

МИНИСТЕРСТВО ОБРАЗОВАНИЯ, НАУКИ И МОЛОДЁЖНОЙ ПОЛИТИКИ КРАСНОДАРСКОГО КРАЯ

ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ ПРОФЕССИОНАЛЬНОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ
КРАСНОДАРСКОГО КРАЯ

«НОВОРОССИЙСКИЙ КОЛЛЕДЖ РАДИОЭЛЕКТРОННОГО ПРИБОРОСТРОЕНИЯ»

Комплект оценочных средств

**для проведения промежуточной аттестации в форме
зачета/дифференцированного зачета**

по дисциплине ОГСЭ.04 Иностранный язык (английский)

в рамках программы подготовки специалистов среднего звена (ППССЗ)

по специальности СПО

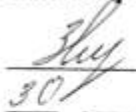
11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники

(по отраслям)

2018

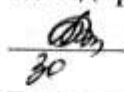
СОГЛАСОВАНО

Зам. директора по УМР

 Е.В. Заслонова
30 08 2018 г.

УТВЕРЖДАЮ

Зам. директора по УР

 Т.В. Трусова
30 08 2018 г.

Одобен

УМО филологических дисциплин

Протокол от 29.08. 2018 г. № 1

Председатель УМО

 М.А. Марарь

Комплект оценочных средств для проведения промежуточной аттестации по дисциплине ОГСЭ.04 Иностранный язык (английский) разработан на основе федерального государственного образовательного стандарта среднего профессионального образования по специальности 11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники (утв. приказом Минобрнауки РФ от 15 мая 2014 г. № 541, зарегистрирован в Минюст Российской Федерации от 26 июня 2014 г. № 32870), рабочей программы дисциплины ОГСЭ.04 Иностранный язык (английский) (утв. директором колледжа), Положения по организации текущего контроля успеваемости и промежуточной аттестации обучающихся ГБПОУ КК НКРП (утв. директором колледжа), Положения по формированию КОС по дисциплине (утв. директором колледжа).

Организация-разработчик: ГБПОУ КК «Новороссийский колледж радиоэлектронного приборостроения» (далее ГБПОУ КК НКРП)

Разработчик:

преподаватель ГБПОУ КК НКРП
(должность, место работы)


(подпись)

М.А. Марарь

Рецензенты:

Тараренко Е. В., преподаватель англ. яз.
ГБПОУ КК НКРП
Заслонова Е. В., зам. директора
по УМР ГБПОУ КК НКРП

РЕЦЕНЗИЯ

на комплект оценочных средств учебной дисциплины ОГСЭ.04 Иностранный язык (английский)
Направление подготовки (специальность) 11.02.02 Техническое обслуживание и ремонт
радиоэлектронной техники.

Комплект оценочных средств подготовлен преподавателем М.А. Марарь.

КОС учебной дисциплины «Иностранный язык» (английский) разработан на основе рабочей программы учебной дисциплины общеобразовательного цикла ППССЗ.

Предназначен для подготовки оценочных материалов, обеспечивающих проведение рубежного контроля и промежуточной аттестации в форме зачёта и дифференцированного зачёта по учебной дисциплине.

КОС состоит из следующих разделов:

- раздел «Паспорт комплекта оценочных средств», характеризующий область применения и нормативные основания разработки КОС; сводные сведения об объектах оценивания, показателях и критериях оценивания, типах заданий; формах аттестации;
- раздел «Комплект оценочных средств», структура которого позволяет разрабатывать и комплектовать разные типы заданий для обучающихся.

В паспорте указаны знания и умения в соответствии с рабочей программой учебной дисциплины, показатели и критерии оценки знаний студентов по каждому объекту оценивания, а также формы и методы контроля.

Комплект оценочных средств включает в себя разработанные комплексные задания, задания для внеаудиторных самостоятельных работ, тестовые задания для проведения дифференцированного зачета по каждому объекту оценивания.

Задания разработаны конкретно, последовательно, технически грамотно и позволяют проверить знания и умения по данной дисциплине.

Таким образом, КОС учебной дисциплины «Иностранный язык (английский)» обеспечивает проведение текущего и промежуточного контроля знаний студентов и может быть использован в образовательном процессе в ГБПОУ КК «Новороссийский колледж радиоэлектронного приборостроения».



Марарьова Е. В.
(Ф.И.О. рецензента)
преподаватель ГАПОУ КК «НКСЭ»
(должность, место работы)
преподаватель английского и
немецкого языков
(квалификация по диплому)
19 08 2018г.

Рецензия

На комплект оценочных средств учебной дисциплины ОГСЭ.04 Иностранный язык (английский) по специальности 11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники (по отраслям).

Комплект оценочных средств разработан преподавателем ГБПОУ КК НКРП М.А. Марарь.

КОС учебной дисциплины ОГСЭ.04 иностранный язык (английский) разработан на основе рабочей программы учебной дисциплины специальности 11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники (по отраслям) в соответствии с требованиями Федерального государственного образовательного стандарта СПО.

Предназначен для подготовки оценочных материалов, обеспечивающих проведение рубежного контроля в форме контрольных работ и промежуточной аттестации в форме зачета и дифференцированного зачета по учебной дисциплине.

КОС состоит из следующих разделов:

- раздел «Паспорт комплекта оценочных средств», характеризующий область применения и нормативные основания разработки КОС; сводные сведения об объектах оценивания, показателях и критериях оценивания, типах заданий; формах аттестаций;

- раздел «Комплект оценочных средств», структура которого позволяет разрабатывать и комплектовать разные типы заданий для обучающихся. Данный раздел включает в себя разработанные комплексные задания (в том числе текстовые) для проведения текущего контроля, рубежного контроля в форме контрольной работы и промежуточной аттестации в форме зачета и дифференцированного зачета;

- раздел «Условия выполнения заданий» включает в себя место выполнения, время выполнения, оборудование, основные и дополнительные источники учебной литературы, критерии оценивания знаний и умений обучающихся.

Структура материала построена логично, последовательно, технически грамотно и позволяет проверить знания и умения по данной дисциплине.

Большое внимание уделено контролю лексических навыков, навыков чтения и перевода текстов технической направленности с элементами анализа, а также грамматических навыков.

Важным достоинством данного комплекта является многоуровневость, что позволяет использовать материал в группах разного уровня подготовки. При этом прослеживается преемственность уровней с точки зрения формируемых компетенций. КОС содержит в себе развивающий компонент.

КОС учебной дисциплины ОГСЭ.04 Иностранный язык (английский) соответствует рабочей программе и может быть использован в образовательном процессе в ГБПОУ КК «Новороссийский колледж радиоэлектронного приборостроения».

Рецензент:



Е.В. Заслонова

(Ф.И.О. рецензента)

зам. директора по УМР, ГБПОУ КК НКРП

(должность, место работы)

Инженер-системотехник

(квалификация по диплому)

18

18

2018г.

1 Паспорт комплекта оценочных средств

1.1 Область применения комплекта оценочных средств

Комплект оценочных средств (КОС) предназначен для оценки результатов освоения дисциплины **ОГСЭ. 04 Иностранный язык (английский)**.

КОС включает контрольные материалы для проведения текущего контроля и промежуточной аттестации в форме зачёта/дифференцированного зачёта.

Результаты освоения ¹ (объекты оценивания)	Основные показатели оценки результата и их критерии ²	Тип задания; № задания ³	Форма аттестации (в соответствии с учебным планом)
Умение переводить (со словарём) иностранные тексты профессиональной направленности	Использование общих и терминологических словарей; понимание читаемого текста	Устный/письменный опрос Контрольная работа	Зачёт Диф.зачёт
Умение самостоятельно совершенствовать устную и письменную речь, пополнять словарный запас	Использование языковой догадки в случае затруднения понимания смысла читаемого; применение полученной при прочтении текста информации для выполнения различного рода заданий	Выполнение индивидуальных заданий Фронтальный/индивидуальный опрос Тестирование	Зачёт Диф.зачёт
Умение общаться (устно и письменно) на иностранном языке на профессиональные и повседневные темы	Понимание, извлечение нужной информации из прослушанного и воспроизведение услышанного с опорой на ключевые слова учебного материала (речи преподавателя, носителя языка в аудиозаписи) согласно тематике рабочей программы; владение монологической и диалогической речью; соблюдение языковых и речевых норм при коммуникации	Устный опрос Практические задания	Зачёт Диф.зачёт
Знание лексического (1200-1400 лексических	Узнавание ЛЕ и их применение в текстах	Индивидуальный опрос	Зачёт Диф.зачёт

¹ Указываются коды и наименования результатов обучения в соответствии с программой дисциплины (знания, умения) или профессионального модуля (общие, профессиональные компетенции, умения, знания, практический опыт).

Подробнее см. разъяснения по разработке КОС

² Критерии указываются, если необходимы для того чтобы впоследствии эксперты могли дать ответ в экспертном листе, используя дуальную систему: «выполнил – не выполнил»; «да-нет» и т.п. Чаще всего помимо показателей требуются критерии при разработке оценочных средств по программам СПО.

³ № задания указывается, если предусмотрен.

