



МИНОБРАЗОВАНИЯ РОССИИ

Федеральное государственное бюджетное образовательное учреждение
высшего образования
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Колледж сервиса и дизайна

РАБОЧАЯ ПРОГРАММА УЧЕБНОЙ ДИСЦИПЛИНЫ

ОГСЭ.03 Иностранный язык

11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники (по отраслям)

Базовая подготовка

Очная форма обучения

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Рабочая программа учебной дисциплины разработана на основе Федерального государственного образовательного стандарта по специальности среднего профессионального образования программы подготовки специалистов среднего звена 11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники (по отраслям), 15.05. 2014 № 541.

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1 ОБЩИЕ СВЕДЕНИЯ ОГСЭ.03 ИНОСТРАННЫЙ ЯЗЫК

1.1 Место дисциплины в структуре основной образовательной программы

Учебная дисциплина ОГСЭ.03 Иностранный язык является частью общего гуманитарного и социально-экономического цикла основной образовательной программы (далее ООП) в соответствии с ФГОС СПО по специальности 11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники (по отраслям).

1.2 Требования к результатам освоения учебной дисциплины

В результате освоения дисциплины студент должен уметь:

общаться (устно и письменно) на иностранном языке на профессиональные и повседневные темы; переводить (со словарем) иностранные тексты профессиональной направленности;

самостоятельно совершенствовать устную и письменную речь, пополнять словарный запас.

В результате изучения учебной дисциплины «Английский язык» обучающийся должен знать:

лексический (1200-1400 лексических единиц) и грамматический минимум, необходимый для чтения и перевода (со словарем) иностранных текстов профессиональной направленности.

В процессе освоения дисциплины у студентов должны быть сформированы общие компетенции:

ОК 1. Понимать сущность и социальную значимость своей будущей профессии, проявлять к ней устойчивый интерес.

ОК 2. Организовывать собственную деятельность, определять методы и способы выполнения профессиональных задач, оценивать их эффективность и качество.

ОК 3. Решать проблемы, оценивать риски и принимать решения в нестандартных ситуациях.

ОК 4. Осуществлять поиск, анализ и оценку информации, необходимой для постановки и решения профессиональных задач, профессионального и личностного развития.

ОК 5. Использовать информационно-коммуникационные технологии для совершенствования профессиональной деятельности.

ОК 6. Работать в коллективе и команде, эффективно общаться с коллегами, руководством, потребителями.

ОК 7. Ставить цели, мотивировать деятельность подчиненных, организовывать и контролировать их работу с принятием на себя ответственности за результат выполнения заданий.

ОК 8. Самостоятельно определять задачи профессионального и личностного развития, заниматься самообразованием, осознанно планировать повышение квалификации.

ОК 9. Быть готовым к смене технологий в профессиональной деятельности.

1.3 Объем учебной дисциплины и виды учебной работы

Вид учебной работы	Объем часов
Максимальная учебная нагрузка (всего)	198
Обязательная аудиторная учебная нагрузка (всего)	174
в том числе:	
практические занятия	174
самостоятельная работа студента (всего)	24
в том числе:	
Итоговая аттестация в форме дифференцированного зачета	

2.2 Тематический план и содержание учебной дисциплины «Иностранный язык»

Наименование разделов и тем	Содержание учебного материала, лабораторные и практические работы, самостоятельная работа обучающихся	Объем часов	Уровень освоения
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Раздел 1	Вводно-коррективный курс	20	
Тема 1.1. Описание людей: друзей, родных и близких и т.д.(внешность, характер, личностные качества)	Содержание учебного материала Практические занятия	8	
	1. Введение. Входной контроль, тест		2
	2. Фонетический материал - основные звуки и интонации английского языка; - основные способы написания слов на основе знания правил правописания; - совершенствование орфографических навыков.		2
	3. Лексический материал по теме. 4. Грамматический материал: - простые нераспространенные предложения с глагольным, составным именным и составным глагольным сказуемым (с инфинитивом); - простые предложения, распространенные за счет однородных членов предложения и/или второстепенных членов предложения; - предложения утвердительные, вопросительные, отрицательные, побудительные и порядок слов в них; - безличные предложения; - понятие глагола-связки .		2
Тема 1.2. Межличностные отношения дома, в учебном заведении, на работе. Повседневная жизнь, условия жизни, учебный день, выходной день	Содержание учебного материала Практические занятия	12	
	5. Лексический материал по теме: - расширение потенциального словаря за счет овладения интернациональной лексикой, новыми значениями известных слов и новых слов, образованных на основе продуктивных способов словообразования		2
6. Грамматический материал: - модальные глаголы, их эквиваленты; - предложения с оборотом there is/are;	2		

	- сложносочиненные предложения: бессоюзные и с союзами and, but. - образование и употребление глаголов в Present, Past, Future Simple/Indefinite		
	7. Лексический материал по теме, расширение потенциального словаря		2
	8. Грамматический материал: - имя существительное: его основные функции в предложении; имена существительные во множественном числе, образованные по правилу, а также исключения. - артикль: определенный, неопределенный, нулевой. Основные случаи употребления определенного и неопределенного артикля. Употребление существительных без артикля.		2
	9. Грамматический материал: - числительные; - система модальности.; - образование и употребление глаголов в Past, Future Simple/Indefinite.		2
	10. Контрольная работа по грамматическому материалу		3
Раздел 2.	Развивающий курс	154	
Тема2.1 Цифры, числа, математические действия, Основные математические понятия и физические явления	Содержание учебного материала Практические занятия	14	
	11. Addition and Subtraction		2
	12. Multiplication and Division		2
	13. Common and Decimal Fraction Грамматика и лексика: временные формы глагола; глагол to be с инфинитивом; оборот to be + of + существительное; существительное в функции определения; числительные		2
	14. Ohm's Law		2
	15. Ohm's Law. Electric Circuit		2
	16. Ohm's Law. Series Circuit and Parallel Curcuit		2
	17. Meters. Resistors.		2
	Самостоятельная работа Портфолио или учебно-контрольный файл обуча-	8	

	ющегося.		
Тема 2.2 Документы (письма, контракты)	Содержание учебного материала	12	
	Практические занятия		
	18. Business letter design		2
	19. Business letter style		2
	20. Types of business letters Грамматика и лексика: причастие I, II; слова some, the same; значения слова as и сочетаний с ним; степени сравнения прилагательных и наречий, сравнительные конструкции		2
	21. Types of business letters		2
	22. Contracts		2
	23. Parts of contracts	2	
Тема 2.3 История развития радиотехники и радиоэлектроники	Содержание учебного материала	12	
	Практические занятия		
	24. Russian and Foreign Scientists		2
	25. Heinrich Hertz		2
	26. Michael Faraday Грамматика и лексика: причастие II в постпозиции; глаголы, выражающие долженствование; временные формы глаголов и причастий I и II		2
	27. James Maxwell		2
	28. Heinrich Hertz		2
	29. Alexander Popov	2	
Тема 2.4 Радиотехника и транспорт	Содержание учебного материала	8	
	Практические занятия		
	30. Radio engineering		2
	31. Radio engineering		2
	32. Radio engineering and transport		2
	33. Radio engineering and transport		2
	Самостоятельная работа подготовить презентацию об известном ученом	12	
Тема 2.5 Радиоэлектронная промышленность	Содержание учебного материала	14	
	Практические занятия		
	34. Radio electronic industry		2
	35. Radio electronic industry	2	

	36. Types of Radio electronic industry Грамматика и лексика: инфинитив в функции подлежащего, обстоятельств цели и следствия; оборот «for + существительное + инфинитив»; значения слов one, it		2
	37. Types of Radio electronic industry		2
	38. Types of Radio electronic industry		2
	39. Types of Radio electronic industry		2
	40. Revision		2
Тема 2.6 Элементы и узлы радио-электронной техники	Содержание учебного материала Практические занятия	20	
	41. Resistors		2
	42. Capacitors		2
	43. High Frequency Inductors		2
	44. High Frequency Inductors		2
	45. High frequency oscillating circuits Грамматика и лексика: сложное дополнение; значения слов и сочетаний due, which		2
	46. High frequency oscillating circuits		
	47. Resonant lines		
	48. Strip lines, waveguides and microwave resonators		
	49. Chokes and transformers with steel core		
	50. Delay lines and filters		
	Самостоятельная работа подготовить словарь профессиональной лексики	4	
Тема 2.7 Радиоэлектронное оборудование	Содержание учебного материала Практические занятия	40	
	51. Electronic equipment		2
	52. Electronic equipment		2
	53. Electronic equipment Грамматика и лексика: инфинитив в функции определения, вводное слово there		2
	54. The Methods of Mailing Lists		2
	55. Classification of radio electronic equipment		2
	56. Classification of radio electronic equipment		2
	57. Classification of radio electronic equipment		2

	58. Classification of radio electronic equipment		2
	59. Functional complexity of electronic equipment		2
	60. Functional complexity of electronic equipment		2
	61. Functional complexity of electronic equipment		2
	62. Types of radio electronic equipment		2
	63. Analogue radio electronic equipment		2
	64. Digital radio electronic equipment		2
	65. Analog digital radio electronic equipment		2
	66. Varieties of radio electronic systems		2
	67. Varieties of radio electronic systems		2
	68. Grammar lesson		2
	69. Grammar lesson		2
	70. Revision		2
Тема 2.8 Инструкции и руководства работы с радиоэлектронным оборудованием	Содержание учебного материала	34	
	Практические занятия		
	71. Types of technical texts		2
	72. Methods for translating scientific and technical terms		2
	73. Methods for translating scientific and technical terms Грамматика и лексика: сложное дополнение; значение слова result и сочетаний с ним; значения слов most, that, those		2
	74. Equivalent translation		2
	75. Transliteration		2
	76. Semantic skinning		2
	77. Borrowing		2
	78. Concretization		2
	79. Generalization		2
	80. Grammatical features of scientific and technical translation		2
	81. Lexical features of translation of scientific texts		2
	82. Stylistic features of scientific translation		2
	83. Practice of text translation		2
84. Practice of text translation	2		
85. Practice of text translation	2		

	86. Practice of text translation		2
	87. Revision		3

Для характеристики уровня освоения учебного материала используются следующие обозначения:

1. – ознакомительный (узнавание ранее изученных объектов, свойств);
2. – репродуктивный (выполнение деятельности по образцу, инструкции или под руководством)
3. – продуктивный (планирование и самостоятельное выполнение деятельности, решение проблемных задач)

3 УСЛОВИЯ РЕАЛИЗАЦИИ ПРОГРАММЫ ДИСЦИПЛИНЫ

3.1. Требования к минимальному материально-техническому обеспечению

Реализация учебной дисциплины требует наличия учебного кабинета «Иностранного языка».

