific literature.

6 I get acquainted with new people while I am travelling.

12 We participate in students conferences.

4.4 Supply appropriate personal pronoun.

1 The cargo has arrived. _____ was delivered this morning.

2 When the sales manager comes in, tell _____ I phoned.

3 If you see Ann, please give _____ my regards.

4 They got in touch with us when _____ were developing a new installation.

5 It wasn't his idea, it was _____ . I was the first who suggested these changes.

6 He is more experienced than _____ am, but not as creative as _____ .

7 We bought new equipment, but we really don't need _____ .

8 E-mails have become a real nuisance. I receive dozens of _____ every day.

9 These are my duties and what are _____ ? What are you responsible for?

10 It has been an excellent course. I've enjoyed _____ very much.

5 SKILLS

Work in pairs. Student A, look at the information below. Student B, look at the information on *page 96* (*Communication Activities*). Interview each other to complete the profiles. Prepare the questions that you will need in order to complete the profiles.

Name: Maxwell K. Smith

Age: 35

Nationality: American

Marital status: married

Salary: $48,000 per annum

Company: Columbia Heights

Present position: Electrical Engineer

Background:

University of Illinois, Champaign, IL

Name: Luis Menga

Age: _____

Nationality: _____

Marital status: _____

Salary: _____

Company: _____

Present position:_____

_____

Background: _____

_____

Master's in Electrical Engineering Technology (May 2002)

University of Minnesota, Minneapolis, Bachelor of Science in Electrical Engineering (May 1998)

Present responsibilities:

- Prepare electrical drawings and specifications.
- Manage project schedules and budgets, and obtain permits for operations.
- Make engineering calculations in connection with field and office assignments.
- Investigate problems and recommend solutions.
- Ensure compliance with safety requirements and standards procedures.
- Prepare requests for proposals and evaluate bids.
- Estimate cash flow projections.
- Perform highly specialized design, research, and analysis on a project-by-project basis and advise on code compliance.

Present responsibilities:

UNIT 2

1 LEAD-IN

1 What are the main challenges of education?

2 What initiatives to promote education as a fundamental human right do you know?

3 Is it worth getting higher education nowadays?

4 Who can continue education and attend an online university?

2 READING

Text 1. KHARKIV NATIONAL ACADEMY OF MUNICIPAL ECONOMY

Kharkiv National Academy of Municipal Economy is a modern scientific and educational complex training specialists for different fields of municipal economy: municipal construction, electric transport, electric and energy supply, water and gas supply, municipal enterprises management, urban ecology, hospitality and tourism. It offers a wide range of undergraduate and postgraduate programmes. They lead to a variety of awards including postgraduate diplomas, Bachelor and Master degrees, Candidates and Doctors of Sciences on the basis of higher education.

More than 16,000 students study at the academy, 300 students are citizens of 30 countries of the world. The branches of academy successfully operate in Greece and Israel. Academy has close scientific and business contacts with higher education establishments, scientific and research institutions from 11 countries of the world, among which are France, Germany, Finland, the USA, Great Britain, Sweden, Netherlands, Israel, etc. The students are trained at 11 departments:

- Town Planning and Development
- Economics and Entrepreneurship
- Management
- Urban Engineering Ecology
- Power Supply and City Lighting
- City Electric Transport

- Correspondence department
- Foreign Students department
- Postgraduate and Distant Learning department
- Upgrading Skills and Retraining department
- Preparatory department

The academy is recognized nationally for the diversity of subjects and the quality of teaching. Its staff enumerates 500 teachers, 70 Professors and Doctors of Sciences, more than 300 PhD lecturers. 8 world-standard schools, headed by Doctors of Sciences, Professors, Candidates of Sciences, and PhD lecturers, successfully function at the academy. 11 branch scientific and research laboratories, namely "Megapolis Centre", engineering centre of phyto-technologies, the Laboratory of Academic Scientific and Research Complex (ASRC), have gained the international reputation.

The academy is accommodated in 6 modern well-equipped premises. At the disposal of students are 6 hostels, the library with its stock of 882,000 volumes, a sports centre offering an extensive range of indoor and outdoor activities, dining halls and cafes. There is a lively Students' Union with numerable societies covering a wide range of interests.

According to the level of training the academy graduates get the diplomas of Bachelor, Specialist and Master Degrees. The students' training is carried out according to the academic curriculum and programmes approved by the Ministry of Education and Science of Ukraine. The academic year starts on September, 1. The course of study lasts 5 years. After acquiring Master Degree the students can continue their education taking a tree-year post-graduate course.

2.1 Reading Comprehension

1 What different fields are the specialist trained for?

2 How many students are currently enrolled?

3 What scientific and branch laboratories have gained the international reputation?

4 What departments are the students trained at?

5 What is the academy recognized nationally for?

6 What is there at the disposal of students?

7 What diplomas do the students get according to the level of training?

Text 2. FIRST EUROPEAN UNIVERSITIES

A university is an institution of higher education and research, which grants academic degrees in a variety of subjects. A university is a corporation that provides both undergraduate education and postgraduate education. The word university is derived from the Latin *universitas magistrorum et scholarium*, roughly meaning ‘community of teachers and scholars.’ The original Latin word referred to degree-granting institutions of learning in Western Europe where this form of legal organization was prevalent, and from where the institution spread around the world.

Prior to their formal establishment, many medieval universities were run for hundreds of years as Christian cathedral schools or monastic schools, in which monks and nuns taught classes; evidence of these immediate forerunners of the later university at many places dates back to the 6th century AD.

The first universities with formally established guilds in Europe were the University of Bologna (1088), the University of Paris (1150, later associated with the Sorbonne), the University of Oxford (1167), the University of Palencia (1208), the University of Cambridge (1209), the University of Salamanca (1218), the University of Montpellier (1220), the University of Padua (1222), the University of Naples Federico II (1224), the University of Toulouse (1229).

The University of Bologna (Italian: Alma Mater Studiorum Università di Bologna, UNIBO) is the oldest continually operating university in the world, the word 'universitas' being first used by this institution at its foundation. The true date of its founding is uncertain, but believed by most accounts to have been 1088. Since 2000, the University's motto has been Alma mater studiorum (Latin for "fostering mother of studies"). The university is historically notable for its teaching of canon and civil law. Until modern times, the only degree granted at that university was the

doctorate. The University counts about 100,000 students in its 23 faculties. It has a number of branch centers in Italy and a branch center abroad in Buenos Aires.

The University of Paris was founded in the mid 12th century, and officially recognized as a university probably between 1160 and 1170. After many changes, it ceased to exist in 1970, and 13 autonomous universities were created from it. The university is often referred to as the Sorbonne or La Sorbonne after the collegiate institution founded about 1257 by Robert de Sorbon. The university had four faculties: Arts, Medicine, Law, and Theology. The Faculty of Arts was the lowest in rank, but also the largest as students had to graduate there to be admitted to one of the higher faculties. The students were divided into four nations according to language or regional origin: France, Normandy, Picardy, and England. The faculty and nation system of the University of Paris (along with that of the University of Bologna) became the model for all later medieval universities. Under the governance of the Church, students wore robes and shaved the tops of their heads in tonsure, to signify they were under the protection of the church. Students operated according to the rules and laws of the Church and were not subject to the king's laws or courts. Students were often very young, entering the school at age 13 or 14 and staying for 6 to 12 years.

The University of Oxford is a university located in Oxford, United Kingdom. It is the second oldest surviving university in the world and the oldest university in the English-speaking world. Although the exact date of foundation remains unclear, there is evidence of teaching there as far back as the 11th century. The University grew rapidly from 1167 when Henry II banned English students from attending the University of Paris. After disputes between students and Oxford townsfolk in 1209, some academics fled north-east to Cambridge, where they established what became the University of Cambridge. The two ‘ancient universities’ have many common features and are often jointly referred to as Oxbridge. In addition to cultural and practical associations as a historic part of British society, the two universities have a long history of rivalry with each other. Most undergraduate teaching at Oxford is organised around weekly essay-based tutorials at self-governing colleges and halls,

supported by lectures and laboratory classes organised by University faculties and departments. League tables consistently list Oxford as one of the UK's best universities, and Oxford consistently ranks in the world's top 10.

In Europe, young men proceeded to university when they had completed their study of the *trivium*–the preparatory arts of grammar, rhetoric and dialectic or logic– and the *quadrivium*: arithmetic, geometry, music, and astronomy.

The end of the medieval period marked the beginning of the transformation of universities that would eventually result in the modern research university. Many external influences, such as eras of humanism, Enlightenment, Reformation and Revolution, shaped research universities during their development.

By the 18th century, universities published their own research journals and by the 19th century, the German and the French university models had arisen. The German, or Humboldtian model, was conceived by Wilhelm von Humboldt and based on Friedrich Schleiermacher's liberal ideas pertaining to the importance of freedom, seminars, and laboratories in universities. The French university model involved strict discipline and control over every aspect of the university.

Until the 19th century, religion played a significant role in university curriculum; however, the role of religion in research universities decreased in the 19th century, and by the end of the 19th century, the German university model had spread around the world. Universities concentrated on science in the 19th and 20th centuries and became increasingly accessible to the masses. In Britain the move from industrial revolution to modernity saw the arrival of new civic universities with an emphasis on science and engineering. The British also established universities worldwide, and higher education became available to the masses not only in Europe. In a general sense, the basic structure and aims of universities have remained constant over the years.

Although each institution is organized differently, nearly all universities have a board of trustees; a president, chancellor, or rector; at least one vice president, vice-chancellor, or vice-rector; and deans of various divisions. Universities are generally divided into a number of academic departments, schools or faculties. Public

university systems are ruled over by government-run higher education boards. They review financial requests and budget proposals and then allocate funds for each university in the system. They also approve new programs of instruction and cancel or make changes in existing programs. In addition, they plan for the further coordinated growth and development of the various institutions of higher education in the state or country. However, many public universities in the world have a considerable degree of financial, research and pedagogical autonomy. Private universities are privately funded and generally have a broader independence from state policies.

Despite the variable policies, the universities are usually among the foremost research and advanced training providers in every society. Most universities not only offer courses in subjects ranging from the natural sciences, engineering, architecture or medicine, to sports sciences, social sciences, law or humanities, they also offer many amenities to their student population including a variety of places to eat, banks, bookshops, print shops, job centers, and bars. In addition, universities have a range of facilities like libraries, sports centers, students' unions, computer labs, and research laboratories. In a number of countries, major classic universities usually have their own botanical gardens, astronomical observatories, business incubators and university hospitals.

2.2 Reading Comprehension.

The following statements reproduce the main ideas of Text 2 but they are mixed. Rearrange the statements in the order they appear in the text.

__ Most universities offer courses in different subjects and have a range of facilities.

__ To enter the university the young men had to complete the study of the *trivium* and the *quadrivium*

__ The role of religion in research universities decreased by the end of the 19th century.

__ The word university means ‘community of teachers and scholars.’

__ This university has many common features with the oldest university in the English-speaking world.

__ The first universities in Europe date back to the 11th – 13th centuries.

__ Each institution is organized differently but nearly all universities have a board of trustees.

__ It is the oldest continually operating university in the world.

__ The modern research university emerged at the end of medieval period.

__ This university ceased to exist and some autonomous universities were created from it.

__ It is the second oldest surviving university in the world.

3 VOCABULARY

3. 1 Match the left and the right side to make up word combinations.

1	to grant	**a**	undergraduate education
2	to provide	**b**	academic degree
3	to cease	**c**	university
4	to proceed to	**d**	to exist
5	to spread	**e**	accessible to the masses
6	to become	**f**	around the world
7	to establish	**g**	courses in subjects
8	to offer	**h**	universities
9	to have	**i**	research university
10	to result in	**j**	a range of facilities the modern

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…; 9-…; 10-…

3.2 Which verbs are related to these abstract nouns?

embodiment	_____	education	_____
establishment	_____	institution	_____
development	_____	foundation	_____

3.3 Which abstract nouns are related to these verbs? Use a dictionary to help you, if necessary.

coordinate	_____	operate	_____
create	_____	publish	_____
decorate	_____	research	_____

3.4 Which adjectives are related to these adverbs?

consistently	_____	generally	_____
differently	_____	privately	_____
eventually	_____	usually	_____

3.5 Complete the table. Use a dictionary to help you, if necessary.

adjective	***noun***	***verb***
academic	_____	_____
financial	_____	_____
formal	_____	_____
industrial	_____	_____
original	_____	_____

3.6 Choose the right words to fit into the following paragraph.

women foreign schools languages universities countries

Student Migrations and the Feminisation of European Universities

The end of the nineteenth century saw the emergence of two new categories of students in Western (1) _____ : foreigners and women. This trend manifested itself

mainly in (2) _____ with a dense, well-developed university network such as Switzerland, France, Germany, the Austro-Hungarian Empire and Belgium. The Italian, Spanish, English, Scottish, Dutch or Scandinavian universities were less affected by this wave, and the number of (3) _____ students they hosted remained relatively slight given, among other things, the fact that their (4) _____ of instruction were rarely studied in the (5) _____ of the other European countries. The presence of (6) _____ was also less important in these universities and mainly consisted of natives of each country concerned.

4 LANGUAGE REVIEW

Grammar: •Countable and uncountable nouns •Singular/plural verb forms •Constructions '*there is/there are'* •Demonstratives (*this/that; these/those*) •Articles •Articles with countable and uncountable nouns

4.1 Write the plurals of the following words and use them in the sentences of your own.

company	-	city	-
person	-	phenomenon	-
man	-	idea	-
father-in-law	-	CEO	-
fax	-	photo	-
passer-by	-	child	-
crisis	-	parking space	-
breakdown	-	woman	-

4.2 Choose the correct option.

1 There ***isn't/aren't much/many*** light in the hall.

2 The police ***has/have*** a lot of witnesses.

3 There ***was/were*** too ***much/many*** people in the exhibition hall.

4 ***That/Those*** lighting installations ***was/were*** very efficient.

5 Mathematics ***is/are*** his favourite subject at the academy.

6 ***This/these*** data ***was/were*** obtained yesterday.

7 The team ***is/are*** all working hard on a new project.

8 My luggage ***is/are*** in the car already.

9 The staff ***is/are*** all taking a training course.

10 It is a well known fact that no news ***is/are*** good news.

11 The money on the desk ***is/are*** for your business trip expenses.

4.3 Rewrite the sentences in the plural making necessary changes.

1 She has an important task. _____

2 There's an urgent problem left. _____

3 The man is going to the head office. _____

4 This copy is damaged. _____

5 She often gets in touch with customers. _____

6 That draft has a terrible mistake. _____

4.4 Complete the sentences with *a* or *an, the* or no article.

1 His father works as _____ electrician.

2 What do you usually order in your factory canteen for _____ lunch?

3 Where is _____ USB drive I lent you yesterday?

4 Our car does 150 miles _____ hour.

5 _____ smog is a problem in _____ big cities.

6 They get to the office by _____ bus.

7 I'm very interested in _____ education. It is important to receive _____ good education.

8 Is this _____ first time you have won the grant?

9 _____ life is very difficult for ... unemployed these days.

10 I saw _____ advertisement this morning. I think it must have been _____ same one that I saw last week.

11 She lost _____ important document and was fired.

12 _____ telephone was invented by Alexander Bell.

13 He plays _____ violin pretty well.

14 This is _____ excellent chance to get a good job.

15 She took _____ six-month computer course.

16 Do you always tell _____ truth?

17 Thank you, Anna, _____ idea you suggested was really valuable.

4.5 Underline the correct word in the dialogue.

Linda: Michael, have you got (1) ***a/some*** moment for a chat?

Michael: Of course, go ahead.