<p>единиц) и грамматический минимум необходимый для чтения и перевода (со словарём) иностранных текстов профессиональной направленности</p>	<p>профессиональной направленности. Перевод и воспроизведение ЛЕ в устной и письменной речи. Нахождение и определение терминов согласно теме урока (обоснование их употребления в определенном контексте)</p>	<p>Самостоятельная работа Лексический диктант</p>	
<p>Знание грамматического материала, необходимого для чтения и перевода (со словарём), а также грамматических явлений в текстах профессиональной направленности</p>	<p>Узнавание и нахождение в текстах профессиональной направленности примеров использования определенных грамматических структур и явлений. Представление своих примеров использования определенного грамматического материала с применением грамматических правил по теме урока Анализ и объяснение выявленных грамматических структур, устойчивых грамматических выражений</p>	<p>Фронтальный опрос Индивидуальный опрос Тестирование Контрольная работа</p>	<p>Зачёт Диф.зачёт</p>

Оценивание результатов освоения умений по показателям контроля:

Результаты освоения (объекты оценивания)	Основные показатели оценки результата и их критерии	Форма аттестации	
		Текущий контроль	Рубежный контроль
У.1. Переводить (со словарем) иностранные тексты профессиональной направленности	<ul style="list-style-type: none"> - грамотное чтение аутентичных текстов разных стилей (публицистические, художественные, научно-популярные и технические), с использованием основных видов чтения в зависимости от коммуникативной задачи; - адекватная передача содержания переводимого текста в соответствии с нормами русского литературного языка; - нахождение слова в иностранно-русском словаре, выбирая нужное значение слова; - осуществление языковой и контекстуальной догадки. 	<p>Практические задания</p> <p>Фронтальный опрос</p> <p>Индивидуальный опрос</p>	Контрольная работа
У.2. Самостоятельно совершенствовать устную и письменную речь, пополнять словарный запас	<ul style="list-style-type: none"> - свободное описывание явлений, событий; - изложение фактов в письме личного и делового характера; - заполнение различных видов анкет, сообщение сведений о себе в форме, принятой в стране/странах изучаемого языка; -изучение языкового материала по данной теме; -выполнение упражнений по тексту, (упр.12, 13); рассказ по теме «Первое радио»; -доклады, сообщения о великих ученых; составление конспекта по биографии А.С. Попова; -заполнение таблицы «Этапы усовершенствования радио»; -дополнительные сведения (рефераты, доклады, сообщения) о помехах в радиопередаче; заполнение схемы по теме; -чтение и перевод дополнительного материала по заданной теме; подготовка докладов по теме «Радиолокационные приборы»; - работа с техническим текстом; - составление опорного конспекта по устной теме; перевод технического текста с русского языка на английский по теме «Лучевые системы»; 	<p>Практические задания</p> <p>Фронтальный опрос</p> <p>Индивидуальный (устный/письменный) опрос</p>	Контрольный срез

	<ul style="list-style-type: none"> - запись конспекта по теме «Предназначение трансподерных систем»; - составление словаря-минимума; составление темы для устного высказывания; - перевод технического текста с русского языка на английский по теме «Плазменная панель»; - заполнение таблицы «Сравнительная характеристика чёрно-белого и цветного телевизионного приёмника» 		
У.3. Общаться (устно и письменно) на иностранном языке на профессиональные и повседневные темы	<ul style="list-style-type: none"> - свободное ведение диалога в ситуациях официального и неофициального общения в бытовой, социокультурной и учебно-трудовой сферах, с использованием аргументации, эмоционально-оценочных средств; - выполнение перевода; практикум устной и письменной речи; доклады по теме «Новые технологии в процессе связи»; - изучение языкового материала по теме для применения в чтении и переводе; - работа с текстом технической направленности; ответы на вопросы по теме; составление краткого сообщения по вопросам к тексту; чтение и перевод текстов для дополнительного чтения; составление темы «Линии передач»; подготовка к монологическому высказыванию; изучение дополнительного материала о телекоммуникации; подготовка докладов по теме: «Телекс. Телетайп. Дальномер»; составление конспекта по теме: «Радиотелеграфия». 	<p>Устные/письменные задания</p> <p>Фронтальный/индивидуальный опрос</p> <p>Практические задания</p>	<p>Контрольная работа</p> <p>Контрольный срез</p>
З.1. Лексический материал (1200 - 1400 лексических единиц)	<ul style="list-style-type: none"> - знание новых лексических единиц, связанных с темой определенного урока и с определенными ситуациями общения; - владение профессиональной информацией, расширенной за счет новой тематики и проблематики речевого общения; - перевод текстов, построенных на языковом материале 	<p>Практические задания</p> <p>Лексический диктант</p> <p>Фронтальный опрос</p>	<p>Контрольный срез</p> <p>Контрольная работа</p>

	повседневного и профессионального общения, в том числе инструкции и нормативные документы	Индивидуальный (устный/письменный) опрос	
3.2. Грамматический минимум, необходимый для чтения и перевода (со словарем) иностранных текстов профессиональной направленности	<ul style="list-style-type: none"> - использование новых значений изученных глагольных форм (видовременных, неличных), средства и способы выражения модальности, условия, предположения, причины, следствия, побуждения к действию; - систематизация, объяснение примеров грамматических правил и явлений; - применение в речи грамматических конструкций и структур. 	<p>Практические задания</p> <p>Фронтальный опрос</p> <p>Индивидуальный (устный/письменный) опрос</p>	Контрольный срез

2 Комплект оценочных средств

3 семестр

2.1 Задания для проведения рубежного контроля (практические):

Объект оценивания:

У1. по теме «Значение и отличие линий передач. Разные сигналы – на разные расстояния»

31. по теме «Значение и отличие линий передач. Разные сигналы – на разные расстояния»

32. по теме «Словообразование. Сочетания типа A+N, N+N»

Контрольная работа № 1 Variant 1

1. Put down the corresponding words. Translate the words

Model: recorder – to record; регистрирующий прибор – записывать

changer – to _____ ; _____ - _____;

explorer – to _____ ; _____ - _____;

processor – to _____ ; _____ - _____.

2. Which of the following words are nouns? verbs? adjectives? adverbs?

N

V

Adj

Adv

Finally, carry out, movement, movable, develop, historically, link, equip, source, popular, speed, high, highly, move, serve, service.

3. Put down the English for:

искусственные спутники _____

местный источник _____

высокая частота _____

беспроволочная передача _____

верхняя поверхность _____

соединительный провод _____

4. Put the blanks into the correct word combinations:

Artificial communication ____1____ are placed in an ____2____ around the Earth. They relay radio and television ____3____ around the ____4____ surface of the Earth and thus serve the purpose of intercontinental radio and television ____5____. There are two ____6____ of satellites in the orbit: active and ____7____. As for active satellites, they are used to receive, ____8____, and ____9____ signals being sent for the purpose of ____10____. The function of passive satellites is only ____11____ the transmitted signals from the ____12____ of the Earth.

1. retransmit

5. types

9. amplify

2. signals

6. to reflect

10. communication

3. orbit

7. curved

11. surface

4. satellites

8. transmission

12. passive

5. Give the Russian for:

polytechnics _____

air-proof _____

multicolour _____

automatic device _____

complex numbers _____

***6. Translate the sentences:**

Cables may be laid directly in the ground or put into ducts already laid. Cables laid directly in the ground must always have some protection against corrosion. Faulty cable must be taken out and inspected. The cost of direct laying is rather low but laying of this kind has a disadvantage: directly laid cables cannot be taken out. In cities it is not possible to use direct laying and cables must be put in ducts.

Variant 2**1. Put down the corresponding words. Translate the words**

Model: communication – связь; to communicate – передавать

reception, to _____; _____ - _____;

invention, to _____; _____ - _____;

transmission, to _____; _____ - _____.

2. Which of the following words are nouns? verbs? adjectives? adverbs?*N**V**Adj**Adv*

Operation, operative, useless, usefulness, velocity, range, cord, wireless, way, include, differ, practically, reliable, support, approximately, insulate.

3. Put down the English for:

высокая

скорость

довольно

высокая

движения _____

СТОИМОСТЬ _____

соединительные звенья _____

снова

используемые

сжатый воздух _____

части _____

значительные

преимущества _____

4. Put the blanks into the correct word combinations:

____ **1** ____ transmission is one of the ____ **2** ____ elements of modern ____ **3** ____ . Practically, one can say that communication is ____ **4** ____ due to the energy being transmitted over the transmitting ____ **5** ____ . Lines used for energy transmission may be classed into the following three types: ____ **6** ____ , ____ **7** ____ and underground. Naturally, these types are different in ____ **8** ____ and in the elements they are made of. As for the overhead lines, they ____ **9** ____ line conductors, ____ **10** ____ and supports. Indoor lines include conductors, ____ **11** ____ and buses. The conductors in indoor lines may include one wire or a ____ **12** ____ of wires not insulated from one another.

1. lines**2.** combination**3.** carried out**4.** energy**5.** communication**6.** indoor**7.** construction**8.** overhead**9.** insulators

10. include

11. basic

12. cords

5. Give the Russian for:

polyphase_____

sound-proof_____

corrosion-proof_____

thin aluminium wire_____

multiphase_____

***6. Translate the sentences:**

In tunnels and subways cables are usually put on walls. In cold weather cables must be kept warm or warmed before laying. No cable should be laid when the temperature is low because of the possible damage to the paper core. If a cable is faulty or if it is corroded, it stops operating or operates badly. Most common faults in cables are a break, a short, a contact between conductors in a multi-wire system. Naturally, different combinations of these faults are also possible. Faulty cables are taken out and replaced by new ones.

2.2 Задания для проведения промежуточной аттестации в форме зачёта (практические)

Объект оценивания:

У1. по теме «Виды кабелей. Их прокладка»

У3. по теме «Виды кабелей. Их прокладка»

З1. по теме «Виды кабелей. Их прокладка»

З2. по теме «Словообразование. Сочетания типа А+N, N+N»

Variant 1

1 Put down the Russian equivalents:

to conduct

to resist

to supply

to link

local transmission

connecting wire

amplifier

frequency

to conduct

to link

2. Complete the sentences:

1) is one of the basic elements of modern communication.

computing that uses photons.

2) heating and radiation losses take place in the lines.

5) According to the accepted theory

..... that is independent of the velocity of the observer.

3) The gas-insulated lines ... and each of them is placed inside the tube.

6).....to cable being tested, which made it possible to

4) is a method of

find the fault.

1. include a number of phase conductors
2. Energy transmission
3. In the process of transmitting electric energy
4. The device was connected
5. Optical computing used for communication
6. the velocity of light is absolute

3. Put down the corresponding verbs. Translate nouns and made verbs:

Variation – to vary – менять(ся)

- reduction - _____ - _____
 generation - _____ - _____
 dependence - _____ - _____
 insulation - _____ - _____

4. Read the Text. Find the word combinations of the type A+N, N+N in the text:

As we know, electric energy is transmitted to different parts of the country by means of transmitting lines. The lines include thick wires made of different metals. A number of metal wires put together form one thick cable and a pair includes two insulated conductors forming a metallic circuit. Thus, the basic technological part of energy transmission process is a long transmission line, and a cable is its main part. The length of transmitting lines varies greatly since different signals must be transmitted over various distances, from area to area.

