**МИНИСТЕРСТВО ОБРАЗОВАНИЯ ОРЕНБУРГСКОЙ ОБЛАСТИ**

**ГОСУДАРСТВЕННОЕ АВТОНОМНОЕ ПРОФЕССИОНАЛЬНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ**

**«МЕДНОГОРСКИЙ ИНДУСТРИАЛЬНЫЙ КОЛЛЕДЖ»**

**г.МЕДНОГОРСКА ОРЕНБУРГСКОЙ ОБЛАСТИ**

**(ГАПОУ МИК)**

**МЕТОДИЧЕСКИЕ УКАЗАНИЯ И КОНТРОЛЬНЫЕ ЗАДАНИЯ**

**ПО ВЫПОЛНЕНИЮ КОНТРОЛЬНОЙ РАБОТЫ**

**ДЛЯ ОБУЧАЮЩИХСЯ ЗАОЧНОЙ ФОРМЫ ОБУЧЕНИЯ**

**Дисциплина: ИНОСТРАННЫЙ ЯЗЫК**

Для специальности СПО

**13.02.11 Техническая эксплуатация и обслуживание электрического и электромеханического оборудования ( по отраслям**

2021

Методические указания составлены в соответствии с программой учебной дисциплины «Иностранный язык» на основе ФГОС СПО по специальности среднего **13.02.11** Техническая эксплуатация и обслуживание электрического и электромеханического оборудования (по отраслям)

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1. Введение

Цели и задачи дисциплины.

Обучение иностранному языку представлено в программе как основной элемент системы профессионального образования, а его назначение – завершить формирование основ владения иностранным языком, начатое в средней профессиональной школе, и заложить основы практического владения иностранным языком и ориентирована на достижение следующих целей:

дальнейшее развитие иноязычной коммуникативной компетенции (речевой, языковой, социокультурной, компенсаторной, учебно-познавательной):

речевая компетенция – совершенствование коммуникативных умений в четырех основных видах речевой деятельности (говорении, аудировании, чтении и письме); умений планировать свое речевое и неречевое поведение;

языковая компетенция – овладение новыми языковыми средствами в соответствии с отобранными темами и сферами общения: увеличение объема используемых лексических единиц; развитие навыков оперирования языковыми единицами в коммуникативных целях;

социокультурная компетенция – увеличение объема знаний о социокультурной специфике страны/стран изучаемого языка, совершенствование умений строить свое речевое и неречевое поведение адекватно этой специфике, формирование умений выделять общее и специфическое в культуре родной страны и страны изучаемого языка;

компенсаторная компетенция – дальнейшее развитие умений объясняться в условиях дефицита языковых средств при получении и передаче иноязычной информации;

учебно-познавательная компетенция – развитие общих и специальных учебных умений, позволяющих совершенствовать учебную деятельность по овладению иностранным языком, удовлетворять с его помощью познавательные интересы в других областях знания;

* + развитие и воспитание способности и готовности к самостоятельному и непрерывному изучению иностранного языка, дальнейшему самообразованию с его помощью, использованию иностранного языка в других областях знаний; способности к самооценке через наблюдение за собственной речью на родном и иностранном языках; личностному самоопределению в отношении будущей профессии; социальная адаптация; формирование качеств гражданина и патриота.

**Методические указания по выполнению контрольной работы**

Учебно-методическое пособие предназначено для студентов – заочников всех курсов.

Пособие включает темы, наиболее важные для практического овладения языком. Пособие состоит из двух частей: грамматический справочник и контрольные работы.

Грамматический справочник содержит правила по всем темам, включенным в данное пособие. Грамматический материал излагается на русском языке и иллюстрируется примерами на русском и английском языках. Основные темы дополняются сводными таблицами, которые создают необходимую зрительную опору.

В пособие включены контрольные работы с 10 вариантами. Вариант определяется номером студента по списку. Если в группе 17 человек, а вариантов 10, то 11-тый по списку выбирает 1 вариант, 12-тый – 2 и т.д.

 Каждая контрольная работа содержит грамматические упражнения и работу с текстом.

 Прежде чем начать выполнять письменную работу, студент должен изучить теоретический материал, указанный преподавателем, а затем приступить к работе над контрольной работой.

Контрольная работа студента должна отвечать следующим требованиям:

Оформление контрольной работы:

Контрольная работа выполняется в ученической тетради (12 листов) или на листах формата А4 (печатный вариант).