Оборудование учебного кабинета:

- посадочные места по количеству обучающихся;
- рабочее место преподавателя;
- комплект учебно-наглядных пособий «Страноведение»;
- грамматические таблицы;
- дидактические материалы;
- пособия для мультимедийного оборудования.
- методические рекомендации по созданию презентаций
- методические рекомендации по грамматике английского языка

Технические средства обучения:

Мультимедийный комплект (проектор CASIO XJ-V2, экран LUMIEN Eco Picture) – 1 шт., персональный компьютер Lenovo ThinkCentre – 21 шт., наушники Sanako SLHO7 – 21 шт., колонки Microlab 2.0 SOLO4C – 1 шт., стол – 21 шт., стул – 21 шт.

Лицензионное программное обеспечение:

ОС Windows 10, Microsoft Office 10, Nibelung 3.8, Toefl, словари – Multitran, АBBYY Lingvo

3.2. Информационное обеспечение обучения

Перечень рекомендуемых учебных изданий, Интернет-ресурсов, дополнительной литературы

Основные источники:

1. Байдикова, Н. Л. Английский язык для технических направлений (В1–В2) : учебное пособие для среднего профессионального образования / Н. Л. Байдикова, Е. С. Давиденко. — Москва : Издательство Юрайт, 2017. — 171 с. — (Профессиональное образование). — ISBN 978-5-534-10078-5. — Текст : электронный // ЭБС Юрайт [сайт]. — URL: <https://urait.ru/bcode/455909>
2. Лаптева, Е.Ю. Английский язык для технических направлений : учебное пособие / Лаптева Е.Ю. — Москва : КноРус, 2017. — 493 с. — ISBN 978-5-406-07797-9. — URL: <https://book.ru/book/934352>
3. Нарочная, Е.Б. Английский язык для технических направлений : учебник / Нарочная Е.Б., Шевцова Г.В., Москалец Л.Е. — Москва : КноРус, 2016. — 400 с. — ISBN 978-5-406-07922- — URL: <https://book.ru/book/938402>

Дополнительные источники:

1. Куряева, Р. И. Английский язык. Лексико-грамматическое пособие в 2 ч. Часть 1 : учебное пособие для среднего профессионального образования / Р. И. Куряева. — 8-е изд., испр. и доп. — Москва : Издательство Юрайт, 2016. — 264 с. — (Профессиональное образование). — ISBN 978-5-534-09890-7. — Текст : электронный // ЭБС Юрайт [сайт]. — URL: <https://urait.ru/bcode/452245>
2. Куряева, Р. И. Английский язык. Лексико-грамматическое пособие в 2 ч. Часть 2 : учебное пособие для среднего профессионального образования / Р. И. Куряева. — 8-е изд., испр. и доп. — Москва : Издательство Юрайт, 2017. — 254 с. — (Профессиональное образование). — ISBN 978-5-534-09927-0. — Текст : электронный // ЭБС Юрайт [сайт]. — URL: <https://urait.ru/bcode/452246>
3. Нужнова, Е. Е. Английский язык. Professional Reading: Law, Economics, Management : учебное пособие для среднего профессионального образования / Е. Е. Нужнова. — 2-е изд., испр. и доп. — Москва : Издательство Юрайт, 2016. — 149 с. — (Профессиональное

образование). — ISBN 978-5-534-12993-9. — Текст : электронный // ЭБС Юрайт [сайт]. — URL: <https://urait.ru/bcode/448712>

1. <http://www.learnthenet.com>.
2. <http://www.longman-elt.com>.
3. TechDictionary [Electronic resource]. — <http://www.techdictionary.com/>.
4. Webopedia [Electronic resource]. — <http://www.webopedia.com/>.

4 КОНТРОЛЬ И ОЦЕНКА РЕЗУЛЬТАТОВ ОСВОЕНИЯ УЧЕБНОЙ ДИСЦИПЛИНЫ

Контроль и оценка результатов освоения учебной дисциплины осуществляется преподавателем в процессе проведения практических занятий и тестирования, а также выполнения обучающимися индивидуальных заданий, презентаций.

Результаты обучения (освоенные умения, усвоенные знания)	Формы и методы контроля и оценки результатов обучения
1	2
Умения:	
<u>говорение:</u> – вести диалог (диалог–расспрос, диалог–обмен мнениями/суждениями, диалог–побуждение к действию, этикетный диалог и их комбинации) в ситуациях официального и неофициального общения в бытовой, социокультурной и учебно-трудовой сферах, используя аргументацию, эмоционально-оценочные средства;	практические занятия, беседа\дискуссия
– рассказывать, рассуждать в связи с изученной тематикой, проблематикой прочитанных/прослушанных текстов; описывать события, излагать факты, делать сообщения;	практические занятия, реферат, презентация
–создавать словесный социокультурный портрет своей страны и страны/стран изучаемого языка на основе разнообразной страноведческой и культуроведческой информации;	практические занятия, реферат, презентация
<u>аудирование:</u> – понимать относительно полно (общий смысл) высказывания на изучаемом иностранном языке в различных ситуациях общения;	практические занятия, просмотр учебных фильмов
– понимать основное содержание аутентичных аудио- или видеотекстов познавательного характера на темы, предлагаемые в рамках курса, выборочно извлекать из них необходимую информацию;	практические занятия, просмотр видеофильмов
– оценивать важность/новизну информации, определять свое отношение к ней;	практические занятия ситуативная беседа
<u>чтение</u> – читать аутентичные тексты разных стилей (публицистические, художественные, научно-популярные и технические), используя основные виды чтения (ознакомительное, изучающее, просмотровое/поисковое) в зависимости от коммуникативной задачи;	практические занятия, просмотровое и поисковое чтение газетных, журнальных статей (со словарём, без словаря)
<u>письменная речь</u> – описывать явления, события, излагать факты в письме личного и делового характера;	практические занятия реферат, презентация

– заполнять различные виды анкет, сообщать сведения о себе в форме, принятой в стране/странах изучаемого языка;	практические занятия
Знания:	
– значения новых лексических единиц, связанных с тематикой данного этапа и с соответствующими ситуациями общения;	практические занятия, монологическая речь, диалогическая речь
– языковой материал: идиоматические выражения, оценочную лексику, единицы речевого этикета и обслуживающие ситуации общения в рамках изучаемых тем;	практические занятия, диалогическая речь, полилог
– новые значения изученных глагольных форм (видо-временных, неличных), средства и способы выражения модальности; условия, предположения, причины, следствия, побуждения к действию;	практические занятия, тестирование
– лингвострановедческую, страноведческую и социокультурную информацию, расширенную за счет новой тематики и проблематики речевого общения;	практические занятия, монологическая речь, диалогическая речь, полилог
– тексты, построенные на языковом материале повседневного и профессионального общения, в том числе инструкции и нормативные документы по профессиям и специальностям СПО	практические занятия, письмо
	По всем темам программы осуществляется текущий контроль, рубежный и итоговый.

ТЕХНОЛОГИИ ФОРМИРОВАНИЯ ОК

Код ОК	Результаты обучения (освоенные умения, усвоенные знания)		Формы и методы контроля и оценки результатов обучения
1	2		3
	Умения:	Знания:	
ОК 1. Понимать сущность и социальную значимость своей будущей профессии, проявлять к ней устойчивый интерес.	<u>говорение:</u> – вести диалог (диалог–расспрос, диалог–обмен мнениями/суждениями, диалог–побуждение к действию, этикетный диалог и их комбинации) в ситуациях официального и неофициального общения в бытовой, социокультурной и учебно-трудовой сферах, используя аргументацию, эмоционально-оценочные средства;	– значения новых лексических единиц, связанных с тематикой данного этапа и с соответствующими ситуациями общения;	практические занятия, беседа\дискуссия
ОК 2. Организовывать собственную деятельность, выбирать типовые методы и способы выполнения профессиональных задач, оценивать их эффективность и качество.	– рассказывать, рассуждать в связи с изученной тематикой, проблематикой прочитанных/прослушанных текстов; описывать события, излагать факты, делать сообщения; выполнение заданий по решению проблемы в группе, подготовка проектов по изучаемым темам, перевод документации, проведение оценки выполнения заданий одноклассников и самооценки	– языковой материал: идиоматические выражения, оценочную лексику, единицы речевого этикета и обслуживающие ситуации общения в рамках изучаемых тем;	практические занятия, реферат, презентация, проект, портфолио
ОК 3. Решать проблемы, оценивать риски и принимать решения в нестандартных ситуациях.	- выполнение проектного задания, руководство проектом, решение кейс-задач	– лингвострановедческую, страноведческую и социокультурную информацию, расширенную за счет новой тематики и проблематики речевого общения;	практические занятия, реферат, презентация, проект, решение кейс-задач
ОК 4. Осуществлять поиск, анализ и оценку информации, необходимой для постановки и решения профессиональных задач, профессионального и личностного раз-	- выполнение проектов по темам, поиск информации по проблеме, работа с профессиональными текстами	- лексические единицы профессиональной лексики	проекты, презентации, портфолио, критический анализ информации