Linda: There (2) ***is/are*** (3) ***a/some*** important work that we need to do over the next few months. It should be (4) ***an/some*** interesting job, and I think you're the best (5) ***person/people*** to do it.

Michael: Do you really think so?

Linda: Yes. We are going to install (6***) a/some*** new wind turbines to increase the capacity.

Michael: Uh, I see …

Linda: And, as you know, we haven't got (7) ***many/much*** space at our present site. Well, we think it's (8) ***an/some*** ideal opportunity to expand.

Michael: Yes, I absolutely agree.

Linda: We'd like you to do (9) ***a/some*** research on the whole idea, and then write (10) ***a/some*** report on whether to go ahead or not. Are you interested?

Michael: Well, actually, I haven't got (11) ***much/many*** experience of this kind of thing.

Linda: I know, but there really (12) ***isn't/aren't*** anyone else here who is suitable. And we need to make (13) ***a progress/progress*** on this as quickly as possible.

Michael: Um, right, but there (14) ***is/are*** (15) ***many/much*** (16) ***information/ informations*** to collect.

Linda: Well, with this new responsibility we are going to review your salary.

Michael: Well, it sounds like (17) ***a/an*** interesting idea. I'll try to cope with it.

5 SKILLS

Prepare and present the information about one of the world famous universities. Try to complete the table below with the facts that can be helpful in your presentation.

University name	_____
Location	_____
The date of foundation	_____
Key facts in the history of the establishment	_____
Notable alumni and professors	_____
World ranking	_____
Educational courses provided	_____
Degree granted	_____
Students life	_____

UNIT 3

1 LEAD-IN

1 At what ages do you take important examinations in Ukraine?

2 Do you think a good education should prepare you for life in general or for a particular job?

3 What do you think is the percentage of literacy in Ukraine?

2 READING

Text 1. UKRAINE'S NATIONAL HIGHER EDUCATION SYSTEM

In Ukraine, as in other developed countries, higher education is considered to be one of the main human values. Ukraine has inherited from the past a well-developed and multifunctional system of higher education. The dynamics, as a characteristic trait of the current civilization, increasing social role of an individual,

humanization and democratization of society, intellectualization of labour, fast change in technologies and equipment worldwide require the creation of such a system which will allow Ukraine to become the ever-educated nation. The establishment of the national higher education system is based on the new legislative and methodological grounds. It provides for the entirely new qualitative level of expert's training, increase in academic and professional mobility of graduates, greater openness, democratic principles of teaching and raising the youth, accession of Ukraine's higher education system into the world community.

Higher education in Ukraine has a long and rich history. Its students, graduates and academics have long been known and appreciated worldwide. The pioneering research of scholars working in the country’s higher education institutions and academies, such as Dmytro Mendeleyev, Mykola Zhukovsky, and Yeugeny Paton, are part of the universal history of scientific progress.

The first higher education institutions (HEIs) emerged in Ukraine during the late 16th and early 17th centuries. The first Ukrainian higher education institution was the Ostrozka School, or Ostrozkiy Greek-Slavic-Latin Collegium, similar to Western European higher education institutions of the time. Established in 1576 in the town of Ostrog, the Collegium was the first higher education institution in the Eastern Slavic territories. The oldest university was the Kyiv Mohyla Academy, first established in 1632 and in 1694 officially recognized by the government of Imperial Russia as a higher education institution. Among the oldest is also the Lviv University, founded in 1661. More higher education institutions were set up in the 19th century, beginning with universities in Kharkiv (1805), Kiev (1834), Odessa (1865), and Chernivtsi (1875) and a number of professional higher education institutions, e.g.: Nizhyn Historical and Philological Institute (originally established as the Gymnasium of Higher Sciences in 1805), a Veterinary Institute (1873) and a Technological Institute (1885) in Kharkiv, a Polytechnic Institute in Kiev (1898) and a Higher Mining School (1899) in Katerynoslav. Rapid growth followed in the Soviet period. By 1988 a number of higher education institutions increased to 146 with over

850,000 students. Most HEIs established after 1990 are those owned by private organizations.

The higher education consists of higher educational establishments, scientific and methodological facilities under federal and municipal governments and self-governing bodies in charge of education. The higher education structure includes also the post-graduate and Ph. D. Programs and self-education. The higher education includes two major educational levels, namely, basic higher education and full higher education. The educational level is trait of higher education by the level of gained quality which provides comprehensive development of an individual and which will do to get an appropriate qualification. The legislation sets the following educational and qualification levels - junior specialist, bachelor, specialist, master, as well as scientific degrees of candidate of sciences (assistant professor) and doctor of sciences (Ph. D.). Educational and qualification level is trait of higher education by the level of gained qualities which will enable this individual to perform the appropriate occupational tasks or responsibilities at a certain qualification level. Senior scientific researcher, assistant professor and professor are the applied degrees.

According to the HEIs status the following 4 levels of accreditation are set:

- Level I - vocational schools and other HEIs equaled to them which teach junior specialists by using educational and professional programs (EPPs);
- Level II - colleges, other HEIs equaled to them which teach bachelors, and if need be junior specialists, by using EPPs;
- Level III - institutes, conservatories, academies, universities which teach bachelors and specialists, as well as junior specialists if need be, by using EPPs;
- Level IV - institutes, conservatories, academies, universities which teach bachelors, masters and specialists if need be, by using EPPs.

Currently, Ukraine's higher educational system comprises 327 technical vocational schools, 216 vocational schools, 117 colleges, 149 institutes: 2 conservatories, 48 academies and 81 universities.

Ukraine nationals study in their national languages, while foreign students have a choice of either the native language or English. This is subject to the availability of the program in English. Foreign students that opt to study in Ukrainian or Russian language undergoes a one year preparatory language course, during which they undergo a study of language and preparatory courses related to their future discipline. On graduation, they receive an additional certificate of proficiency for the language, which compensates for the additional year. Students taught in the English language skip this preparatory stage, but studies study the language as an independent course in the course of their academic program.

An academic year runs from 1st of September to 31st of June. This is split into two semesters having a brief two weeks winter break in January, and a long vacation from 1st of July to 31st of August.

Since the mid-90s, Ukraine has taken steps to reform its education frameworks in consistence with the Bologna Process. It is named after the place it was proposed, the University of Bologna in the Italian city of Bologna, with the signing in 1999 of the Bologna declaration by Ministers of Education from 29 European countries. The overarching aim of the Bologna Process is to create a European Higher Education Area (EHEA) based on international cooperation and academic exchange that is attractive to European students and staff as well as to students and staff from other parts of the world. The envisaged European Higher Education Area will facilitate mobility of students, graduates and higher education staff; prepare students for their future careers and for life as active citizens in democratic societies, and support their personal development; offer broad access to high-quality higher education, based on democratic principles and academic freedom.

HEIs' graduates are given state standard diplomas after they complete education under respective EPPs based on the results of state attestation. The following educational and qualification levels granted to the experts exist in Ukrainian system of higher education: junior specialist, bachelor, specialist and master.

Normative periods of training under different educational and qualification levels are set as follows:

3 years for junior specialist (on the basis of full comprehensive secondary education);

4 years for bachelor (on the basis of full comprehensive secondary education);

1 year for specialist (on the basis of first degree);

1 year for master (on the basis of first degree).

Ukraine's higher educational system fulfills important social functions creating intellectual potential of Ukraine as a new independent state entering the world community. Higher education supplies all spheres of national economy with qualified professionals and looks for the better ways of development and perfection.

2.1 Reading comprehension.

1 What can the national higher education system provide for the Ukrainian youth?

2 What famous Ukrainian people have been known and appreciated worldwide?

3 How old is the higher education system in Ukraine?

4 What are the levels of education, qualification and accreditation in Ukraine?

5 Why did Ukraine reform its education frameworks?

Text 2. HIGHER EDUCATION IN GREAT BRITAIN

All British universities are private institutions. Students have to pay fees and living costs, but every student may obtain a personal grant from local authorities. If the parents do not earn much money, their children will receive a full grant which will cover all the expenses. Students studying for first degrees are known as ‘undergraduates’. New undergraduates in some universities are called ‘fresher’. They have lectures and regular seminars.

After three or four years the students will take their finals. Those who pass examinations successfully are given the Bachelor’s degree: Bachelor of Arts for History or Bachelor of Science. The first postgraduate degree is Master of Arts, Master of Science. Doctor of Philosophy is the highest degree. It is given for some

original research work which is an important contribution to knowledge. Open Days are a chance for applicants to see the university, meet students and ask questions. All this will help you decide whether you have made the right choice.

The most famous universities in Britain are Oxford and Cambridge. They are the two oldest English universities and they both have a long and eventful history of their own. Oxford and Cambridge are regarded as being academically superior to other universities and as giving special privilege and prestige. Cambridge University consists of a group of 32 independent colleges. The first students came to the city in 1209 and studied in the schools of the cathedral and monasteries.

Further education in Britain is for people over 16 taking courses at various levels up to the standard required for entry to higher education. The Open University offers degrees for people who do not have a formal education and qualifications, or who are older. Students study at home and then post their works off to a tutor for marking. Most courses take six years and students get a number of credits for each year's work. The Open University was founded in 1969 and started its first course in 1971. About 120, 000 people have enrolled since then.

2.2 Reading comprehension.

1 Why do British students pay fees and living costs?

2 When are the British students given the Bachelor's degree?

3 What are the grounds to giving the highest degree?

4 Which University in Britain does not take into account for entry the students' previous academic achievements?

3 VOCABULARY

3. 1 Match the following word pairs from the above given texts to make word partnerships.

1	to complete / provide	**a**	a personal grant
2	to obtain	**b**	education

3	to undergo	**c**	mobility of students
4	to facilitate	**d**	a study of language
5	to give a state	**e**	examinations
6	to pass	**f**	standard diploma
7	to study	**g**	of proficiency
8	to receive a certificate	**h**	in one's national language
9	to prepare	**i**	courses
10	to take	**j**	for one's future career

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…; 9-…; 10-…

3.2 Complete the phrases with the words given below.

information	an electrical engineer
technology	an industrial engineer
power engineering	an illumination engineer
the media	set up my own business
the illumination industry	open a shop
the electric power industry	make a career in engineering

I'd like to work in … _____
_____
_____
_____
_____
_____

I'd like to be … _____
_____
_____

I'd like to … _____
_____
_____

3.3 Put the following events in order of which happens first, second and third.

1 __ __ __	**a.** take an exam	**b.** pass an exam	**c.** study for an exam
2 __ __ __	**a.** go to college	**b.** go to secondary school	**c.** go to kindergarten
3 __ __ __	**a.** learn	**b.** listen	**c.** forget
4 __ __ __	**a.** be a teacher	**b.** be a schoolchild	**c.** be an undergraduate
5 __ __ __	**a.** have a lesson	**b.** do homework	**c.** take a test

3.4 Complete the following list with the name of the specialist in the particular field.

science	***scientist***	***science***	***scientist***
chemistry	_____	cybernetics	_____
physics	_____	astrophysics	_____
zoology	_____	civil engineering	_____
genetics	_____	information technology	_____

3.5 Can you imagine? Read the passage guessing the ending of some words.

At 18, British school-leavers with A-level can apply for a (1)**d** _ _ _ _ _ course at university. Most of these (2)**c** _ _ _ _ _ _ last for three years, and students must pay all of their own accommodation and living costs, and some of their tuition(3) **f** _ _ _. Since 1990, the government has offered student loans to help the situation. The (4) **l** _ _ _ _ are between 3,000 and 5,000 per (5)**y** _ _ _ depending on whether students live with their parent or away from (6)**h** _ _ _, and also whether or not they live in London.

Students have to pay back their loans when they (7)**l** _ _ _ _ university, but not until their income reaches 10,000 per year. The interest rates are (8)**l** _ _ and there is no deadline for repayment. However, most (9)**s** _ _ _ _ _ _ _ find that the loans do not fully meet their needs, so many have to stay in the (10)**f** _ _ _ _ _ home to avoid accommodation costs, or take part-time (11) **j** _ _ _ _ while they are studying.

3.6 Which of the following characteristics do you like best in a teacher? Put them in order 1 – 8.

___ is friendly
___ gives frequent tests
___ has a good sense of humour
___ makes a subject interesting
___ gives a lot of homework
___ is young and attractive
___ knows his/her subject well
___ keeps good control of the students' behaviour

4 LANGUAGE REVIEW

Grammar: •Present Progressive non-progressive verbs •The contrast between Present Simple and Present Progressive •The article *the* with geographical names, names of streets, buildings etc.

4.1 Match the sentences in the Present Continuous with the correct description.

1	They are leaving for Manchester tomorrow morning.	**a**	actions happening around the moment of speaking
2	He is looking for a better job now.	**b**	actions happening at the moment of speaking
3	She is looking through the mail at the moment.	**c**	repeated actions with 'always' expressing annoyance or criticism
4	She is always interrupting me.	**d**	temporary situations
5	She is living at her sister until she rent a flat.	**e**	changing or developing situations
6	It is getting more and more difficult to find a well-paid job.	**f**	fixed arrangements in the near future

1-…; 2 - …; 3 - …; 4 - …; 5 - …; 6 - …

4.2 Fill in with Present Simple or Present Continuous. Then reproduce the dialogues in pairs.

1

Ann: Hi, Mum!

Mum: Hallo, Ann! Where (1) _____ (***you/call***) from?

Ann: I **(**2)_____ (***be***) at work at the moment. My boss (3) _____ (***have***) a meeting with our permanent clients at the moment. He often (4) _____ (***arrange***) business meetings with clients on Tuesdays.

Mum: What about your college study?

Ann: I **(**5) _____ (***do***) fine. I (6) _____ (***prepare***) a course project in Electromagnetic Fields at the moment.

Mum: Well, why (7) _____ (***you/phone***)? Is there anything wrong?

Ann: No, I just want you to know that I (8) _____ (***come***) home Next Saturday.

Mum: What time **(**9) _____ (***your train/arrive***) in Leeds?

Ann: It (10) _____ (***leave***) London at 12 o'clock and 9) _____ (***arrive***) in Leeds at 3 o'clock.

Mum: See you on Saturday then.

2

John: **(**1) _____ (***you/look***) for someone?

Lucy: Yes, I (2) _____ (***need***) to speak to Bryan Smith but he isn't in his office. (3) _____ (***you/know***) where he is?

John: Oh, I'm sorry, he isn't here today. He **(**4) _____ (***visit***) our plant. He (5) _____ (***try***) to prepare a report on our occupational safety standards. I (6) _____ (***think***) he'll be back at her desk tomorrow. Perhaps I can help you?

Lucy: Oh, thanks. I (7) _____ (***work***) for BHW Ceramics. We (8) _____ (***supply***) electrical ceramic insulators to the transmission, distribution and railway industries.

John: Oh, yes.

Lucy: Well, Bryan Smith contacted us last week. You (9) _____ (***want***) to place the order.

John: Yes, that's right.

Lucy: We (10) _____ (***help***) businesses with all aspects of design for their requirements and (11) _____ (***guarantee***) short delivery times. Bryan asked me to call in and give all the details on our products. I (12) _____(***have***) all our catalogues and pricelists with me.

John: Well, that sounds great. I'm sure Bryan would be really interested to see everything.

Lucy: Could you look trough the catalogues and prepare the documents to place the order?

John: Oh, I'm sorry, I (13) _____(***not/know***) exactly. You really need to speak to Bryan, he (14) _____(***deal***) with this order. I'll tell him to give you a ring tomorrow. What's the best time to call?

Lucy: I (15) _____ (***meet***) a client tomorrow morning … anytime after 2. He can call me on my mobile. He (16) _____ (***have***) my phone number.