 На тетрадь наклеивается титульный лист и адресный бланк (выдается к каждому контрольному заданию на заочном отделении).

В тетради должны быть оставлены поля для замечаний и рекомендаций рецензента;

Работа должна быть выполнена грамотно и аккуратно, четким, разборчивым подчерком. Не допускается сокращение слов, кроме общепринятых.

Перевод текста должен осуществляться параллельно, т.е. каждому английскому предложению должно соответствовать русское предложение.

Перевод слов, словосочетаний должен производиться следующим образом: записать на английском, через тире - русский перевод. Каждое слово или словосочетание записывать с новой строки, с маленькой буквы.

Ответы на вопросы оформляются следующим образом: записывается вопрос на английском языке, переводится, после этого записывается ответ на английском языке (перевод ответа не требуется).

Между каждым заданием оставляется три клетки.

Выполненная работа высылается в колледж на рецензию.

При получении отрецензированной работы студент должен выполнить все указания рецензента. Работа над ошибками, дополнения к ответам, согласно рецензии, выполняется в этой же тетради. Контрольная работа с оценкой «не зачтено» выполняется студентом повторно и высылается в колледж на проверку вместе с не зачтенной работой.

На рецензию не принимаются работы:

\_ выполненные по не правильно выбранному варианту;

\_ переписанные у других студентов;

\_ выполненные небрежно, неразборчивым подчерком.

В случае возникновения затруднений при выполнении контрольной работы студент может получить консультацию преподавателей в установленные сроки.

Студенты, не справившиеся с контрольной работой, не допускаются к зачету.

**КОНРОЛЬНЫЕ РАБОТЫ ДЛЯ 2 КУРСОВ НА БАЗЕ 9 КЛАССОВ**

**Вариант № 1.**

1. ***Read and translate the text:***

**OHMMETER**

Ohmmeters are widely used nowadays for measuring the value of resistance.

The main part of the meter, as in any other direct-indicating device, is its movement In the ohmmeter's movement either an external or an internal permanent magnet is used.

The operation of the device either depends on the supply voltage or does not depend on it. Accordingly, the meters are classed into two groups. 1. Meters having a moving-coil movement with two coils on a common shaft. The currents in these coils flow in the opposite directions- and, accordingly, two torques are produced. These torques also act in the opposite directions. In the meters of this type a generator serves as a supply source. 2. Devices having a moving-coil movement with a series resistor. In them a battery serves as a supply source.

1. ***Translate the words and distribute them into four columns (what? what kind of? what to do? how?). Mind the suffixes and prefixes:***

to supply, supply, to oppose, opposite, opposition, to act, action, active, actively, interaction, to produce, production, overproduction, to vary, various, variation, unvariable, amperage, voltage, shortage.

1. ***Translate the word-combinations in writing:***

common shaft, opposite shafts, supply sources, electromagnetic torque, voltage supply, acting torques;

similarly constructed shafts, widely used amperage, constantly opposed torques, air supplied installation, power proportional supply .

1. ***Fill in the verbs "to supply5\*, "to serve as", "to consider", "to act":***
2. Measuring devices are ... in units 13-16. 2. Voltage sources ... circuits with electric power. 3. The shaft ... a base for the coils. 4. The torques produced ... in the opposite directions.
3. ***Translate the sentences. Mind «accordingly»:***

1. Meters are used to measure the values of current, voltage, resistance, etc. Accordingly, they are classed into ammeters, voltmeters, ohmmeters, etc. 2. The ohmmeter includes a moving-coil movement with a series resistor; accordingly, in it a battery is used as a supply source!

1. ***Choose the correct variant:***
2. The ohmmeter serves to measure a) power b) resistance.
3. Its movement a) does not include a permanent magnet b) includes a permanent magnet.
4. A moving-coil movement has a) coils on two different shafts b) coils on one common shaft.
5. In the coils a) two torques are produced b) one torque is produced.
6. The currents in the coils flow a) in one direction b) in two opposite directions.
7. ***Answer the questions:***
8. What does the ohmmeter serve for? 2. What type of magnet does its movement include? 3. How many shafts has the meter? 4. How many torques are produced in the coils? 5. In what directions does the current in the coils flow?