вита.			
ОК 5. Использовать информационно-коммуникационные технологии для совершенствования профессиональной деятельности.	<ul style="list-style-type: none"> - выполнение проектов по темам, поиск информации по проблеме, работа с профессиональными текстами - оценивать важность/новизну информации, определять свое отношение к ней; - рассказывать, рассуждать в связи с изученной тематикой, проблематикой прочитанных/прослушанных текстов; описывать события, излагать факты, делать сообщения; 	– языковой материал: идиоматические выражения, оценочную лексику, тексты, построенные на языковом материале повседневного и профессионального общения, в том числе инструкции и нормативные документы по специальности	практические занятия, реферат, презентация, проект, портфолио, критический анализ информации
ОК 6. Работать в коллективе, обеспечивать его сплочение, эффективно общаться с коллегами, руководством, потребителями.	– понимать относительно полно (общий смысл) высказывания на изучаемом иностранном языке в различных ситуациях общения; работать в группе по решению проблемы, выполнение проектов, составление ситуативных диалогов, проведение оценки выполнения заданий одноклассников и самооценки	– значения новых лексических единиц, связанных с тематикой данного этапа и с соответствующими ситуациями общения;	практические занятия, просмотр учебных фильмов, выполнение проектов
ОК 7. Ставить цели, мотивировать деятельность подчиненных, организовывать и контролировать их работу с принятием на себя ответственности за результат выполнения заданий.	руководить работой в группе, вносить предложения по решению ситуаций, проблем.	– языковой материал: идиоматические выражения, оценочную лексику, единицы речевого этикета и обслуживающие ситуации общения в рамках изучаемых тем;	практические занятия, работа над проектами, портфолио
ОК 8. Самостоятельно определять задачи профессионального и личностного развития, заниматься самообразованием, осознанно планировать повышение квалификации.	- оценивать важность/новизну информации, определять свое отношение к ней;	- тексты, построенные на языковом материале повседневного и профессионального общения, в том числе инструкции и нормативные документы по специальности	проекты, презентации, портфолио, критический анализ информации, составление карты личного роста
ОК 9. Ориентиро-	– читать аутентичные тек-	– тексты, построенные	практические

<p>ваться в условиях частой смены технологий в профессиональной деятельности.</p>	<p>сты разных стилей (публицистические, художественные, научно-популярные и технические), используя основные виды чтения (ознакомительное, изучающее, просмотровое/поисковое) в зависимости от коммуникативной задачи;</p>	<p>на языковом материале повседневного и профессионального общения, в том числе инструкции и нормативные документы по специальности</p>	<p>занятия, просмотровое и поисковое чтение газетных, журнальных статей (со словарём, без словаря),</p>
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	МИНОБРНАУКИ РОССИИ
	Федеральное государственное бюджетное образовательное учреждение высшего образования «Владивостокский государственный университет экономики и сервиса»
	<i>Колледж сервиса и дизайна</i>

**КОМПЛЕКТ
КОНТРОЛЬНО-ОЦЕНОЧНЫХ СРЕДСТВ
ОГСЭ.03 Иностраный язык**

**11.02.02 Техническое обслуживание и ремонт
радиоэлектронной техники (по отраслям)**

Подготовка базовая

Форма обучения очная

Владивосток 2020

1 Общие сведения

Контрольно-оценочные средства (далее – КОС) предназначен для контроля и оценки образовательных достижений обучающихся, освоивших программу учебной дисциплины ОГСЭ.03 Иностранный язык.

КОС разработаны на основании:

– основной образовательной программы СПО по специальности 11.02.02 Техническое обслуживание и ремонт радиоэлектронной техники (по отраслям);

– рабочей программы учебной дисциплины ОГСЭ.03 Иностранный язык.

Формой промежуточной аттестации является дифференцированный зачет.

Код ОК, ПК	Код результата обучения	Наименование
ОК 1 ОК 2 ОК 3 ОК 4 ОК 5 ОК 6 ОК 7 ОК 8 ОК 9	У 1	общаться (устно и письменно) на иностранном языке на профессиональные и повседневные темы
	У2	переводить (со словарем) иностранные тексты профессиональной направленности
	У3	самостоятельно совершенствовать устную и письменную речь, пополнять словарный запас
	З1	лексический (1200 - 1400 лексических единиц) и грамматический минимум, необходимый для чтения и перевода (со словарем) иностранных текстов профессиональной направленности

2 Распределение типов контрольных заданий по элементам знаний и умений, контролируемых в процессе изучения

Код результата обучения	Содержание учебного материала (темы)	Тип оценочного средства	
		Текущий контроль	Промежуточная аттестация
З1	Тема 1.1. Описание людей: друзей, родных и близких и т.д.(внешность, характер, личностные качества), Тема 1.2. Межличностные отношения дома, в учебном заведении, на работе. Повседневная жизнь, условия жизни, учебный день, выходной день, Тема2.1 Цифры, числа, математические действия, Основные математические понятия и фи-	практические занятия, беседа\дискуссия; реферат, презентация; просмотровое и поисковое чтение газетных, журнальных статей	дифференцированный зачет

	зические явления, Тема 2.2 Документы (письма, контракты), Тема 2.3 История развития радиотехники и радиоэлектроники Тема 2.4 Радиотехника и транспорт, Тема 2.5 Радиоэлектронная промышленность, Тема 2.6 Элементы и узлы радиоэлектронной техники, Тема 2.7 Радиоэлектронное оборудование, Тема 2.8 Инструкции и руководства работы с радиоэлектронным оборудованием	(со словарём, без словаря); монологическая речь, тестирование; диалогическая речь; полилог.	
У1	Тема 1.1. Описание людей: друзей, родных и близких и т.д.(внешность, характер, личностные качества), Тема 1.2. Межличностные отношения дома, в учебном заведении, на работе. Повседневная жизнь, условия жизни, учебный день, выходной день, Тема 2.2 Документы (письма, контракты	практические занятия, беседа\дискуссия; реферат, презентация; просмотровое и поисковое чтение газетных, журнальных статей (со словарём, без словаря); монологическая речь, тестирование; диалогическая речь; полилог.	дифференцированный зачет
У2	Тема 2.2 Документы (письма, контракты), Тема 2.3 История развития радиотехники и радиоэлектроники, Тема 2.5 Радиоэлектронная промышленность, Тема 2.6 Элементы и узлы радиоэлектронной техники, Тема 2.7 Радиоэлектронное оборудование	практические занятия, беседа\дискуссия; реферат, презентация; просмотровое и поисковое чтение газетных, журнальных статей (со словарём, без словаря); монологическая речь, тестирование; диалогическая речь; полилог.	дифференцированный зачет
У3	Тема2.1 Цифры, числа, математические действия, Основные математические понятия и физические явления, Тема 2.2 Документы (письма, контракты), Тема 2.3 История развития радиотехники и радиоэлектроники, Тема 2.8 Инструкции и руководства работы с радиоэлектронным оборудованием	практические занятия, беседа\дискуссия; реферат, презентация; просмотровое и поисковое чтение газетных, жур-	дифференцированный зачет

		нальных статей (со словарём, без словаря); монологическая речь, тестирование; диалогическая речь; полилог.	
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3 Структура банка контрольных заданий для текущего контроля и промежуточной аттестации

Тип контрольного задания	Количество контрольных заданий (вариантов)	Общее время выполнения обучающимся контрольный заданий
Текущий контроль		
Тестовое задание №1, Choose the right variant.	20 заданий	20 минут
Тестовое задание №2, Choose the right variant.	20 заданий	20 минут
Тестовое задание №3, Choose the right variant.	20 заданий	20 минут
Тестовое задание №4, Choose the right variant.	20 заданий	20 минут
Тестовое задание №5, Choose the right variant.	20 заданий	20 минут
Тестовое задание №6, Choose the right variant.	20 заданий	20 минут
Тестовое задание №7, Choose the right variant.	20 заданий	20 минут
Тестовое задание №8, Choose the right variant.	20 заданий	20 минут
Тестовое задание №9, Choose the right variant.	20 заданий	20 минут
Тестовое задание №10, Choose the right variant.	20 заданий	20 минут
Task 1 This is the summary of the section. Render it in English	2 задание	90 минут
Task 2 This is the summary of the section. Render it in English	1 задание	40 минут
Task 3 This is the summary of the section. Render it in English	1 задание	40 минут
Task 4 This is the summary of the section. Render it in English	1 задание	40 минут
Task 5 This is the summary of the section. Render it in English	1 задание	40 минут
Task 6 This is the summary of the section. Render it in English	1 задание	40 минут
Примеры текстов для ознакомительного, изучающего, просмотрового/поискового чтения		

Text 1	1 задание	40 минут
Text 2	1 задание	40 минут
Text 3	1 задание	40 минут
Text 4	1 задание	40 минут
Text 5	1 задание	40 минут
Text 6	1 задание	40 минут
Text 7	1 задание	40 минут
Text 8	1 задание	40 минут
Text 9	1 задание	40 минут
Text 10	1 задание	40 минут
Text 11	1 задание	40 минут
Text 12	1 задание	40 минут
Примеры заданий на письменную коммуникацию		
Task 1	1 задание	20 минут
Task 2	1 задание	20 минут
Task 3	1 задание	20 минут
Task 4	1 задание	20 минут
Task 5	1 задание	20 минут
Task 6	1 задание	20 минут
Task 7	1 задание	20 минут
Task 8	1 задание	20 минут
Task 9	1 задание	20 минут
Task 10	1 задание	20 минут
Task 11	1 задание	20 минут
Task 12	1 задание	20 минут
Task 13	1 задание	20 минут
Task 14	1 задание	20 минут
Task 15	1 задание	20 минут
Task 16	1 задание	20 минут
Task 17	1 задание	20 минут

- a) pulls down c) is being pulled down
 b) is pulled down d) pulled down
12. You ... an umbrella when you left the house, didn't you?
 a) have c) had had
 b) was having d) had
13. By the time we got to the cinema the film
 a) will begin c) had begun
 b) would begin d) began
14. Is there anything I ... do to help you?
 a) can c) am to
 b) may d) as to
15. The last film I saw was ... frightening than this one.
 a) little c) least
 b) less d) the least
16. Someone is calling you. Will you answer ... phone?
 a) a c) -
 b) the d) these
17. To tell the truth I don't like ... pair of trousers that I bought last month.
 a) those c) that
 b) this d) a
18. Whose house is it? - It's
 a) my c) her
 b) mine d) our
19. Today is ... cold than yesterday. So, I'm wearing my shorts.
 a) little c) least
 b) less d) the least
20. "Come home ... Christmas Day, we'll be waiting for you", my mother always says to me.
 a) in c) -
 b) on d) at

Test 3

Choose the right variant.

