Міністерство освіти і науки України
Національний університет водного господарства та природокористування
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МЕТОДИЧНІ ВКАЗІВКИ

і навчальні завдання до розвитку мовних і мовленнєвих компетентностей та навичок самостійної роботи з навчальної дисципліни «Іноземна мова професійного спілкування (англійська)» для здобувачів вищої освіти другого (магістерського) рівня за освітньо-професійними програмами «Електроенергетика, електротехніка, електромеханіка» спеціальності 141 «Електроенергетика, електротехніка, електромеханіка» галузі знань 14 «Електрична інженерія»;
«Автоматизація, комп’ютерно-інтегровані технології та робототехніка» спеціальності 174 «Автоматизація, комп’ютерно-інтегровані технології та робототехніка» галузі знань 17 «Електроніка, автоматизація та електронні комунікації» денної і заочної форм навчання

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Методичні вказівки і навчальні завдання до розвитку мовних і мовленнєвих компетентностей та навичок самостійної роботи з навчальної дисципліни «Іноземна мова професійного спілкування (англійська)» для здобувачів вищої освіти другого (магістерського) рівня за освітньо-професійними програмами «Електроенергетика, електротехніка, електромеханіка» спеціальності 141 «Електроенергетика, електротехніка, електромеханіка» галузі знань 14 «Електрична інженерія»; «Автоматизація, комп'ютерно-інтегровані технології та робототехніка» спеціальності 174 «Автоматизація, комп'ютерно-інтегровані технології та робототехніка» галузі знань 17 «Електроніка, автоматизація та електронні комунікації» денної і заочної форм навчання. [Електронне видання] / Тадеєва М. І. – Рівне : НУВГП. 2024. – 45 с.

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Керівник освітньо-професійної програми «Електроенергетика, електротехніка, електромеханіка» кандидат технічних наук, доцент Літковець С. П.
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ЗМІСТ

Вступ

У сучасний період глобалізації суспільних процесів, інтернаціоналізації економіки та панування інформаційно-комунікаційних технологій в усіх сферах людського життя важливу роль відіграють вміння і навички іншомовного спілкування людини на всіх рівнях її освіти упродовж життя. Важливим засобом формування іншомовної комунікативної компетентності студентів, яка входить до ключових компетентностей, необхідних в їхній майбутній професійній діяльності, служить іноземна мова професійного спілкування. Вивчення англійської мови професійного спілкування вкрай необхідне для підготовки досвідчених фахівців у сфері електричної інженерії та автоматизації й розвитку комп'ютерно-інтегрованих технологій і робототехніки.

Основними завданнями цієї дисципліни є подальший розвиток мовних та мовленнєвих умінь і навичок майбутніх магістрів в усіх видах мовленнєвої діяльності: говорінні, аудіюванні, читанні, письмі та перекладі фахової літератури.

Запропоновані методичні вказівки та завдання структуровані за тематичними розділами й містять низку адаптованих спеціалізованих текстів з вітчизняних та оригінальних англомовних джерел для різних видів читання, перекладу та обговорення, а також завдання і вправи для закріплення граматичних, лексичних вмінь і навичок. Акцентовано також на особливостях галузевої термінології, що сприяє формуванню навичок професійного спілкування англійською мовою, практиці перекладу спеціальної фахової літератури, подальшому розвитку навичок міжкультурного ділового спілкування, формуванню в майбутніх магістрів здатності працювати в міжнародному контексті.

Мета методичних вказівок і навчальних завдань – допомогти майбутнім фахівцям зазначеної сфери орієнтуватися в потоці англомовної інформації та навчити їх виділяти базові проблеми електроенергетики, електромеханіки, електротехніки та автоматизації технологічних процесів, сформувати вміння і навички наукового письмового спілкування (на прикладі підготовки доповіді й презентації виступу на науково-практичній конференції).

BRIEF METHODICAL GUIDE FOR MASTER`S

The Structure and Content of ENGLISH for Specific Purposes (ESP) for the Master`s students in Electrical Engineering, Automation, Computer Integrated Technologies and Robotics

This subject belongs to the basic components in the Curriculum of training Master`s students in Ukrainian higher educational institutions. The graduates of the second educational level should obtain the English language proficiency level B2+ which ensure their foreign language communicative competence in modern society for effective functioning in academic and professional spheres. Today the university instruction in our country should further develop foreign language communicative competences of Master`s students due to growing trends of their international academic mobility which have been promoted by Bologna agreements. According to the Common European Framework of Reference for Languages (2001) the content of professional training realization of future Master`s students should be closely connected with their foreign language skills and aptitudes.

The principles of ESL Curriculum construction for the future Masters of Science are based on the ideals of internationalism, democracy and equal opportunities of young people to have access to language learning and teaching. Based on the principle of plurilingualism the Curriculum is adapted to European academic space and it opens wide international opportunities for the students. The innovative character of the Curriculum is defined by the influence of the following factors: developing intercultural and interlanguage communication and supporting the students` opportunities to sociocultural studies.

The language skills of the students are directed to the knowledge and aptitudes to use lexical, grammatical, semantic and orthographic norms of this or that language which are important components of the professional communicative competence. This competence is connected with the ability to use foreign language for communication in real life academic and job related fields and situations of professional communication. Due to the fact that the Master`s degree programs are diverse, there are no unified recommendations to the construction of Core Curriculum learning objectives and Course design. Professional communicative competence includes the development of linguistic skills by means of performing job oriented tasks, projects, presentations, exercises and learning special vocabulary in the sphere (terminology). For highly developed competence in the professional communication will be mandatory to use team teaching by language and subject specialists and also personal motivation intentions of the future professionals in Engineering, Science and Arts.

The Main Requirements for Syllabus Design (Engineering Professions)

The English for Specific Purposes Syllabus is directed on the students with B1+ proficiency level on the period of admission. It includes two modules which consist of job related skills and the bases of business communication in professional sphere. The aim of the ESP course is to develop English language competence of students on the frames of effective communication in the academic and special professional environment.

The objectives of the course:

- understand the main ideas and content of information in the processes of debates, formal discussions, talks, lectures;
- read and understand authentic texts, special literature from professional journals or Web-based resources;
- know the bases of understanding instructions, specifications for operating devices, instruments and other types of equipment;

- equire the skills how to make professional correspondence of different types (letters, e-mail communication etc.);
- participate in different students` forums (seminars, debates, scientific and practical conferences, meetings);
- react to the messages, instructions in engineering environment;
- prepare individual presentations on the topics of electrical engineering, automation, computer-integrated technologies, robotics etc.;
- write professional correspondence, business correspondence (CV, letter of application for employment, cover letter, resume); take part in job interview in order to receive a nice job ;
- prepare academic assignments, reports, reviews in standard norms;
- write an essay on the actual problem of engineering.