4.3 Some state verbs have continuous tenses, but there is a difference in meaning. Choose the correct tense form.

1 I ***see/am seeing*** that the situation is out of control.

2 They can't talk to you, they ***see/are seeing*** their permanent clients.

3 Our Project Manager is Italian. He ***comes/is coming*** from Italy.

4 The representative of a consulting engineering firm ***comes/is coming*** tomorrow.

5 She ***is /is being*** very intolerant and nervous these days, because we can't cope with the urgent order.

6 You haven't said a word all morning. What ***are you thinking/do you think*** about?

7 I ***think/am thinking*** changes are inevitable.

8 They ***weigh/are weighing*** the cargo that has just been delivered.

9 The cargo is heavy. It ***weighs/is weighing*** a lot.

10 This uniform ***fits/is fitting*** me perfectly.

11 We ***fit/are fitting*** a new carpet in the hall.

12 They ***appear/are appearing*** to be working.

13 The new General Manager ***appears/is appearing*** in the office tonight.

14 The coffee ***tastes/is tasting*** really bitter.

15 They ***taste/are tasting*** our new brand of coffee.

16 She ***has/is having*** a lot of responsibilities as the chief of the department.

17 ***Are you having/Do you have*** a good time at the moment?

4.4 Use the definite article where necessary.

1 Have you ever gone skiing in _____ Alps?

2 Is _____ Everest the highest mountain in the world?

3 What is the capital of _____ Netherlands?

4 He graduated from _____ Yale University in 1997.

5 The house over there belongs to _____ Browns. They moved in last month.

6 _____ Nile is the second-longest river in the world.

7 When _____ UN was founded in 1945, it had 51 member states.

8 Europe, Asia, Africa, and Australia are in _____ Eastern Hemisphere.

9 _____ NATO was established in 1949.

10 Bunin was the first Russian to receive _____ Nobel Prize in Literature in 1933.

11 _____ Lake Baikal is the deepest freshwater lake in the world.

12 _____ Mont Blanc is the highest peak in _____ Alps

13 _____ Westminster Abbey is near … Parliament Square - at the top end of _____ Victoria Street

14 The delegation arrived at _____ Heathrow Airport yesterday.

15 _____ Hyde Park is very famous all over _____ world.

16 _____ Odeon Cinema is in _____ Green Street.

17 _____ Trafalgar Square is in _____ London.

5 SKILLS

You would like to take an Electrical Engineering course in the UK. You have surfed the Internet looking for options. Write a formal email to the authorities

of the University of Dundee requesting the information about the course you are going to take: the mode, the price, the start date, duration, venue, students accommodation, etc. Use the information given on the university site.

The University of Dundee is one of the UK's leading universities, internationally recognised for its expertise across a range of disciplines including science, medicine, engineering and art. An established university, it has a progressive and dynamic outlook, constantly striving to build on its achievements: investing in excellent facilities, pushing the boundaries of research, and developing new ways of e-learning.

Electronic and Electrical Engineering BEng

Department of Electronic Engineering and Physics

Course description:

Year 1: Engineering mathematics; information technology; electricity optics and waves; mechanics and thermodynamics; electrical/electronic engineering project.

Year 2: Engineering mathematics; engineering design and communications; engineering software; analogue and digital electronic systems; electrical and mechanical systems; fundamentals of electronic devices.

Year 3: Analogue electronic circuits; digital electronic circuits; microelectronics; telecommunications; mathematical methods; computer engineering; electronic control; electrical power; communication skills.

Qualification: Undergraduate in Electronic and Electrical Engineering

(http://www.hotcourses.com/uk-courses/Electronic-and-Electrical-Engineering-BEng-courses/page_pls_user_course_details/16180339)

UNIT 4

1 LEAD-IN

1 What's good / not good about engineering?

2 What can you create with engineering?

3 Do you know what country professional engineers take a hippocratic oath in?

4 What engineering institutions are there in Ukraine?

2 READING

Text 1. THE ENGINEERING PROFESSION

The engineering profession in some of its branches is one of the oldest recorded in history. An engineer is the person who implements scientific principles to bring theories to ground realities. He or she is proficient in mathematics and other sciences and continuously strives to discover, study new technologies to introduce advanced and innovative products or services for consumers. In the simpler terms, an engineer is a convergent thinker who uses the rules of mathematics and takes basic science information to solve problems and manufacture new products.

There are two broad divisions of engineering which cover practically all forms of engineering activity. These are research engineering and constructive or creative engineering. In the former division are included the work of the scientist, the work of the investigator and the work of the inventor; in the latter the work of those whose task is to assemble the knowledge gained in research and to use this knowledge in the creation of things of value to all the people.

Engineers influence different aspects of modern life, and it is likely that today you've already relied on the expertise of an engineer or engineers. Everything people use today has been designed and developed or manufactured by one or more engineers.

There are various types of engineers as well as their sub-types. The major areas where engineers specialize are mechanical, electrical, aerospace, marine, and civil

engineering. And there are also other fields where more and more people are entering; these include software, electronics, nuclear, biomedical engineering, etc.

Electrical engineering is a field of engineering that generally deals with the study and application of electricity, electronics and electromagnetism. The field first became an identifiable occupation in the late nineteenth century after commercialization of the electric telegraph and electrical power supply. It now covers a range of subtopics including power, electronics, control systems, signal processing and telecommunications. Electrical engineers are responsible for developing electrical systems that may be consumer based (like MP3 players, iPods, digital cameras, DVD players, etc.), as well as power-based like airline navigation system or the electricity grids in cities. An electrical engineer has many options to go for in specialization, from computer networks and robotics to wireless communications and even medical imaging.

An engineering education has changed to adjust to the needs of society, the evolution must continue and change is needed to address the needs of the 21st century. The major trends in engineering education can be summarized by the following classification:

- 19th century and the first half of the 20th century - professional engineer;
- second half of the 20th century - scientific engineer;
- the 21st century - entrepreneurial/enterprising engineer.

It cannot be said definitely what the engineering profession will look like hundred years from now. The intense discussions that are currently taking place among leaders of the profession and educators suggest that innovation will be a central theme. It is evident that the entrepreneurial engineer of the twenty-first century:

- Knows everything — can find information about anything quickly and knows how to evaluate and use the information. The entrepreneurial engineer has the ability to transform information into knowledge.

- Can do anything — understands the engineering basics to the degree that he or she can quickly assess what needs to be done, can acquire the tools needed, and can use these tools proficiently.
- Works with anybody anywhere — has the communication skills, team skills, and understanding of global and current issues necessary to work effectively with other people.
- Imagines and can make the imagination a reality —has the entrepreneurial spirit, the imagination, and the managerial skills to identify needs, come up with new solutions, and see them through.

It is unthinkable that society can remain competitive and can sustain the present standard of living without a large number of people with the knowledge and know-how to innovate. It needs to educate engineers that understand the societal context of their work, have an understanding of the human dimension around the globe, coupled with innovation and creativity.

2.1 Reading comprehension.

1 Can Ukrainian students apply for the scholarship granted by a foreign country?

2 Do you know about any government scholarship progamme for Ukrainian graduates?

3 Do you know any university that offers full scholarships at the undergraduate level to Ukrainian students?

Text 2. GETTING THE ELECTRICAL ENGINEERING PROFESSION ABROAD

Electrical engineering is a field of engineering that generally deals with the study and application of electricity, electronics and electromagnetism. Electrical engineering may include electronic engineering. Where a distinction is made, usually outside of the United States, electrical engineering is considered to deal with the problems associated with large-scale electrical systems such as power transmission and motor control, whereas electronic engineering deals with the study of small-scale

electronic systems including computers and integrated circuits. Alternatively, electrical engineers are usually concerned with using electricity to transmit energy, while electronic engineers are concerned with using electricity to transmit information.

Electrical engineers typically possess an academic degree with a major in electrical engineering. The length of study for such a degree is usually four or five years and the completed degree may be designated as a Bachelor of Engineering, Bachelor of Science, Bachelor of Technology or Bachelor of Applied Science depending upon the university. The degree generally includes units covering physics, mathematics, computer science, project management and specific topics in electrical engineering. Initially such topics cover most, if not all, of the sub-disciplines of electrical engineering. Students then choose to specialize in one or more sub-disciplines towards the end of the degree.

Some electrical engineers also choose to pursue a postgraduate degree such as a Master of Engineering/Master of Science (M.Eng./M.Sc.), a Master of Engineering Management, a Doctor of Philosophy (Ph.D.) in Engineering, an Engineering Doctorate (Eng.D.), or an Engineer's degree. The Master and Engineer's degree may consist of either research, coursework or a mixture of the two. The Doctor of Philosophy and Engineering Doctorate degrees consist of a significant research component and are often viewed as the entry point to academia. In the United Kingdom and various other European countries, the Master of Engineering is often considered an undergraduate degree of slightly longer duration than the Bachelor of Engineering.

From the Global Positioning System to electric power generation, electrical engineers have contributed to the development of a wide range of technologies. They design, develop, test and supervise the deployment of electrical systems and electronic devices. For example, they may work on the design of telecommunication systems, the operation of electric power stations, the lighting and wiring of buildings, the design of household appliances or the electrical control of industrial machinery.

Fundamental to the discipline are the sciences of physics and mathematics as these help to obtain both a qualitative and quantitative description of how such systems will work. Today most engineering work involves the use of computers and it is commonplace to use computer-aided design programs when designing electrical systems. Nevertheless, the ability to sketch ideas is still invaluable for quickly communicating with others.

Although most electrical engineers will understand basic circuit theory (that is the interactions of elements such as resistors, capacitors, diodes, transistors and inductors in a circuit), the theories employed by engineers generally depend upon the work they do. For example, quantum mechanics and solid state physics might be relevant to an engineer working on VLSI (the design of integrated circuits), but are largely irrelevant to engineers working with macroscopic electrical systems. Even circuit theory may not be relevant to a person designing telecommunication systems that use off-the-shelf components. Perhaps the most important technical skills for electrical engineers are reflected in university programs, which emphasize strong numerical skills, computer literacy and the ability to understand the technical language and concepts that relate to electrical engineering.

For many engineers, technical work accounts for only a fraction of the work they do. A lot of time may also be spent on tasks such as discussing proposals with clients, preparing budgets and determining project schedules. Many senior engineers manage a team of technicians or other engineers and for this reason project management skills are important. Most engineering projects involve some form of documentation and strong written communication skills are therefore very important.

2.2 Reading comprehension.

1 What does electrical engineering deal with?

2 What does getting an academic degree in electrical engineering imply?

3 What other degrees can be designated in case of pursuing a postgraduate degree?

4 How can electrical engineers contribute to electrical engineering?

5 What are the most important technical skills for electrical engineers?

3 VOCABULARY

3.1 Match the left and the right side (Text 1) to make word combinations. Make up sentences of your own with them.

1	to implement	**a**	for customers
2	to introduce products	**b**	scientific principles
3	to bring theories	**c**	of engineering activity
4	to cover all forms	**d**	to ground realities
5	to use the knowledge	**e**	of modern life
6	to influence different aspects	**f**	in the creation of things
7	to adjust	**g**	the present standards of living
8	to sustain	**h**	to the needs of society

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…

3.2 Match the following word pairs from (*Text 2*) (the above given texts) to make word partnerships. Make up sentences of your own with the word partnerships.

1	a field	**a**	of electrical systems
2	the deployment	**b**	of engineering
3	the application	**c**	of technologies
4	the study	**d**	of electricity
5	the development	**e**	of electronic systems

1-…; 2-…; 3-…; 4-…; 5-…

3. 3 Match the left and the right side to make a sentence.

1	Full scholarships for international students	**a**	can be one of the most rewarding and exciting experiences in a student's career.
2	Many talented students	**b**	may only teach in their native language.
3	Certificates are awarded	**c**	include living allowance, tuition fee and sometimes, health insurance.
4	Some overseas institutions	**d**	for full attendance, satisfactory class

			participation and the production of satisfactory coursework..
5	Studying abroad	**e**	sacrifice their studies for unskilled work.

1-…; 2-…; 3-…; 4-…; 5-…

3.4 Which word or expression from the text can be used to mean the following.

1	a source of power, such as fuel, used for driving machines, providing heat, etc.	**a**	energise
2	to supply power or energy to a machine, an atom, etc.	**b**	energy
3	the activity of applying scientific knowledge to the design, building and control of machines, roads, bridges, etc.	**c**	engineer
4	a person whose job involves designing and building engines, machines, roads, bridges, etc.	**d**	engineering
5	connected with electricity; using or producing electricity	**e**	electrician
6	a person whose job is to connect, repair, etc. electrical equipment	**f**	electric(al)
7	a form of energy from charged elementary particles	**g**	electrical engineering
8	the design and building of machines and systems that are used or produce electricity	**h**	electricity

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…

3.5 Which word? Read and remember the words which are frequently used with the following nouns.

electric ~	**electrical ~**
light	equipment
guitar	wring
drill	signal
chair	engineer
shock	shock

Electric is usually used to describe something that uses or produces electricity. You use **electrical** with more general nouns such as *equipment* and *wiring* and thing that are concerned with electricity: *an electrical fault*. However, the distinction is not always so clear now: *an electric/electrical company; an electric/electrical current; an electric/electrical shock*

3.6 Complete the following table as in the example. Use a dictionary if necessary.

verb	***noun***	***person***
create	creation	creat***or***
design	design	design***er***
construct	_____	_____
develop	_____	_____
evaluate	_____	_____
innovate	_____	_____
manage	_____	_____
navigate	_____	_____
occupy	_____	_____
supply	_____	_____

3.7 Choose the right words to fit into the following paragraph.

Engineers career right scientists easy professions

(1)_____ have a great sense of purpose when they take engineering up as a (2)_____ and a lot of their work can be available for all to see. But anyone going into engineering thinking that it is (3)_____ to do will find it could be their downfall, as you need to be in the (4)_____ frame of mind. The problem is that a lot of people underestimate engineering (5)_____ because they do not know much about it. A lot of people think that engineers are (6)_____ , but this is far from the truth. Knowing the role of an engineer can help you to understand more about the profession**.**

3.8 Can you imagine? Read the passage guessing the ending of some words.

If you are (1) **i** _ _ _ _ _ _ _ _ _ in being an engineer, do your research into the field that you would like to go into and see exactly what you will be (2) **d** _ _ _ _. It is best to know about some of the tasks that you may be undertaking and (3) **k** _ _ _ how hard the job is going to be. Knowing all of this (4) **c** _ _ help to put you in the right frame of mind, if you would still like to be an (5) **e** _ _ _ _ _ _ _. It can be extremely tough for an engineer and unlike any other (6) **p** _ _ _ _ _ _ _ _ _ where you can cover up mistakes, it is not as easy when you are an engineer.

4 LANGUAGE REVIEW

***Grammar*:** Regular and irregular verbs, Past Simple • Constructions *used to, be used to, get used to* • Prepositions of Time • Cardinal and ordinal numerals • Expressing quantity, reading figures • Telling the time, dates, telephone numbers, addresses

4.1 Put each of the verbs in brackets into the Past Simple.

One of the most famous inventors of all time, Thomas Alva Edison (1) _____ (***exert***) a tremendous influence on modern life, (2) _____ (***contribute***) inventions such as the incandescent light bulb, the phonograph, and the motion picture camera, as well as (3) _____ (***improve***) the telegraph and telephone. In his 84 years, he (4) _____ (***acquire***) an astounding 1,093 patents. Aside from being an inventor, Edison also (5) _____ (***manage***) to become a successful manufacturer and businessman.