**Вариант № 2.**

1. ***Read and translate the text:***

**SAFETY ELECTRIC SYSTEM. ELECTRIC SHOCK.**

The strength of current depends on both the voltage and on the resistance in a circuit. A current of 50 mA is dangerous for a man and a current of 100 mA and higher is lethal.

Earthing system serves to protect attending personnel from electric shocks when voltage appears on parts that are normally dead. The risk of an electric shock decreases with decreasing voltage. In wet and hot atmosphere the risk of electric shock increases. . Safe voltage for circuits used in dry atmosphere is under 36 V. When " the power is on contacts with live conductors are dangerous for life. Thus measures are taken to protect attending personnel from contacts with live parts of installations under voltage.

The danger of electric shock disappears provided the metal parts of installations under voltage are connected with ground by means of safety earthing.

Connecting to ground is made by means of earthing electrodes which are connected directly with ground.

The insulation resistance of any installation should be regularly checked by means of measuring devices. The faulty parts should' be detected, eliminated, and replaced by new ones.

1. ***Translate the word-combinations in writing:***

power decrease, dry air, hot atmosphere, dead conductor, live conductors, power

on position, power off position; safety earthing system, dangerous decrease of voltage, live conductor contact.

1. ***Choose the proper words:***

1. The danger of electric shock (appears, disappears) when the conductor becomes (live, dead). 2. Current passes through faulty (earthed, unearthed) parts of installations when the power is on. 3. Low accuracy of measurement is (an advantage, a disadvantage) of the measuring device. 4. The danger o£ electric shock (increases, decreases) in the wet and hot "atmosphere. 5. No current

1. ***Fill in the verbs "to detect", "to appear", "to disappear", "to decrease":***

1. When resistance increases, the risk of electric shock ... . 2. Faults in electric installations are ... by means of special devices. 3. Electric power ... only on live conductors with power .4. When the device is switched off electric power ...

1. ***Choose the correct variant:***
2. Earthing system serves a) as protection from electric shock, b) as connection with ground.
3. Voltage appears on a) dead parts b) live parts.
4. Contact with live conductors is a) dangerous b) safe.
5. Connection to ground is made a) by means of wire conductors b) by means of earthing electrodes.
6. Danger of electric shock disappears if the frame a) is earthed b) is unearthed.
7. ***Answer the questions. Use them in a talk with your group mate:***

1. What does an earthing system serve for?

2. What parts are termed dead (live)?

3. In what air does the risk of electric shock: decrease?

4. By what means is con­nection to ground made?

 5. What does electric shock result from?

 6. Is a current of 50 mA dangerous for a man?

 7. Is wet and hot atmosphere dangerous for the attending personnel?

8. Does the risk of electric shock decrease with increasing current

**Вариант № 3.**

1. ***Read and translate the text:***

**RELAYS**

Relays are electromagnetic devices widely used in various branches of industry. Relays are designed for rather low currents and for operation in control circuits at low voltages.

By means of a relay electric current flowing in one circuit can open or close a second circuit and thus control the switching on and off of a circuit.

The main components of a relay are an electromagnet, an armature and a spring. As to contacts, they belong to its auxiliary elements. When a current starts flowing in the electromagnetic winding, the armature moves, and the spring closes the contacts. When there is no current in the primary circuit, the spring pulls the armature and the contacts open.

How a relay is used to control the work of an electric motor. The relay is placed close to the motor which is connected to its secondary circuit. The armature closes the contacts of the secondary circuit, and the motor starts operating. It stops when the relay opens.

The primary circuit is operated either manually or automatically. Every evening and morning street lights are switched on and off from the main panel by means of relays.

As to thermal relays, they use bimetallic thermal elements. This element consists of two metals differing in thermal coefficients. When the element is heated it actuates the device. It can be heated either directly by the current flowing in it or indirectly by a heater.

1. ***Translate the word-combinations in writing:***

new branch of industry, auxiliary components of relays, bimetallic auxiliary blocks, manually actuated springs

1. ***Translate the sentences. Mind "no":***
2. No heating element can actuate this device. 2. No auxiliary springs were utilized to pull the armature. 3. The switches are faultless; they produce no noise in operation. 4. The operators used no additional springs since no additional components were needed to actuate the relay.
3. ***Choose the correct variant:***
4. Relays are designed for a) low currents b) high currents.
5. A relay consists of a) a spring and an armature, b) an electromagnet, an

armature and a spring.