The Content of the Curriculum in ESP for Master` s Students is based on international levels of proficiency and corresponds to the national qualification levels. It includes the professionally oriented content (fields of subject knowledge), situational context, pragmatic skills and abilities. The purpose of the Curriculum is to help students to achieve language proficiency on B2+ and C1 levels. For this aim realization students` academic activities should be concentrated on the development of their foreign language communicative competence which includes the skills in the following areas: language and linguistic competences, socio-cultural competence, professional communicative competence. In this aspect the defined competences are characterized from the point of view of students` language behavior in specialism- related spheres and situations of every day academic and professional activities.

Language skills are treated as integral part of linguistic competence and can be formed with help of speaking skills, skills in listening comprehension, reading and writing skills and skills of translation and reviewing specialism-related literature.

In this case the students should develop their personal study skills which benefit to the creation of learning opportunities and learning environment.

Linguistic competence of Master`s students means knowledge, skills and abilities to use correctly such language forms as lexical, grammatical, phonological, semantic and orthographic ones. Lexical competence deals with the skills of selection of lexical elements including terminology in a separate sphere (profession). Grammatical competence is connected with knowledge and abilities to use grammatical forms and resources of language which help to perform communicative tasks. Semantic competence which deals with learning professional terminology is closely connected with skills of controlling the organization of meaning. Phonological and socio-cultural competences of students are obligatory to develop in all stages of tertiary education. And professional communicative competence is considered to be as the highest result by the end of the ESP course.

Professional skills as the integral part of professional communicative competence are formed during the following types of language activities, such as listening comprehension, speaking activities, reading of different kinds, writing (essay) and translation of special texts.

1. Students` professional skills in listening comprehension should include the abilities :

- to understand the main content and ideas in extended discussions, debates, seminars, other types of conversations dealing with special field of engineering;
- to understand in detail the telephone conversations and situations of business meetings and negotiations;
- to identify speakers attitude ant reaction in business and professional communication processes;

- to differentiate the people`s talks with fellow students, colleagues, employers, representatives of different age and social groups, etc.

2. Speaking activities of students should combine the abilities to produce dialogues and monologues :

- to take an active part in professional forums, meetings, conferences in academic and professional context;
- to carry out fluent interview, report on academic and field related topics;
- to develop the skills on analysis and logical skills in discussion of important problems in engineering sphere;
- to react appropriately speaking in situations of everyday life problems, social, academic, engineering problems;
- to prepare detailed Power Point Presentations on the modern problems of Electrical Engineering, Automation, Computer-Integrated Technologies, Robots Techniques.

3. Reading skills and abilities should be of the following types:

- to receive information, ideas, answers for the questions independently from a wide range of modern resources, such as specialism related texts, articles, text books, journals, etc;
- to read and understand the information from field related texts paying attention to terminology, abbreviations and using reference sources;
- to know how to do information search in the Internet and in library catalogues;
- to understand the meaning of correspondence related to professional field;
- to react on the important instructions and rules from reference books using the field related vocabulary and terminology and the help of special dictionaries.

4. Writing skills should be formed of the next types:

- to know how to write business and professional letters with the aim of searching for a job, describing personal data, experiences in academic and professional activities;

- to write field related essays giving arguments and personal attitudes towards current problems of special engineering;
- to note the important information during the lectures, seminars, workshops, conferences.

5. Translation skills obtained:

- to read and translate with the help of dictionaries texts which contain the information about the developments in specialism related engineering;
- to understand the main ideas and principles how to do different types of translation (adequate translation, review, annotation);
- to prepare personal glossary (to 100 terms) in the special field of engineering

Another important Master`s students activity in the course of English for Specific Purposes is project work development. Project work gives the opportunity for them to move from the university studied to the world of engineering profession in social life with help of modern information communicational technologies. In the process of project development students learn to work in small groups (team work) sharing ideas, approaches, resources, using their communication styles and creative abilities. Thus, students demonstrate during the project work more cooperation than competition skills in order to develop a joint product. Usually the students` projects can obtain the following final forms: presentation, review, report, small experimental product, poster session, etc.

Project work is closely connected with combination of skill-based and traditional practical classroom activities. It comprises the following stages of its development: 1) preliminary discussion of the main problem of the project, 2) setting the project objective, 3) creation of the plan, 4) language activities, 5) the main research part of the project, 6) collecting the data for the project, 7) recommendations and propositions from the team members, 8) generating the final variant of the project, 9) presentations of project results for discussion, 10) evaluation procedures. During project work development are usually used a number of pedagogical forms and methods, among them we practice brainstorms, working in the team, mapping out project stages, discussing the students` plans, making participants aware of evaluation criteria, demonstration of presentation. The language skills which the future masters obtain during the project development should be of the following types:

- listening skills (for details, for different attitudes, for teacher`s opinion),
- speaking skills (the art of discussion, arguing, giving relevant explanations, proposing new ideas, responding to the questions and expressing personal ideas, interpreting data,
- reading skills (reference to prior reading, intensive and extensive reading, reading with understanding of main ideas of the texts, making plan and summary of the texts) ,
- writing skills (using professional vocabulary for preparation of an esseys, describing the content of texts, note-making work, personal propositions, filing a number of forms).

The Syllabus in ESP for Master`s students in Engineering (Electrical Engineering, Automation, Computer-Integrated Technologies and Robotics) is based on the Core ESP Curriculum and should be realized through the main aims: 1) practical, 2) educational, 3) developmental, 4) cognitive, 5) socio-cultural. The Syllabus plan and structure (two modules) is developed by the staff of the foreign languages department of the university with the credits and hours defined in the degree program. The first module deals with business communication (searching the job, application documents – resume, cover letter, job interview) and the second one is connected with tools and techniques of field related communication (reading and translation of texts, types of translation, learning terminology, extra linguistic means of communication, preparing presentation and annotation to graduate Master`s paper, academic writing (essay)).

Unit I. Reading activities

Different types of reading is the integral part of formation the professional foreign language communicative competence of the future engineers. Reading field related texts has the aim to develop students` abilities to find and select the relevant information on general and special topics on electrical engineering, automation, computer-integrated technologies and robotics. By the end of the course students should be able to: 1) understand the main ideas of authentic texts in the sphere of engineering (equipment, appliances, devices, innovative technologies, inventions), 2) work with professional correspondence in electrical and automation spheres, 3) distinguish between relevant and non-relevant information, important and less important facts and phenomena, 4) guess the meaning of unfamiliar word combinations from the context, 5) use the terminology of the sphere, 6) read the sociocultural information with critical thinking and creative approach.