Thomas Alva Edison (6) _____ (***be***) born to Sam Edison and Nancy Elliott on February 11, 1847, in Milan, Ohio. Edison (7) _____ (***be***) the youngest of seven children, four of whom (8) _____ (***survive***) to adulthood. To seek a better fortune, Sam Edison (9) _____ (***move***) the family to Port Huron, Michigan, in 1854, where he (10) _____ (***work***) in the lumber business.

Edison (11) _____(***be***) a poor student. When a schoolmaster (12) _____ (***call***) Edison "addled," his furious mother (13) _____ (***take***) him out of the school and (14) _____ (***proceed***) to teach him at home. Edison (15) _____ (***say***) many years later, "My mother (16) _____ (***be***) the making of me. She (17) _____ (***be***) so true, so sure of me, and I (18) _____ (***feel***) I (19) _____ (***have***) someone to live for, someone I

must not disappoint." At an early age, he (20) _____ (***show***) a fascination for mechanical things and for chemical experiments.

In 1859, Edison (21) _____ (***take***) a job selling newspapers and candy on the Grand Trunk Railroad to Detroit. In the baggage car, he (22) _____ (***set up***) a laboratory for his chemistry experiments and a printing press. An accidental fire (23) _____ (***force***) him to stop his experiments on board. Around the age of twelve, Edison (24) _____ (***lose***) almost all his hearing. He (25)_____ (***not do***) let his disability discourage him, however, and often (26) _____ (***treat***) it as an asset, since it (27)_____ (***make***) it easier for him to concentrate on his experiments and research.

4.2 Choose the correct answer.

1 I was sure that I _____the door to my office last night.

a used to lock **b** locked **c** was used to locking

2 Our company _____ to belong to a French multinational.

a is used **b** used to **c** got used

3 ‘ Do you like working in this department?’

‘ Well, I _____ to it yet, but it’s okay.’

a am not used **b** wasn’t used **c** am used

4 I _____ on the left because I’ve lived in Britain for a long time.

a used to drive **b** am getting used to driving **c** am used to driving

5 I _____ to work every day, but these days I usually get to my office by bus.

a am used to driving **b** used to drive **c** got used to driving

6 I wouldn’t like to share an office. I _____ in my own office.

a am used to working **b** am getting used to working **c** am used to work

7 I _____ a lot on business, but nowadays I have to.

a used to travel **b** didn't use to travel **c** was used to travelling

4.3 Read the following sentences correctly.

1 On April 24, 1877 Charles F. Brush was issued U.S. Patent No. 189,997 for his arc lighting system.

2 Although a flashlight is a relatively simple device, its invention did not occur until the late 19th century because it depended upon the earlier invention of the electric battery and electric light bulb.

3 Some special services have their own short numbers (e.g.1-1-9, 9-1-1, 0-0-0, 9-9-9, 1-1-1, and 1-1-2 being the Emergency Services numbers for China, Japan, South Korea, Taiwan and Sri Lanka; Canada and the United States; Australia; the United Kingdom; New Zealand; and the European Union, respectively.)

4 I'm afraid I can't come. I have another meeting scheduled for 2:30 p.m.

5 About 3/5 of workers are young people.

6 The meeting started at 8:30 a.m. in Room 20.

7 The stock deal, which involved $4.5 billion, paid a 12.5% dividend.

8 The vote was 126 in favour of the action and only 16 opposed.

9 The assignment was to read chapter 6, pages 31-39.

10 Take bus 5 to get to the park.

11 The meeting is scheduled for the 30th of June.

12 The Bulls won the final game by a score of 114 to 106.

13 She has been living on 20 High Street for almost 5 years.

14 During the 1980s she lived in San Francisco.

5 SKILLS

5.1 Read the following top ten qualities of an engineer and discuss with your partner which of them are of special demand for a successful electrical engineer. Interview each other clarifying what qualities he or she possesses to start his or her career in Electrical Engineering.

Top 10 Qualities of an Engineer

- **Strong Analytical Aptitude:**

A great engineer has excellent analytical skills and is continually examining things and thinking of ways to help things work better. They are naturally inquisitive.

- **Shows an Attention to Detail:**

A great engineer pays meticulous attention to detail. The slightest error can cause an entire structure to fail, so every detail must be reviewed thoroughly during the course of completing a project.

- **Has Excellent Communication Skills:**

A great engineer has great communication skills. They can translate complex technical lingo into plain English and also communicate verbally with clients and other engineers working together on a project.

- **Takes Part in Continuing Education:**

A great engineer stays on top of developments in the industry. Changes in technology happen rapidly, and the most successful engineers keep abreast of new research and ideas.

- **Is Creative:**

A great engineer is creative and can think of new and innovative ways to develop new systems and make existing things work more efficiently.

- **Shows an Ability to Think Logically:**

A great engineer has top-notch logical skills. They are able to make sense of complex systems and understand how things work and how problems arise.

- **Is Mathematically Inclined:**

A great engineer has excellent math skills. Engineering is an intricate science that involves complex calculations of varying difficulty.

- **Has Good Problem Solving Skills:**

A great engineer has sharp problem solving skills. An engineer is frequently called upon solely to address problems, and they must be able to figure out where the problem stems from and quickly develop a solution.

- **Is a Team Player:**

A great engineer understands that they are part of a larger team working together to make one project come together successfully, and therefore, must work well as part of that team.

- **Has Excellent Technical Knowledge:**

A great engineer has a vast amount of technical knowledge. They understand a variety of computer programs and other systems that are commonly used during an engineering project.

5.2 Read the following engineering jokes. Do you know any other jokes?

Engineers and Light Bulbs (The Sequel)

- How many first year engineering students does it take to change a light bulb?
  None. That's a second year subject.
- How many second year engineering students does it take to change a light bulb?
  One, but the rest of the class copies the report.
- How many third year engineering students does it take to change a light bulb?
  "Will this question be on the final exam?"
- How many civil engineers does it take to change a light bulb?
  Two. One to do it and one to steady the chandelier.
- How many electrical engineers does it take to change a light bulb?
  None. They simply redefine darkness as the industry standard.
- How many computer engineers does it take to change a light bulb?
  "Why bother? The socket will be obsolete in six months anyway."
- How many mechanical engineers does it take to change a light bulb?
  Five. One to decide which way the bulb ought to turn, one to calculate the force required, one to design a tool with which to turn the bulb, one to design a comfortable-but functional- hand grip, and one to use all this equipment
- How many nuclear engineers does it take to change a light bulb?
  Seven. One to install the new bulb and six to figure out what to do with the old one for.

UNIT 5

1 LEAD-IN

1 What is the role of computer skills in the career development?

2 Do all students already possess necessary computer literacy skills?

3 What does it mean when it is stressed that computers have become more user friendly?

4 What if you do not have a home computer with the Internet?

2 READING

THE NEED FOR COMPUTER LITERACY IN MODERN SOCIETY

An outstanding characteristic of modern society is the powerful flow of knowledge and information in different fields of human activities. Information is often called the lifeblood of modern civilization. It plays an ever increasing part in everyday life, management of business, etc. The present-day information explosion must be properly dealt with. To handle the information flow properly and instantly, to help specialists find immediately an information and data needed urgently a multiple of machines have been invented. Computers have fundamentally altered the way we live and work. They have, in particular, transformed our ability to deal with information and data. We are now moving rapidly toward where—for all practical purposes—we can process information infinitely fast, store infinite amount of data, and transmit data instantaneously. As a result of the emergence of the Internet, knowledge has been "communalized." Everybody has access to information about anything and—perhaps equally importantly— knowledge is no longer "owned" by the experts. Computers have also empowered the average man and woman to create products that previously required large corporations with significant resources. They are ideal for high-volume computing tasks such as the computation and analysis of statistical and mathematical data as well as scientific and engineering calculations.

Computers have become part of our everyday lives. They have an effect on almost everything you do. When you buy groceries at a supermarket, a computer is used with laser and barcode technology to scan the price of each item and present a total. Barcoding items (clothes, food and books) require a computer to generate the barcode labels and maintain the inventory. Most television advertisements and many films use graphics produced by a computer. In hospitals, beside terminals connected to the hospital's main equipment, computers allow doctors to type in orders for blood tests and to schedule operations. Banks use computers to look after their customers' money. In libraries and bookshops, computers can help you to find the book you want as quickly as possible.

The Internet has revolutionized the computer and communications world like nothing before. The Internet is at once a world-wide broadcasting capability, a mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers without regard for geographic location.

Electronic Learning or e-Learning is reinventing the way people learn. The desk, the chalkboard, the paper and pencil, and the knowledge-giver no longer dominate the classroom. The Internet is the biggest influence. When delivered via the Internet, the vendors' curricula can personalize learning. Any student can use the computer as a medium through which the access to information and resources manifest itself as the supernatural agency.

The computer field continues to experience huge growth. Computer networking, computer mail, and electronic publishing are just a few of the applications that have grown in recent years. Advances in technologies continue to produce cheaper and more powerful computers offering the promise that in the near future, computers or terminals will reside in most, if not all homes, offices, and schools.

Therefore, the pressure on those who still are unfamiliar with computers and their use is ever greater. So, almost everyone will need to become familiar with data processing and computing to a greater or lesser extent. No matter

whether we need it in the home, office, school, college or factory, it will be almost as commonplace to use a computer as it is to drive a car. It is absolutely necessary for every active member of modern society to be able to use the computer system in data (information) processing and management.

2.1 Reading Comprehension

1 What is necessary for successful development of modern society?

2 What helps specialist to handle the information flow?

3 Why have computers fundamentally altered the way we live and work?

4 What parts of our everyday lives have computers changed?

5 Which invention has the biggest influence on modern society?

6 What is the foreseeable future of the computer usage?

3 VOCABULARY

3.1 Match the left and the right side to make word combinations.

1	characteristic	**a**	of data
2	management	**b**	of modern society
3	infinite amount	**c**	of business
4	the emergence	**d**	of statistical data
5	analysis	**e**	to information and resources
6	part	**f**	of the Internet
7	mechanism	**g**	of our everyday lives
8	access	**h**	for information dissemination

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…

3. 2 Match the words given below with the nouns to make word partnerships. Use them in the sentences given below.

modern human huge practical significant main

1 _____ activities

2 _____ calculations

3 _____ equipment

4 _____ growth

5 _____ purposes

6 _____ resources

b The handbook covers all aspects of power _____ in an easy-to-understand format.

c S_____ r_____ are those that are likely to have a material bearing on the decision-making process.

d The company has over 30 years of experience in the construction of power _____ .

e Google chart shows a _____ in many Android devices use.

f H_____ a_____ have led to increased atmospheric concentrations of a number of greenhouse gases, including carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and ozone in the lower part of the atmosphere.

3.3 Fill in the missing word forms. Use a dictionary if necessary.

verb	***noun***	***adjective***	***adverb***
effect	_____	_____	_____
experiment	_____	_____	_____
equalize	_____	_____	_____
help	_____	_____	_____
personalize	_____	_____	_____
practise	_____	_____	_____
specialize	_____	_____	_____

3.5 You have come across the text the following compound adjectives:

present-day high-volume world-wide

Think of and make up some other compound adjectives using the following words .

1	top	**a**	called
2	so	**b**	secret
3	part	**c**	made
4	hand	**d**	time
5	full	**e**	controlled
6	remote	**f**	time
7	word	**g**	peak
8	off	**h**	famous

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…

Write the word partnerships to them with the given nouns as in the example:

last-minute arrival

1	_____	**a**	calls
2	_____	**b**	scientist
3	_____	**c**	TV
4	_____	**d**	employment
5	_____	**e**	information
6	_____	**f**	expert
7	_____	**g**	job
8	_____	**h**	thing

1-…; 2-…; 3-…; 4-…; 5-…; 6-…; 7-…; 8-…

3.6 Can you imagine? Read the passage guessing the ending of some words.

Why Is Computer Literacy Important?

Computer literacy refers to having the skills and the (1) **k** _ _ _ _ _ _ _ _ to use computers competently. (2) **C** _ _ _ _ _ _ _ literacy also implies that one is comfortable with using computer software and other applications that are related to the computer. Another (3) **i** _ _ _ _ _ _ _ _ part of being computer literate is to know how the computer functions and (4) **o** _ _ _ _ _ _ _. Basic computer skills are considered very important assets of people in developed (5) **c** _ _ _ _ _ _ _ _.

First world and developing countries consider computer (6) **l** _ _ _ _ _ _ _ to be a very vital skill to acquire. Employers desire their (7) **w** _ _ _ _ _ _ to possess basic computer skills because (8) **t** _ _ _ _ companies are becoming more technologically advanced. The computers help them to run their (9) **c** _ _ _ _ _ _ _ _ efficiently and cost effectively.

With the influence and essentiality of becoming computer literate individuals, (10) **p** _ _ _ _ _ now regard that living without computer (11) **s** _ _ _ _ _ would now be unimaginable. People rely much on computers on the amount of (12) **w** _ _ _ they can accomplish**.**

4 LANGUAGE REVIEW

Grammar: •Past Progressive, the contrast between Past Simple and Past Progressive •*when*- and *while*-clauses.

4.1 Complete the sentences by putting the verbs in brackets into either the Past Simple or Past Continuous.

1 She _____ (***try***) to explain her proposal, when the supervisor _____ (***interrupt***) her.

2 When he _____ (***finish***) reading the manual, he _____ (***give***) it to me.

3 Everyone _____ (***wait***) for the meeting to begin when the manager ____ _____ (***call***) to say that he was stuck in the traffic jam.

4 When the electrician _____ (***arrive***), we _____ (***explain***) him what had happened.

5 What _____ (***you/do***) when the industrial accident happened?

6 We _____ (***look through***) the report when the lights went out.

7 Yesterday morning John _____ (***read***) the design specifications and technical drawings while Mike_____ (***estimate***) the costs of the project.

8 When he _____ (***join***) the company five years ago, he _____ (***be***) responsible for supervising the manufacture of electrical equipment.

9 They _____ (***type***) the report with the results of the experiment when the system _____ (***fail***).

10 The electric energy industry in the US _____ (***be***) under a restructuring driven by changes in federal and state laws in the 1990s.

4.2 Underline the best continuation of the conversations.

1 A: What was he doing this morning?

B: He ***calculated/was calculating*** the project expenditures to avoid cost overruns.

2 A: How did David spend his weekend?

B: He ***was going/went*** to Paris on business.

3 A: I didn't see you in the office last week.

B: I ***worked/was working*** at home trying to present the results of our experiment.

4 A: What did they do when the electric transmission lines were damaged?

B: They immediately ***got in touch/were getting*** in touch with the utility company.

5 A: What were you doing when we were discussing what caused the power system outage?

B: I ***tried/was trying*** to find the solution.

5 SKILLS

5.1 Over the past years, computer technology has started to change many aspects of our life. One of these is the approach to teaching and learning. Many people believe that the Internet will greatly enhance students' lives but the others think that costs will outweigh the benefits.

Speculate about the problem in groups of 4-5 using the prompt ideas below. Support your opinion with the examples from your personal experience. Give the ideas of how to use the positive sides in the most effective ways and how to reduce the negative ones.

PROS	***CONS***
• ***convenience*** (Computer technology has made life much easier and convenient. One of the biggest conveniences is how many	• ***disadvantages to students' health*** (Most activities can be done right from the comforts of a chair or other stationary position, students are

tasks and/or needs that formerly required trips to be made can now be accomplished from the comforts of home.)

- ***saves time***
  (Computer technology has the capabilities to take over the mundane chores that are time consuming.)
- ***fast and efficient***
  (Things can be adjusted, fixed or taken care of on a moment's notice as long as a secure Internet connection is available.)
- ***communication***
  (No longer are time zones, physical distance or long distance expenses barriers to maintaining contact with family, friends and colleagues. With communication tools such as e-mail, instant messaging, Skype, chat and video conferencing, there are many different choices available to keep people connected and in touch, often at very little cost.)
- ***a valuable source of information and the best means of transmitting this information***

moving less. Long hours at the computer can negatively influence students' sight.)