1. The relay is placed a) close to the motor, b) far from the motor.
2. The motor is connected to a) the primary circuit b) the secondary circuit.
3. ***Ask 5 questions to the text.***

**Вариант № 4.**

1. ***Read and translate the text:***

**THE MAIN COMPONENTS OF ELECTRIC CIRCUITS**

The main components of any circuit are devices that produce and utilize electric energy. They are: 1. power sources, 2. utilizing loads, 3. connecting conductors.

The most common power sources are electric-generators and primary cells. Electric generators convert chemical energy into electric energy.

Loads include electric heaters, electric motors, incandescent lamps, etc. Motors convert electric energy into mechanical, incandescent lamps and heaters convert electric energy into light and heat Utilizing devices or loads convert electric energy into thermal, mechanical or chemical energy.

Electric power is delivered from power sources to loads by electric wires. According to their material, wires can be aluminum, copper, steel, etc.

In addition to these three main components, electric circuits use different types of switches, protection devices (relays and fuses), and meters (ammeters, voltmeters, wattcmeters, etc.)

1. ***Choose the correct variant:***
2. The main components of electric circuits are a) loads and wires, b) power

sources, loads and wires.

1. Power sources are used a) to produce electric energy, b) to deliver it to the leads.
2. Electric conductors (are used a) to connect the circuit elements, b) to deliver electric power.
3. Protection devices are utilized a) in some circuits b) in any circuit.
4. A switch is utilized a) in some circuits, b) in any circuit.
5. Answer the questions. Use them in a talk with your group mate:

1. What are the main components of an electric circuit? 2. What is the function of an electric source? 3. What is the function of a load? 4. What is the function of wire conductors? 5. What addition: devices are utilized in a circuit?

1. ***Translate the words and distribute them into three columns (what?***

***What kind of? What to do?). Mind the suffixes:***

power, to power, to add, additional, protection, to protect, protective, utilization, to convert, convertible, various., variable, generator, generation

1. ***Translate the following word-combinations:***

additional power, additional loads, convertible values, converted values, protected power source, protecting devices, power increase, various fuses, variable resistor, primary cells, chemical cells.

1. ***Translate the sentences into Russian. Mind "etc. (et cetera) " and "in addition to":***
2. Electric circuits can include cells, resistors, capacitors, fuses, etc. 2. In addition to fuses relays are also used as electric circuit protection devices. 3. Electric energy can be converted into light, heat, mechanical energy, thermal energy, etc. 4. In addition to solid insulators liquid insulators are also widely used in this system.
3. ***Fill in the verbs "to utilize", "to convert", "to deliver":***
4. Primary cells ... electric power. 2. Different kinds of energy can be ... into electric energy. 3. Protecting devices should be ... in any circuit.

**Вариант № 5.**

***1. Read and translate the text:***

**ELECTRIC MOTORS**

Motors are used for converting different forms of energy into mechanical energy.

The main part of a motor is a coil or armature. The armature is placed between the poles of a powerful magnet. When a motor is put into operation current starts flowing through the coil (armature) and the armature starts rotating.

Electric motors are necessary for all branches of industry, transport and agriculture.

They are used in industrial plants, and operate under different conditions, both favourable and unfavourable for their service life. Because of their different applications, motors are manufactured in many different designs.

Each motor has a nameplate attached to its frame. The nameplate bears machine ratings. To these belong output power in kilowatts, voltage, the rated current, the starting current, the power factor, the efficiency, the rated torque.

These machine ratings are important for the use of motors during their service life which is normally equal to about 10 years, provided the operating conditions are favorable. Under abnormal and unfavourable conditions it is much shorter.

Thus normal and favorable ambient conditions are very important for the length of a motor's service life.

According to the type of energy required for their operation, electric motors are divided into d.c. and a. c. motors.

1. ***Choose the correct variant:***
2. Motors are used a) for transmitting energy, b) for converting energy.
3. Motor's main part is a) the frame, b) the armature, c) the stator.
4. The armature is placed a) between the poles of the magnet b) above the poles of the magnet
5. Normal ambient conditions are a) favourable for motor's service, b) unfavourable for motor's service.
6. Answer ***the questions:***

1. What are motors used for? 2. What is the motor's main part? 3. Where is the armature placed? 4. What conditions are favourable for motor's life?