Variant 2

1 . Put down the Russian equivalents:

- | | |
|--------------|---------------------|
| to decrease | broadcast reception |
| to radiate | internal wiring |
| to differ | network |
| to belong to | |

2. Complete the sentences:

- 1) Traditional microprocessors include _____ or logic circuits, for processing.
- 2) _____ are being used to receive and reflect back information about the upper atmosphere and the ionosphere.
- 3) _____ polythene ones can be laid directly in the ground without ducts since they are corrosion-proof.
- 4) Both _____ audio _____ and _____ video recordings _____ serve _____
- 5).....they usually include line conductors and insulators. 6) In order to be able to use computers for practice, it is necessary to have.....

- 1 . As for underground lines
2. Unlike lead-covered cables
3. elementary knowledge of its construction
4. Artificial satellites
5. electronic switches
6. as popular means of communication.
7. unit of current

3. Add the proper adjectives (A) to the nouns (B):

- | | |
|----------------|-------------------|
| A | B |
| interdependent | areas _____ |
| various | frequencies _____ |

reduced parts _____
reliable data _____
variable weight efficiency _____

4. Read the Text. Find the word combinations of the type A+N, N+N in the text:

In the process of transmitting electric energy, heating and radiation losses take place in the lines. The intensity of losses depends on the resistance in the lines. The greater is the resistance in the lines, the greater are the losses of conducting wires. Naturally, the losses must be reduced. The purpose of any energy transmission is to carry energy with as little losses as possible. Conductors and transformers are connected to the lines since they serve as the means of reducing heating and radiation losses.

4 семестр

2.3 Задания для проведения промежуточной аттестации в форме дифференцированного зачёта (практические)

Объект оценивания:

У1. по теме «Беспроводные телефоны»

У3. по теме «Беспроводные телефоны»

З 1. по теме «Беспроводные телефоны»

З 2. по теме «Словообразование. Причастия I, II»

Variant 1

1. Read and translate the text. Find the new terms on the theme “TELEPHONY”

Telephony is the transmitting of sounds over a considerable distance by means of electric current, using wires. Telephony as a means of communication is widely used in modern life all over the world. By means of telephone apparatus people can communicate with each other at distances of thousands of kilometers.

The transmission of sounds over a distance is known to be transmission of oscillations. In order to carry on communication, the frequency of the transmitted oscillations should be constant during the whole period of communication. The circuit, which is closed when the line is connected, consists of a transmitter and a receiver connected by an electric conductor.

A telephone transmitter is usually a carbon microphone. Its main parts are microphone housing, carbon chamber, carbon diaphragm, carbon granules, insulating spacer, and conductor.

By means of the carbon microphone, variable electrical impulses are caused to flow through the circuit. These variable impulses depend on the nature of the sounds supplied into the microphone. During the process of communication current passes through the diaphragm, carbon chamber, and carbon granules.

2. Give the Russian for:

telephone set _____
protector unit _____
carbon protector block _____
ground network _____

3. Translate the sentences. Mind “NO”:

- No charges move through an open circuit.
- No fuse is used in case of the building being served by insulated wires.

4. Read the text. Answer the questions on the text in the written way:

In addition to the wireline telephones described above, there exist wireless instruments. Naturally, the wireless telephones have no wire transmission lines. Nevertheless they have connections of their own: they are all connected to the public switched telephone network (PSTN). There are wireless telephones of different kinds. Among them there are cordless telephones and cellular systems. It is supposed that these cellular radio systems will be expanded to include global satellite-based telephony.

CORDLESS TELEPHONES

Cordless telephones are devices that are employed mostly within a home or office. Cordless telephones have a very limited mobility – up to a hundred metres. They essentially serve as a wireless extension to the wiring that exist in a home or office because they are plugged directly into the existing telephone jack. Cordless telephones operate over a pair of frequencies in the 46- and 48-megahertz bands or over a single frequency in the 902-928 megahertz band.

QUESTIONS

- Do wireless telephones have any connections?
- Where can cordless devices be employed?
- Into what element are they plugged?

5. Translate the questions and be ready to tell about the Telephony in English:

1. What is telephony? By what means are sounds transmitted over a distance?
2. What is the transmission of sounds?
3. What should be constant during the whole period of communication?
4. What does the circuit consist of?
5. What does a telephone transmitter include?
6. By what means are variable impulses caused to flow through the circuit?

Variant 2

1. Read and translate the text. Find the new terms on the theme “TELEPHONY”

The sound pressure on the diaphragm varies the pressure on the granules of carbon. These granules either make more contacts and decrease the resistance of the granules, or make fewer contacts and increase the resistance.

Sound waves produce oscillations of the same frequency as those of the sounding body. As a result, both the transmitter resistance and the current in the circuit change.

The varying current passes through the receiver connected to the network. The receiver of a telephone apparatus consists of electromagnetic coils, a steel magnet, and a diaphragm. The diaphragm, magnets, and the coils are housed in a plastic cap. During the process of communication, the cap of the receiver is pressed to the ear. A variable current passing through the magnet's coils changes the position

of the diaphragm; it makes it vibrate. The frequency of these oscillations is the same as that of the transmitter. Therefore the receiver reproduces the same sounds as those that are spoken into the microphone.

2. Translate the following sentences:

1. Fuses _____
 - serve as protectors.
 - protect the protector blocks.
 - are not used with insulated wires.
2. Power contact current may overheat either the protector or its ground part _____
3. A protector unit _____
 - is an important part of the system.
 - Serves as protection element.

3. Give the Russian for:

specific efficiency _____
spectral efficiency _____
geographic areas _____
geographically limited areas _____

4. Read the text. Answer the questions on the text in a written way:

CELLULAR TELEPHONES

Cellular telephones are transportable by vehicle or personally portable devices that may be used in motor vehicles or by people.

Cellular telephones communicate by radiowave in the 800-900-megahertz band. They allow a great degree of mobility within a service region that may occupy hundreds of square kilometres in area.

It should be noted that all communication with a mobile or portable device within a given cells is made to the base station that serves the cell. Because of the low transmitting power of battery-operated portable devices, specific sending and receiving frequencies of a cell may be reused in other cells within larger geographic areas. Thus, the spectral efficiency of f cellular system is increased by a factor equal to the number of times a frequency may be reused within its service area.

It is interesting to note that the first mobile and portable cellular systems were huge and heavy. But because of the progress in component technology, their weight and size were considerably decreased. For example, the weight of light portables in 1990 was equal to 310 grams. By 1994 their weight was reduced and became equal to 120 grams. This process is continuing. The weight of one of the models of cellular telephones produced in Russia – Motorola70V – is only 81 grams!

QUESTIONS

- How large may be serving regions of cellular telephones?
- What can you say about the weight of portable cellular systems?

5. Translate the questions and be ready to tell about the Telephony in English:

1. Where does current pass through during the process of communication?
2. What kind of oscillations do sound waves produce?
3. What does the receiver of telephone apparatus consist of?

4. Where are parts of receiver housed?
5. How does the position of the diaphragm change?
6. What is the frequency of receiver oscillations?

5 семестр

2.4 Задания для проведения рубежного контроля (практические)

Объект оценивания:

У1. по теме «Радиоприемник. Антенна. Радиосвязь »

У2. по теме «Радиоприемник. Антенна. Радиосвязь »

У3. по теме «Радиоприемник. Антенна. Радиосвязь »

З1. по теме «Радиоприемник. Антенна. Радиосвязь »

З2. по теме «Словообразование. Словосочетания с причастиями»

Контрольная работа №2

Variant 1

1. Put down the corresponding words. Translate the words

to print –print печатать - отпечаток

To image, to punch, to run, to impulse, to contain, to couple.

2. Translate the following examples in writing

- a) The aggregate is run by electric power.
- b) Telegraphy is the first electrical system of information movement transmission.
- c) By whom will the firm be run?
- d) The dots and dashes of the Morse code are being produced by varying the length of time for which current flows.

3. Which of the words below are Nouns? Verbs? Adjectives?

N

V

Adj

Visual, telecommunication, use, record, current, complete, amplified, buzz, transmission, weak, circuit, reduce.

4. Underline the words with the negative prefix

Irregular, indicator, increase, impossible, independence, index.

5. Insert the word combinations according to the point of the text

The function of radiotelegraphy is sound _____1_____. Radiotelegraph _____2___ coded messages, for example, in Morse code- by radio. Its essential parts are radio transmitters, radio _____3_____, and teleprinter _____4_____. These parts are usually located in the radio service centre. _____5_____ of the

service centre includes high-speed Morse and music apparatus. The function of the radio transmitters is _____6_____ mechanical movements into electrical ____7____. Transmitters may be directly controlled by telegraph pulses in a _____8_____ or _____9_____.

1. receivers 2. apparatus 3. equipment 4. broadcasting 5. transmits 6. to convert 7. amplitude-modulated
8. currents 9. frequency-modulated systems

Variant 2

1. Put down the corresponding words. Translate the words

to press-press *жать - пресс*

To supply, to couple, to tune, to note, to noise, to tape, to sound.

2. Translate the following examples in writing

- a) These motors run automatically.
- b) The new program must be run on the computer.
- c) Electric current flowing through a circuit can either open or close it.
- d) Telegraph transmission is a method of transmitting messages over a distance by means of electrical impulses.

3. Which of the words below are Nouns? Verbs? Adjectives?

N

V

Adj

Mobilize, providers, coupled, vary constant, oscillators, amplify, channel, interrupt, terminal, broadcast, coded.

4. Underline the words with the negative prefix

Interval, inconvertible, inspects, inseparable, internal, inconsiderable, influence.

5. Insert the word combinations according to the point of the text:

_____1_____ is one of the essential parts of any transmission and reception system. Its _____2_____ at the transmitter is to send electromagnetic into _____3_____, and the receiver- _____4_____ energy from the traveling electromagnetic wave produced from _____5_____. An aerial is formed by a wire or a metal _____6_____. As we know, an aerial must be _____7_____ from the ground and may occupy vertical or horizontal position. When _____8_____ are produced in the aerial, it starts _____9_____ radio waves which travel in different directions.