1. Excuse me, do you speak English? I ... for a hotel.
 a) look c) was looking
 b) am looking d) have been looking
2. Last summer we wanted a relaxing holiday, so we ... to stay on a small island.
 a) choose c) had chosen
 b) have chosen d) chose
3. Mathematics ... hard. I don't understand it.
 a) are c) was
 b) is d) were
4. While we ... for the train, it started to rain.
 a) waited c) was waiting
 b) are waiting d) were waiting
5. The police officer said that every house in that street ... already by the police.
 a) search c) had been searched
 b) were searched d) searched
6. There is going to be a big art exhibition. It... a lot of visitors.
 a) attracts c) has attracted
 b) will attract d) attracted
7. The result of his investigation ... in the newspaper soon.
 a) publish c) will be published

- b) be published d) is published
8. When they arrived home, their children ... outside the door waiting for them.
a) sit c) was sitting
b) are sitting d) were sitting
9. We ... a new computer not long ago. Now the job will be done much more quickly.
a) had bought c) bought
b) was bought d) have bought
10. He was sorry that he ... to me for so long.
a) didn't write c) hadn't been writing
b) haven't been writing d) hasn't been writing
11. The ring you found ... be returned to an old lady who had lost it.
a) can c) have to
b) must d) are to
12. Everybody in our team played ... except the captain.
a) bad c) worst
b) badly d) the worst
13. You know much, but you know ... than your teacher.
a) little c) least
b) less d) much
14. Small shops are not as ... as supermarkets.
a) more convenient c) most convenient
b) convenient d) the most convenient
15. Sarah is a very good pianist. She plays ... piano very well.
a) a c) the
b)an d)-
16. We had five phone calls, but there were ... for you.
a) no c) either
b) none d) neither
17. I didn't have much time, but I ... visit a lot of places of interest in London.
a) can c) must
b) was able to d) had to
18. That's an easy question! ... knows the answer!
a) All c) Each
b) Everybody d) Every
19. The comic told silly jokes, but nobody laughed ... him.
a) on c) at
b) under d)about
20. We feel sorry ... Sam because he hasn't got any friends.
a) for c) with
b)about d) by

Test 4

Choose the right variant.

1. If I ... some fish, will you cook it for me?
a) will catch c) caught
b) catch d) am catching
2. She said that she ... her present flat. She tried to find another one.
a) doesn't like c) didn't like
b) won't like d) likes
3. I saw you yesterday from the bus. Where ... you ... at that time?

- a) was hurrying c) had hurried
b) were hurrying d) did hurry
- 4.1 found that everything I said on the phone ... to the police.
a) report c) was reported
b) is reported d) had been reported
5. When I speak Italian, all the others in the class ... at me as I don't know the language well.
a) laughed c) will laugh
b) was laughing d) laugh
6. He ... in the Army for eighteen months. This is his last month.
a) serves c) has been serving
b) is serving d) have served
7. Don't make noise: the children ... to sleep.
a) try c) will try
b) is trying d) are trying
8. A new museum ... in the city. What a beautiful building it will be!
a) was being built c) is built
b) is being built d) builds
9. Two terrorists ... in New York some days ago.
a) are arrested c) were arrested
b) have been arrested d) will be arrested
- 10.1 ... understand this letter. Will you translate it for me?
a) mustn't c) may not
b) can't d) shouldn't
11. Diana's parents don't let her go to late-night disco. She ... be at home at 9 o'clock in the evening.
a) must c) may
b) can d) have to
12. Henry ... apologize for his bad behaviour yesterday.
a) have to c) had to
b) may d) is to
13. The children studied hard, and as a result they passed the exams ... of all.
a) good c) best
b) better d) the best
14. This is ... film I've ever seen.
a) more interesting c) most interesting
b) the most interesting d) not interesting
15. ... old, ... sick, ... unemployed need our special care.
a) - c) the
b) an d) everybody
16. Someone who saw ... robbery called the-police.
a) - c) the
b) a d) those
17. According to this song ... we need is love.
a) all c) each
b) every d) some
18. We wished the bride and groom happiness in ... new life together.
a) there c) theirs
b) their d) these
19. Excuse me, but does this umbrella belong ... you?
a) to c) at
b) for d) with
20. I listened to the radio every day to know the weather forecast but I can never rely ... it.

- a) everybody c) both
 b) some d) every
18. Mr. Smith was accused of spying and put ... prison.
 a) in c) at
 b) of d) to
19. Our city succeeded ... collecting a large sum of money for charity.
 a) on c) with
 b) in d) at
20. I'm sorry ... your difficulties. Can I help?
 a) for c) about
 b) at d) on

Test 10

Choose the right variant.

1. It's 11 o'clock so I ... to bed now.
 a) go c) will go
 b) am going d) have gone
2. The tickets to the football match usually ... and checked at the entrance.
 a) sell c) are sold
 b) was sold d) won't be sold
3. We ... to the party today.
 a) have been invited c) have invited
 b) are invited d) had been invited
4. The baby ... because it is hungry now.
 a) crying c) cries
 b) is crying d) cried
5. There ... a lot of people waiting in the station yesterday evening.
 a) is c) was
 b) are d) were
6. Some people ... on the benches waiting for their trains.
 a) was sleeping c) have slept
 b) were sleeping d) had slept
7. By the time the train arrived, Susan ... to push her way to the front of the crowd.
 a) managed c) had managed
 b) has managed d) would manage
8. ... you ... my English book anywhere? I can find it nowhere.
 a) Did ... see c) Will ... see
 b) Have ... seen d) Had ... seen
9. He ... the text before I decided to help him.
 a) translated c) has translated
 b) had translated d) will translate
10. It ... in London this morning that the British Oil Corporation had discovered oil under the sea near the Welsh coast.
 a) announced c) had been announced
 b) would be announced d) was announced
11. If he ... when I come, I won't wake him up.
 a) sleep c) will sleep
 b) will be sleeping d) is sleeping
12. ... they leave before supper or have they time to stay until my friends come?
 a) must c) might
 b) may d) should
13. My ... brother studies at college.

Test 10 1) b; 2) c; 3) a; 4) b; 5) d; 6) b; 7) c; 8) b; 9) b; 10) d; 11) d; 12) a; 13) b; 14) b; 15) a; 16) a; 17) a; 18) a; 19) b; 20) a;

Критерии оценки

- оценка «отлично» выставляется обучающемуся, если студент выполнил задание от 91% до 100%
- оценка «хорошо», если студент выполнил задание от 70% до 90%
- оценка «удовлетворительно», если студент выполнил задание от 50% до 69%
- оценка «неудовлетворительно», если студент выполнил задание менее 50%

Task 1

This is the summary of the section. Render it in English

Electronic Circuit Elements

Resistors. A resistor is a circuit element designed to insert resistance in the circuit. A resistor may be of low value or of high value. Resistors in electronic circuits are made in a variety of sizes and shapes.

They are generally classed as fixed, adjustable or variable, depending upon their construction and use.

The resistance value of small fixed resistors is sometimes indicated by a code colour. Resistors required to carry a comparatively high current and dissipate high power are usually of the wire-wound ceramic type.

Adjustable and variable resistors. An adjustable resistor is usually of the wire-wound type with a metal collar which may be moved along the resistance wire to vary the value of the resistance placed in the circuit. In order to change the resistance, the contact band must be loosened and moved to the desired position and then tightened so that it will not slip. In this way the resistor becomes, for all practical purposes, a fixed resistor during operation.

A variable resistor is arranged so that it may be changed in value at any time by the operator of the electronic circuit. This change is usually accompanied by rotating a small adjustment knob or by turning a screw adjustment. Variable resistors are commonly known as **rheostats** or **potentiometers**.

It must be pointed out that the use of a resistor of any type must be very carefully considered. The capacity of a fixed resistor, rheostat or potentiometer must be such that it can handle the current through the circuit without damage computing the current by means of Ohm's law.

Inductors. The purpose of an inductor, or inductance coil, is to insert inductance into a circuit. The effect of an inductance is to oppose any change in the existing current flow in a circuit. The opposition to current flow in an a. c. circuit by an inductor is called inductive reactance and is measured in ohms.

Inductors are made in many shapes and designs. An inductor used in extremely high-frequency circuits may consist of only one turn or even less than one turn of wire. On the other hand, an inductor used as a choke coil in a low-frequency circuit or in a filter circuit may contain many turns of wire and also be wound on an iron core to increase the inductance.

Inductors are often used in radio in connection with capacitors to provide tuned circuits. These tuned circuits are most valuable in radio and television for filtering out unwanted frequencies and passing the desired frequencies.

Inductance coils are rated as to value in henrys. One henry is a comparatively large inductance. Therefore, many of the inductors used in electronic circuits are rated in millihenrys. One millihenry (mh) is one thousandth of a henry. One henry is the inductance of a coil which will produce a back voltage of 1 volt when the current change is at the rate of 1 amp per second.

Task 2

This is the summary of the section. Render it in English

Capacitors

A capacitor may be defined as a device consisting of two or more conductor plates separated from one another by a dielectric and used for receiving and storing an electric charge. The effect of a capacitor in an electric circuit is to oppose any change in the existing voltage.

Capacitors are commonly used in d. c. circuits to reduce the effects of transient voltages and currents. Electrical transients are high voltages developed from time to time when the circuit is broken or reconnected, as when a switch is turned on or off. These transient voltages are usually caused by the inductance of a circuit. In an a. c. circuit the capacitor is often used to block the direct current but permit the flow of the alternating current. In effect, the alternating current appears to flow through the capacitor but is actually being stored first on one plate of the capacitor and then on the other.