Texts for Reading Activities

Text 1. History and definitions of ohm, ampere, volt, electric current

The history of Ohm, Ampere, Volt, and Electric Current is intertwined with the evolution of our understanding of electricity and magnetism, spanning centuries of scientific inquiry and experimentation.

Georg Simon Ohm, a German physicist, made groundbreaking contributions to the field of electrical science in the early 19th century. In 1827, Ohm published his famous work "Die galvanische Kette, mathematisch bearbeitet" ("The

Galvanic Circuit Investigated Mathematically"), where he introduced Ohm's Law. This law establishes a fundamental relationship between voltage, current, and resistance in electrical circuits. Ohm's Law states that the current passing through a conductor is directly proportional to the voltage applied across it and inversely proportional to the resistance of the conductor. Ohm's meticulous experiments and mathematical formulations laid the groundwork for the quantitative study of electrical circuits and resistance. The unit of electrical resistance, the Ohm (Ω), was named in honor of his contributions.

The Ohm is the unit of electrical resistance in the International System of Units (SI). It is denoted by the symbol Ω. Resistance refers to the opposition that a material offers to the flow of electric current. Named after the German physicist Georg Simon Ohm, the Ohm is defined as the resistance between two points of a conductor where a potential difference of one volt produces a current of one Ampere.

André-Marie Ampère, a French physicist and mathematician, made significant strides in understanding electromagnetism. Ampère's work in the early 19th century laid the foundation for modern electromagnetic theory. He discovered the relationship between electric currents and magnetic fields, demonstrating that electric currents produce magnetic effects. Ampère's experiments led to the development of Ampère's Law, which quantitatively describes the magnetic field produced by a current-carrying conductor. The unit of electric current, the Ampere (A), is named after him, recognizing his profound impact on the study of electromagnetism.

The Ampere, often abbreviated as "A," is the unit of electric current in the SI system. It is named after the French physicist and mathematician André-Marie Ampère. An Ampere is defined as the amount of electric charge passing through a given point in a circuit per unit time. In simpler terms, it represents the rate of flow of electric charge. One Ampere is equivalent to one coulomb of charge passing through a point in one second.

Alessandro Volta, an Italian physicist, is renowned for his invention of the electric battery. In 1800, Volta created the first true battery, known as the voltaic pile, which produced a continuous and stable electric current. His invention marked a significant advancement in the generation and storage of electrical energy, paving the way for numerous practical applications. The unit of electrical potential difference, the Volt (V), is named after Volta, acknowledging his pioneering work in the field of electricity. Volta's contributions revolutionized the study and application of electrical energy, laying the groundwork for modern electrical engineering and technology.

The Volt, symbolized as "V," is the unit of electrical potential difference, electromotive force, or voltage. It is named in honor of the Italian physicist Alessandro Volta, the inventor of the electric battery. One Volt is defined as the potential difference between two points in a conducting wire when one joule of energy is used to move one coulomb of electric charge between these points. Voltage is essential for driving electric currents through circuits, analogous to pressure driving the flow of water through pipes.

Electric current, the flow of electric charge through a conductor, has a rich history dating back to ancient times. The concept of electric current gained momentum in the 18th and 19th centuries through the works of scientists such as Benjamin Franklin, Charles-Augustin de Coulomb, Michael Faraday, and Hans Christian Ørsted. Franklin's experiments with electricity laid the foundation for understanding the principles of electric charge. Coulomb's law quantified the electrostatic force between charged particles, providing insights into the behavior of electrically charged objects. Faraday's experiments on electromagnetic induction demonstrated the generation of electric currents by varying magnetic fields. Ørsted's discovery of the magnetic effect of electric currents revealed the intimate relationship between electricity and magnetism. These collective efforts culminated in the development of a comprehensive understanding of electric currents and their applications in various fields, from telecommunications to power generation.

Electric Current is the flow of electric charge through a conductor. It is measured in Amperes (A). Electric currents can be either direct current (DC), where the charge flows in one direction continuously, or alternating current (AC), where the direction of flow periodically reverses. Electric current plays a fundamental role in various electrical systems and devices, including powering appliances, lighting homes, and transmitting signals in electronics.

In summary, the history of Ohm, Ampere, Volt, and Electric Current is a testament to the ingenuity and perseverance of pioneering scientists who unraveled the mysteries of electricity and magnetism. Their discoveries and innovations continue to shape our modern world, powering technological advancements and fueling progress in science and engineering. Ohm, Ampere, Volt, and Electric Current are fundamental concepts in the study of electricity, each with its own defined unit of measurement. These concepts form the basis for understanding and analyzing electrical circuits, enabling the design and operation of a wide range of electrical systems and devices essential to modern society.

Task 1. Read and translate the text and discuss it with your fellow students.

Task 2. Make the outline of the text, divide it into sections and render their content in the form of interview.

Task 3. Describe the history of electricity.

Task 4. Give and study the definitions of the basic terms dealing with electrical engineering.

Task 5. Prepare short reports about the scientists who contributed much to electrical engineering sphere.

Text 2. Electrical measuring instruments and their implementation

When we talk about electricity, we often need to measure different things to understand how it works. Electrical measurements help us figure out how much electricity is flowing, how much resistance something has, and how much power is being used. These measurements are like checking the levels on a dashboard in a car to see how fast you're going or how much fuel you have left.

Sometimes, electricity and magnetism go hand in hand. Magnetic quantities are measurements related to magnets and how they interact with electric currents. It's like when you see a magnet attracting metal objects—there's a force there that can be measured and understood.

Electrical measuring instruments are tools we use to take these measurements. They help us see how much electricity is flowing through a wire or how strong a magnetic field is. Think of them like special tools that tell us how hot something is or how heavy something weighs.

Indicating instruments are like gauges on a dashboard. They give us immediate feedback on what's happening right now. For example, a voltmeter shows how much voltage is in a circuit at a given moment. It's like the speedometer in a car, showing how fast you're going right now.

Recording instruments are like cameras for electricity. They take pictures, or recordings, of what's happening over time. So, instead of just seeing the voltage at one moment, they

show how it changes over hours or days. It's like taking a video of a journey instead of just looking at a single picture.
Integrating instruments are a bit like calculators. They don't just show one number; they combine or integrate lots of measurements to give us a bigger picture. For example, they can add up all the electricity used over a month to tell us how much power was consumed. It's like adding up all the miles you've driven to see how far you've traveled in total.