1. Energy 2. the transmitter aerial 3. purpose 4. to absorb 5. space 6. conductor 7. electric oscillations
8. radiating 9. the aerial

2.5 Задания для проведения промежуточной аттестации в форме зачёта (практические)

Объект оценивания:

У1. по теме «Принцип работы радиолокационного прибора и его применение»

У2. по теме «Принцип работы радиолокационного прибора и его применение»

31. по теме «Принцип работы радиолокационного прибора и его применение»

32. по теме «Словообразование; атрибутивные словосочетания; пассивный залог»

Variant 1

1. Fill in the missing words:

to extend – extension - extender

to _____ - _____ - detector

to _____ - _____ - rotator

to _____ - _____ - identifier

to _____ - _____ - scanner

to _____ - _____ - calculator

to _____ - _____ - feeder

2. Give the Russian equivalents:

Feeder cable –

Located objects -

Scanning beam –

Seeker -

Beam aerial -

3. Translate in writing. Mind the attributive combinations expressed by a preposition and a noun:

A coaxial pair in use - _____

Transmission lines under construction -

Feeders in common use - _____

4. Translate the Text. Find answers to the questions below:



RADAR is classified as means belonging to the sphere of radio communication. The word RADAR is an abbreviation of the words Radio Detection And Ranging.

Radar as a term is now used to include any system employing microwaves. To them belong microwaves ranging from 30 cm to 1 mm. Radar as a system of communication is used for locating, identifying, or guiding such moving objects as ships, aircraft, missiles, or artificial satellites. The radar system consists essentially of a generator, of electromagnetic radiation, the output of which is pulse modulated.

Then the output is fed to a movable aerial where from it is radiated as a beam. The aerial is rotating continuously when in use. The basic principle of radar is the scanning of the area by a beam of microwaves and detection of the waves that are reflected from the object to be located.

Radar of the type used for detection of aircraft. It rotates steadily, sweeping the airspace with a narrow beam.

Radar is an object-detection system that uses radio waves to determine the range, altitude, direction, or speed of objects. It can be used to detect aircraft, ships, spacecraft, guided missiles, motor vehicles, weather formations, and terrain. The radar dish or antenna transmits pulses of radio waves or microwaves that bounce off any object in their path. The object returns a tiny part of the wave's energy to a dish or antenna that is usually located at the same site as the transmitter.

Radar was secretly developed by several nations before and during World War II. The term *RADAR* was coined in 1940 by the United States Navy as an acronym for **Radio Detection And Ranging**. The term *radar* has since entered English and other languages as a common noun, losing all capitalization.

The modern uses of radar are highly diverse, including air traffic control, radar astronomy, air-defense systems, antimissile systems; marine radars to locate landmarks and other ships; aircraft anticollision systems; ocean surveillance systems, outer space surveillance and rendezvous systems; meteorological precipitation monitoring; altimetry and flight control systems; guided missile target locating systems; and ground-penetrating radar for geological observations. High tech radar systems are associated with digital signal processing and are capable of extracting useful information from very high noise levels.

Other systems similar to radar make use of other parts of the electromagnetic spectrum. One example is "lidar", which uses visible light from lasers rather than radio waves.

QUESTIONS

- What is the meaning of the abbreviation "radar"?
- What is the basic principle of radar?
- What is radar as a system of communication used for?
- What function does a movable aerial perform?

Variant 2

1. Fill in the missing words:

existence – to exist - существовать

guidance – to _____ - _____

unguidance – to _____ - _____

dependence – to _____ - _____

2. Give the Russian equivalents:

detector tube _____

feed circuit _____

extended aerial _____

beam _____

guide channel _____

to seek _____

unguided missile _____

3. Translate in writing. Mind the attributive combinations expressed by a preposition and a noun:

The code in common use is called the Morse code.

The generator under construction has no commutator.

The problem under discussion is of great importance.

4. Translate the Text. Find answers to the questions below:



The time taken for a pulse to travel to the object and back can be measured. In this way the distance to the object from the transmitter can be calculated, and its direction can be defined from the detection off the aerial direction. This technique has been extended to the use of computers, which accept data, apply logical processes to the data and supply the results of these processes as the information being sought.

The information provided by radar includes the bearing and range (and therefore position) of the object from the radar scanner. It is thus used in many different fields where the need for such positioning is crucial. The first use of radar was for military purposes: to locate air, ground and sea targets. This evolved in the civilian field into applications for aircraft, ships, and roads.

In aviation, aircraft are equipped with radar devices that warn of aircraft or other obstacles in or approaching their path, display weather information, and give accurate altitude readings. The first commercial device fitted to aircraft was a 1938 Bell Lab unit on some United Air Lines aircraft. Such aircraft can land in fog at airports equipped with radar-assisted ground-controlled approach systems in which the plane's flight is observed on radar screens while operators radio landing directions to the pilot.

Marine radars are used to measure the bearing and distance of ships to prevent collision with other ships, to navigate, and to fix their position at sea when within range of shore or other fixed references such as islands, buoys, and lightships. In port or in harbour, vessel traffic service radar systems are used to monitor and regulate ship movements in busy waters.

Meteorologists use radar to monitor precipitation and wind. It has become the primary tool for short-term weather forecasting and watching for severe weather such as thunderstorms, tornadoes, winter storms, precipitation types, etc. Geologists use specialized ground-penetrating radars to map the composition of Earth's crust.

Police forces use radar guns to monitor vehicle speeds on the roads.

A radar system has a transmitter that emits radio waves called *radar signals* in predetermined directions. When these come into contact with an object they are usually reflected or scattered in many directions. Radar signals are reflected especially well by materials of considerable electrical conductivity—especially by most metals, by seawater and by wet ground. Some of these make the use of radar altimeters possible. The radar signals that are reflected back towards the transmitter are the desirable ones that make radar work. If the object is *moving* either toward or away from the transmitter, there is a slight equivalent change in the frequency of the radio waves, caused by the Doppler effect.

QUESTIONS

- What device was the radar technique extended to?
- How is modulation defined?
- What kind of waves does radar employ?
- What are the radar applications?
- Describe a radar.

6 семестр

2.6 Задания для проведения промежуточной аттестации в форме дифференцированного зачёта (практические)

Объект оценивания:

У1. по теме «Multimedia»

У2. по теме «Multimedia»

З1. по теме «Multimedia»

З2. по теме «Словообразование; пассивный залог; инфинитив и его функции»

Variant 1

1. Translate the Text

2. Find the new terms on the theme “MULTIMEDIA”

3. Find the grammar structures of Passive Voice

4. Divide the text into logical parts, call them

5. Define the main idea of the text

6. Express your opinion about the text main idea

7. By the made-up plan of the text, retell it, using the supporting key-words

Multimedia refers to content that uses a combination of different content forms. This contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material. Multimedia includes a combination of text, audio, still images, animation, video, or interactive content forms. Multimedia can be recorded and played, displayed, dynamic, interacted with or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia devices are electronic media devices used to store and experience multimedia content. Multimedia is distinguished from mixed media in fine art; by including audio, for example, it has a broader scope. The term "rich media" is synonymous for interactive multimedia. Hypermedia scales up the amount of media content in multimedia application.

Categorization of multimedia. Multimedia may be broadly divided into **linear** and **non-linear** categories. Linear active content progresses often without any navigational control for the viewer such as a cinema presentation. Non-linear uses interactivity to control progress as with a video game or self-paced computer based training. Hypermedia is an example of non-linear content. Multimedia presentations can be **live** or **recorded**. A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via an interaction with the presenter or performer.

Major characteristics of multimedia. **Multimedia presentations** may be viewed by person on stage, projected, transmitted, or played locally with a media player. A broadcast may be a live or recorded multimedia presentation. Broadcasts and recordings can be either analog or digital electronic media technology. Digital online multimedia may be downloaded or streamed. Streaming multimedia may be live or on-demand.

Multimedia games and simulations may be used in a physical environment with special effects, with multiple users in an online network, or locally with an offline computer game, or simulator. The various formats of technological or digital multimedia may be intended to enhance the users' experience, for example to make it easier and faster to convey information. Or in entertainment or art, to transcend everyday experience. Enhanced levels of interactivity are made possible by combining multiple forms of media content. Online multimedia is increasingly becoming object-oriented and data-driven, enabling applications with collaborative end-user innovation and personalization on multiple forms of content over time. Examples of these range from multiple forms of content on Web sites like photo galleries with both

images (pictures) and title (text) user-updated, to simulations whose co-efficients, events, illustrations, animations or videos are modifiable, allowing the multimedia "experience" to be altered without reprogramming. In addition to seeing and hearing, Haptic technology enables virtual objects to be felt. Emerging technology involving illusions of taste and smell may also enhance the multimedia experience.

Variant 2

1. Translate the Text
2. Find the new terms on the theme “*MULTIMEDIA*”
3. Find the grammar structures of Passive Voice
4. Divide the text into logical parts, call them
5. Define the main idea of the text
6. Express your opinion about the text main idea
7. By the made-up plan of the text, retell it, using the supporting key-words

Application. Multimedia finds its application in various areas including, but not limited to, advertisements, art, education, entertainment, engineering, medicine, mathematics, business, scientific research and spatial temporal applications.

Creative industries. Creative industries use multimedia for a variety of purposes ranging from fine arts, to entertainment, to commercial art, to journalism, to media and software services. An individual multimedia designer may cover the spectrum throughout their career. Request for their skills range from technical, to analytical, to creative.

Commercial uses. Much of the electronic old and new media used by commercial artists and graphic designers is multimedia. Exciting presentations are used to grab and keep attention in advertising. Business to business, and interoffice communications are often developed by creative services firms for advanced multimedia presentations beyond simple slide shows to sell ideas or liven-up training. Commercial multimedia developers may be hired to design for governmental services and nonprofit services applications as well.