Like many other electronic units, capacitors are manufactured in a wide variety of sizes and styles. Some very low-capacity capacitors are merely tiny wafers of metal separated by an insulator; large capacitors may weigh several pounds. Fixed capacitors are of two general types. One is the dry capacitor which consists of metal plates separated by a dry dielectric such as mica or waxed paper, and the other is the electrolytic capacitor, whose dielectric is a chemical paste or one electrolyte. The electrolytic capacitor is effective in only one direction. This means that it must be connected in such a manner that the positive and negative polarities are correct. If it is connected in reverse, the current will flow through the capacitor and destroy it. Fixed capacitors of both the dry and electrolytic type are manufactured in a wide variety of shapes and sizes. The electrolytic capacitors are marked to indicate the correct method of connection into a circuit.

The unit of capacitance is a farad. A capacitor which will store 1 coulomb of electricity under an e. m. f. of 1 volt has a capacitance of 1 farad. The farad is an extremely high value of capacitance; therefore capacitors used in standard electronic circuits are rated in⁹ microfarads (1 mf = one millionth of a farad) or micromicrofarads (1 mf = one millionth of a microfarad).

Task 3

Lithium-ion Batteries

Lithium-ion batteries are incredibly popular these days. You can find them in laptops, PDAs, cell phones and iPods. They're so common because, they're some of the most energetic rechargeable batteries available.

Lithium-ion batteries have also been in the news lately. That's because these batteries have the ability to burst into flames occasionally. It's not very common – just two or three battery packs per million have a problem -- but when it happens, it's extreme. In some situations, the failure rate can rise, and when that happens you end up with a worldwide battery recall that can cost manufacturers millions of dollars.

So the question is, what makes these batteries so energetic and so popular? How do they burst into flame? And is there anything you can do to prevent the problem or help your batteries last longer? In this article, we'll answer these questions and more.

Lithium-ion batteries are popular because they have a number of important advantages over competing technologies:

- 1) They're generally much lighter than other types of rechargeable batteries of the same size. The electrodes of a lithium-ion battery are made of lightweight **lithium** and **carbon**. Lithium is also a highly reactive element, meaning that a lot of energy can be stored in its atomic bonds. This translates into a very high **energy density** for lithium-ion batteries.

- 2) Here is a way to get a perspective on the energy density. A typical lithium-ion battery can store 150 watt-hours of electricity in 1 kilogram of battery. A **NiMH (nickel-metal hydride) battery** pack can store perhaps 100 watt-hours per kilogram, although 60 to 70 watt-hours might be more typical. A **lead-acid battery** can store only 25 watt-hours per kilogram. Using lead-acid

technology, it takes 6 kilograms to store the same amount of energy that a 1 kilogram lithium-ion battery can handle. That's a huge difference.

- 1) They hold their charge. A lithium-ion battery pack loses only about 5 percent of its charge per month, compared to a 20 percent loss per month for NiMH batteries.
- 2) They have no **memory effect**, which means that you do not have to completely discharge them before recharging, as with some other battery chemistries.
- 3) Lithium-ion batteries can handle hundreds of charge/discharge cycles.

That is not to say that lithium-ion batteries are flawless. They have a few disadvantages as well:

- 1) They start degrading as soon as they leave the factory. They will only last two or three years from the date of manufacture whether you use them or not.
- 2) They are extremely sensitive to high temperatures. Heat causes lithium-ion battery packs to degrade much faster than they normally would.
- 3) If you completely discharge a lithium-ion battery, it is ruined.
- 4) A lithium-ion battery pack must have an on-board computer to manage the battery. This makes them even more expensive than they already are.
- 5) There is a small chance that, if a lithium-ion battery pack fails, it will burst into flame.

Many of these characteristics can be understood by looking at the chemistry inside a lithium-ion cell.

Inside a Lithium-ion Battery Pack and Cell

Lithium-ion battery packs come in all shapes and sizes, but they all look about the same on the inside. If you were to take apart a laptop battery pack (something that we **DO NOT** recommend because of the possibility of shorting out a battery and starting a fire) you would find the following:

The **lithium-ion cells** can be either cylindrical batteries that look almost identical to AA cells, or they can be **prismatic**, which means they are square or rectangular.

The computer, which comprises:

- 1) One or more **temperature sensors** to monitor the battery temperature
- 2) A **voltage converter and regulator circuit** to maintain safe levels of voltage and current
- 3) A shielded **notebook connector** that lets power and information flow in and out of the battery pack
- 4) A **voltage tap**, which monitors the energy capacity of individual cells in the battery pack
- 5) A **battery charge state monitor**, which is a small computer that handles the whole charging process to make sure the batteries charge as quickly and fully as possible.

If the battery pack gets too hot during charging or use, the computer will shut down the flow of power to try to cool things down. If you leave your laptop in an extremely hot car and try to use the laptop, this computer may prevent you from powering up until things cool off. If the cells ever become completely discharged, the battery pack will shut down because the cells are ruined. It may also keep track of the number of charge/discharge cycles and send out information so the laptop's battery meter can tell you how much charge is left in the battery.

It's a pretty sophisticated little computer, and it draws power from the batteries. This power draw is one reason why lithium-ion batteries lose 5 percent of their power every month when sitting idle.

Task 4

Lithium-Ion Cells

As with most batteries you have an outer case made of metal. The use of metal is particularly important here because the battery is pressurized. This metal case has some kind of pressure-sensitive **vent hole**. If the battery ever gets so hot that it risks exploding from over-pressure, this vent will release the extra pressure. The battery will probably be useless afterwards, so this is something to avoid. The vent is strictly there as a safety measure. So is the **Positive Temperature Coefficient (PTC)** switch, a device that is supposed to keep the battery from overheating.

This metal case holds a long spiral comprising three thin sheets pressed together:

- A **Positive electrode**

- A **Negative electrode**
- A **separator**

Inside the case these sheets are submerged in an organic solvent that acts as the electrolyte. Ether is one common solvent.

The separator is a very thin sheet of microperforated plastic. As the name implies, it separates the positive and negative electrodes while allowing ions to pass through.

The positive electrode is made of Lithium cobalt oxide, or LiCoO_2 . The negative electrode is made of carbon. When the battery charges, ions of lithium move through the electrolyte from the positive electrode to the negative electrode and attach to the carbon. During discharge, the lithium ions move back to the LiCoO_2 from the carbon.

The movement of these lithium ions happens at a fairly high voltage, so each cell produces 3.7 volts. This is much higher than the 1.5 volts typical of a normal AA alkaline cell that you buy at the supermarket and helps make lithium-ion batteries more compact in small devices like cell phones. See **How Battery works** for details on different battery chemistries.

We'll look at how to prolong the life of a lithium-ion battery and explore why they can explode next.

Lithium-ion Battery Life and Death

Lithium-ion battery packs are expensive, so if you want to make yours to last longer, here are some things to keep in mind:

1) Lithium ion chemistry prefers **partial discharge** to **deep discharge**, so it's best to avoid taking the battery all the way down to zero. Since lithium-ion chemistry does not have a "memory", you do not harm the battery pack with a partial discharge. If the voltage of a lithium-ion cell drops below a certain level, it's ruined.

2) Lithium-ion batteries **age**. They only last two to three years, even if they are sitting on a shelf unused. So do not "avoid using" the battery with the thought that the battery pack will last five years. It won't. Also, if you are buying a new battery pack, you want to make sure it really is new. If it has been sitting on a shelf in the store for a year, it won't last very long. Manufacturing dates are important.

3) **Avoid heat**, which degrades the batteries.

Exploding Batteries

Now that we know how to keep lithium-ion batteries working longer, let's look at why they can explode.

If the battery gets hot enough to ignite the electrolyte, you are going to get a fire. There are video clips and photos on the Web that show just how serious these fires can be. The CBC article, "Summer of the Exploding Laptop," rounds up several of these incidents.

When a fire like this happens, it is usually caused by an internal short in the battery. Recall from the previous section that lithium-ion cells contain a separator sheet that keeps the positive and negative electrodes apart. If that sheet gets punctured and the electrodes touch, the battery heats up very quickly. You may have experienced the kind of heat a battery can produce if you have ever put a normal 9-volt battery in your pocket. If a coin shorts across the two terminals, the battery gets quite hot.

In a separator failure, that same kind of short happens inside the lithium-ion battery. Since lithium-ion batteries are so energetic, they get very hot. The heat causes the battery to vent the organic solvent used as an electrolyte, and the heat (or a nearby spark) can light it. Once that happens inside one of the cells, the heat of the fire cascades to the other cells and the whole pack goes up in flames.

It is important to note that fires are very rare. Still, it only takes a couple of fires and a little media coverage to prompt a recall.

Task 5

This is the summary of the section. Render it in English

Engineering documentation

Hundreds of electronic equipments are now used for scientific, industrial and everyday purposes. They do jobs better or more rationally than before and take over jobs that couldn't be done otherwise. So, industrial electronics today plays a very important role. You can easily find many electronic equipments at home: a tape recorder, a TV set, an MP3 player, a computer and many others.

The application and use of electronic equipments demands a good knowledge of their fundamentals.

In meters and lamps electricity flows in the wire. But inside any transistor or microcell (and previously, in radio tubes) electric current passes through the space (or semiconductor) separating certain parts in tables detail. Such action is called electronic. It's not difficult to imagine it because the same happens in lightning. There you actually see how electricity jumps through space.

The first electronic equipments used radio lamps. They were: a radio set, a TV set, computing machines (predecessors of modern calculators), computers (which occupied big rooms), tape recorders.

The next stage came when transistors were invented. The devices became more powerful and much smaller. The number of devices increased greatly, some multifunctional devices appeared (radio + tape recorder). Computers and calculators became smaller: cassette recorders and videocassette recorders appeared.