Electrical measurements, magnetic quantities, and the instruments we use to measure them help us understand and control electricity and magnetism in our everyday lives. They're like tools and gadgets that help us navigate the world of electrical energy and make sure everything runs smoothly.
Here's a simplified explanation of the implementation of electrical measurements, magnetic quantities, and related instruments:

1. Before implementing electrical measurements, it's essential to understand what we're trying to measure. This includes quantities like voltage (electric potential), current (flow of electric charge), and resistance (opposition to current flow).
2. Depending on what needs to be measured, different instruments are used. For example, a voltmeter measures voltage, an ammeter measures current, and an ohmmeter measures resistance. These instruments come in various types and designs suited for different applications and levels of precision.
3. Once the appropriate instrument is selected, it needs to be connected correctly to the circuit being measured. This involves making sure the instrument is properly calibrated to ensure accurate readings. Calibration involves adjusting the instrument to match known standards of measurement.
4. With the instrument connected and calibrated, measurements can be taken. This often involves placing the instrument in series or parallel with the circuit under test, depending on the type of

measurement being made. For example, to measure current, the ammeter is placed in series with the circuit, while to measure voltage, the voltmeter is connected in parallel.

Implementation of Magnetic Quantities and Instruments:

Magnetic quantities include parameters like magnetic field strength, magnetic flux, and magnetic induction. These are essential for understanding how magnets and magnetic materials behave.

Instruments used for measuring magnetic quantities include gaussmeters, magnetometers, and fluxmeters. These devices are designed to detect and quantify magnetic fields, flux, and induction.

Magnetic instruments need to be properly positioned and calibrated for accurate measurements. Calibration ensures that the instrument's readings correspond to known magnetic standards.

Similar to electrical measurements, magnetic measurements involve placing the instrument in the vicinity of the magnetic field to be measured. The instrument's display provides readings that indicate the strength, direction, or other characteristics of the magnetic field.

The implementation of electrical measurements, magnetic quantities, and related instruments involves understanding the principles behind these measurements, selecting appropriate instruments, connecting and calibrating them correctly, and then using them to gather data for analysis and decision-making in various applications.

Task 1. Read the text, divide it into sections on the context, give the title for every section and discuss it in small groups.

Task 2. Give the basic charsctiristics of electrical measurements using the field related terminilogy.

Task 3. Choose the main spheres of implementation of electrical measurements.

Task 4. Find out in the text and memorize the essential vocabulary connected with electrical measurement instruments.

Task 5. Give an oral summary of the information about types of electrical measurements.

Text 3. Robotics in modern life

Robotics is a field of technology that deals with the design, construction, operation, and application of robots. A robot is an autonomous or semi-autonomous machine capable of performing tasks or actions traditionally carried out by humans. Robots can be found in various industries, homes, and even outer space, performing a wide range of functions.

The concept of robots dates back to ancient times, with early examples found in mythology and folklore. However, the modern era of robotics began in the 20th century with the development of programmable machines capable of carrying out tasks automatically.

One of the earliest recorded instances of a robot-like device is the "Antikythera Mechanism," an ancient Greek analog computer used for astronomical calculations. In the 20th century, significant advancements were made in robotics with the invention of the first industrial robot by George Devol and Joseph Engelberger in the 1950s. This robot, known as the Unimate, was used for automating tasks in the manufacturing industry.

Let us analyze the following types of Robots in Different Spheres. Industrial robots are the most common type of robot and are used in manufacturing and production processes. They are designed to perform tasks such as welding, painting, assembly, and material handling on production lines. Medical robots are used in healthcare settings for tasks such as surgery, rehabilitation, and diagnostics. Surgical robots, for example, assist surgeons in performing minimally invasive procedures with greater precision and control. Service robots are designed to assist humans in various tasks outside of industrial settings. They can be found in homes, offices, hospitals, and public spaces, performing tasks such as cleaning, security, and customer service. Military robots are used for reconnaissance, surveillance, bomb disposal, and combat operations. These robots are designed to operate in challenging environments and perform tasks that are too dangerous for humans. Agricultural robots, also known as agribots or agrobots, are used in farming and agriculture for tasks such as planting, harvesting, and monitoring crops. These robots help increase efficiency and reduce the need for manual labor in the agricultural industry.

Robots play a crucial role in the manufacturing industry, where they are used to automate repetitive and labor-intensive tasks. Industrial robots increase productivity, improve product quality, and reduce production costs for manufacturers. They can work 24/7 without fatigue, leading to higher throughput and faster production cycles. Additionally, robots can perform tasks in hazardous or harsh environments, ensuring the safety of human workers. In the service sector, robots are used to augment human capabilities and improve customer experiences. Service robots can be found in hotels, restaurants, airports, and retail stores, assisting with tasks such as cleaning, delivery, information provision, and entertainment. These robots help businesses streamline operations, enhance efficiency, and provide innovative services to customers.

Robotics has a rich history dating back to ancient times, with modern robots playing vital roles in various spheres such as industry, healthcare, agriculture, and services. As technology continues to advance, robots are expected to become increasingly intelligent, versatile, and integrated into our daily lives, transforming the way we work, live, and interact with the world around us.

Here's a fundamental text highlighting interesting facts about the usage of robotics in different countries.

Japan is a global leader in robotics technology and has one of the highest densities of robots per capita in the world. Robots are extensively used in Japan across various sectors, including manufacturing, healthcare, entertainment, and even as companions for the elderly. The country's aging population has driven the development of robots designed to assist with caregiving tasks and provide companionship to the elderly.

The United States is home to some of the world's most advanced robotics companies and research institutions. Robotics technology is widely utilized in the US military for tasks such as reconnaissance, surveillance, and bomb disposal. Additionally, the US is a major hub for the development of autonomous vehicles and drones, with companies like Tesla, Waymo, and Amazon leading the way in innovation.

Germany is known for its strong manufacturing industry and has a significant presence in the field of industrial robotics. German companies such as KUKA and FANUC are global leaders in the production of industrial robots used in automotive assembly, electronics manufacturing, and other industries. Germany also invests heavily in research and development of robotics technology, particularly in areas like human-robot collaboration and automation.

South Korea has emerged as a major player in the field of robotics, with a strong focus on service robots and humanoid robotics. The country's government has invested heavily in robotics research and development, leading to the creation of advanced robots for tasks such as healthcare, education, and entertainment. South Korea is also home to the annual Robot World Expo, one of the largest robotics exhibitions in the world.

China is rapidly becoming a global leader in robotics, driven by government initiatives to promote automation and innovation. The country's manufacturing sector is the largest consumer of industrial robots, with Chinese companies investing heavily in automation to improve productivity and reduce labor costs. China is also investing in the development of service robots for applications such as delivery, retail, and hospitality.