1. ***Translate the words and distribute them into three columns (what? what kind of? what to do?). Mind the suffixes and prefixes:***

favourable, unfavourable, importance, unimportant, necessary, necessity, unnecessary, wireless, powerless, to rely on, Aunreliable, ambient, to energize, to minimize, supporter.

1. Translate the word-combinations:

wireless communication, safe and reliable design, powerful magnets, considerable changes, favourable results, starting torque .

1. ***Translate the sentences. Mind "because", "because of:***

1. This motor's service life was short because of unfavourable operating conditions. 2. High-voltage current is used in the line because it transmits energy over large distances. 3. The danger of an electric shock is very high because of the wet atmosphere and the high ambient temperature in the shop.

1. ***Fill in the verbs "to attach ", "to serve ", "to rotate ", "to put into operation ":***

1. Motors ... to convert different forms of energy into mechanical energy. 2. When the motor is operating its armature ... . 3. Nameplates are ... to the devices' frames. 4. These two installations should be., simultaneously.

**Вариант № 6.**

1. ***Read and translate the text:***

**VOLTMETER**

Voltmeter is used to measure the value of voltage in the circuit. When the voltmeter is being used its positive and negative terminals are connected to the circuit in parallel.

The voltmeter movement is similar in its construction to the ammeter movement: it includes a coil and a high

resistor. The scale is calibrated in volts.

In a.c. circuits, in addition to series resistors, the range of measurement is extended by an instrument voltage transformer.

In d.c. circuits, moving-coil meters are commonly used. Their accuracy does not depend either on the value of the external magnetic fields or on the temperature. It depends only on the load. Overloading of the meter results in faulty indications. In order to extend the range of measurements either moving-coil or moving-iron devices are applied.

Moving-iron devices are used in a.c. circuits at power (commercial) frequency. They are produced in accuracy classes 0.1-2.5. Their advantages are a low cost, simplicity of construction and reliability of operation.

***2 . Translate the words in writing:***

to rely on, reliability, reliable, unreliable, simple, simplicity, accurate, accuracy, similarity, similar, external, inaccurate, dissimilarity, advantageous, disadvantage.

1. ***Translate the word-combinations in writing:***

reliable simplicity, unreliable inaccuracy, internal similarity, disadvantageous position, externally interconnected installations, similarly constructed cells, low accuracy class meters, magnetic field range, instrument voltage transformer.

1. ***Choose the correct variant:***

1. Should the circuit be opened when its voltage (current) is measured? 2. Is the voltmeter movement similar to the ammeter movement? 3. Can the range of the voltmeter be extended? 4. Can you rely- on the indications of a faulty meter? 5. Is a galvanometer a high.

1. ***Translate the sentences. Mind "either... or":***

1. Measuring devices should be connected to the circuits either in series or in parallel.2. The measuring range of the meter can be extended either by a shunt or by a current transformer.

1. ***Choose the correct variant:***

1. The voltmeter movement a) is similar to the ammeter movement, b) is different from the ammeter movement.

1. The accuracy of the meter depends on a) the ex- ' temal magnetic field, b) the load.
2. Low cost and reliability are a) advantages, b) disadvantages.
3. ***Answer the questions:***
4. What part of the voltmeter is similar to that of the ammeter? 2. What does the accuracy of a moving- coil meter depend on? 3. What does overloading in the circuit

**Вариант № 7**

1. ***Read and translate the text:***

**OHMMETER**

Ohmmeters are widely used nowadays for measuring the value of resistance.

The main part of the meter, as in any other direct-indicating device, is its movement In the ohmmeter's movement either an external or an internal permanent magnet is used.

The operation of the device either depends on the supply voltage or does not depend on it. Accordingly, the meters are classed into two groups. 1. Meters having a moving-coil movement with two coils on a common shaft. The currents in these coils flow in the opposite directions- and, accordingly, two torques are produced. These torques also act in the opposite directions. In the meters of this type a generator serves as a supply source. 2. Devices having a moving-coil movement with a series resistor. In them a battery serves as a supply source.

1. ***Translate the words and distribute them into four columns (what? what kind of? what to do? how?). Mind the suffixes and prefixes:***

to supply, supply, to oppose, opposite, opposition, to act, action, active, actively, interaction, to produce, production, overproduction, to vary, various, variation, unvariable, amperage, voltage, shortage.