- ***restrict the opportunity to meet and socialize with other students***
  (Students communicate chatting on the Internet, staying at home.)
- ***plagiarism***
  (Sometimes students use ideas of other people and present them as their own ones.)
- ***the level of lecturer/student contact that students and lecturers are used to may be reduced***
  (University lecturers are now able to put their lectures on the Internet for students to read and so the importance of attending face toface lectures has been reduced.)
- ***lecturers may be less available for consultation***
  (If the lecturers are able to put their Lectures on the Internet, they may choose to do this from home and so be less available for consultation.)

5.2 Computer knowledge

I'm a computer genius.

I'm a computer nerd. *(A person who is boring, stupid and not fashionable.)*

I'm computer literate.

I'm a technophobe.

MODULE 1.2

UNIT 6

1 LEAD-IN

1 Do you think Ukraine is an energy-rich country?

2 Do you think there is a balance between domestic primary energy production and demand?

3 Do you know what one-third of Ukraine's primary energy is sourced from?

4 What kind of power do you think plays an important role in electricity production?

5 What other sources of energy are needed to start in Ukraine a realistic clean energy programme for future generations?

2 READING

ENERGY SAVING POTENTIAL IN UKRAINE

Current Energy Efficiency Status of National Economy

High energy content of Ukraine's GDP is a result of significant technological lag in the majority of economy sectors compared to the developed countries, unsatisfactory structure of the national economy, negative impact of the shadow sector, specifically, import-export operations, which objectively limit the competitive power of national production and is burdensome for the economy, especially concerning its foreign energy dependence. In contrast to the industrially developed countries where energy saving is an element of economic and environmental expediency, in case of Ukraine it is an issue of survival under the market conditions and entrance to European and world market. This requires addressing the problem of well-balanced solvent demand both on the internal and external markets, as well as diversification of fuel and energy imports.

Low energy efficiency has become one of the key factors that have given rise to critical situations in the Ukrainian economy. The energy component in the cost structure of manufactured goods had an almost three-fold increase in the first half of 1990s, reaching 42% of total material expenses associated with output of products. It

was not until 1997-1999 that energy efficiency of the economy began to improve as a result of measures taken at the state level. While GDP energy content grew by 38.6% in 1990-1996, it had been decreasing significantly since 2000, and it was for the first time in the Ukrainian history that GDP growth was achieved at the same time with reduction in consumption of primary fuel and energy resources.

However, it should be noted that the GDP energy content reduction rates slowed down in 2002 due to negative changes in the energy content reduction trend with regard to the gross value added in the most energy-intensive sectors of the economy – metallurgy, machine-building, chemical and petrochemical, as well as housing and communal services sector, these changes brought about by inadmissibly high depreciation (65-70%) of fixed assets and corresponding increase in per unit cost of fuel and energy resources for a number of important product types.

Energy saving is one of the crucial factors for the energy strategy of Ukraine. It determines the effective operation of the national economy. At present, building an efficient energy-saving state regulation system is the main factor reducing the energy content of goods (services) in all sectors of economy. This will make possible, in the first place, improving the energy final consumption structure, specifically, by further extension and intensification of electrification in all economic sectors by replacing critical fuels and, at the same time, enhancing production efficiency.

Energy security is an integral part of economic and national security, an essential condition for a country's existence and development. The present day concept of energy security suggests achieving the status when the economy and social sector of the state have a reliable, stable, economically efficient and environmentally safe supply of energy resources, and creating conditions for formulation and implementation of policy protecting national interests in the energy sector.

The main objectives with regard to ensuring Ukraine's energy security are:

- reliable supply of energy resources to meet the needs of national economy and the population to the objectively necessary extent;

- reliable and efficient operation and development of sectors and companies of the Fuel-and-Energy Complex;
- social orientated energy policy regarding to the population and FEC workers energy supply;
- abating detrimental impact of FEC facilities operations on the environment and the population in accordance with internal and international requirements.

The issue of energy facilities ownership is important for the country's energy security. Nuclear power plants, hydropower plants, underground gas storage facilities, backbone and interstate power lines, oil and gas pipelines and pipeline dispatch control must remain in the state ownership. Energy sector management and regulation should be improved to create proper conditions and rules for FEC facilities operation, fair competition should be introduced at energy markets and, on this basis, balance the interests of the state, energy companies and consumers of energy resources.

2.1 Reading Comprehension. Mark statement as true (T) or false (F).

1 Ukraine has the greatest technological progress in the majority of economy sectors compared to other developed countries. ___

2 Energy saving in Ukraine is an issue of survival under the market conditions. ___

3 Production of energy in Ukraine is characterized as low effective. ___

4 Energy saving factor determines the effective operation of the national economy. ___

5 The existence and development of Ukraine largely depends on its energy security. ___

6 Country's energy security must be assured by the state energy facilities ownership. ___

3 VOCABULARY

3. 1 Match the following word pairs from the text to make word partnerships.

	noun		***noun***
1	product	**a**	operations
2	energy	**b**	sector
3	reduction	**c**	efficiency
4	production	**d**	rates
5	shadow	**e**	facilities
6	import-export	**f**	types

1-…; 2-…; 3-…; 4-…; 5-…; 6-…

3.2 There are many word combinations with *energy* in the text.

energy	~ companies	~ resources
	~ consumer	~ saving
	~ content	~ sector
	~ efficiency	~ security
	~ import	~ strategy
	~ market	~ supply

Below are the examples of other word combinations with *energy*. Fit them into the following sentences.

energy	~ user	~ consumption	~ equipment	~ requirements
		~ conservation	~ minister	~ sources
		~ economy	~ production	~ technology

1 What is the most efficient and environmentally aware type of **e_____** **p_____** for home use and are people aware of the benefits both environmentally and long cost savings?

2 The company produces alternative **e** _____ **e** _____ that converts energy from moving water into electricity.

3 **E_____** **t_____** is an interdisciplinary engineering science having to do with the efficient, safe, environmentally friendly and economical extraction, conversion, transportation, storage and use of energy,

4 **E_____** **M_____** Charles Hendry told MPs governments had spent £2.2 billion

supporting wind power over eight years. (MPs governments-члены парламента)

5 The appetite for oil and other **e** _____ **s** _____ is growing dramatically, with worldwide **e**_____ **c** _____ projected to increase by 36 percent by 2035.

6 **E**_____ **c** _____ supports the eco friendly lifestyle by providing energy, which saves your money and at the same time saves the earth.

7 The major **e**_____ **u** _____in most buildings is the heating, ventilating, and air conditioning (HVAC) system.

8 The world **e** _____ **e** _____ has the largest influence on the decisions that people and governments make.

Can you think of some more possible word combinations with *energy*? Write them down and add to your vocabulary. _____

_____

3.3 Add the appropriate adjectives and nouns to the table below.

	adverb	***adjective***	***noun***
1	**economically**	_____	_____
2	**environmentally**	_____	_____
3	**especially**	_____	_____
4	**inadmissibly**	_____	_____
5	**industrially**	_____	_____
6	**objectively**	_____	_____
7	**specifically**	_____	_____

3.4 Translate the following word combinations into your native language.

1 high energy content _____

2 important product types _____

3 foreign energy dependence _____

4 FEC facilities operations _____

5 energy facilities ownership _____

6 the energy content reduction _____

7 the GDP energy content reduction rates _____

8 the energy final consumption structure _____

3.5 Choose the right words to fit into the following paragraph.

investments levels companies prices times potential

Energy Efficiency Facts

Energy intensity in Ukraine is around three (1) _____ higher than in the EU. This means that on average, Ukrainian (2) _____ use three times as much energy to produce the same output as companies in the European Union. Needless to say, the (3) _____ for energy efficiency in Ukrainian companies is huge, even with today's Ukrainian energy prices, which are low compared to EU (4) _____. However, the market for energy efficiency investments in Ukraine is still in its infancy. But with increasing energy (5) _____ and WTO accession, Ukrainian companies can only maintain their competitiveness on the world market through lowering their energy consumption by using every opportunity for profitable energy efficiency (6) _____.

WTO-World Trade Organization

3.6 Use the correct form of the words in brackets to complete the sentences.

1 Living near power _____ (***lanes/links/lines***) may significantly increase a person's risk of death.

2 As of January, 2011 there is a total of 195 nuclear power _____ (***place/plan/ plant***) units.

3 Coal is the nation's primary _____ (***frame/focus/fuel***) for electric power production.

4 Energy _____ (***effect/effectiveness/efficiency***) is the goal of efforts to reduce the amount of energy required to provide products and services.

5 There were no significant differences in controlling energy _____ (***requests/ rewards/requirements***) between locations.

6 The authorities are looking into the possibility of reducing state _____

(***possession/privacy/ownership***) in the largest energy company.

7 The negative _____ (***influence/position/impact***) of electricity generation is significant because modern society uses large amounts of electrical power.

8 The three main _____ (***subjects/objects/objectives***)– sustainability, security and competitiveness – can be reached by developing an energy market, reducing energy consumption and promoting innovative low-carbon systems.

4 LANGUAGE REVIEW

Grammar: •Present Perfect and its contrast to Past Simple • Present Perfect with *how long* and •Past Simple with *when* • *Have gone (to)/ Have been (to)*

4.1 Match the sentences in the Present Perfect with the correct description.

1	They have changed some electric installations.	**a**	an action which happened at an unstated time in the past; the exact time is not important, so it is not mentioned
2	They have received three faxes this morning.	**b**	an action which has recently finished and which result is visible in the present
3	I have just finished the report.	**c**	an action which started in the past and continuous up to the present
4	They have known him most of their working life.	**d**	an action which has happened within a specific time period, which is not over at the moment of speaking, such as this morning/week/month, etc.
5	She has never been to Paris.	**e**	an action which has just finished

1- …; 2 - …; 3 - …; 4 - …; 5 - …

4.2 Complete the sentences by putting the verbs in brackets into either the Present Simple, Present Perfect or Past Simple.

1 When _____ (***join***) ESC (Electrical Supply Corporation)?

2 That's the best presentation on alternative energy sources I _____ (***hear***).

3 They are going to employ a new secretary. Ann always _____ (***make***) mistakes in costs estimation reports.

4 We _____ (***not have***) any problem when we introduces new system of equipment control last summer.

5 Scientists _____ (***make***) some fundamental discoveries in the 18th century.

6 Last week I _____ (***be***) very busy and I _____ (***not/have***) the time to do a lot in the household.

7 Rexel _____ (***operate***) in 36 countries, in three main geographic zones (North America, Europe, and Asia-Pacific) and _____(***hold***) about 10% share of the global market of distributed electrical supplies.

8 For more than half a century, GE_____ (***be***) an industry leader in combined cycle technology and today _____ (***lead***) the industry in combined cycle installations around the world.

9 – ….. you ever _____ (***be***) to New York?
– New York? No I _____ (***never/ be***) there. Have you?
– Yes. In fact I _____ (***just /come back***) from there. I'm doing some consultancy work there and I _____ (***spend***) at least six weeks there last year.

10 Electricity supply activities _____ (***include***) the generation, transmission and distribution of electricity and the on-selling of electricity via power distribution systems operated by others.

4.3 Complete the dialogue by putting the verbs in brackets into the correct form of the Past Simple or Present Perfect. Reproduce the dialogue in pairs.

Mark: Hi, Matt. I (1) _____ (***not see***) you for ages!

Matt: Hi. I'm sorry. I (2) _____ (***not be***) in touch with anyone recently. I (3) _____ (***be***) really busy.

Mark: What have you been up to then?

Matt: Well, you know I (4) _____ (***leave***) my job in … in March

so that I (5) _____ (***can***) go freelance as an art lighting designer.

Mark: Yes, I remember, you **(**6) _____ (***talk***) a lot about that last year. How is it going?

Matt: Well, it **(**7) _____ (***be***) really difficult so far. It's much harder work than I (8) _____ (***imagine***). (9) _____ (***you/ever/be***) self-employed?

Mark: No, never, but I (10) _____ (***often/think***) about it. So, why (11) _____ (***be***) so difficult?

Matt: Well, at the beginning **(**12) _____ (***have***) a couple of good clients. And since then I (13) _____ (***have***) a lot of interest from different companies, but none of them (14) _____ (***become***) regular customers.

Mark: **(**15) _____ (***try***) to put up a website with examples of your work?

Matt: Yes, I **(**16) _____ (***just/develop***) it. Would you mind to have a look? I'd like to know your opinion.

4.4 Choose the correct option.

1 – Where's Jane?

– She ***has been/ has gone*** out. She should be back in an hour.

2 – John looks happy. He seems to have finalized the deal.

– Yes, he ***has been/ has gone*** to the customer and they have signed the contract.

3 – The office is empty.

– Yes, everybody ***has been/ has gone*** home

4 – It's great to see you again with us! Where ***have*** you ***been/gone***?

– I've just returned from our subsidiary.

5 – Where is our Financial Director?

– He was here earlier, but I think he ***has been/ has gone*** to the bank now.

5 SKILLS

Look through the information about Rexel, one of the leading energy companies. Prepare the presentation of the company history using the facts and events mentioned below.

Through its distribution networks for professional customers in the industrial, residential, and commercial sectors, Rexel provides innovative electrical solutions and equipment to improve comfort, performance, and energy efficiency.

The Group is the preferred partner of all professionals in the electrical chain from electricians to key industrial accounts and equipment manufacturers. For all its customers, Rexel offers a unique range of electrical supplies in terms of its breadth and availability.

Rexel operates in 36 countries with 2,200 branches, a distribution network of more than 40 banners and 28,000 employees. For over 40 years, Rexel has been growing by anticipating the needs of its markets and customers. It remains one step ahead with its offer of innovative solutions of electrical supplies for professionals in the industrial, residential, and commercial sectors.

Milestones

1967 : creation in France of CDME (Compagnie de Distribution de Matériel Electrique)

1980 : initial expansion in Europe

1983 : listed on the Second Marché of the Paris stock exchange

1986 : entry into the US market

1990 : acquired by the PPR group

1993 : CDME changes its name to Rexel

1998 : initial operations in Australia and New Zealand

1999 : expansion into Eastern Europe

2000 : operations start in China and Canada

2005 : 100% of the share capital of Rexel is acquired by a consortium of investors led by Clayton Dubilier & Rice, Eurazeo and Merrill Lynch Global Private Equity.

2006 : Rexel acquires Gexpro (formerly GE Supply) in USA

2007 : Initial public offering of Rexel (Euronext Paris, SBF 120 index)

2008 : acquisition of the major European assets of Hagemeyer (No. 3 worldwide)

2009 : launch of LEAD 2011, a dynamic company strategy to explore new growth avenues (new energies, large infrastructure projects)

2011 : Entry into the Indian and Brazilian market

UNIT 7

1 LEAD-IN

Prior to reading the text examine carefully the following abbreviations. It will help you to understand the text better.

Burshtyn island - Острова Бурштынской ТЭС, которая входит в состав Открытого акционерного общества (ОАО) `Западэнерго` и расположенная в 6 км к юго-востоку от г.Бурштын Галицкого района Ивано-Франковской области

UCTE - Union for the Co-ordination of Transmission of Electricity-энергообъединение европейских стран, одно из крупнейших энергообъединений в мире

TPP - TPP Nikola Tesla (Thermal Electrical Power Station), a Serbian power plant complex located near the town of Obrenovac

CHP - Combined Heat and Power is the use of a heat engine or a power station to simultaneously generate both electricity and useful

heat.