The next period was the period of microcells. They helped to reduce big parts of devices, computers and other devices. The latest period of industrial electronics development is the period of total digitization of all electronic devices, making them compatible with the computer. Photos are no longer made on film but on memory cards, cassettes and video cassettes are out of use. Television is also becoming digital. Industrial electronics is a great part of our leisure time; it makes people's lives easier, and reduces their working time.

Task 6

This is the summary of the section. Render it in English

Computer design

Computer is one of the inventions of the 20th century that changed the world greatly. The first computers of the 1940s were enormous. But now they are almost in every family and in every office building. Most machines do only one job, some are multifunctional (e.g. a TV set + DVD player). But no device is as multifunctional as computer. The parts of the machine (or its hardware) remain the same, you change only the program (software) and your computer immediately learns to do various things. A browser program is designed to look at pages on the Internet (you can also say to browse, things accounts for the word browser). A word processor program lets you to print text and then change styles of fonts and sizes of pages. A database program is used for searching and sorting records. Such program is used in shops, libraries, hospitals, accountant offices, and so on. They make work with great amounts of data much quicker.

Computers are found everywhere and used in every sphere of life. In a plant one can make a computer model of a car or plane and check its resistance to stress. Such calculations without a computer could have taken several months. Computer is used at school: children watch films, presentations and web pages. This helps them to study effectively. Computers also have some disadvantages. There is a famous joke that computers are designed to solve problems but half of the time they are the problem. As computer is a complicated device, one small breakage may stop its work. Moreover, the equipment is soon out of date

Besides, there is a problem of compatibility. First of all, there are hardware devices which can't work with the old operating systems, such as a processor, a hard disk drive, a video card, etc. Then, there are programs which need more resources than computer actually has. Thirdly, computers become more and more complicated, and much effort is required to learn how to work

with them. Fourthly, computer viruses cause a lot of trouble - they can spoil, remove or steal computer data, and every user knows it well from his experience.

And on top of all, computer is a multifunctional device, as we already know, so it can be used both to do work and to entertain oneself. Children often fall prey to computer and Internet: they play computer games, spend their free time chatting with friends on the Internet and doing practically nothing. This aspect can't be denied.

To crown it all, computer is a good device like many others, designed to help people. But it's our own free will that lets us use it in order not to waste time but to get best results.

Task 10

This is the summary of the section. Render it in English

Shipbuilding

Shipbuilding is the construction of ships. It normally takes place in a specialized facility known as a shipyard. Shipbuilders, also called shipwrights, follow a specialized occupation that traces its roots to before recorded history.

Shipbuilding and ship repairs, both commercial and military, are referred to as the 'naval sector'. The construction of boats is a similar activity called boat building. The dismantling of ships is called ship breaking.

Evidence from ancient Egypt shows that the early Egyptians had already know how to assemble planks of wood into a ship hull as early as 3000 BC¹. The oldest ships were built of wooden planks which were 'sewn' together.

In the 2nd millennium BC the ships of Ancient Egypt's Eighteenth Dynasty were typically about 25 meters (80 ft) in length, and had a single mast, some-times consisting of two poles lashed together at the top making an A shape. They mounted a single square sail on a yard, with an additional spar along the bottom of the sail. These ships could also be oar propelled.

In the 1st millennium BC the Chinese built large rectangular barges known as 'castle ships', essentially floating fortresses complete with multiple decks with guarded ramparts. It was in 1st century China that the stern-mounted rudder was first developed.

Viking long ships developed from an alternate tradition of clinker-built hulls fastened with leather thongs. Sometime around the 12th century, northern European ships began to be built with a straight sternpost, enabling the mounting of a rudder, which was much more durable than a steering oar, held over the side. Development in the Middle Ages favored 'round ships', with a broad beam and heavily curved at both ends.

The introduction of cannons onto ships in the 18th century encouraged the development of tumblehome, the inward slant of the above water hull, for additional stability, as well as techniques for strengthening the internal frame.

Iron was gradually adopted in ship construction, initially in small areas needing greater strength, then throughout, although initially copying wooden construction. Steel supplanted wrought iron when it became readily available in the latter half of the 19th century. Wood continued to be favored for the decks, and is still the rule as deck covering for modern cruise ships.

The modern global shipbuilding industry is currently dominated by South Korea, which is by far the world's largest shipbuilding nation in terms of tonnage and number of vessels built, in spite of high labour cost, producing more ships than the entire world output combined in 2008. This is largely due to its highly advanced shipbuilding technology and high productivity and efficiency of its shipyards.

Примеры текстов для ознакомительного, изучающего, просмотрового/поискового чтения

Text 1. Industrial Engineering and Automation

A major advance in the twentieth century manufacturing was the development of mass production techniques. Mass production refers to manufacturing processes in which an assembly line, usually a conveyer belt, moves the product to stations where each worker performs a limited number of operations until the product is assembled. In the automobile assembly plant such systems have reached a highly-developed form. A complex system of conveyer belts and chain drives moves car parts to workers who perform the thousands of necessary assembling tasks.

Mass production increases efficiency and productivity to a point beyond which the monotony of repeating an operation over and over slows down the workers. Many ways have been tried to increase productivity on assembly lines: some of them are as superficial as piping music into the plant or painting the industrial apparatus in bright colors; others entail giving workers more variety in their tasks and more responsibility for the product.

These human factors are important considerations for industrial engineers who must try the balance an efficient system of manufacturing with the complex needs of workers.

Another factor for the industrial engineer to consider is whether each manufacturing process can be automated in whole or in part. Automation is a word coined in the 1940s to describe processes by which machines do tasks previously performed by people. The word was new but the idea was not. We know of the advance in the development of steam engines that produced automatic valves. Long before that, during the Middle Ages, windmills had been made to turn by taking advantage of changes in the wind by means of devices that worked automatically.

Automation was first applied to industry in continuous-process manufacturing such as refining petroleum, making petrochemicals, and refining steel. A later development was computer-controlled automation of assembly line manufacturing, especially those in which quality control was an important factor.

Text 2. Principals of Tuning

Resonant circuits. In the design and operation of electronic systems resonant circuits provide the key to frequency control. When a certain frequency is to be produced, it is necessary to establish a circuit which is resonant at that frequency. Also, when a certain frequency is to be passed through a circuit and others eliminated, it is necessary to have a circuit which is resonant at the frequency to be passed. When a certain frequency is to be blocked, it is necessary to place in the circuit a resonant tank circuit, which will block the frequency for which it is resonant. Resonant circuits are most essential in radio and television receivers and transmitters.

Filters. The characteristics of resonant circuits, as just described, make them very useful for filtering various frequencies in an electronic circuit. Among the types of filters used in electronic circuits are high-pass filters, low-pass filters, and band-pass filters. A high-pass filter tends to pass frequencies in the higher ranges and to attenuate or reduce the current at frequencies in low ranges. The low-pass filter will pass frequencies in the lower ranges and attenuate or reduce the current frequencies of the higher ranges. A band-pass filter will allow a certain band of frequencies to pass and will reduce the current at frequencies below or above the band range. A filter may be made a tuning circuit by making either the inductance or the capacitance variable. A typical tuning circuit consists of a variable capacitor used with a fixed inductance. In some cases, however, the capacitor is fixed and the inductance is tuned by means of a "slug" or movable core. Tuning circuits are usually designed to have fairly high selectivity, that is, they allow only a very narrow band of frequencies to pass and reject all others.

Text 3. The Electron Tube

It may be stated that the modern electronic industry was born with the invention of the electron tube. The first discoveries in electron-tube phenomena were made by Thomas Edison in 1883 during his experiments with the incandescent lamp. Edison discovered that the heated filament of an incandescent lamp gives off electrons which pass to another electrode in the bulb and thus create an actual current flow from the filament to the other electrode, or plate.

The diode tube. An electron tube, also called a vacuum valve, consists of a glass or metal enclosure in which electrodes are placed and sealed in either a gaseous or an evacuated atmosphere. The simplest of electron tubes is the diode, which has two operating electrodes. One of

these is the heated cathode, which emits the electrons, and the other is the plate or anode. The cathode may be directly heated or indirectly heated. The tube with the directly heated cathode utilizes the heated filament for the cathode, in this case the filament is coated with a special material which greatly increases the number of electrons emitted. If the tube has an indirectly heated cathode, the cathode consists of a metal tube in the centre of which is a filament or heater. The heater is insulated from the metal tube. The outside of the cathode tube is covered with an electron-emitting material such as barium oxide, strontium oxide or thorium oxide.

The principal advantage of the diode tube is that it permits the flow of current in one direction only, that is, from the heated cathode to the anode. If an alternating current is applied to the cathode, the tube will conduct only during one half of each cycle, that is, while the cathode is negative and the anode or plate is positive. For this reason diode tubes are often used as rectifiers to change alternating current to direct current. Diode tubes are used in the power-supply circuits of such electronic devices as radio and television, which obtain their primary power from a. c. sources.

Another use of the diode tube is as a detector. In this application the tube changes the h. f. a. c. carrier wave into a direct current which displays the modulation of the a. f. signal, separates the audio portion of a radio signal from the r. f. portion which is the carrier wave.

The triode tube. The triode tube was discovered by Dr. Lee De Forest. De Forest found that by adding a third element to the diode tube the electron flow from the cathode to the plate could be effectively controlled by changing the electrical charge on the grid placed between them.

The effect of the grid in a triode makes it possible for the tube to act as an amplifier, that is, small changes in voltage on the grid will cause very substantial changes in the current flow from the cathode to the plate.

Text 4. Transistors

Among the most important discoveries in electronics during recent years is the invention of the transistor. The transistor is a very small device which is replacing and is doing the work of a much larger electron tube. One of its principal advantages, however, is that no current is required for a heater circuit, as the transistor works at room temperature. During operation a transistor becomes heated, and so it is necessary to make certain that the transistor circuit is not overloaded beyond its operating limits.