Entertainment and fine arts. In addition, multimedia is heavily used in the entertainment industry, especially to develop special effects in movies and animations (VFX, 3D animation, etc.). Multimedia games are a popular pastime and are software programs available either as CD-ROMs or online. Some video games also use multimedia features. Multimedia applications that allow users to actively participate instead of just sitting by as passive recipients of information are called *Interactive Multimedia*. In the Arts there are multimedia artists, whose minds are able to blend techniques using different media that in some way incorporates interaction with the viewer.

Education. *Edutainment* is the combination of education with entertainment, especially multimedia entertainment. Learning theory in the past decade has expanded dramatically because of the introduction of multimedia. The possibilities for learning and instruction are nearly endless. The idea of media convergence is also becoming a major factor in education, particularly higher education. Defined as separate technologies such as voice (and telephony features), data (and productivity applications) and video that now share resources and interact with each other, synergistically creating new efficiencies, media convergence is rapidly changing the curriculum in universities all over the world.

Engineering. Software engineers may use multimedia in Computer Simulations for anything from entertainment to training such as military or industrial training. Multimedia for software interfaces are often done as a collaboration between creative professionals and software engineers.

Industry. In the Industrial sector, multimedia is used as a way to help present information to shareholders, superiors and coworkers. Multimedia is also helpful for providing employee training, advertising and selling products all over the world via virtually unlimited web-based technology.

Mathematical and scientific research. In mathematical and scientific research, multimedia is mainly used for modeling and simulation. For example, a scientist can look at a molecular model of a

particular substance and manipulate it to arrive at a new substance. Representative research can be found in journals such as the Journal of Multimedia.

Medicine. In Medicine, doctors can get trained by looking at a virtual surgery or they can simulate how the human body is affected by diseases spread by viruses and bacteria and then develop techniques to prevent it. Multimedia application like virtual surgeries also help doctors to get practical training.

Document imaging. Document imaging is a technique that takes hard copy of an image/document and converts it into a digital format (for example, scanners).

Disabilities. Ability Media allows those with disabilities to gain qualifications in the multimedia field so they can pursue careers that give them access to a wide array of powerful communication forms.

Miscellaneous. In Europe, the reference organization for Multimedia industry is the European Multimedia Associations Convention (EMMAC).

7 семестр

2.7 Задания для проведения рубежного контроля (практические)

Объект оценивания:

У1. по теме «Электричество-электрическая энергия»

У2. по теме «Электричество-электрическая энергия»

З 1. по теме «Электричество-электрическая энергия»

З 2. по теме «Словообразование; инфинитив в начале и середине предложения»

Контрольная работа №3

Variant 1

1. Read the text. Name the most important inventions in the field of electrical engineering.

It is impossible to imagine our civilization without electricity: economic and social progress will be turned to the past and our daily lives completely transformed.

Electrical power has become universal. Thousands of applications of electricity such as lighting, electrochemistry and electrometallurgy are longstanding and unquestionable.

With the appearance of the electrical motor, power cables replaced transmission shafts, gear wheels, belts and pulleys in the 19-th century workshops. And in the home a whole range of various time and labour saving appliances have become a part of our everyday life.

Our devices are based on specific properties of electricity: electrostatics in the case of radar and television. These appliances have made electricity most widely used.

The first industrial application was in the silver workshops in Paris. The generator - a new compact source of electricity - was also developed there. The generator replaced the batteries and other devices that have been used before.

2. Answer the questions:

- What is the text about?
- What industrial applications of electricity do you know?
- What home appliances of electricity do you know?
- Where was the generator developed?

3. Translate the sentences into Russian:

1. Electricity has many useful properties: it is clean and generates no by-products.
2. Electricity has many important applications in industry as well as in our houses.
3. Electricity has provided mankind with the most efficient source of energy.
4. No other source of energy has been so widely used as electricity.
5. Our lives have been completely transformed with the appearance of electricity.
6. The consumption of electricity has doubled every ten years.
7. The important fact is that electricity offers improved service at reduced cost.

4. Join the words into pairs of synonyms:

Application, appliance, latest, power, use, enable, reach, device, longstanding, make it possible, achieve, energy, transform, old, turn to, most recent.

5. Fill in the blanks with the necessary words given below:

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

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

Variant 2

1. Read the text. Name the most important inventions in the field of electrical engineering.

Electric lighting came into wide use at the end of the last century with the development of the electric lamp by Thomas Edison. Then the transformer was invented, the first electric lines and networks were set up, dynamos and induction motors were designed.

Since the beginning of the 20th century the successful development of electricity has begun throughout the industrial world. The consumption of electricity has doubled every ten years.

Today consumption of electricity per capita is an indicator of the state of development and economic health of a nation. Electricity has replaced other sources of energy as it has been realized that it offers improved service and reduced cost.

One of the greatest advantages of electricity is that it is clean, easily-regulated and generates no by-products. Applications of electricity now cover all fields of human activity from house washing machines to the latest laser devices. Electricity is the efficient source of some of the most recent technological advances such as the laser and electron beams. Truly electricity provides mankind with the energy of the future.

2. Answer the questions:

- Who invented the electric lamp?
- Do you know who invented the dynamo?
- Can you imagine our life without electricity? Why?

3. Translate the sentences into Russian:

1. That the two scientists Lodygyn and Yablochkov were the first in Russia to work in the field of electrical engineering is well-known.
2. It is evident that electricity will be the energy of the future.
3. The transformer was invented and the first electric lines and networks were set up at the end of the 19th century.
4. A combination of electric lines and networks are being set up throughout the country.
5. Electric power has become universal.
6. Electricity is transmitted to distant parts of the country by a combination of electric networks.
7. Our power stations have been connected by high voltage transmission lines into several networks.

4. Join the words into pairs of antonyms:

Future, unlimited, with, past, necessary, limited, old, unnecessary, without, present.

5. Fill in the blanks with the necessary words given below:

We must try to develop alternative... of energy to... electricity for domestic and industrial... It is known that nuclear power comes to the consumer as electricity, which is clean and convenient form of... Although nuclear... stations are large, they can be built... from places where people live.

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

2.8 Задания для проведения промежуточной аттестации в форме зачёта (практические)

Объект оценивания:

У1. по теме «Определение электрического тока. Сила тока. Электрическая цепь»

У2. по теме «Определение электрического тока. Сила тока. Электрическая цепь»

З1. по теме «Определение электрического тока. Сила тока. Электрическая цепь»

З2. по теме «Инфинитив в середине предложения; пассивный залог с модальным глаголом»

Variant 1

1. Match the following:

- | | |
|------------------|-------------------------------|
| 1. property | * электричество |
| 2. electrical | * получать, принимать |
| 3. generation | * свойство |
| 4. to convert | * передавать |
| 5. electricity | * вырабатывание, генерация |
| 6. semiconductor | * электрический |
| 7. to transmit | * электрическая цепь, контур |
| 8. current | * преобразовывать, превращать |
| 9. circuit | * ток |
| 10. to receive | * постоянный (о токе) |
| 11. direct | * полупроводник |

2. Insert the omitted words. Translate the sentences.

1. An electric current is a directed flow of free electric charge ... in a substance or in a vacuum.
2. The electric conductivity of materials depends on the ... of charge carriers.
3. Electricity has valuable properties: it can be distributed among the users and converted back into ..., thermal, chemical and other necessary forms.
4. Electronics considers the principles of operation, design and ... of semiconductor, vacuum and gas-filled devices.

* mechanical * carriers * application * concentration

3. Choose the correct word from the brackets:

1. Electrolytes are (gaseous, liquid, aqueous) solutions of salts, acids, alkalis.
2. (Conductors, semiconductors, dielectrics) possess insignificant conductivity.
3. The components of electric circuits are insulated with (metals, dielectrics, gases).
4. Dielectrics are: (vanishes, silver, carbon, gases, germanium, mineral oils, silicon).

4. Put the verbs into Present Simple Passive:

1. No by-products (to generate) by electricity.
2. The consumption of electric energy (to double) every ten years.
3. Other sources of energy (to replace) by electricity.
4. Electricity (to regulate) easily.

5. Choose the necessary word from the brackets:

- 1) It is impossible (*to imagine/ to express*) our civilization without electricity: economic and social progress will be (*turned/ ruined*) to the past and our (*regular/ daily*) lives completely transformed.

- 2) Thousands of (*applications/ appliances*) of electricity such as (*moonlighting/ lighting*), electrochemistry and metallurgy are (*longstanding and unquestionable/ long-time and unreal*).
- 3) With the (*application/ appearance*) of the electric motor, power cable (*placed/ replaced*) transmission shafts, gear wheels, belts and pulleys in the 19th century (*stores/ workshops*).
- 4) Our devices are (*started/ based*) on specific (*properties/ qualities*) of electricity: electrostatics in the case of radar and television.

Variant 2

1. Match the following:

- | | |
|-----------------|--|
| 1. charge | * увеличиваться, возрастая, повышаться |
| 2. conductivity | * поток |
| 3. carrier | * переменный |
| 4. current | * заряд |
| 5. to improve | * ток |
| 6. flow | * изолировать |
| 7. circuit | * устройство, прибор, приспособление |
| 8. device | * удельная проводимость |
| 9. to increase | * носитель |
| 10. to insulate | * улучшать |
| 11. alternating | * электрическая цепь, контур |

2. Insert the omitted words. Translate the sentences.

1. Dielectrics possess ... conductivity.
2. Electrical energy has very valuable properties: it can be derived from other forms and transmitted with low ... for hundreds of km.
3. Semiconductor and gas-filled rectifying devices are used to ... a.c. to d.c.
4. Electronics has now become a division of electrical ...

* convert * insignificant * losses * engineering

3. Choose the correct word from the brackets:

1. (Copper, germanium, silver, silicon, gold, aluminium) are semiconductors.
2. Conductors have (high, insignificant) conductivity.
3. A directed flow of free electric charge carriers in a substance or in a vacuum is called (conduction, electric charge, conductivity, electric current).
4. The property of a material to produce electric current is called (concentration, conductivity, conduction).

4. Put the verbs into Present Simple Passive:

1. Many devices (to base) on specific properties of electricity.
2. Electricity (to use) widely today.
3. The conductivity of TV sets components and radio sets (to improve).
4. Electricity (to derive) from other forms of energy.