1. ***Translate the word-combinations in writing:***

common shaft, opposite shafts, supply sources, electromagnetic torque, voltage supply, acting torques;

similarly constructed shafts, widely used amperage, constantly opposed torques, air supplied installation, power proportional supply .

1. ***Fill in the verbs "to supply5\*, "to serve as", "to consider", "to act":***

1. Measuring devices are ... in units 13-16. 2. Voltage sources ... circuits with electric power. 3. The shaft ... a base for the coils. 4. The torques produced ... in the opposite directions.

1. ***Translate the sentences. Mind «accordingly»:***

1. Meters are used to measure the values of current, voltage, resistance, etc. Accordingly, they are classed into ammeters, voltmeters, ohmmeters, etc. 2. The ohmmeter includes a moving-coil movement with a series resistor; accordingly, in it a battery is used as a supply source!

1. ***Choose the correct variant:***
2. The ohmmeter serves to measure a) power b) resistance.
3. Its movement a) does not include a permanent magnet b) includes a permanent magnet.
4. A moving-coil movement has a) coils on two different shafts b) coils on one common shaft.
5. In the coils a) two torques are produced b) one torque is produced.
6. The currents in the coils flow a) in one direction b) in two opposite directions.
7. ***Answer the questions:***
8. What does the ohmmeter serve for? 2. What type of magnet does its movement include? 3. How many shafts has the meter? 4. How many torques are produced in the coils? 5. In what directions does the current in the coils flow?

**Вариант № 8.**

1. ***Read and translate the text:***

**SAFETY ELECTRIC SYSTEM. ELECTRIC SHOCK.**

The strength of current depends on both the voltage and on the resistance in a circuit. A current of 50 mA is dangerous for a man and a current of 100 mA and higher is lethal.

Earthing system serves to protect attending personnel from electric shocks when voltage appears on parts that are normally dead. The risk of an electric shock decreases with decreasing voltage. In wet and hot atmosphere the risk of electric shock increases. . Safe voltage for circuits used in dry atmosphere is under 36 V. When " the power is on contacts with live conductors are dangerous for life. Thus measures are taken to protect attending personnel from contacts with live parts of installations under voltage.

The danger of electric shock disappears provided the metal parts of installations under voltage are connected with ground by means of safety earthing.

Connecting to ground is made by means of earthing electrodes which are connected directly with ground.

The insulation resistance of any installation should be regularly checked by means of measuring devices. The faulty parts should' be detected, eliminated, and replaced by new ones.

1. ***Translate the word-combinations in writing:***

power decrease, dry air, hot atmosphere, dead conductor, live conductors, power

on position, power off position; safety earthing system, dangerous decrease of voltage, live conductor contact.

1. ***Choose the proper words:***

1. The danger of electric shock (appears, disappears) when the conductor becomes (live, dead). 2. Current passes through faulty (earthed, unearthed) parts of installations when the power is on. 3. Low accuracy of measurement is (an advantage, a disadvantage) of the measuring device. 4. The danger o£ electric shock (increases, decreases) in the wet and hot "atmosphere. 5. No current

1. ***Fill in the verbs "to detect", "to appear", "to disappear", "to decrease":***

1. When resistance increases, the risk of electric shock ... . 2. Faults in electric installations are ... by means of special devices. 3. Electric power ... only on live conductors with power .4. When the device is switched off electric power ...

1. ***Choose the correct variant:***
2. Earthing system serves a) as protection from electric shock, b) as connection with ground.
3. Voltage appears on a) dead parts b) live parts.
4. Contact with live conductors is a) dangerous b) safe.
5. Connection to ground is made a) by means of wire conductors b) by means of earthing electrodes.
6. Danger of electric shock disappears if the frame a) is earthed b) is unearthed.
7. ***Answer the questions. Use them in a talk with your group mate:***

1. What does an earthing system serve for?

2. What parts are termed dead (live)?

3. In what air does the risk of electric shock: decrease?

4. By what means is con­nection to ground made?

 5. What does electric shock result from?

 6. Is a current of 50 mA dangerous for a man?

 7. Is wet and hot atmosphere dangerous for the attending personnel?

8. Does the risk of electric shock decrease with increasing current?

**Вариант № 9.**

1. ***Read and translate the text:***

**RELAYS**

Relays are electromagnetic devices widely used in various branches of industry. Relays are designed for rather low currents and for operation in control circuits at low voltages.