NPP - nuclear power plant=атомная электростанция

HPP - Hydroelectric power plant - гидроаккумулирующая электростанция

HPSPP - Haryana Prathmik Shiksha Pariyojna Parishad - гидроаккумулирующая электростанция Харьяна в штате на севере Индии

2 READING

THE MAIN PRIORITIES OF ENERGY POLICY OF UKRAINE

To define the main priorities in energy policy of Ukraine, it is necessary to take into consideration the following facts:

- The energy system of Ukraine is interconnected with 7 power grids of neighbouring states by 75 power transmission power lines.
- Technically feasible amount of electricity interchange: 50 billion kWh
- Burshtyn island operates synchronously with UCTE and has potential to increase electricity export.
- The main electricity producers: 14 thermal, 8 hydropower and 4 nuclear power stations with total capacity of 52 million kW.
- TPP and CHP – 57.8%, NPP – 26.6%, HPP and HPSPP – 9.1%, other sources – 6.5%.
- Natural uranium reserves in Ukraine allow meeting the demand of domestic nuclear power sector for over 100 years.
- Coal is the only energy carrier, which reserves are sufficient to cover the needs of the national economy for over 300 years.

In this respect among the main priorities of Ukrainian energy policy presented at the European energy forum were: to strengthen energy security of Ukraine and the EU member-countries; to ensure higher level of energy efficiency and energy saving of the national economy; to develop nuclear industry and nuclear power sector, to

ensure safe NPPs operation; to reconstruct and modernize thermal power sector, to reduce its negative impact on environment; to increase regulating generation capacities; to ensure higher level of consumption of renewable energy sources; to develop oil and gas sectors, to build up strategic oil stocks, to increase natural gas reserves; to restructure the coal industry; to develop internal energy market; to eliminate subsidies and price distortions in energy sector.

One of the main tasks of electricity sector is the parallel operation with the European power grid. It is going to be achieved by the reconstruction and modernization of TPPs units, the improvement of energy supply reliability in Ukrainian regions, the construction of new high voltage transmission power lines, the development of nuclear industry and nuclear power sector and the enhancement of NPPs operational safety.

To provide energy efficiency and safety it is necessary to introduce energy efficient technologies, equipment and materials; to stimulate implementation of energy saving measures; to improve energy accounting and control systems; to ensure higher consumption of alternative and renewable energy sources and to modernize thermal power utility sector.

2.1 Reading Comprehension

1 The text primarily discusses

a the worldwide energy policy.

b the main electricity producers.

c the most important things of energy policy of Ukraine.

d the data on the amount of main energy carriers.

2 According to the facts Ukraine can everything ECXEPT

a decrease electricity export.

b produce nuclear power for 100 years.

c exploit coal reserves for 300 years.

d interchange electricity with seven neighbouring states.

3 With respect to the main priorities Ukraine will

a present its energy policy at the European energy forum.

b operate parallel with the European power grid.

c reconstruct new high voltage transmission power lines.

d increase the consumption of energy produced.

1- …; 2 - …; 3 - …

3 VOCABULARY

3.1 Match the following explanations with the appropriate words.

A.	**1**	the act of to putting into effect according to or by means of a definite plan or procedure	**a**	consumption
	2	the social and cultural forces that shape the life of a person or a population.	**b**	distortion
	3	the act of consuming or the state of being consumed; the amount used	**c**	enhancement
	4	an act or instance of distorting	**d**	environment
	5	the act of raising to a higher degree; intensifying; magnifying	**e**	implementation

1 - …; 2 - …; 3 - …; 4 - …; 5 - …

B.	**1**	that is replaced naturally or controlled carefully and can therefore be used without the risk of finishing it all	**a**	domestic
	2	bad or harmful	**b**	natural
	3	adequate for the purpose; enough	**c**	negative
	4	existing in or formed by nature	**d**	sufficient
	5	devoted to home life or household affairs	**e**	renewable

1 - …; 2 - …; 3 - …; 4 - …; 5 - …

3.2 Fill in the missing word forms as in the example. Where there is a dash (-), you do not need to write anything. Use a dictionary, if necessary.

noun (person/device)	*noun (idea)*	*verb*	*adjective*
operator	operation	operate	operated, operating
-----	explosion	exploit	exploited, exploiting
reservoir	reservation	_____	_____, _____
presenter	_____	_____	_____, _____
carrier	_____	_____	_____, _____
_____	_____	_____	built, building
_____	_____	_____	demanded, demanding
_____	supply	_____	_____, _____
_____	transmission	_____	_____, _____
-----	_____	power	_____, _____
-----	need	_____	_____, _____
_____	_____	demand	_____, _____

3.3 Put the word partnerships into the correct column as in the example.

		noun + noun	*adjective + noun*
a	academic degrees	_____	**a**
b	control systems	**b**	_____
c	gas sector	_____	_____
d	energy safety	_____	_____
e	electricity producer	_____	_____
f	main priorities	_____	_____
g	neighbouring states	_____	_____
h	nuclear industry	_____	_____
i	power grids	_____	_____
j	power facilities	_____	_____
k	power utility	_____	_____
l	price distortions	_____	_____
m	thermal power	_____	_____

n total capacity _____ _____

3.4 Match the sentence beginnings (1-5) to correct endings (a-c).

1	The energy debate has moved	**a**	to produce power 24 hours a day.
2	Today's energy debate is just	**b**	have done a great job for us in earlier times.
3	People rely on our industry	**c**	about our energy supplies.
4	Conventional types of power	**d**	as challenging as it was 30 years ago.
5	We also must keep the proper perspective	**e**	into a new level of public awareness.

1 - …; 2 - …; 3 - …; 4 - …; 5 - …

3.5 Use the correct form of the words in brackets to complete the sentences.

1 Oil use _____ (***contributes/integrates/implements***) to pollution and to the release of global-warming gases.

2 Many of our human _____ (***activities/industries/economies***) have an impact on the Earth's biosphere - our home.

3 We live in a global _____(***economy/policy/country***), where many energy markets are interconnected.

4 Over the next 25 years, the overall _____ (***demand/sector/resource***) for electric power is expected to jump by 50 percent.

5 We must utilize all of our energy _____ (***sources/supply/markets***) - coal, nuclear, oil, gas, hydro and renewable sources.

3.6 Complete the following statements with the verbs given below.

impact ensure improve reduce increase

1 National manufacturers need some action to _____ energy supply.

2 The manufactures are planning to _____ energy saving appliances.

3 Our mission is to provide technology solutions to _____ safe, efficient handling

of nuclear fuel and high level waste.

4 Proven oil reserves will continue to _____ with time since the beginning of the use of petroleum as an economic resource.

5 Which actions should a company undertake to _____ the negative impact on the environment from company's electric energy consumption**?**

4 LANGUAGE REVIEW

Grammar: •Present Perfect Continuous and its contrast to Present Perfect
•Quantifiers: *some/any/no, every/each*.

4.1 Match the sentences in the Present Perfect Continuous with the correct description.

1	He is absolutely exhausted. He has been working all day long.	**a**	emphasis on duration
2	Who has been reading my business papers?	**b**	an action which started in the past and continuous up to the present
3	How long have you been learning English?	**c**	an action which started and finished in the past and lasted for some time; the result of the action is visible in the present
4	She has been sorting out the mail for an hour.	**d**	to express anger, annoyance or irritation

1- …; 2 - …; 3 - …; 4 - …

4.2 Put the verbs into the correct tense (Present Perfect or Present Perfect Continuous).

1 I _____ (***call***) for you for half an hour. Where _____ (***be***)?

2 _____ (***you/find***) a folder with our catalogues? I _____ (***look***) for it for ages.

3 I _____ (***not/discover***) it yet, but I _____ (***not /work***) for a long time yet.

4 Our engineers _____ (***learn***) English for three years, so their level of language proficiency _____ (***improve***).

5 His voice is gone now because he _____ (***argue***) all morning about the necessity to change the layout of the factory floor.

6 They _____ (***negotiate***) the contract on energy supply for several days, but they _____ (***not achieve***) any progress.

7 You look very tired. You _____ (***work***) very hard lately.

8 He _____ (***read***) the maintenance guide for two hours, but he _____ (***read***) not more than 50 pages so far.

9 Look! Somebody _____ (***delete***) all our files.

10 'Sorry, I'm late.' 'That's all right. I _____ (***not/wait***) long.

4.3 Use the verbs in one of present tenses.

Robert (1) _____ (***consider***) himself a successful engineer. He (2) _____ (***work***) for 3TIER, which is a global leader in renewable energy information services. They (3) _____ (***provide***) scientifically-based assessment and forecasting for wind, solar, and hydro energy. He (4) _____(***be***) an Energy Policy Analyst. He (5) _____ (***like***) travelling on business and at the moment he (6) _____(***work***) on the projects in France and Germany. He (7) _____ (***speak***) fluent German, and he (8) _____ (learn) French now.

Robert (9) _____ (***be***) in his present position for four years. But today he (10) _____ (***face***) a dilemma. In the last two weeks he (11) _____ (***receive***) two proposals: to get a promotion to the Senior Energy Policy Analyst and to join another leading company. He (12) _____ (***hope***) for a promotion at 3TIER for a long time, but now he (13) _____ (***hesitate***). A new company (14) _____ (***promise***) higher salary, better perspectives and the chance to get an experience abroad, he (15) _____ (***always/dream***) about.

4.4 Complete the sentences with *some* or *any*.

1 The seats aren't reserved. You can have _____ seat you like.

2 We went to the electrical appliances exhibition three days ago and saw _____ new interesting models.

3 Would you like _____ coffee? The General Manager is talking to client at the moment. He'll see you in a couple of minutes.

4 _____ employee of the company is able to explain you the general policy of the company.

5 I've looked through the report, but there is _____ useful information in it.

6 We've phoned _____ hotels, but unfortunately there are ____ rooms available.

7 We won't have ____ creative ideas without you. You are a very talented person.

8 At the moment we are _____ money to continue our research.

9 I never meet _____ more reliable electrical engineering company.

10 We are going to a business trip next month. But I suppose we'll have _____ fun in Paris as well, we are planning to see _____ famous attractions.

11 If you have __ ___ problems, don't hesitate to contact us _____ time you like.

12 It's a pity, but _____ new ideas were put forward at the meeting.

5 SKILLS

Write a web page giving the history of an electrical engineering company in Ukraine you know about. Include information about the following:

- the origins of the company, who founded it and when;
- key dates in its history;
- the opening of new branches, or factories;
- services provided;
- important contracts and orders it obtained;
- its managerial team;
- significant recent events.

The following words can be useful:

achieve	*expand*	*increase*	*provide*
begin	*establish*	*launch*	*reach*
decrease	*found*	*manufacture*	*reduce*
develop	*improve*	*produce*	

UNIT 8

1 LEAD-IN

1 Do you have any energy forecasting information?

2 Why is it necessary for Ukraine to presents its new energy strategy towards 2030?

3 What do you think a strategy for competitive, sustainable and secure energy implies?

2 READING

UKRAINE'S ENERGY STRATEGY TO 2030

One fundamental prerequisite for the application of sector budget support programmes is the existence of a coherent and nationally-driven policy. Ukraine's key energy policy and priorities are defined in its own Energy Strategy to 2030, which was approved by the Cabinet of Ministers in 2006.

The strategy proceeds from the understanding that Ukraine has a limited endowment of conventional energy resources and also lacks of diverse primary energy sources, such as oil, natural gas, and nuclear fuel. Therefore, in order not to rely on imports, the strategy highlights the importance of rational energy use, the promotion of domestic energy production, and switching to alternative energy sources. Obviously, the strategy also recognises the significance of Ukraine's position as a key transit route for predominantly Russian oil and gas and, therefore, the basic premise of the strategy is to maintain and enhance this transit role.

The major objectives of Ukraine's energy strategy are to ensure its energy security and status as a significant transit country. It is inseparably connected with a set of priorities, which include increasing transit volumes via its territory, reducing the economy's energy intensity, improving its energy efficiency, integrating with the European energy system and expanding domestic energy production. In order to meet these objectives and priorities a set of policy measures is specified, which include modernising and rehabilitating infrastructure that transports hydrocarbons, diversifying supplies and routes, increasing domestic production of coal and nuclear energy, implementing broad-ranging energy efficiency measures, adopting relevant

EU laws and undertaking pricing reform. Moreover, these measures represent and entail a radical shift in the underlying principles governing the Ukrainian energy sector as they require a move from monopoly organisation to more competitive structures, the modification of the state role from manager to regulator, forsaking central planning for liberalisation and providing opportunities for private sector participation rather than relying solely on state ownership.

The Energy Strategy to 2030 represents a significant milestone as it provides an all-encompassing overview and comprehensive strategy of the energy sector, by building upon the various state programmes developed mostly in the 1990s for the various sub-sectors. Nevertheless, some of the projections in the strategy are contentious as they were not developed on the basis of detailed statistical data and models. There also appears to be too strong an emphasis on supply measures at the expense of energy demand and efficiency. More importantly, the strategy lacks specific measures to meet its stated objectives and it is therefore difficult to assess likely developments and the probability of realising its targets.

By way of example, the strategy calls for significant energy savings by the end of the projection period (specifically, a 50 per cent reduction in energy intensity compared to 2005), which is anticipated to derive from structural shifts in the economy, as it moves away from heavy industry and toward the tertiary sector, and significant "technological improvements". The document also envisages a doubling or more in the production of coal and nuclear power to reduce reliance on natural gas. While the projected energy savings and structural changes are feasible, in the context of other countries' experience, the document lacks detailed, specific and concrete actions (including demand-side measures, financing and regulatory/legislative changes) that are necessary to meet the ambitious targets set by the strategy. We expect that This and other similar issues are expected to be discussed and further elaborated in the context of "Component 2: Ad-hoc assistance related to fulfilment of indicators for the Energy Sector Budget Support Programme" of the Complementary Technical Assistance to the EU-Funded Budget Support to Ukraine's Energy Strategy Implementation project.

2.1 Reading Comprehension

1 What must be the role of a sector budget support programme?

2 Does Ukraine have enough fuel-and-energy resources?

3 What do you think is the most important priority among the objectives of Ukraine's energy strategy?

4 What policy measures are specified to meet the objectives and priorities?

5 What will a radical shift in the principles governing the Ukrainian energy sector result in?

6 How much are energy savings supposed to be?

7 Why is a doubling or more in the production of coal and nuclear power envisaged to be?

8 What specific and concrete actions should be taken to meet the ambitious targets of the strategy?

3 VOCABULARY

3. 1 Match the words given below with the nouns to make word partnerships. Write sentences of your own with these word partnerships.

ambitious	***conventional***	***fundamental***	***major***	***similar***
alternative	***domestic***	***heavy***	***natural***	***specific***

1	_____	actions	**6**	_____	industry
2	_____	energy production	**7**	_____	issues
3	_____	energy resources	**8**	_____	objectives
4	_____	energy sources	**9**	_____	prerequisite
5	_____	gas	**10**	_____	targets

3.2 Which word or expression from the text can be used to mean the following.

1 the fact of owing something _____

2 the act of making sth better _____

3 the complete control, possession or use of sth _____

4 the basic systems and services that are necessary for a country or an organization _____

5 something that must exist or happen before sth else can happen or be done _____

3.3 Complete the following table. Write sentences of your own with the new words.

verb	***infinitive***	***-ing form***	***past participle***
assist	_____	_____	_____
promote	_____	_____	_____
participate	_____	_____	_____
regulate	_____	_____	_____
transport	_____	_____	_____

3.4 Choose the best words *maintain, highlight, diversify, adopt* or *lack* to fit these gaps. Make any changes if necessary.