5. Choose the necessary word from the brackets:

- 1) The generator - a new compact (*source of electricity/ ions source*) – was also developed here. Then the transformer was invented, the first electric lines and networks were (*start up/ get up/ set up*), dynamos and induction motors were (*designed/ fabricated/ described*).
- 2) The (*consumption/ usage/ utilization*) of electricity has (*doubled/used/ taken*) every ten years.
- 3) Electricity has replaced other (*sources/elements*) of energy as it has been realized that it (*offers improved/ supposes progressed*) service and (*reduced/ increased*) cost.

- 4) Applications of electricity now (*cover/recover*) all fields of (*human activity/ human living/ human existing*) from (*house washing machines/ house cleaning appliances/house preparing stoves*) to the latest laser devices.

8 семестр

2.9 Задания для проведения промежуточной аттестации в форме дифференцированного зачёта (практические)

Объект оценивания:

У1. по теме «Роботы в современном производстве»

У2. по теме «Роботы в современном производстве»

З1. по теме «Роботы в современном производстве»

З2. по теме «Словообразование; простые и сложные предложения»

Variant 1

1. Answer the question: Do you think that robots can ever completely replace people at work?

Read the text and try to understand: Is your supposition right or wrong according to the point of the text? (Прочитайте текст и определите, подтверждает он или опровергает ваше мнение)

Robots — the Ideal Workers?

We hear many complaints about work in factories; the work is often boring, heavy and repetitive; the operative doesn't have to think about the work; he gets no job satisfaction.

The answer is a robot. For many jobs a robot is much better than human operative. Once it has been programmed, it will do its job over and over again. It never gets bored; it works at a constant speed; it doesn't make mistakes; its work is always of the same standard; it doesn't get tired; it can work 24 hours a day without breaks for food, rest or sleep.

Robots have other advantages, too. They can be designed to do almost any job. You can't change the human body, but a robot's arms, for example, can be made to move in any direction. Robots also can do very heavy work and they can operate in conditions that are too dangerous, too hot or too cold for people to work in. They can work underwater, in poisonous gas and in radioactive areas.

2. Finish the table with the information from the text:

Advantages of robots	Advantages of humans
They never get bored.	They don't have to be programmed.

3. Finish the sentences from the text:

Robots are particularly useful for... in places where... would die. They don't... air, so they can be useful in space or.... Special... have also been ... for handling raw materials.

4. Read and translate the text and answer the questions below in a written way:

INDUSTRIAL ROBOTS

This country's machine-building industry is now facing the task of restructuring on a large scale engineering production, and developing new methods of organization, new equipment and new technologies. This is a global process. Swift production automation, the introduction of microprocessors, robotics, rotary and rotary-conveyer lines, flexible readjustable production is vital for today's industry.

Industrial robots play an important part in the process. Many institutes are currently engaged in developing them. The concept of designing robot modules is making successful headway.

The task today is to raise their reliability, speed and failure-free operation. Russian engineers cooperate in the development of flexible production systems with experts from different countries.

Also needed for the operation of flexible systems are robots which will transport billets and parts between machine-tools, i.e. transport robots, robot trailers, as well as measuring robots. Experts from the Institute of Machine Studies are developing measuring manipulators and coordinate - measuring machines.

It is hard to enumerate all the problems facing our engineers and designers in the development of flexible productions. Automated systems of adjusting, controlling instruments, machined parts and many other things are needed.

The combination of flexible systems with the general system of programmed production, the spreading of flexibility to the processes of preparatory productions - foundry, forging and welding - are also very complicated problems. The flexible system must embrace all the stages of machine building, all its processes.

QUESTIONS:

- 1) What is the flexible production?
- 2) Why is it important?
- 3) What is the main task of industrial robots production?
- 4) What problems have the engineers and designers in the development of flexible productions?

Variant 2

1. Answer the question: Do you think that robots can ever completely replace people at work?

Read the text and try to understand: Is your supposition right or wrong according to the point of the text? (Прочитайте текст и определите, подтверждает он или опровергает ваше мнение)

It is obvious that robots have many advantages over human beings. However, it is also true that humans can do many things that robots can't. For example, humans can carry out a task without having to be told exactly how to do it first — in other words, they don't always have to be programmed. Humans can move, but robots are usually fixed in one place. If they are able to move, robots can do it only in a very limited way. Unlike robots, people can know whether what they are doing is good or bad, and whether it is boring or interesting. Also robots are now able to understand speech and writing, but humans can communicate easily with each other by these methods, and by many others — telephone, drawing, radio, and so on — as well.

And we should not forget that robots owe their existence to humans— we make them, repair them and control them, not the other way round.

2. Finish the table with the information from the text:

Advantages of robots	Advantages of humans
They never get bored.	They don't have to be programmed.

3. Finish the sentences from the text:

A number of industrial and military ... are also used to ... in ... gases. So in many ways robots mean that people do not have to... in ...jobs. But, of course,... are still needed to ... and repair the robots.

4. Translate the Text

a) Find the new terms on the theme "INDUSTRIAL ROBOTS"

b) Define the main idea of the text

c) Express your opinion about the text main idea

INDUSTRIAL ROBOTS

This country's machine-building industry is now facing the task of restructuring on a large scale engineering production, and developing new methods of organization, new equipment and new technologies. This is a global process. Swift production automation, the introduction of microprocessors, robotics, rotary and rotary-conveyer lines, flexible readjustable production is vital for today's industry.

Industrial robots play an important part in the process. Many institutes are currently engaged in developing them. The concept of designing robot modules is making successful headway.

The task today is to raise their reliability, speed and failure-free operation. Russian engineers cooperate in the development of flexible production systems with experts from different countries.

Also needed for the operation of flexible systems are robots which will transport billets and parts between machine-tools, i.e. transport robots, robot trailers, as well as measuring robots. Experts from the Institute of Machine Studies are developing measuring manipulators and coordinate - measuring machines.

It is hard to enumerate all the problems facing our engineers and designers in the development of flexible productions. Automated systems of adjusting, controlling instruments, machined parts and many other things are needed.

The combination of flexible systems with the general system of programmed production, the spreading of flexibility to the processes of preparatory productions - foundry, forging and welding - are also very complicated problems. The flexible system must embrace all the stages of machine building, all its processes.

9 семестр

2.10 Задания для проведения рубежного контроля (практические)

Объект оценивания:

У1. по теме «light amplification by stimulated emission of radiation»

У2. по теме «light amplification by stimulated emission of radiation»

З 1. по теме «light amplification by stimulated emission of radiation»

Контрольная работа № 4

Variant 1

1. Answer the questions in writing:

1. What does the word «laser» mean?
2. What is the laser, is it a device or some phenomenon?
3. Who was the first to write about lasers?

2. Say what confirmations are True and what are False:

1. Laser means “light amplification by stimulated emission of radiation”.
2. Laser produces an intensive beam of light.
3. In the next few years laser will become one of the main technological tools.
4. Martians almost invaded the Earth before the turn of the last century.

3. Translate the sentences:

1. To design, construct and operate a laser system is a great technological achievement.
2. To protect the water resources, forests and atmosphere, several laws were passed in Russia in the 1970s.
3. A very interesting problem is to produce a practically limitless source of energy
4. There are projects to use lasers for long distance communication.
5. Automation makes it possible to obtain and develop new sources of energy
6. To combine laser and thermonuclear reaction is a very interesting problem for the scientists in many countries.

4. Define the parts of speech by suffixes and prefixes:

Encode, capacity, disintegrate, emission, widen, intensive, incredible, defence, stranger.

5. Write the derivations from the given words and translate them:

Limit, transmit, approximate.

6. Find the English equivalents to the Russian ones:

устанавливать — installment, installation, install;
различие, разница — differ, difference, different;
распадаться — disintegrator, disintegration, disintegrate;
применимый — application, applicable, apply.

7. Find Synonyms:

Rapidly, sophisticated, to conduct, demand, almost, quickly, to carry out, approximately, opportunity, requirement, also, use, to fulfill, complex, as well, to realize, application, possibility.

Variant 2

1. Answer the questions in writing:

1. What does the word «laser» mean?
2. What writer from this country wrote a book about a laser?
3. What can a laser do?
4. Where can it be used?
5. What other uses do you know?

2. Say what confirmations are True and what are False:

1. Laser and thermonuclear reaction can produce a limited source of energy.
2. The laser beam heats the fuel so quickly that the plasma disintegrates.
3. There are projects to transform lunar radiation into beams.
4. The laser beam will begin operating in outer space.

3. Translate the sentences:

1. To conduct physical experiments with laser beams, Russian physicists have developed large laser installations. 2. Lasers to be placed on Earth satellites will transform solar radiation into laser beams. 3. A special design bureau in St. Petersburg was the first in the world to develop production of superlong escalators. 4. To put some projects with lasers in operation, great technological difficulties must be overcome. 5. One of the ways to make planes as economical as possible is to lighten the aircraft by using new composite materials. 6. Signals to be measured must be strong enough.

4. Define the parts of speech by suffixes and prefixes:

Reality, strengthen, fulfillment, indestructible, amplification, substance, entirely, vaporize.

5. Write the derivations from the given words and translate them:

Success, science, relate.

6. Find the English equivalents to the Russian ones:

применимый — application, applicable, apply;
укреплять — strong, strength, strengthen;
эффективно — efficient, efficiency, efficiently;
усилитель — amplification, amplifier, amplify

7. Find Antonyms:

Further, integrate, cooling, outside, powerless, uncontrolled, limited, disintegrate, nearer, capable, limitless, controlled, incapable, powerful, heating, inside.

2.10 Задания для проведения промежуточной аттестации в форме зачёта (практические)

Объект оценивания:

У1. по теме «Физический термин. Свойства»

У2. по теме «Физический термин. Свойства»

З 1. по теме «Физический термин. Свойства»

З 2. по теме «Модальные глаголы – can, may, must, should (ought to) и их основные функции»

Variant 1

1. Read the text. Tell about the main periods of superconductivity development and the scientists who contributed to the superconductivity research.