Singapore is known for its highly advanced and technologically driven economy, and robotics plays a significant role in various sectors. The Singaporean government has launched initiatives to promote the adoption of robotics and automation in industries such as logistics, healthcare, and construction. Singapore is also home to several robotics startups and research institutions focused on developing cutting-edge robotic solutions.

Sweden has a strong tradition of innovation and is home to several world-renowned robotics companies, including ABB and Universal Robots. Swedish companies are at the forefront of developing collaborative robots, or cobots, which are designed to work alongside humans in industrial settings. Sweden's focus on sustainability and environmental responsibility has led to the development of robots for tasks such as waste sorting and recycling.

Thus, countries around the world are harnessing the power of robotics to drive innovation, improve efficiency, and tackle complex challenges across various industries. Each country brings its own unique strengths and expertise to the field of robotics, contributing to the advancement of technology and shaping the future of automation.

Task 1. Read the text and find information about the shot history of robotics.

Task 2. Give the definition of robotics.

Task 3. Find out in the text the section about the role of robots in manufacturing industry and render its content.

Task 4. Describe the development of robotics in different countries.

Task 5. Prepare fundamental summary of the text.

Text 4. Automation and computer-integrated technologies

Automation refers to the use of technology to perform tasks or processes with minimal human intervention. It aims to increase efficiency, productivity, and accuracy while reducing labor costs and human error. Automation can be applied across various industries, including manufacturing, healthcare, transportation, and agriculture.

The history of automation can be traced back to ancient times when humans developed tools and machines to perform tasks more efficiently. However, the modern era of automation began in the late 18th and early 19th centuries with the Industrial Revolution. The invention of steam engines, mechanical looms, and other automated machines revolutionized manufacturing and led to the mass production of goods.

The 20th century witnessed rapid advancements in automation technologies, including the development of electrical and electronic systems, programmable logic controllers (PLCs), and industrial robots. These technologies enabled greater precision, speed, and flexibility in automated processes, leading to increased productivity and efficiency in various industries.

Computer-integrated systems integrate computer technology into manufacturing and business processes. These systems streamline operations by connecting different components, such as design, production, inventory management, and quality control, into a cohesive and efficient workflow. Computer-integrated systems enable real-time monitoring, data analysis, and decision-making to optimize processes and improve outcomes.

Computer-integrated systems emerged in the mid-20th century with the advent of computers and digital technologies. Early computer-integrated systems were developed to automate manufacturing processes, such as numerical control (NC) machines used in machining operations. These systems relied on punched cards and early computer languages to control machine tools and coordinate production activities

In the 1970s and 1980s, advancements in computer technology, networking, and software development paved the way for more sophisticated computer-integrated systems. Integrated manufacturing systems (IMS) and computer-integrated manufacturing (CIM) systems emerged, connecting design, production, and control functions into a unified digital workflow. These systems enabled real-time monitoring, data analysis, and decision-making to optimize manufacturing processes and improve competitiveness.

Robotics technology involves the design, construction, and programming of robots to perform tasks autonomously or semi-autonomously. Robots are used in manufacturing, logistics, healthcare, and other industries for tasks such as assembly, welding, packaging, and surgery.

The field of robotics has its roots in the early 20th century with the development of mechanical devices and automata. The first industrial robot, the Unimate, was introduced by George Devol and Joseph Engelberger in the 1950s for automating tasks in the automotive industry. Since then, robotics technology has evolved rapidly, with advancements in sensors, actuators, and control systems enabling robots to perform increasingly complex tasks in manufacturing, healthcare, logistics, and other sectors.

AI technologies, including machine learning, natural language processing, and computer vision, enable computers to perform tasks that typically require human intelligence. AI-powered systems can analyze data, make predictions, and learn from experience to automate decision-making processes.

The concept of artificial intelligence dates back to the mid-20th century, with early developments in machine learning, expert systems, and neural networks. AI technologies gained prominence in the 21st century with the proliferation of big data, cloud computing, and deep learning algorithms. Today, AI-powered systems are used in a wide range of applications, from autonomous vehicles and virtual assistants to predictive analytics and medical diagnosis.

The Internet of Things connects physical devices, sensors, and machines to the internet, enabling them to communicate, collect data, and exchange information in real-time. IoT technology enables remote monitoring, control, and optimization of automated systems, leading to improved efficiency and productivity.

The Internet of Things emerged in the late 20th century with the development of embedded sensors, wireless communication, and cloud computing technologies. The concept of connecting physical devices and machines to the internet enabled real-time monitoring, control, and optimization of automated systems. IoT technology has revolutionized industries such as manufacturing, agriculture, healthcare, and transportation, enabling greater efficiency, productivity, and innovation.

The design and automation of technological processes have evolved in parallel with advancements in automation, computer-integrated systems, and technologies. Early automation systems focused on mechanizing and optimizing manual tasks in manufacturing and production environments. With the advent of computers and digital technologies, the design and automation of processes became more sophisticated, incorporating computer-aided design (CAD), computer-aided manufacturing

(CAM), and computer-integrated manufacturing (CIM) technologies.

In recent decades, the design and automation of technological processes have shifted towards greater integration, connectivity, and intelligence. Advanced technologies such as robotics, artificial intelligence, and the Internet of Things have enabled the development of smart, adaptive, and autonomous systems capable of self-optimization and learning. Today, the design and automation of technological processes are central to innovation and competitiveness in industries ranging from manufacturing and logistics to healthcare and energy.

Key developments in technical means of automation include: The development of sensors capable of detecting changes in the environment, such as temperature, pressure, motion, and light, enabled real-time monitoring and control of automated systems.

Actuators, such as motors, solenoids, and pneumatic cylinders, convert electrical signals into mechanical action, enabling automated machines and robots to perform physical tasks and operations.

PLCs emerged in the 1960s as a reliable and versatile means of controlling automated processes. These specialized computers use programmable logic to execute control functions, monitor inputs from sensors, and send commands to actuators to perform tasks according to predefined logic and instructions.

Industrial robots have evolved from simple mechanical devices to sophisticated machines equipped with robotic arms, end-effectors, and advanced control systems. Modern industrial robots are capable of performing tasks such as assembly, welding.

Designing and automating technological processes involves several key steps.

-Process Analysis: Analyzing existing processes to identify inefficiencies, bottlenecks, and opportunities for automation.
- System Design: Designing automated systems and workflows to optimize efficiency, reduce costs, and improve quality.
- Integration: Integrating automation technologies, such as robotics, AI, and IoT, into the design of technological processes.
-Testing and Optimization: Testing automated systems in real-world conditions and optimizing them based on performance feedback and data analysis.
-Continuous Improvement: Continuously monitoring and improving automated processes to adapt to changing requirements and maintain competitiveness.