1 The permanent observer of the Holy See at the United Nations _____ three issues in energy debate.

2 The country is planning to _____ its energy sources.

3 All US companies are required to _____ the new standards.

4 To _____ the same amount of energy all throughout the day could be tough.

5 Some offices still _____ basic amenities such as air conditioning.

3.5 Use the correct form of the words in brackets to complete the sentences.

1 The government requires continual _____ (***improvement/demand/increase***) in energy and resource use efficiency.

2 Nationally-driven _____ (***policy/politics/problem***) concerning the production and distribution of energy has existed for many years.

3 One of the biggest issues that government is facing is the high cost of _____ (***domestic/home/inside***) energy production.

4 Iran is the most secure, most economical natural gas transit _____ (***route/role/ road***) for Central Asian republics.

5 Ukraine is situated right in the intersection of oil and gas _____ (***transportation/ translation/transformation***) routes of the Eurasian continent.

3.6 Complete the sentences using correct forms of words given in brackets.

Energy Production and Use

Energy(1) _____ (PRODUCE) and use are sensitive to changes in the climate. For example, (2) _____ (INCREASE) temperatures will reduce (3) _____ (CONSUME) of energy for (4) _____ (HEAT) but increase energy used for (5) _____ (COOL) buildings. The implications of climate change for energy supply are less clear than for energy demand.

Climate change effects on energy supply and demand will depend not only on (6) _____ (CLIMATE) factors, but also on patterns of (7) _____ (ECONOMY) growth, land use, (8) _____ (POPULATE) growth and distribution, (9) _____ (TECHNOLOGY) change and social and cultural trends that shape individual and (10) _____ (INSTITUTION) actions.

4 LANGUAGE REVIEW

Grammar: •Past Perfect and Past Perfect Continuous • the contrast between Past Simple, Past Continuous and Past Perfect • Quantifiers: *a lot of – much – many*, *a few/few – a little/little*

4.1 Match the sentences in the Past Perfect or the Past Perfect Continuous with the correct description.

1	They had left before we got to the office.	**a**	a complete past action which had visible results in the past
2	He had been working as an electrical engineer for 15 years before he resigned.	**b**	a past action of certain duration which had visible results in the past
3	They were sad because they had failed the test.	**c**	life experience before some past action

4	She had never been abroad, and it was her first business trip to a foreign country.	**d**	a past action which occurred before another past action or before a stated past time
5	They were absolutely exhausted because they had been working since the morning.	**e**	an action continuing over a period up to a specific time in the past

1- …; 2 - …; 3 - …; 4 - …; 5 - …

4.2 Rewrite the sentences using the Past Simple or the Past Perfect Tense.

1 Mike finished reading the instructions. Then he left the office.

When Mike _____ .

2 She stepped into her office. The telephone rang.

She _____ just _____ .

3 They became famous. They presented their first model.

_____ only after _____ .

4 Mary shook his hand. She saw him before.

As Mary _____ she realized that _____ .

5 Our company put a lot of money into developing advanced technology. The company became profitable.

Only after our company _____ .

4.3 Put the verbs in brackets into one of the past tenses.

1 When I _____ (***arrive***), I _____ (***register***) at the reception and _____ (***go***) straight to the conference hall.

2 I _____ (***work***) hard, so I _____ (***feel***) that I _____ (***deserve***) a holiday.

3 When the supervisor _____ (***come***), I_____ (***finish***) all my work, so I _____ (***have***) very little to do.

4 I _____ (***always/believe***) that with my specialty it would be very easy to get the job.

5 We _____ (***discuss***) the report about the results of the starting test for over an hour when we _____ (***agree***) that Mike should prepare some detailed figures before the next meeting.

6 How _____ you _____ (***feel***) when you _____ (***hear***) about moving our office?

7 I_____ (***know***) that they _____ (***already/deliver***) all the lighting installations.

8 The technician _____ (***install***) some new software on my PC when the short circuit _____ (***occur***).

9 Robert _____ (***try***) to change a light bulb when he _____ (***slip***) and _____ (***fell***).

10 We _____ (***be***) late because we _____ (***have***) some car problems. By the time we _____ (***get***) to the train station, Susan _____ (***wait***) for us for more than two hours.

4.4 Choose the correct option.

1 'Are you going to test the system?'

'No, I …….. it yesterday.'

a did **b** had done **c** had been doing

2 'Did you see the project manager?'

'No, he …….. by the time I arrived at the site. '

a was leaving **b** had been leaving **c** had left

3 'How often do you have to read design specifications?'

'I …….. do it every day.'

a recently **b** usually **c** never

4 'Did the electrician arrive on time?'

'No, I …….. for an hour before he arrived.'

a was waiting **b** had waited **c** had been waiting

5 'This installation is very efficient. Is it new?'

'No, we …….. it for ages.'

a had **b** have **c** have had

6 ‘What time do you finish work?’

‘Actually, I …….. .’

a have just finished **b** finish **c** had just finished

7 ‘What about the project financial situation?’

‘It …….. better slowly.’

a gets **b** is getting **c** has been getting

8 ‘Where is Ann?’

‘She …….. on the phone when I saw her.’

a was talking **b** talked **c** had talked

9 ‘Did you enjoy your trip?’

‘Yes, we …….. at a fabulous hotel. The company paid for all our expenses.’

a have stayed **b** had stayed **c** stayed

10 ‘Sorry for being late.’

‘We …….. our discussion.’

a had almost finished **b** almost finishes **c** have almost finished

4.5 Read the micro dialogues choosing the right option.

1 – This year we have a lot of orders.

– Yes, but not as ***many/much*** as we used to.

2 – We’d better hurry.

– Definitely. The bus goes in ***few/a few*** minutes.

3 – We’ve got so ***much/ many*** work to do.

– I suppose we’ll be in the office till late.

4 – There is ***much/many*** enthusiasm for this idea.

– I absolutely agree. I’m sure we’ll get a success.

5 – They have made ***little/few*** progress in their research.

– Now I understand why they are looking so upset.

6 – ***Much/many*** debate has been generated by his article.

– I’ve heard. He has ***a lot of/much*** fresh ideas.

7 – Many/much remains to be done before we launch the installation into operation.

– Yes, we have to check up ***a lot/a little***.

8 – They didn't show ***much/many*** interest in our new electrical grid.

– Do you think they are not going to sign the contract?

4.6 Underline the words that are possible in these sentences.

1 Surprisingly, there wasn't much ***discussion/debate/quarrel*** at the meeting about the necessity to reconstruct the electrical shop.

2 A new factory provided jobs in the region where there wasn't much ***job/work/jobs*** employment.

3 I don't have much ***information/details/facts/news*** to help you in these circumstances.

4 Many ***questions/research/problems*** need to be considered before the final decision can be made.

5 Are there many ***equipment/computers/facilities*** at your plant?

5 SKILLS

Get acquainted with the opinion of Günther H. Oettinger, European Commissioner for Energy, and analyze the charts below and formulate the priorities for European energy policy in the coming years.

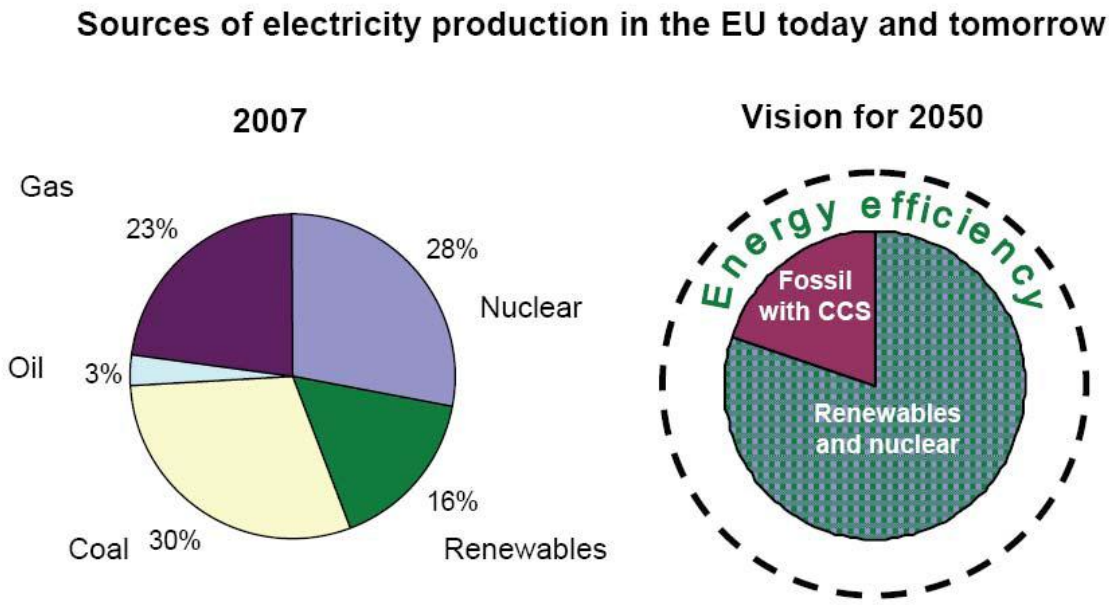
' Energy is the heart of our economy and our society. If we invest in our energy system, we are investing in the future. If, however, we neglect our energy supply and energy efficiency, the consequences could be profound and irreversible. In this respect, our plans regarding energy technology and infrastructure are crucial.'

'I would like to specifically highlight three topics that are of fundamental importance for the proper functioning of the internal market in energy and our future energy supply, namely technology, infrastructure and finances.'

(Günther H. Oettinger, European Commissioner for Energy

Securing Europe's Energy Supply

The priorities for European energy policy in the coming years)



UNIT 9

1 LEAD-IN

1 Have you ever thought who has created all the many thousands of little and big things we use in our everyday lives?

2 When you hear the word *scientist,* do you think about someone who is a) male?, female?, boring?, well paid?, or responsible? Or all five?

3 Do scientists or engineers make our everyday lives easier? Say you reasons.

4 Can you list at least three things that any scientist can do to help build a better world?

2 READING

THE ETHICS AND SOCIAL RESPONSIBILITY OF SCIENTISTS AND TECHNOLOGISTS

Modern scientific and technological progress has raised a complicated problem of the social responsibility of scientists. Here are some of them: How far are scientists responsible for the application of their work? If they are, how can they best fulfill this responsibility? What is the ethics of scientific exploration, how is it related to the universal ethical values of mankind? Finally a number of scientists have raised the problem of the socio-ethical control of research referring to man, the justification for a moratorium on some fields of research threatening man and the entire mankind. Is such control possible in whatever form? Will it not restrict the freedom of research? How is this freedom related to the social and humanistic responsibility of scientists and technologists?

Scientists are realizing more and more clearly the indisputable fact that their social responsibility, the role of the ethical principle in science should grow in geometrical progression, if mankind and science itself are to develop at least in arithmetic progression. The ethics of science is being asserted as a *sine qua non* of effective performance of humanistic-oriented scientific research. There is no alternative to this either for science or for humanity.

In mastering nuclear energy man has developed a power which, unless controlled by his intellect, could extinguish life and snuff out our planet's blue glow. This idea is convincingly proved by the disaster at the Chornobyl atomic power station in Ukraine. Such accidents take place from lack of knowledge in the fields of natural and technical sciences or from lack of consciousness about the negative consequences of the application of the scientific and technological innovations.

Science and technology by themselves are not a source of ethics and values. They can tell you what will happen if you do this or that: for instance, how many people might be killed by a nuclear bomb, but the decision on whether to develop the bomb cannot be a scientific decision. This can only be judged by

something outside science — ethics. Scientists and technologists should be aware of the consequences of their discoveries, projects.

Hence the crucial importance is attached today to the problem of socio-ethical control of science with a view to its humanistic orientation and development as a science for man. We need a new ethics and it must be many-sided. The belief that only one idea is true is tremendously dangerous. If you have only one way of looking at the world you abuse it. The new ethics must recognize that there are many ways out of the human predicament, which present different aspects of the same situation. Only on the basis of such an ethical attitude can we solve the problems which threaten the world today.

2.1 Reading Comprehension.

1 What has the problem of the social responsibility of scientists resulted from?

2 What aspects of the social responsibility of scientists does the problem touch upon?

3 What is the ethics of science being asserted as a *sine qua non* of?

4 What can lack of consciousness of scientists and technologists result in?

5 What should be the basis of new ethics of scientists?

3 VOCABULARY

3. 1 Match the following word pairs from the above given texts to make word partnerships.

A.	**1**	be responsible	**a**	by the disaster
	2	be related	**b**	for the application
	3	be judged	**c**	to the universal values
	4	be aware	**d**	by sth outside science
	5	be proved	**e**	of the consequences

1-…; 2-…; 3-…; 4-…; 5-…

B.	**1**	the application	**a**	of mankind

2	the fields/freedom	**b**	of exploration
3	the control	**c**	for man
4	the values	**d**	of research/science
5	the science	**e**	of work/innovations

1-…; 2-…; 3-…; 4-…; 5-…

3.2 Which word or expression from the text can be used to mean the following.

A.	**1**	to learn or understand sth completely	**a**	to develop
	2	to do or have what is required or necessary	**b**	to extinguish
	3	to be a danger to sth	**c**	to threaten
	4	to destroy sth	**d**	to fulfill
	5	to think of or produce a new idea, product, etc. and make it successful	**e**	to master

1-…; 2-…; 3-…; 4-…; 5-…

B.	**1**	a careful study of a subject	**a**	consciousness
	2	how well or badly you do sth	**b**	decision
	3	knowledge about the structure and behavior of the natural and physical world	**c**	performance
	4	a choice or judgement that you make after thinking	**d**	research
	5	the state of being aware of sth	**e**	science

1-…; 2-…; 3-…; 4-…; 5-…

3. 3 Match the sentence beginnings (1-5) to correct endings (a-c).

1 The goal of scientists and technologists is

2 Scientists and technologists should

3 The experts can prevent problems

4 Science is a great source of power,

5 The ethics and responsibility of science should be

a an integral part of the education and training of all scientists.

b a major driver of social change.

c at an early stage when it is easier to take action.

d protect society's interest as their own.

e to increase the body of human knowledge.

1-…; 2-…; 3-…; 4-…; 5-…

3.4 Complete the following passage with the verbs given below.

successful scientists communicate scientific

Researchers practitioners others students

The Social Foundations of Science

Throughout the history of science, philosophers and (1) _____ have sought to describe a single systematic procedure that can be used to generate (2) _____ knowledge, but they have never been completely(3) _____. The practice of science is too multifaceted and its (4) _____ are too diverse to be captured in a single overarching description. (5) _____ collect and analyze data, develop hypotheses, replicate and extend earlier work, (6) _____ their results with (7) _____, review and critique the results of their peers, train and supervise associates and (8) _____ , and otherwise engage in the life of the scientific community.