Semiconductors. The operation of a transistor depends upon the nature and characteristics of a crystal substance such as germanium, or silicon. Pure germanium and silicon are good insulators because there are no free electrons to carry current through the material. However, when a very small percentage of an impurity is added, their crystal lattice structure remains the same, but the extra electrons brought in by the impurity remain free in the material to act as current carriers. This makes the material a semiconductor, that is, it will carry current in one direction and block the flow of current in another direction. Germanium with an impurity which leaves an excess of electrons in the material is called *n*-type germanium because of its negative characteristic. When an impurity such as aluminium is added to germanium, *p*-type germanium is formed. This is because aluminium atoms have fewer valence electrons, and when combined with germanium, they leave vacant spots or holes where an electron should be in order to balance the charges between the atoms. A current flow in *p*-type germanium, electrons move into the holes, leaving other holes at the points from which they came. This is the hole current.

Junction transistor. There are two principal types of transistors: the point-contact transistor and the junction transistor.

A junction transistor consists of three principal sections and may be manufactured as one piece. In a *n-p-n* transistor the crystal consists of a section of *n*-type germanium, and another larger section of *n*-type germanium. One end of this transistor is called the emitter, the small *p*-type section is called the base, and the other end is called the collector. The collector is biased positive with respect to the base; hence there will normally be no current flow across the base-to-collector junction. The positive collector will draw the electrons away from the junction and the

negative base will draw the holes away from the junction, and so there can be no transfer of holes or electrons at this point. Since the emitter is negative with respect to the base, the electrons will flow from the emitter to the base and the holes will move from the base to the emitter. This results in a substantial flow of electrons from the emitter to the base, and since the base is very thin, these electrons move across the base and into the positively charged collector.

The result is that a substantial collector current will flow. This collector current will vary in accordance with the changes of the current flow across the emitter-to-base junction. Generally speaking, we may consider the operation of this transistor similar to that of a triode tube with the emitter representing the cathode, the base representing the control grid and the collector representing the plate.

The advantages of a transistor are its very small size and weight, the fact that no power is necessary for heating it, and its comparatively rugged construction.

Text 5. Electrical Power and Horsepower

The development of the electromagnet was the beginning of the use of electricity for producing power, power to be used by man to run his machines and to do much of his work. In modern home alone, there are at least a dozens of electric motors in machines to tell the time, to wash and press cloths, to cool the refrigerator, to mix and stir foods, to clean the rugs, to circulate air in a warm room and so on.

Electric motors in the automobile start the car and circulate the warm air from the heater. In the factories, on the farms, and in the mines the electric motor does all types of work and oftent very heavy work.

What is power? One might ash. Power is measured energy, usually represented as the energy measured by the amount of work a horse can do in a given time. One horse-power is equal to the work done by lifting 550 pounds 1 foot in 1 second. Therefore, power involves three things: weight, time and distance.

Motors are rated in horsepower or fractions of horsepower, for instance, the motor used in a typical washing machine is usually a 1/4 horsepower. Thus, the motor of this kind is known to be termed fractional horsepower motor.

Text 6. Types of resistor

Resistors are the most fundamental and commonly used of all the electronic components, to the point where they are almost taken for granted but they play a vital role within a circuit.

There are many different **Types of Resistor** available for the electronics constructor to choose from, from very small surface mount chip resistors up to large wire wound power resistors. The principal job of a resistor within an electrical or electronic circuit is to “resist” (hence the name **Resistor**), regulate or to set the flow of electrons (current) through them by using the type of conductive material from which they are composed.

Resistors can also be connected together in various series and parallel combinations to form resistor networks, which can act as voltage droppers, voltage dividers or current limiters within a circuit.

Resistors are what are called “Passive Devices”, that is they contain no source of power or amplification but only attenuate or reduce the voltage or current signal passing through them. This attenuation results in electrical energy being lost in the form of heat as the resistor resists the flow of electrons through it.

Then a potential difference is required between the two terminals of a resistor for current to flow. This potential difference balances out the energy lost. When used in DC circuits the potential difference, also known as a resistors voltage drop, is measured across the terminals as the circuit current flows through the resistor.

Most types of resistor are linear devices that produce a voltage drop across themselves when an electrical current flows through them because they obey Ohm's Law, and different values of resistance produces different values of current or voltage. This can be very useful in Electronic circuits by controlling or reducing either the current flow or voltage produced across them we can produce a voltage-to-current and current-to-voltage converter.

There are many thousands of different **Types of Resistor** and are produced in a variety of forms because their particular characteristics and accuracy suit certain areas of application, such as High Stability, High Voltage, High Current etc, or are used as general purpose resistors where their characteristics are less of a problem.

Some of the common characteristics associated with the humble resistor are **Temperature Coefficient, Voltage Coefficient, Noise, Frequency Response, Power** as well as a resistors **Temperature Rating, Physical Size and Reliability**.

In all Electrical and Electronic circuit diagrams and schematics, the most commonly used symbol for a fixed value resistor is that of a "zig-zag" type line with the value of its resistance given in Ohms, Ω . Resistors have fixed resistance values from less than one ohm, ($<1\Omega$) to well over tens of millions of ohms, ($>10M\Omega$) in value.

Fixed resistors have only one single value of resistance, for example 100Ω , but variable resistors (potentiometers) can provide an infinite number of resistance values between zero and their maximum value.

Text 7. Conductors and insulators

Everything is made up of atoms. Each one of them has three particles: protons, neutrons and electrons. Electrons spin around the centre of an atom. They have a negative charge. Protons, which are in the centre of atoms, have a positive charge. Normally, an atom has as many protons as it has electrons. It is stable or balanced. Carbon, for example has six protons and six electrons. Scientists can make electrons travel from one atom to another. An atom that loses electrons is positively charged, an atom that gets more electrons is negatively charged. Electricity is created when electrons move between atoms. Positive atoms look for free negative electrons and attract them, so that they can be balanced.

Electricity can pass through some objects better than through others. Conductors are materials through which electrons can travel more freely. Copper, aluminium, steel and other metals are good conductors. So are some liquids like saltwater.

Insulators are materials in which electrons cannot move around. They stay in place. Glass, rubber, plastic or dry wood are good insulators. They are important for your safety, because without them, you couldn't touch a hot pan or plug in a TV set.

Electric current

When electrons move through a conductor an electric current is created. A current that always flows in one direction is called a direct current (DC). A battery for example, produces a direct current. A current that flows back and forth is called an alternating current (AC).

Electric circuits

Electrons cannot jump freely through the air to a positively charged atom. They need a circuit to move. When a source of energy, like a battery, is connected to a light bulb the electrons can move from the battery to the light bulb and back again. We call this an electric circuit.

Sometimes there are many circuits in an electrical device that make it work. A TV set or a computer may have millions of parts that are connected to each other in different ways.

You can stop the current from flowing by putting a switch into the circuit. You can open the circuit and stop electrons from moving.

A piece of metal or wire can also be used to produce heat. When an electrical current passes through such metal it can be slowed down by resistance. This causes friction and makes the wires hot. That's why you can toast your bread in a toaster or dry your hair with warm air from a hairdryer.

In some cases wires can become too hot if too many electrons flow through them. Special switches, called fuses, protect the wiring in many buildings.

Kinds of electricity

Static electricity

- happens when there is a build-up of electrons
- it stays in one place and then jumps to an object
- it does not need a closed circuit to flow
- it is the kind of electricity you feel when you rub your pullover against an object or when you drag your feet over a carpet
- lightning is a form of static electricity

Current electricity

- happens when electrons flow freely between objects
- it needs a conductor—something in which it can flow, like a wire
- current electricity needs a closed circuit
- it is in many electrical appliances in our homes - toasters, TV sets, computers
- a battery is a form of current electricity

How batteries work

A battery has liquid or paste in it that helps it produce electric charges. The flat end of the battery has a negative charge and the end with the bump has a positive charge.

When you link a wire between both ends a current flows. When the current passes through a light bulb electric energy is converted into light.

The chemicals in the battery keep the ends charged and the battery going. As time passes, the chemical becomes weaker and weaker and the battery cannot produce any more energy.

How electricity is produced

Generators are used to transform mechanical energy into electrical energy. A magnet rotates inside a coil of wire. When the magnet moves, an electric current is produced in the wire.

Most power stations use turbines to make the generator rotate. Water is heated to make steam, which pushes the blades of the turbine. Gas, oil or coal can be used to heat the water. Some countries build power stations on rivers, where the moving water pushes the turbine blades.

How electricity is measured

Electricity is measured in watts, named after James Watt who invented the steam engine. It would take about 750 watts to equal one horsepower.

A kilowatt-hour is the energy of 1,000 watts that work for one hour. If, for example, you use a 100-watt light bulb for 10 hours you have used 1 kilowatt of electricity.

How electricity is transported

The electricity produced by a generator travels along cables to a transformer that changes the voltage of electricity. Power lines carry the high-voltage electricity over very long distances. When it reaches your home town another transformer lowers the voltage and smaller power lines bring it to homes, offices and factories.

Electrical safety

It is important to understand why and how you can protect yourself from electrical injuries.

Electric shock occurs when an electric current passes through your body. It can lead to heart failure and can damage other parts of your body. It can also burn your skin and other body tissues.

A very weak electrical object, like a battery, cannot do any harm to you, but inside the house you have devices and machines that use 220 volts.

Most machines in your house have safety features to protect you. If something goes wrong, a special wire leads the electricity to the ground where nothing can happen.

There are also electrical dangers outside your house. Trees that touch power lines can be dangerous. Lightning has more than enough electricity to kill a person. If you get caught in a thunderstorm stay away from open fields and high places. One of the safest places is your car, because lightning will only hit the outside metal of the car.