Superconductivity

According to the prominent scientist in this country **V.L. Ginzburg** the latest world achievements in the field of superconductivity mean a revolution in technology and industry. Recent spectacular breakthroughs¹ in superconductors may be compared with the physics discoveries that led

to electronics and nuclear power. They are likely to bring the mankind to the threshold of a new technological age. Prestige, economic and military benefits could well come to the nation that first will master this new field of physics. Superconductors were once thought to be physically impossible. But in 1911 superconductivity was discovered by a Dutch physicist **K. Onnes**, who was awarded the Nobel Prize in 1913 for his low-temperature research. He found the electrical resistivity of a mercury wire to disappear suddenly when cooled below a temperature of 4 Kelvin (-269 °C). Absolute zero is known to be 0 K. This discovery was a completely unexpected phenomenon. He also discovered that a superconducting material can be returned to the normal state either by passing a sufficiently large current through it or by applying a sufficiently strong magnetic field to it. But at that time there was no theory to explain this.

For almost 50 years after K. Onnes' discovery theorists were unable to develop a fundamental theory of superconductivity. In 1950 physicists **Landau and Ginzburg** made a great contribution to the development of superconductivity theory. They introduced a model which proved to be useful in understanding electromagnetic properties of superconductors.

2. Answer the questions:

1. What is this text about? 2. What is the phenomenon of superconductivity? 3. Who was the first to discover the phenomenon? 4. What scientists do you know who have worked in the field of superconductivity?

3. Say what sentences are True, what are False. Correct the False sentences.

1. The latest achievements in superconductivity mean a revolution in technology and industry. 2. Superconductors were once thought to be physically impossible. 3. The achievements in superconductivity cannot be compared with the discoveries that led to electronics and nuclear power. 4. The electrical resistivity of a mercury wire disappears when cooled below 4 K.

4. Compare the pairs of the sentences and translate them.

1. Designers report a new manned craft to be able to submerge to the depth of 21,000 feet. A new manned craft is reported to be able to submerge to the depth of 21,000 feet. 2. We know radio navigation stations to be located at different places around the world to guide the pilots. Radio navigation stations are known to be located all over the world to guide the pilots. 3. People considered dirigibles to be too slow and unreliable, that is why they were not used for a long time. Dirigibles were considered to be slow and unreliable.

5. Translate the sentences, paying attention to grammar construction Complex Subject:

1. The phenomenon of superconductivity appears to have been discovered as early as 1911 2. Before 1911 superconductivity was assumed to be impossible. 3. Recent discoveries in superconductivity made scientists look for new conducting materials and for practical applications of the phenomenon. 4. The latest achievements in the field of superconductivity are certain to make a revolution in technology and industry. 5. Recommendations from physicists will allow the necessary measures to be taken to protect the air from pollution. 6. Lasers are sure to do some jobs better and at much lower cost than other devices. 7. M. Faraday supposed a light beam to reverse its polarization as it passed through a magnetized crystal.

6. Define the Parts of Speech – N, V, Adj, Adv:

Resistant, resist, resistance, resistor, resistivity; superconductivity, superconductive, superconductor, superconducting; theory, theorist.

7. Give the Russian word its English equivalent:

достижение — achievable, achievement, achieve;

электронный — electronics, electronic, electron;

легче — easily, easy, easier

8. Translate the words with suffixes *-ward* (*-wards*) in the meaning of **direction.**

Toward(s), forward(s), backward(s), afterward(s), downward(s), outward(s), northward(s).

9. Find and translate the words with special making of plural (множ. число)

There are a few words taken over from Latin and Greek that still retain their original plurals in English. In some cases we can use either. Formulas is seen more often than formulae. Antenna — antennae (*pl*). Many think that media, strata and phenomena are all singular. They aren't. Data, a plural, is used both ways.

10. Find Synonyms and Antonyms into the pairs.

Below - above; useful - useless; easy - difficult; field - sphere; to meet demands — to meet requirements (needs); full - complete; to use — to apply; to get — to obtain; moreover — besides; sufficient — enough; likely — unlikely; to continue — to discontinue.

Variant 2

1. Read the text. Tell about the main periods of superconductivity development and the scientists who contributed to the superconductivity research.

Superconductivity

Finally, in 1957 a satisfactory theory was presented by American physicists, which won for them in 1972 the Nobel Prize in physics. Research in superconductors became especially active since a discovery made in 1986 by IBM² scientists in Zurich. They found a metallic ceramic compound to become a superconductor at a temperature well above³ the previously achieved record of 23 K.

It was difficult to believe it. However, in 1987 American physicist Paul Chu informed about a much more sensational discovery he and his colleagues produced superconductivity at an unbelievable before temperature 98 K in a special ceramic material. At once in all leading laboratories throughout the world superconductors of critical temperature 100 K and higher (that is, above the boiling temperature of liquid nitrogen) were obtained. Thus, potential technical uses of high temperature superconductivity seemed to be possible and practical. Scientists have found a ceramic material that works at room temperature. But getting superconductors from the laboratory into production will be no easy task. While the new superconductors are easily made, their quality is often uneven. Some tend to break when produced, others lose their superconductivity within minutes or hours. All are extremely difficult to fabricate into wires. Moreover, scientists lack a full understanding of how ceramics become superconductors. This fact makes developing new substances largely a random process. This is likely to continue until theorists give a fuller explanation of how superconductivity is produced in new materials.

2. Answer the questions:

1. What materials are the best superconductors? 2. Is it possible to return superconducting materials to the normal state? 3. How can it be done? 4. In what fields of science and technology can the phenomenon of superconductivity be used?

3. Say what sentences are True, what are False. Correct the False sentences.

1. A superconducting material cannot be returned to the normal state. 2. Landau and Ginzburg introduced a model which was useful in understanding electromagnetic properties of superconductors.

3. Scientists from IBM found a ceramic material that became a superconductor at a temperature of 23 K. 4. Potential technical uses of high temperature superconductivity are unlikely to be possible and practical.

4. Compare the pairs of the sentences and translate them.

1. Experts expect the new submersible craft to move round the ocean floor like a sports car. The new submersible craft is expected to move round the ocean floor like a sports car. 2. Scientists in many countries consider propeller engines to be much more economical. Propeller engines are considered to be much more economical. 3. We know propeller planes fly slower than jet planes, therefore, a new ventilator engine with a propeller has been built. But as propeller planes are known to fly slower than jet planes a new ventilator engine with a propeller has been built.

5. Translate the sentences, paying attention to grammar construction Complex Subject:

1. Superconductors are likely to find applications we don't even think of at present. 2. A Dutch physicist found a superconducting material to return to normal state when a strong magnetic field was applied. 3. Properties of materials obtained in space prove to be much better than those produced on Earth. 4. There are prospects for lasers to be used in long distance communication and for transmission of energy to space stations. 5. The electrical resistivity of a mercury wire was found to disappear when cooled to -269 °C. 6. Additional radio transmitters let the pilot make his approach to an airport by watching his flight instruments. 7. There seems to be a lot of alloys and compounds that become superconductors under certain conditions.

6. Define the Parts of Speech – N, V, Adj, Adv:

Theoretical, theorize; physics, physicist, physical, physically; explain, explainable, explanation; store, storage, storable.

7. Give the Russian word its English equivalent:

легче — easily, easy, easier;

удовлетворять — satisfy, satisfactory, satisfaction;

действительно — reality, realize, really

8. Translate the words with suffixes *-ward (-wards)* in the meaning of **direction.**

Southward(s), rearward(s), homeward(s), sideward(s), windward(s), upward(s).

9. Find and translate the words with special making of plural (множ. число)

Here are some foreign singular and plural forms of words often used in English. Latin, medium (a means of mass communication) - media, nucleus (ядро атома) - nuclei; Greek: analysis - analyses; axis — axes; crisis — crises; hypothesis - hypotheses; phenomenon — phenomena.

10. Find Synonyms and Antonyms into the pairs.

Conductivity — nonconductivity; to vary — to change; to lead to — to result in, recent — latest; advantage — disadvantage; low — high; believable — unbelievable; to lose — to find; tiny -huge; liquid — solid; unexpected — expected; common — ordinary.

10 семестр

2.11 Задания для проведения промежуточной аттестации в форме дифференцированного зачёта (практические)

Объект оценивания:

У1. по теме «Чистые» проводники»

У2. по теме «Чистые» проводники»

З 1. по теме «Чистые» проводники»

З 2. по теме «Сложносочиненные и сложноподчиненные предложения»

Variant 1

1. Translate the Text

2. Find the new terms on the theme “*Intrinsic Semiconductor*”, “*Electrons and Holes*”

3. Find the *compound sentences* and *complex sentences*

4. Write down the main physical phenomenon in this text

5. Tell about this phenomenon in your native language, as you see it

6. Try to tell about the phenomenon in English, using supporting key-words from the text

Intrinsic Semiconductor

A silicon crystal is different from an insulator because at any temperature above absolute zero temperature, there is a finite probability that an electron in the lattice will be knocked loose from its position, leaving behind an electron deficiency called a "hole". If a voltage is applied, then both the electron and the hole can contribute to a small current flow. The conductivity of a semiconductor can be modeled in terms of the band theory of solids. The band model of a semiconductor suggests that at ordinary temperatures there is a finite possibility that electrons can reach the conduction band and contribute to electrical conduction. The term intrinsic here distinguishes between the properties of pure "intrinsic" silicon and the dramatically different properties of doped n-type or p-type semiconductors. **Semiconductor Current.** Both electrons and holes contribute to current flow in an intrinsic semiconductor. The current which will flow in an intrinsic semiconductor consists of both electron and hole current. That is, the electrons which have been freed from their lattice positions into the conduction band can move through the material. In addition, other electrons can hop between lattice positions to fill the vacancies left by the freed electrons. This additional mechanism is called hole conduction because it is as if the holes are migrating across the material in the direction opposite to the free electron movement. The current flow in an intrinsic semiconductor is influenced by the density of energy states which in turn influences the electron density in the conduction band. This current is highly temperature dependent.