Technical Means of Automation:

1. Sensors detect changes in the environment, such as temperature, pressure, motion, and light, and provide input to automated systems for decision-making and control.
2. Actuators are devices that convert electrical signals into mechanical action, such as moving robotic arms, opening and closing valves, or adjusting machine settings.
3. Programmable Logic Controllers (PLCs) are specialized computers used to control automated machinery and processes. They receive input from sensors, process data, and send commands to actuators to execute tasks according to predefined logic and instructions.
4. Industrial robots are programmable machines equipped with robotic arms and end-effectors that perform tasks such as assembly, welding, painting, and material handling. These robots can operate autonomously or under the supervision of human operators.

Thus, automation, computer-integrated systems, and advanced technologies play integral roles in modern industries by improving efficiency, productivity, and quality. By leveraging automation technologies and integrating them into the design of technological processes, businesses can achieve greater competitiveness, innovation, and success in today's rapidly evolving global market.

Task 1. Read the text and render its content in the form of interview.

Task 2. Make up a plan of the text, render its sections using the current vocabulary.

Task 3. Find out in the text and learn the definitions of automation and computer-integrated technologies.

Task 4. Speak before your fellow students about the advantages of computer-integrated technologies in the forms of the Internet of Things and Robotics.

Task 5. Prepare short reports about development of computer – integrated technologies in modern world.

UNIT II. COMMUNICATION ACTIVITIES

By the end of the course students should be able to: 1) participate in various types of discussions, talks, conversations on engineering related topics (electrical engineering, automation, robotics), 2) make telephone conversations on engineering problems, 3) change the ideas and views on the content of radio and TV programs connected with these types of engineering, 4) react to the messages and instructions in the sphere, 5) describe the tables, formulae, diagrams in professional direction, 6) use innovative strategies to report at seminars, conferences, 7) understand the values, traditions, customs in development of Ukrainian and foreign engineering and apply intercultural approach in professional communication.

Topics for classroom discussion

1. From electrical to computer engineering.
2. Electronics and modern devices.

3. Electronic mail.
4. To live in virtual reality.
5. The most interesting places you have explored in the Internet.

SPOKEN PRODUCTION ACTIVITY

The future Masters in engineering should prepare individual presentations on the wide range of themes related to the field and produce monologues and dialogues dealing with the following problems: Electricity in modern life. The Electric system. Electrical Measurements. Electrical Measuring Instruments. Electrical Mechanics. Automation. Electronics. Radio and TV Communication. The Elements of a System of Radio Communication. Fundamentals of Radar. The Telephone. Transistors. Magnetron. Brief Analysis of Television system. Universal Electronic Computer. Machine Language and Language Structure. Mechanical and Electronic Calculating Machines. Robotics. Robots in Modern Life. The Robot`s Nervous System. Peripheral Equipment. Automatic Translator. Age of Thinking Machines. Video Terminals.

Brief instructions and recommendations for successful presentation:

- think over the problem of your future presentation and make a plan of it;
- prepare the logical structure of presentation;
- construct the content and develop the main ideas of presentation;
- use the scientific language style and special field related vocabulary;
- speak slowly, use the words and sentences, terminology correctly;
- try to support the contact with the audience;

- use the visual aids and extra lingual means of communication;
- follow the time limits and do not forget to thank your listeners for attention;
- remember of the following types of presentations: plenary presentations, panel discussions, talks, paper reporting, workshops, poster presentations, swap stop.

ACADEMIC WRITING ACTIVITY

has the aim to develop the future engineers` academic and professionally oriented skills to prepare literature research analysis for their Master`s paper and to make summary in English using it in the process of defense. By the end of the course students should be able to express their attitudes, views, considerations on field related problems, make an outline and the essay, describe instructions, tables and diagrams, etc. Thus, the main skills in academic writing include the followings:

- make a plan and express ideas logically;
- write on introduction or conclusion to Master`s paper;
- use scientific style and logical connectors of paragraphs;
- analyze the ideas and propose personal attitude to ideas from articles, monographs, textbooks;
- compare and interpret data from different sources;
- quote the authors correctly;
- create a bibliography;
- use the consultations and recommendations of your supervisor.

It is also important to take into consideration the language knowledge obtained (proper grammatical structures, the rules of syntax and stylistics in the field of engineering, relevant vocabulary and terminology) and sociolinguistic competence (behavior in home and foreign engineering environments, cross cultural approach, interaction with the help of extra lingual means and factors). By the end of the ESP course students will have the opportunities to prepare written products of the following types: thesis, research work, abstract, summary, academic paper, bibliography, statistical report, essay, language portfolio.

TOPICS FOR ESSEYS:

1. Discoveries and inventions of our University researchers in the field of electrical engineering, automation and computer integrated technologies.
2. Foreign languages in Master`s students` professional development.
3. Different sources of power engineering today.
4. Robotics in modern life.
5. Brief analysis of radio and television systems.

UNIT III. THE ORGANISATION OF SELF-STUDY ACTIVITIES

Self-study is the important part of ESP course and it needs constant and skilled assessment and it deals with the level of teacher`s supervision, control and students` skills of work independently using relevantly self-study resources. Autonomous learning gives the students opportunity to put an end with previous gaps and to choose and develop their own learning styles. It is also important for them to receive the reliable self-study resources which contain clearly formulated for performance tasks, exercises and projects, a set of accessible resources (textbooks, audio and video resources, materials from media and the Internet). In this case self-study tasks may be proposed in various forms (exercises, tests, essays, written reports, presentations, projects). The assessment of tasks, projects can be formative and summative. Formative assessment can include a brief progress of a person or a group of participants in the subject. It is accomplished through teacher and usually needs feedback. The other type – summative assessment is connected with the results or products of learning (qualitative aspect) and should be important for the future students` progress.

Language Portfolio for professional communication is comparatively new means of self-assessment of students` skills. It`s unction is to improve the language learning process helping to students developing their self-assessment and the other cognitive skills. (Self-assessment checklist of language skills for professional needs you can see in English for Specific Purposes, British Council, 2005, pp. 56-58).

THE TASKS AND EXERCISES
for training foreign language professional competence

Task 1. Discuss with your fellow students the profile of the future professional in Electrical engineering and in Automation and Computer Integrated Technologies commenting the following arguments

1) Electrical and Automation engineers must understand how modern complex devices work.
2) Future engineers look for creative solving of their field problems.
3) Future professionals must pay attention to details.
4)Future engineers must constantly read and search for the new information.