By means of a relay electric current flowing in one circuit can open or close a second circuit and thus control the switching on and off of a circuit.

The main components of a relay are an electromagnet, an annature and a spring. As to contacts, they belong to its auxiliary elements. When a current starts flowing in the electromagnetic winding, the armature moves, and the spring closes the contacts. When there is no current in the primary circuit, the spring pulls the armature and the contacts open.

How a relay is used to control the work of an electric motor. The relay is placed close to the motor which is connected to its secondary circuit. The armature closes the contacts of the secondary circuit, and the motor starts operating. It stops when the relay opens.

The primary circuit is operated either manually or automatically. Every evening and morning street lights are switched on and off from the main panel by means of relays.

As to thermal relays, they use bimetallic thermal elements. This element consists of two metals differing in thermal coefficients. When the element is heated it

actuates the device. It can be heated either directly by the current flowing in it or indirectly by a heater.

1. ***Translate the word-combinations in writing:***

new branch of industry, auxiliary components of relays, bimetallic auxiliary blocks, manually actuated springs

1. ***Translate the sentences. Mind "no":***
2. No heating element can actuate this device. 2. No auxiliary springs were utilized to pull the armature. 3. The switches are faultless; they produce no noise in operation. 4. The operators used no additional springs since no additional components were needed to actuate the relay.
3. ***Choose the correct variant:***
4. Relays are designed for a) low currents b) high currents.
5. A relay consists of a) a spring and an armature, b) an electromagnet, an

armature and a spring.

1. The relay is placed a) close to the motor, b) far from the motor.
2. The motor is connected to a) the primary circuit b) the secondary circuit.

**Вариант № 10.**

1. ***Read and translate the text:***

**THE MAIN COMPONENTS OF ELECTRIC CIRCUITS**

The main components of any circuit are devices that produce and utilize electric energy. They are: 1. power sources, 2. utilizing loads, 3. connecting conductors.

The most common power sources are electric-generators and primary cells. Electric generators convert chemical energy into electric energy.

Loads include electric heaters, electric motors, incandescent lamps, etc. Motors convert electric energy into mechanical, incandescent lamps and heaters convert electric energy into light and heat Utilizing devices or loads convert electric energy into thermal, mechanical or chemical energy.

Electric power is delivered from power sources to loads by electric wires. According to their material, wires can be aluminum, copper, steel, etc.

In addition to these three main components, electric circuits use different types of switches, protection devices (relays and fuses), and meters (ammeters, voltmeters, wattcmeters, etc.)

1. ***Choose the correct variant:***
2. The main components of electric circuits are a) loads and wires, b) power ources, loads and wires.
3. Power sources are used a) to produce electric energy, b) to deliver it to the leads.
4. Electric conductors (are used a) to connect the circuit elements, b) to deliver electric power.
5. Protection devices are utilized a) in some circuits b) in any circuit.
6. A switch is utilized a) in some circuits, b) in any circuit.
7. ***Answer the questions. Use them in a talk with your group mate:***

1. What are the main components of an electric circuit? 2. What is the function of an electric source? 3. What is the function of a load? 4. What is the function of wire conductors? 5. What addition: devices are utilized in a circuit?

1. ***Translate the words and distribute them into three columns (what?***

***What kind of? What to do?). Mind the suffixes:***

power, to power, to add, additional, protection, to protect, protective, utilization, to convert, convertible, various., variable, generator, generation

1. ***Translate the following word-combinations:***

additional power, additional loads, convertible values, converted values, protected power source, protecting devices, power increase, various fuses, variable resistor, primary cells, chemical cells.

1. ***Translate the sentences into Russian. Mind "etc. (et cetera) " and "in addition to":***

1. Electric circuits can include cells, resistors, capacitors, fuses, etc. 2. In addition to fuses relays are also used as electric circuit protection devices. 3. Electric energy can be converted into light, heat, mechanical energy, thermal energy, etc. 4. In addition to solid insulators liquid insulators are also widely used in this system.

1. ***Fill in the verbs "to utilize", "to convert", "to deliver":***

I. Primary cells ... electric power. 2. Different kinds of energy can be ... into electric energy. 3. Protecting devices should be ... in any circuit.