3.5 Complete the sentences using correct forms of words given in brackets.

1 Scientific discovery leads _____ to technology which often changes the world in permanent and violent ways. (DIRECT)

2 I think it's unethical to put the world's most _____ technology into the hands of the people who have done the most harm to the world. (ADVANCE)

3 It is a multi-disciplinary journal that explores _____ issues of direct concern to scientists and engineers. (ETHIC)

4 Science is much more than curiosity – the observing, measuring, analyzing – and the _____ of facts. (ACCUMULATE)

5 Social responsibility is becoming an ever more important issue in the _____ of

science and society. (INTERACT)

4 LANGUAGE REVIEW

Grammar: •Future forms • Quantifiers: *both/neither – all/none - either*

4.1 Match the sentences with the correct description of a future form.

1	What are you doing next Tuesday?	**a**	predictions about the future
2	I'm sure they will like a new design.	**b**	on-the-spot decisions or offers
3	Look at the sky! It is going to rain.	**c**	actions/events/situations which will definitely happen in the future and which cannot be controlled
4	Jim's plane leaves at 10 tomorrow morning.	**d**	promises, threats, warnings, requests, hopes
5	I'm going to change the plan.	**e**	intentions and ambitions
6	I'm sorry to hear that. I'll find out what the problem is right now.	**f**	predictions when there is evidence that something will happen in the near future
7	By the end of this month, he'll have been working in the company for ten years.	**g**	fixed arrangements in the near future
8	This time next week we'll be signing a contract.	**h**	timetables/programmes
9	It is not necessary to phone Tom. I'll be seeing him at work later on today.	**i**	actions which will be in progress at a stated future time
10	She will be 30 this year.	**j**	actions which will definitely happen in the future, as a result of a routine or arrangement
11	By the end of the year we'll have sold around 1,000 installations.	**k**	when we ask politely about someone's plans for the near future, in order to see if our wishes fit in with their plans

12	Stop being late all the time or I'll fire you.	**i**	for actions which will be finished before a stated future time
13	Will you be going to the head office this afternoon? Can you take these documents.	**m**	to emphasise the duration of an action up to a certain time in the future.

1-…; 2 - …; 3 - …; 4 - …; 5 - …; 6 - …; 7 - …; 8 - …; 9 - …; 10 - …; 11- …; 12- …; 13- …

4.2 Put the verbs in brackets into the correct tense denoting a future activity.

1 – I'm so tired. I have been working all night and I'm about to fall asleep.

– I _____ (***get***) you some coffee.

2 – They don't like him to know about our new model.

– I promise I _____ (***not/tell***) him about it.

3 – Is Jerry going with us to the branch office?

– I don't know, but I _____ (***see***) him at the meeting tomorrow. I _____ (***ask***) him then.

4 – _____ (***you, do***) me a favor, Sam?

– Sure, what do you want me to do?

– I _____ (***change***) the broken light bulb in the lamp above the desk. I need someone to hold the ladder for me while I am up there.

– No problem, I _____ (***hold***) it for you.

5 – The phone is ringing.

– I _____ (***get***) it.

6 – I heard you're taking a French class at the community college.

– Yeah, I _____ (***go***) to Paris next spring and I thought knowing a little French would make the trip easier.

7 – I'm arriving next Friday.

– When you _____ (***get off***) the plane, I _____ (***wait***) for you.

8 – How are you today?

– I am sick of rain and bad weather! Hopefully, when we _____ (***wake***) up tomorrow morning, the sun _____ (***shine***) .

9 – How is the report? Is it typed?

– Not yet, but I _____ (***finish***) it by 11 o'clock.

10 –What are your future plans?

– I know definitely that _____ (***not study***) engineering. I'm rather bad at maths.

11 – If you _____ (***need***) to contact me sometime next week, I _____ (***stay***) at the Sheraton in San Francisco.

– OK. Let's keep in touch.

12 – It is so hot in here!

– I _____ (***turn***) the air-conditioning on.

13 – What _____ (***plan***) to do this summer?

– I _____ (***spend***) a couple of weeks with my family and then _____ (***go***) somewhere in Europe.

14 – We are late.

– Yes, this taxi is so slow. By the time we get there, the meeting _____ (***finish***).

15 – _____ (***you/use***) the conference room next Tuesday?

– I'm not sure yet.

4.3 Rewrite the sentences using *be (not) to, due to, about to, on the point of, plan/intend/propose/hope/agree/promise (not) to.*

1 You will arrive at the office at 7.30 in the morning.

2 They are making plans. They are going to install a new lighting control system.

3 Do you promise that you won't tell anyone about this incident?

4 I hope our company will meet future energy needs and adapt to new environmental regulations.

5 The economy will collapse in the very near future; it will happen at any time now.

6 The Government has made a promise. They will not increase payment for electrical energy during the next year.

7 I'm sorry I can't talk to you now. I'm going to the meeting in a minute.

8 You must not enter the building of the power plant without signing your name in the register.

9 The City Council has decided what they would like to do one day. They are going to close the nuclear power plant

10 The train will depart at 8.25.

11 The factory will be closed for three weeks for repairs.

12 The Chief Executive is going to announce his resignation.

4.4 Use *both … and, either … or, neither … nor,* or *not only … but also* to rewrite the sentences.

1 James wants to take an electrical engineering training course in Edinburgh; so does David.

2 Tracy hasn't been to a business trip abroad and Stella hasn't either.

3 The teachers thought the exam results were unfair and so did the students.

4 James will bring the manuals, or else Paul will.

5 Mary and David are not particularly creative.

6 Cathy is going to the meeting, or else Andrea is.

7 Mike hasn't seen the project yet, neither has Daniel.

4.5 Fill in: *all, every, none, both, either, neither*.

1

Mary: Have you decided what electrical engineering company you would like to apply to for the job?

John: Not yet. I have visited some electrical engineering companies in our city, but (1) _____ of them need somebody with at least 5-year experience in the field. (2) _____ of them provide training. But I want (3) _____ to get some experience and have some prospects for promotion.

Mary: Why don't you try to send your CV and covering letters to smaller companies? Two friends of mine did it. (4) _____ found the job and were successful. In fact, (5) _____ of them are complaining. You have to start from something.

John: Right you are. I'll try. I've seen a couple of advertisements. (6) _____ were quite interesting.

2

Alice: Have you decided where to go on holiday?

Judy: Not yet. I have a brochure but (7) _____ the hotels are so expensive. (8) _____ of them provide full-board and I want (9) _____ half-board or self-catering.

Alice: Why don't you rent a room? (10) _____ people say it is cheap and enjoyable. If you share a room, (11) _____ of you pay a lot of money.

Judy: Alright, let's have a look at some rooms in Italy or Spain. They (12) _____ look nice and I see that (13) _____ room has a sea-view. (14) _____ of the hotel rooms available has any view at all.

Alice: Right – so it's (15) _____ Italy or Spain.

Judy: Yes. (16) _____ of them look perfect.

5 SKILLS

As a result of the current discussion how further global warming could be prevented or at least mitigated, the revival of nuclear power seems to be in everybody's or at least in many politicians' and scientists' mind.

Divide into two teams. The first must put forward the arguments to support the idea of nuclear power development, while the other one must present the opposite point of view. Use the ideas mentioned below.

PROS OF NUCLEAR POWER	CONS OF NUCLEAR POWER
• Nuclear power generation does emit relatively low amounts of	• The problem of radioactive waste is still an unsolved one. The waste

carbon dioxide (CO2). The emissions of green house gases and therefore the contribution of nuclear power plants to global warming is therefore relatively little.

- This technology is readily available, it does not have to be developed first.

- It is possible to generate a high amount of electrical energy in one single plant.

from nuclear energy is extremely dangerous and it has to be carefully looked after for several thousand years (10,000 years according to United States Environmental Protection Agency standards).

- High risks: Despite a generally high security standard, accidents can still happen. It is technically impossible to build a plant with 100% security. A small probability of failure will always last. The consequences of an accident would be absolutely devastating both for human being and for the nature.

- Nuclear power plants as well as nuclear waste could be preferred targets for terrorist attacks. No atomic energy plant in the world could withstand an attack similar to 9/11 in New York. Such a terrorist act would have catastrophic effects for the whole world.

- During the operation of nuclear power plants, radioactive waste is produced, which in turn can be used for the production of nuclear weapons.

- The energy source for nuclear energy is Uranium. Uranium is a scarce resource; its supply is estimated to last only for the next 30 to 60 years depending on the actual demand.

- The time frame needed for formalities, planning and building of a new nuclear power generation plant is in the range of 20 to 30 years

COMMUNICATION ACTIVITIES (for Unit 1)

Name:

Age: _____

Nationality: _____

Marital status: _____

Salary: _____

Company: _____

Present position: _____

_____

Background: _____

_____

Present responsibilities: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

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_____

_____

_____

_____

_____

Name: Luis Menga

Age: 31

Nationality: Brazilian

Marital status: single

Salary: 40,000 per annum

Company: Global Electrical Engineering Inc, Austin, Texas

Present position: Electrical Engineer

Background:

Bachelors of Electrical Engineering, Idaho State University, 2002
Circuits and Power Systems, Diploma, Arlington Technical Institute, 2002

Present responsibilities:

- Perform Short-Circuit, Coordination and Arc-Flash Studies on electrical distribution systems of hospitals, schools, office buildings, industrial site, etc.
- Perform site surveys to gather electrical equipment details needed to perform Power System Studies.
- Design, draft original and revised drawings for engine control systems, remote monitoring and control systems and other electrical systems as required.
- Prepare bills of materials for projects, create operating procedures for custom designed projects
- Work with other departments as a team to ensure consistent quality and coordinated effort
- Assist and troubleshoot electrical issues at customer sites

Appendix 1. Irregular Verbs

There are about 180 irregular verbs. Some are very unusual. Here are the most useful.

First form	Second form	Third form
All forms the same		
cost	cost	cost
cu	cut	cut
hit	hit	hit
hurt	hurt	hurt
let	let	let
put	put	put
set	set	set
shut	shut	shut
split	split	split
Similar sound group		
beat	beat	beaten
bit	bit	bitten
eat	ate	eaten
fall	fell	fallen
forget	forgot	forgotten
forgive	forgave	forgiven
give	gave	given
hide	hid	hidden
shake	shook	shaken
take	took	taken
tear	tore	torn
wear	wore	worn
blow	blew	blown
flow	flew	flown
know	knew	known
throw	threw	thrown
grow	grew	grown
draw	drew	drawn
begin	began	begun
drink	drank	drunk
ring	rang	rung
sing	sang	sung
shrink	shrank	shrunk
freeze	froze	frozen
speak	spoke	spoken
steal	stole	stolen

First form	Second form	Third form
Second and third forms the same		
bend	bent	bent
build	built	built
feel	felt	felt
keep	kept	kept
leave	left	left
light	lit	lit (lighted)
lend	lent	lent
mean	meant	meant
meet	met	met
send	sent	sent
shoot	shot	shot
sleep	slept	slept
spend	spent	spent
spoil	spoilt	spoilt
get	got	got
lose	lost	lost
sat	sat	sat
bring	brought	brought
buy	bought	bought
fight	fought	fought
think	thought	thought
catch	caught	caught
teach	taught	taught
feed	fed	fed
find	found	found
have	had	had
hear	heard	heard
hold	held	held
make	made	made
pay	paid	paid
read	read	read
say	said	said
sell	sold	sold
stand	stood	stood
understand	understood	understood
tell	told	told
stick	stuck	stuck

break	broke	broken	win	won	won
wake	woke	woken	shine	shone	shone
choose	chose	chosen	***All forms different***		
drive	drove	driven	be	was/were	been
write	wrote	written	become	became	become
ride	rode	ridden	come	came	come
			do	did	done
			go	went	gone
			run	ran	run
			see	saw	seen
			show	shown	shown
			spill	spilled	spilt

Confusing Verbs

lay	laid	laid	laying	- to put sth in a particular position
lie	lay	lain	laying	- to be or put yourself in a flat position
lie	lied	lied	lying	- to say sth that you know is not true

Appendix 2. Word Formation

- **Prefixes** are syllables which we add before certain words to form new words. The meaning of the new words depend on the prefix that has been used.

anti- = ***against*** (anticlockwise)
bi- = ***two*** (bilingual)
co- = ***with*** (co-educational)
counter- = ***in the opposite direction*** (counterattack)
ex- = ***previous, former*** (ex-president)
inter- = ***between*** (interstate)
mis- = ***done wrongly or badly*** (misread)
mono- = ***one*** (monolithic)
multi- = ***many*** (multicultural)
non- = ***not*** (nonexistent)
out- = ***more, better*** (outlast)
over- = ***(done) to a great extent*** (overdo)
post- = ***after*** (postwar)
pre- = ***before*** (prenuptial)
pro- = ***in favour of*** (pro-American)
re- = ***again*** (redesign)
semi- = ***half*** (semi-circle)
sub- = ***under, less*** (subordinate)
super- = ***big, more*** (superior)
trans- = ***from one side, group etc to another*** (transatlantic)
tri- = ***three*** (triathlon)
under- = ***not enough*** (underdeveloped)
uni- = ***one*** (uniform)

The prefixes below are used to express opposite meanings.

de-	destabilize, dethrone
dis-	disadvantage, disbelief
in-	insufficient **BUT**
	il- (***before*** **l**) illegal
	im- (*before* b, m, p) immature, improbable
	ir- (***before*** **r**) irregular **BUT** unreal, unremarkable
non-	non-dairy
un-	unattractive, uncivilized

Some prefixes are added to words to form verbs.

en-	courage – encourage
	BUT em- ***before*** **b, m, p**) body – embody

- **Suffixes** are syllables which we add to the end of certain words to form new words.
  - **Nouns referring to people**
    - **verb + *-er/-or/-ar (***work – worker, act – actor, burgle – burglar)
    - **noun/verb/adjective + *-ist*** (social – socialist, piano – pianist, natural – naturalist)
    - **verb + *-ant/-ent*** **(**assist – assistant, reside – resident)
    - **noun + *-an/-ian*** (republic – republican, Italy – Italian)
    - **verb + *-ee (passive meaning)*** (employ – employee)
  - **Nouns formed from verbs**

-age	post – postage
-al	propose – proposal
-ance	perform – performance
-ation	animate – animation
-ence	coincide – coincidence
-ion	televise – television
-ment	employ – employment
	pretend – pretension ***(verbs ending in –d/-t)***
-sis	hypothesise – hypothesis
-tion	describe – description
-ure	close – closure
-y	discover - discovery

  - **Nouns formed from adjectives**

-ance	relevant – relevance
-cy	urgent – urgency
-ence	patient – patience
-ion	isolated – isolation
-iness	happy – happiness
-ness	sad –sadness
-ity	relative – relativity

-ty royal – royalty
-y honest – honesty

- **Adjectives formed from nouns**
  -ous nausea –nauseous
  -al nation – national
  -ic history – hystoric
  -ical theatre – theatrical
  -ish girl – girlish
  -ive suppression – suppressive
  -ful (with) dread – dreadful
  -less (without) name – nameless
  -ant brilliance – brilliant
  -able reason – reasonable
  -y wealth – wealthy
  -ly world – worldy

- **Adjectives formed from verbs**
  -able treat – treatable (verbs ending in **–d/-t**)
  -ible sense – sensible
  -ive exclude – exclusive
  -ate consider- considerate
  -ent differ – different

- **Verbs formed from adjectives**
  -en bright – brighten
  -ise real- realize

- **Verbs formed from nouns**
  -en strtenth - strenthen

Appendix 3. Pronunciation

Pronunciation of *–(e)s* ending (noun plurals and the 3 d person singular of verbs in the Present Simple)

/S/	after **/f/, /t/, /p/, /k/**	laughs, spots, drips, racks
/IZ/	after **/z/, /dʒ/, /tʃ/ , /s/, / ʃ/**	houses, dodges, ditches, passes, lashes
/Z/	after **/b/, /p/, /m/, /d/, /l/, /n/, /v/**	dabs, rigs, beams, thrills, pains, leaves, toys

Pronunciation of *-ed* ending

/id/	after **/t/, /d/**	lifted, branded
/t/	after **/k/, /tʃ/, /f/, /s/, /ʃ/, /p/**	baked, matched, laughed, lanced, dashed, trapped
/d/	after **/b/, /dʒ/, /m/, /v/, /g/, /l/, /n/, /z/, vowel +/r/**	snubbed, nudged, dimmed, craved, drugged, spilled, opened, cruised, cared

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