Task 2. Speak about the problems of patent industry in Ukraine and abroad answering the following questions: 1) What do you know from the history of patent industry? 2) Do patents and inventors play the important role in the development of innovations? 3) What do you know about the work of patent agents and patent examiners? 4) What are the basic skills of the people working in this industry? 5) What are the main problems of training staff in patent industry?

Task 3. Submit you applications for the job interview on the vacancy of highly paid engineer position in metrology and standardization department of tool-manufacturing company. Prepare the true answers connected you're your educational background, work experience and personal details.

Task 4. Identify the subjects you are taught in the Master`s program and describe their structure and content: Robotics, Automation and Control in Technical Systems, Electronics, Electrical Equipment, Electrical Measurements.

Task 5. Discuss the following questions in small groups and express your ideas later in class for the whole group: 1) Students` work in the laboratories. 2) University laboratories` equipment. 3) Safety rules for the work in laboratory. Describe one of your experiments in the laboratory of your department, e.g., Laboratory of measuring instruments.

Task 6. Prepare for the talk (Role-play) with your fellow students about Ukrainian scientists. Find the information from different sources about the scientists who left our native land for other countries due to special reasons (e.g.Ivan Puluy, Olexander Smakula, Stepan Tymoshenko, Ostap Stasiv) .

Task 7. Prepare for the classroom discussion in small groups and agree or disagree with the statement that science and engineering have nothing in common with ethical and moral problems of modern society. Give your own argumentation.

Task 8. Being a specialist in a certain type of engineering (Master`s degree) enjoy the opportunity of participating in a scientific conference. In this case it will be useful for you to obtain the new skills how to express your thoughts and ideas before the audience in the form of reports and presentations. Prepare your small research product for annual scientific conference of department or the foreign languages` department. Use the help of audio-visual aids and Internet resources.

EXERCISES for training lexical and grammatical skills:

Exercise 1. Put all possible types of questions to the following sentences:

1. The electric motor finds wide application in industry.
2. Ivan Puluy is the great world scientis in the sphere of invisible X-rays.
3. The students of our technical university deal with the equipment designed for production and installation of electronic devices.
4. Students get acquainted with programs and methods of electrical measurements.
5. The graduates of our department may work as metrologists, engineers of inspection and sertification centres of big plants and tool-manufacturing industries.

Exercise 2. Form sentences combining suitable parts of the sentence:

1. The electric current is....	1) the energy of position
2. Kinetic energy is ….	2) electricity at rest.
3. Static electricity is…	3) the flow of moving electrons.
4. Potential energy is…	4) the energy of motion.
5. The direct current is….	5) a discharge of electricity.
6. Lightning is….	6) the flow of electrons in one direction

Exercise 3. Translate the following word combinations into Ukrainian:

residential usage; a great variety; modern means of communication; high-frequency current; an increasing rate; convenient household appliances; consumption of electric energy; an unforeseeable change; the countless numbe of factors; to improve the efficiency.

Exercise 4. Finish the sentences thinking about the usage of field related vocabulary:

1. Electric energy is widely used in...
2. The greater part of electricity goes...
3. The progress in electrical engineering has led to the...
4. The amount of electricity going to industrial and...
5. … may occur in industrial enterprises...
6. Electrical engineers must understand ….

Exercise 5. Translate the following sentences into Ukrainian:

1. Energy issues couldn't be solved by industrial countries alone, working in isolation.
2. The need to strengthen cooperation is further underlined by recent events and developments taking place within as well as outside the Union.
3. Despite recent economic setbacks, many of the newly emmerging world economies are being fuelled by massive increases in energy use.
4. This brief description of some methods used in our work covers only a few of the problems encountered.
5. The resistance being very high, the current in the circuit is low.
6. The test referred to above can be easily made.
8. There is always water vapour in the air, the amount depending upon various conditions.
9. Until now we have been discussing reactors from which no power is being taken.
10. Some of the effects produced by an electric current are discussed in the following chapter.

Exercise 6. Fill in the blanks with the correct prepositions (in, on, next, to, under, over, between).

1. The dresser is … the bedroom. 2. The shoes are … the bed. 3. The clock radio is … the photo. 4. The night table is … the bed and the dresser. 5. The sink is … the toilet. 6. The mirror is …the sink. 7. The table is … the sofa. 8. The sofa is … the living room. 9. The pictures are … the sofa. 10. The flowers are … the television. 11. The telephone is … the wall. 12. The bowl is …

the table. 13. The clock is … the refrigerator. 14. The cabinets are … the kitchen. 15. The toaster is … the refrigerator

Exercise 7. Translate the following sentences paying attention to the
usage of field related vocabulary:

1. The students carried out an experiment looking at the thermometer from time to time.
2. The cinema was invented before my time.
3. It is high time to begin work.
4. Four times three is twelve.
5. “Am I late?” “No, you are just in time”.
6.“What is the time?” “It’s dinner time”.
7. The students went to the club and had a good time there.
8. It took a long time before people learned to split the atom.
9. I shall be back in no time.
10. For a long time people did not know that lightning and atmospheric electricity are one and the same thing.
11. Ivan Puluy lectured at the university and at the same time worked in different fields of science.
12. I work in the laboratory two times a week.

Exercise 8. Fill in the blanks with the words (ONE or FOR):

1. London is ... of the largest cities in the world.
2. .... must remember that it is necessary to study English at least an hour a day.
3. As ... rubber it was brought to Europe as early as the 15th century.
4. . ... understands the importance of electricity when ... sees trams, trolley-buses and trains driven by it.
5. The energy of the atom is widely used ... peaceful purposes.
6. ... must know the chemical properties of the atom.
7. We produce rubber because it is necessary ... the development of our industry.
8. In 1819 Volta returned to Como ... he wanted to spend the rest of his life there.

9. This is a more important problem than that....
10. I haven't got a dictionary, I must have...

Exercise 9. Give antonyms for the following words:
North Pole, dark, on the one hand, different, arrangement, smaller, magnetized, unfamiliar, like, negative, similar, to produce , in motion.

Exercise 10. Read and translate the following word combinations:
electrical conductivity, fundamental significance, technological importance, the individual materials, inverse resistivity, stream of electrons, suitable for using, extremely effective.

Exercise 11. Make the sentences using the words:
conduct, improve, resist, increase, exist, reduce, emission, semiconductor, illumination, resistivity, efficiency, variability,
fundamental, experimental, technological.

Exercise 12. Translate the words in brackets into English:
1. The electrical (провідність) of different materials was investigated by many scientists.
2. Today (дослідження) of the electrical properties of solids has revealed many interesting phenomena.
3. To understand (значення) of this investigation we must compare it with the previous one.
4. If a (найдрібніший) trace of arsenic were added to pure germanium, the conductivity of the latter would increase.
5. Great (зміни) can be produced by increasing temperature.
6. In some (випадках) the change is very abrupt.
7. Some (напівпровідники та ізолятори) are extremely sensitive to light.
8. Can you say what principles (пояснюють) the great differences in conductivity between metals and insulators?
9. The resistivity of a pure metal is known to be increased by heating and (знижена) by cooling.