Electrons and Holes. In an intrinsic semiconductor like silicon at temperatures above absolute zero, there will be some electrons which are excited across the band gap into the conduction band and which can produce current. When the electron in pure silicon crosses the gap, it leaves behind an electron vacancy or "hole" in the regular silicon lattice. Under the influence of an external voltage, both the electron and the hole can move across the material. In an n-type semiconductor, the dopant contributes extra electrons, dramatically increasing the conductivity. In a p-type semiconductor, the dopant produces extra vacancies or holes, which likewise increase the conductivity. It is however the behavior of the p-n junction which is the key to the enormous variety of solid-state electronic devices. Pure semiconductors are relatively good insulators as compared with metals, though not nearly as good as a true insulator like glass. To be useful in semiconductor applications, the *intrinsic semiconductor* (pure undoped semiconductor) must have no more than one impurity atom in 10 billion semiconductor atoms. This is

analogous to a grain of salt impurity in a railroad boxcar of sugar. Impure, or dirty semiconductors are considerably more conductive, though not as good as metals. Why might this be?

Variant 2

1. Translate the Text
2. Find the new terms on the theme “*Electrons and Holes*”
3. Find the *compound sentences and complex sentences*
4. Write down the main physical phenomenon in this text
5. Tell about this phenomenon in your native language, as you see it
6. Try to tell about the phenomenon in English, using supporting key-words from the text

Electrons and Holes

All electrons of an atom are tied up in four covalent bonds, pairs of shared electrons. Electrons are not free to move about the crystal lattice. Thus, intrinsic, pure, semiconductors are relatively good insulators as compared to metals. Thermal energy may occasionally free an electron from the crystal lattice. This electron is free for conduction about the crystal lattice. When the electron was freed, it left an empty spot with a positive charge in the crystal lattice known as a *hole*. This hole is not fixed to the lattice; but, is free to move about. The free electron and hole both contribute to conduction about the crystal lattice. That is, the electron is free until it falls into a hole. This is called *recombination*. If an external electric field is applied to the semiconductor, the electrons and holes will conduct in opposite directions. Increasing temperature will increase the number of electrons and holes, decreasing the resistance. This is opposite of metals, where resistance increases with temperature by increasing the collisions of electrons with the crystal lattice. The number of electrons and holes in an intrinsic semiconductor are equal. However, both carriers do not necessarily move with the same velocity with the application of an external field. Another way of stating this is that the *mobility* is not the same for electrons and holes. Pure semiconductors, by themselves, are not particularly useful. Though, semiconductors must be refined to a high level of purity as a starting point prior the addition of specific impurities. Semiconductor material pure to 1 part in 10 billion, may have specific impurities added at approximately 1 part per 10 million to increase the number of carriers. The addition of a desired impurity to a semiconductor is known as *doping*. Doping increases the conductivity of a semiconductor so that it is more comparable to a metal than an insulator. It is possible to increase the number of negative charge carriers within the semiconductor crystal lattice by doping with an electron *donor* like Phosphorus. Electron donors, also known as *N-type* dopants include elements from group VA of the periodic table: nitrogen, phosphorus, arsenic, and antimony. Nitrogen and phosphorus are N-type dopants for diamond. Phosphorus, arsenic, and antimony are used with silicon. The crystal lattice contains atoms having four electrons in the outer shell, forming four covalent bonds to adjacent atoms. This is the anticipated crystal lattice. The addition of a phosphorus atom with five electrons in the outer shell introduces an extra electron into the lattice as compared with the silicon atom. The pentavalent impurity forms four covalent bonds to four silicon atoms with four of the five electrons, fitting into the lattice with one electron left over.

Variant 3

1. Translate the Text
2. Find the new terms on the theme “*Electrons and Holes*”
3. Find the *compound sentences and complex sentences*
4. Write down the main physical phenomenon in this text
5. Tell about this phenomenon in your native language, as you see it
6. Try to tell about the phenomenon in English, using supporting key-words from the text

Electrons and Holes

Note that this spare electron is not strongly bonded to the lattice as the electrons of normal Si atoms are. It is free to move about the crystal lattice, not being bound to the Phosphorus lattice site. Since we have doped at one part phosphorus in 10 million silicon atoms, few free electrons were created compared with the numerous silicon atoms. However, many electrons were created compared with the fewer electron-hole pairs in intrinsic silicon. Application of an external electric field produces strong conduction in the doped semiconductor in the conduction band (above the valence band). A heavier doping level produces stronger conduction. Thus, a poorly conducting intrinsic semiconductor has been converted into a good electrical conductor. It is also possible to introduce an impurity lacking an electron as compared with silicon, having three electrons in the valence shell as compared with four for silicon. This leaves an empty spot known as a *hole*, a positive charge carrier. The boron atom tries to bond to four silicon atoms, but only has three electrons in the valence band. In attempting to form four covalent bonds the three electrons move around trying to form four bonds. This makes the hole appear to move. Furthermore, the trivalent atom may borrow an electron from an adjacent (or more distant) silicon atom to form four covalent bonds. However, this leaves the silicon atom deficient by one electron. In other words, the hole has moved to an adjacent (or more distant) silicon atom. Holes reside in the valence band, a level below the conduction band. Doping with an electron *acceptor*, an atom which may accept an electron, creates a deficiency of electrons, the same as an excess of holes. Since holes are positive charge carriers, an electron acceptor dopant is also known as a *P-type* dopant. The P-type dopant leaves the semiconductor with an excess of holes, positive charge carriers. The P-type elements from group IIIA of the periodic table include: boron, aluminum, gallium, and indium. Boron is used as a P-type dopant for silicon and diamond semiconductors, while indium is used with germanium. The “marble in a tube” analogy to electron conduction relates the movement of holes with the movement of electrons. The marble represent electrons in a conductor, the tube. The movement of electrons from left to right as in a wire or N-type semiconductor is explained by an electron entering the tube at the left forcing the exit of an electron at the right. Conduction of N-type electrons occurs in the conduction band. Compare that with the movement of a hole in the valence band.

Условия выполнения задания:

1 Место выполнения задания: кабинет иностранного языка

2 Максимальное время выполнения задания: 50 минут

3 Форма выполнения задания: устно-письменная

3 Пакет экзаменатора

3.1 УСЛОВИЯ

Количество вариантов: 2

Время выполнения каждого задания: 50 мин

Оборудование:

- ноутбук с лицензионным программным обеспечением: MS WINDOWS 2013, MICROSOFT OFFICE;
- библиотечный фонд: учебники, пособия;
- схемы, таблицы; географические и физические карты; презентации на электронных носителях.

Литература для обучающегося:

Учебники:

1. Virginia Evans, Jenny Dooley, Carl Taylor “Electronics”- Express Publishing, 2012
2. Virginia Evans, Jenny Dooley, Tres O’Dell “Electrician” - Express Publishing, 2012
3. И.В. Орловская, Л.С. Самсонова, А. И. Скубриева «Учебник английского языка для технических вузов и университетов». – М.,: Издательство МГГУ им. Н.Э. Баумана, 2012.
4. А.Л. Луговая «Современные средства связи». – М.,: Высшая школа, 2012

Методические пособия:

1. Samuel M. Goldwasser “TV and Monitor CRT (Picture Tube) Information” (Internet)
2. Eric H. Glendinning, Norman Glendinning “Oxford English for Electrical and Mechanical Engineering” – Oxford University Press.

Справочная литература:

1. А. Касаткин «Основы электричества и электроники»
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3.2 КРИТЕРИИ ОЦЕНКИ

Знания и умения оцениваются следующим образом:

Критерии оценки письменных ответов

Оценки	Критерии оценки
«5»	Коммуникативная задача решена полностью, применение лексики адекватно коммуникативной задаче, грамматические ошибки либо отсутствуют, либо не препятствуют решению коммуникативной задачи
«4»	Коммуникативная задача решена полностью, но понимание текста незначительно затруднено наличием грамматических и/или лексических ошибок.
«3»	Коммуникативная задача решена, но понимание текста затруднено наличием грубых грамматических ошибок или неадекватным употреблением лексики.
«2»	Коммуникативная задача не решена ввиду большого количества лексико-грамматических ошибок или недостаточного объема текста.

Критерии оценки устных развернутых ответов

Оценки	Взаимодействие с собеседником	Лексический запас	Грамматическая правильность речи	Фонетическое оформление речи
«5»	Адекватная естественная реакция на реплики собеседника. Проявляется речевая инициатива для решения поставленных коммуникативных задач.	Имеется большой словарный запас, соответствующий предложенной теме. Речь беглая. Объем высказываний соответствует программным требованиям.	Лексика адекватна ситуации, редкие грамматические ошибки не мешают коммуникации.	Владеет основными произносительными и интонационным и навыками устной речи и техникой чтения.

«4»	Коммуникация затруднена, речь обучающегося имеет продолжительные паузы.	Имеется достаточный словарный запас, в основном соответствующий поставленной задаче. Наблюдается беглость речи, но отмечается повторяемость и некоторые затруднения при подборе слов.	Грамматические и/или лексические ошибки заметно влияют на восприятие речи обучающегося.	В достаточной степени владеет техникой чтения и основными произносительными и интонационным и навыками устной речи. Однако допускает незначительные ошибки в произношении отдельных звуков и интонации иноязычной речи.
«3»	Коммуникация существенно затруднена, обучающийся не проявляет речевой инициативы.	Имеет ограниченный словарный запас, использует упрощенные лексико-грамматические структуры, в некоторых случаях недостаточные для выполнения задания в пределах предложенной темы.	Обучающийся делает большое количество грубых грамматических и/или лексических ошибок.	В недостаточной степени владеет техникой чтения и допускает многочисленные фонетические и интонационные ошибки, что затрудняет понимание речи.
«2»	Коммуникативная задача не решена ввиду большого количества лексико-грамматических ошибок или недостаточного объема текста.	Слабый лексический запас, отсутствует какая-либо вариативность в его использовании.	Допускает большое количество грамматических ошибок. Отмечается трудность при выборе правильных глагольных форм и	Речь неправильная, с большим количеством фонетических и интонационных ошибок. Наблюдаются многочисленные ошибки на правила чтения.

			употреблении нужных времен.	
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