Exercise 13. Translate the sentences into Ukrainian:

1. In a crystal of copper, in which the atoms are packed together, the electrons spread themselves over the wide range.
2. In contrast to copper, the atoms of the semiconductor germanium turned out to be together, by forming covalent bonds.
3. It is advisable to use a solution whose resistance will be of about the same order of magnitude as the resistances in the previous solution.
4. On account of the resistance of tin to the action of air and water, it is used to coat other metals 5. Having finished measuring, you should turn off the light.
6. How can this phenomenon be accounted for? This is a question which in its turn can be solved only by very experienced chemists.
7. In order to understand this process one should read some papers before starting his work.
8. In either of these cases the solubility of lead will be lowered practically to zero.
9. On account to its resistance to corrosion, copper is widely used.
10. Trace soft aluminium which dissolve in solid copper greatly reduce the electrical conductivity.
11. If this substance is heated and turned red, cupric oxide is formed
12. Because of uniform expansion over a wide range of temperature, mercury is used in thermometers.
13. As a rule, if the length of a conductor is doubled, the resistance is doubled too.

Exercise 14. Fill in the blanks with nessesery prepositions:

1.When you leave the laboratory don't forget to turn . . . the light and gas.
2. Mercury is a good conductor . . . heat and electricity.

3. This can be accounted . . . the increase of temperature and pressure.
4. The resistances in ohms of these and other frequently used conductors turned out to have been
carefully measured.
5. When we turn . . . the light and our electric lamp is burning, the tungsten of the lamp has about 30 times the resistance that it had.
6. The impact of light has an effect . . . electrical resistivity.
7. The resistance . . . some conductors was much greater when they carried a large current.

Exercise 15. Translate the following sentences and define the function of the infinitive:
1. The current is known to flow when the circuit is closed.
2. To stop the current flow is to break the circuit in some point.
3. To stop the current flow you must open the circuit.
4. A fuse is expected to melt and break the circuit.
5. Various switches are used to open or to close a circuit.
6. A switch is a device to break or to close the circuit.
7. We know the circuit to be a path of an electric current.
8. We may expect a short circuit to result from wire fault.
9. The overloading of the line is likely to produce a short circuit.
10. Ampere supposed the current to flow from the positive pole of the source to the negative pole.

Exercise 16. Fill in the blanks with prepositions and render the content of the text:
The great French physicist Ampere was an absent-minded man. One day he was waiting... his friend. The appointed hour arrived, passed and his friend did not come. As Ampere had to go ... he took a piece ... chalk and wrote ... his door: “I havegone ... . I shall return ... two hours.” And he went... . He returned two hours later. While he was going upstairs he worked out a very difficult problem. “If my friend had come ... the appointed hour,” he said ... himself, “I should have told him ... this

problem. I shall speak ... him ... it now. Perhaps he will be able to solve it." So when Ampere came ... his own door and saw the words written ... it, he decided that he was ... his friend's door. "Oh," said he, "he has gone...! I am very sorry! Were he ... home, we shouldiscuss my problem." And he wrote the following words: "Very sorry that I have not found you ... home." Then he went downstairs again.

Exercise 17. Read, translate the following sentences and define the function of the word PROVIDED in every case:

1. These electrical devices are provided with rubber insulators.
2. These electrical devices provided with rubber insulators were produced at a large factory.
3. These electrical devices can work for a long time provided they are made of high-quality material.
4. The electric current flows provided there is a complete circuit.
5. Lightning did not strike the house as it was provided with a lightning conductor.
6. Ohm's law provided the possibility of determining resistance provided the voltage and
current were known.
7. The electrons will jump through the air forming an electric spark provided the potential difference becomes great enough.
8. The students will be able to translate difficult articles provided they have dictionaries.

Exercise 18. Complete the sentences with the past tense forms of the verbs in parentheses and describe actions of these creative people mentioned in the context:

1. The inventor Thomas Edison (not, find) ... the right materials for the light bulb easily. He (try) … six thousand different materials before he found the right one.
2. When the playwright Maxwell Anderson (hear) … rain on the roof of his house, he was able to write more easily, or so he said. And what (he, do) … on a sunny day? Anderson turned on a

sprinkler. When the sprinkler dropped water on the roof of his house, it (make) … a sound just like rain.

3. In the 1930s in Florida (USA) farmers (make) … use of a special type of sprinkler to water the orange trees. One night it (get) … unusually cold in Florida and the sprinkler (blow) … snow instead of water onto the orange trees. People in the north (become) … very excited about this discovery. They (be) … able to use this technique to make snow for skiing.

Tests for self-control and self-assessment of students` linguistic proficiency

e.g. Choose the right option:

1. Drills and milling _____ are always noisy.

b) machines a) devices c) blades d) engines
e) gadgets

2. How can we fix these two components ______ ?

e) together a) on b) onto c) to
d) along d) clean e) pure

3. The need to develop _____ energy is widely seen as a futuristic technological challenge.

c) renewable a) generated b) renovated
d) innovative e) depleted

e) advance a) ahead b) forward c) before
d) beforehand

4. He needs a new pair of ______ for welding.

c) goggles a) helmet b) spanners
d) racket e) drills

5. Please find attached a full set of preliminary ____, as submitted to the client for approval.

c) <u>drawings</u> a) paintings b) meetings
d) manufacturing e) provision

6. The electricity was cut _____ for over three hours yesterday.

e) <u>off</u> a) in b) on c) out d) away

7. It’s a good idea to check that the cable is not _____.

e) <u>damaged</u> a) endangered b) replaced
c) removed d) warned

8. This machinery needs to be ______ before putting it into operation.

a) <u>adjusted</u> b) suited c) accommodated
d) conformed e) damaged

9. I must get ________ – I can’t use the Internet at all.

a) <u>my computer fixed</u> b) my fixed computer c) my computer fix d) fixed my computer

e) fixing my computer

10. I think people nowadays are a lot more technically-minded than they _______ be.

a) <u>used to</u> b) would c) use to
d) would to e) are used to

11. Our computer system at work is archaic. *Archaic* most nearly means _____.

b) <u>obsolete</u> a) worthy c) current
d) trendy e) valuable

12. You’re a computer expert, Jack. Could I ____ a minute?

c) <u>pick your brains</u> a) rack you brains b) bash your brains d) hold your brains

e) brush your brains

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