Text 8. Solar light by night

Most people living in towns consider it a usual thing that streets are lit at night. But street lights need a power supply (источник энергии) therefore distant areas with no source of electricity remain in darkness until the sun comes up again. With new appliances now offered by several British firms, many distant places could be lit with solar-powered street lights. It may seem strange that the lamps can use the power of the sun which shines by day when the lamps are needed at night, but they work by using energy accumulated during the day from a solar panel. The solar panel produces electricity which charges (заряжать) a battery. When the sun goes down, the battery power is then used for lighting. Each lamp has its own panel so the system can be used for one individual light or a number of them. In the south of Saudi Arabia a motorway tunnel miles from any power supply is lit day and night by solar-powered devices. The solar panels provide power during the day and charge batteries which accumulate enough power to light the tunnel at night. The generation of electricity by batteries is still expensive but the advantage of sun-powered lamps is that they can bring light to areas distant from any other power supply. There is one more advantage of solar power: not only it is unlimited, but also its use does not pollute the environment. That is why it is very important to develop devices which make it possible to transform solar power into mechanical or electric forms of power.

Text 9. Energy

In the language of science energy is the ability to do work. There are various forms of energy, such as heat, mechanical, electrical, chemical, atomic and so on. One might also mention the two kinds of mechanical energy—potential and kinetic, potential energy being the energy of position while kinetic energy is the energy of motion. It is well known that one form of energy can be changed into another. A waterfall may serve as an example. Water falling from its raised position, energy changes from potential to kinetic energy. The energy of falling water is generally used to turn the turbines of hydroelectric stations. The turbines in their turn drive the electric generators, the latter producing electric energy. Thus, the mechanical energy of falling water is turned into electric energy. The electric energy, in its turn, may be transformed into any other necessary form. When an object loses its potential energy, that energy is turned into kinetic energy. Thus, in the above-mentioned example when water is falling from its raised position, it certainly loses its potential energy, that energy changing into kinetic energy. We have already seen that energy of some kind must be employed to generate the electric current. Generally speaking, the "sources of energy usually employed to produce current are either chemical as in the battery, or mechanical, as in the electromagnetic generator. Chemical sources of current having a limited application, the great quantities of electric energy generated today come from various forms of mechanical energy. The rising standards of modern civilization and growing industrial application of the electric current result in an increasing need of energy. Every year we need more and more energy. We need it to do a lot of useful things that are done by electricity. However, the energy sources of the world are decreasing while the energy needs of the world are increasing. These needs will continue to grow as more motors and melted metals are used in industry and more electric current is employed in everyday life. As a result, it is necessary to find new sources of energy. The sun is an unlimited source of energy. However, at present, only a little part of solar energy is being used directly. How can we employ solar energy directly to produce useful energy? This is a question which has interested scientists and inventors for a long time. Lavoisier and other great scientists of the past melted metals with the help of solar furnaces. Today, solar furnaces illustrate just one of the numerous ways to harness the sun. Using semiconductors, scientists, for example, have transformed solar energy into electric energy.

Text 10. Atomic energy

A man trying to see a single atom is like a man trying to see a single drop of water in the sea while he is flying high above it. He will see the sea made up of a great many drops of water but he certainly will not be able to see a single drop. By the way, there are so many atoms in the drop of water that if one could count one atom a second, day and night, it would take one hundred milliard years. But that is certainly impossible. Man has, however, learned the secret of the

atom. He has learned to split atoms in order to get great quantities of energy. At present, coal is one of the most important fuel and our basic source of energy. It is quite possible that some day coal and other fuel may be replaced by atomic energy. Atomic energy replacing the present sources of energy, the latter will find various new applications. The nuclear reactor is one of the most reliable "furnaces" producing atomic energy. Being used to produce energy, the reactor produces it in the form of heat. In other words, atoms splitting in the reactor, heat is developed. Gas, water, melted metals, and some other liquids circulating through the reactor carry that heat away. The heat may be carried to pipes of the steam generator containing water. The resulting steam drives a turbine, the turbine in its turn driving an electric generator. So we see that a nuclear power-station is like any other power-station but the familiar coal-burning furnace is replaced by a nuclear one, that is the reactor supplies energy to the turbines. By the way, a ton of uranium (nuclear fuel) can give us as much energy as 2.5 to 3 million tons of coal. The first industrial nuclear power-station in the world was constructed in Obninsk not far from Moscow in 1954. It is of high capacity and has already been working for many years. One may mention here that the station in question was put into operation two years earlier than the British one and three and a half years earlier than the American nuclear power-stations. A number of nuclear power-stations have been put into operation since 1954. The Beloyarskaya nuclear power-station named after academician Kurchatov may serve as an example of the peaceful use of atomic energy in the USSR. Soviet scientists and engineers achieved a nuclear superheating of steam directly in the reactor itself before steam is carried into the turbine. It is certainly an important contribution to nuclear engineering achieved for the first time in the world. We might mention here another important achievement, that is, the first nuclear installation where thermal energy generated in the reactor is transformed directly into electrical energy. Speaking of the peaceful use of atomic energy it is also necessary to mention our nuclear ice-breakers. "Lenin" is the world's first ice-breaker with a nuclear installation. Its machine installation is of a steam turbine type, the steam being produced by three reactors and six steam generators. This ice-breaker was followed by many others. The importance of atomic energy will grow still more when fast neutron reactors are used on a large scale. These reactors can produce much more secondary nuclear fuel than the fuel they consume.

Text 11. Early history of electricity

Let us now turn our attention to the early facts, that is to say, let us see how it all started. History shows us that at least 2,500 years ago, or so, the Greeks were already familiar with the strange force (as it seemed to them) which is known today as electricity. Generally speaking, three phenomena made up all of man's knowledge of electrical effects. The first phenomenon under consideration was the familiar lightning flash –a dangerous power, as it seemed to him, which could both kill people and burn or destroy their houses. The second manifestation of electricity he was more or less familiar with was the following: he sometimes found in the earth a strange yellow stone which looked like glass. On being rubbed, that strange yellow stone, that is to say amber, obtained the ability of attracting light objects of a small size. The third phenomenon was connected with the so-called electric fish which possessed the property of giving more or less strong electric shocks which could be obtained by a person coming into contact with the electric fish. Nobody knew that the above phenomena were due to electricity. People could neither understand their observations nor find any practical applications for them. As a matter of fact, all of man's knowledge in the field of electricity has been obtained during the last 370 years, or so. Needless to say, it took a long time before scientists learned how to make use of electricity. In effect, most of the electrically operated devices, such as the electric lamp, the refrigerator, the tram, the lift, the radio, and so on, are less than one hundred years old. In spite of their having been employed for such a short period of time, they play a most important part in man's everyday life all over the world. In fact, we cannot do without them at present. So far, we have not named the scientists who contributed to the scientific research on electricity as centuries passed. However, famous names are connected with its history and among them we find that of Phales, the Greek philosopher. As early as about 600 B. C. (that is, before our era) he discovered that when amber was

rubbed, it attracted and held minute light objects. However, he could not know that amber was charged with electricity owing to the process of rubbing. Then Gilbert, the English physicist, began the first systematic scientific research on electrical phenomena. Rediscovered that various other substances possessed the property similar to that of amber or, in other words, they generated electricity when they were rubbed. He gave the name "electricity" to the phenomenon he was studying. He got this word from the Greek "electrum" meaning "amber". Many learned men of Europe began to use the new word "electricity" in their conversation as they were engaged in research of their own. Scientists of Russia, France and Italy made their contribution as well as the Englishmen and the Germans.

Text 12. Electricity

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 pulleys¹ 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 lives. Other devices are based on specific properties of electricity: electrostatics in the case of photocopying machine and electromagnetism in the case of radar and television. These applications 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 had been used before. 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.

Примеры заданий на письменную коммуникацию

1. Расположите части письма в правильном порядке:

1) 7 Maple Estate, Hlarbour Road, Melbourn, Australia. (Sender's address)
Ref. JK/RS
Telephone 041-336-3692
7 May 2007

2) Dear Sirs,

3) We await your instructions, which shall have our careful attention

Yours faithfully

Richard Smith

Sales Manager

4) We recently had the honour of sending you a catalogue of our goods, and trust that you duly received the same.

As we have not yet been favoured with your order, we venture to enquire if you have reached a decision, and whether you require further information about our product.

5) Purchasing Department

Sunrise Boulevard

Riverton, MI 44444

(Addressee's address)

2. Расположите части делового письма в правильном порядке:

1. John L. Davis, President
Autocomp. Inc.
8100 South Jackson Street
Detroit, MI 48220

2. We recently purchased \$ 250,000 worth of automated material-handling equipment from your company. This equipment was purchased from you because of the fine reputation you have for quality and service to your customers.

3. We look forward to doing business with your company in the future.
Sincerely,
Victor Boyd,
Plant Manager

4. Dear Mr. Davis:

5. Rusk Seed, Inc.
400 National Highway
Decatur, Illinois 62525
April 15, 2007

3. Ответьте на вопросы, пользуясь информацией на конверте:

New Jersey Power Company
5695 South 23 Road
(1) Ridgefield, (2) NJ 08887

Mr. Frederick Wolf
Director of Marketing
(3) Smith Printing Company
590 (4) Sixth Avenue
Milwaukee, (5) WI 53216

1. What is the ZIP code in the return address?
2. What is the ZIP code in the mailing address?
3. What town does the letter come from?
4. What is addressee's company name?
5. What is the street name in the mailing address?

4. Определите, к какому виду делового документа относится представленный ниже отрывок:

Mr. Fred North,
Purchasing Manager,
Broadway Autos,
London, Great Britain
7th July, 2007

Dear Mr. Sign,

I am writing to apologize for the late delivery of this order.
Our revised delivery date is now Friday November 22.
We hope that this revised date is suitable and we greatly regret by inconvenience that may have been caused.

Best regards,

Fred North

ОТВЕТ:

1. Contract
2. Letter of apology
3. Memo
4. CV

5. Выберите слова или сочетания слов для заполнения пропусков так, чтобы они отражали особенности оформления служебной записки:

To _____: Secretarial Supervisor

(1) _____: John Davis

(2) _____: automated equipment

The (3) _____: of Smart Equipment will visit us on 28 April to demonstrate their new material handling equipment which you are sure to be interested in.

Please arrange the time to meet him so that all your staff could be present.

(4) _____

1. Subject
2. From
3. Sales Manager
4. J.D.

6. Перед вами конверт:

Amtorg Trading Corporation
5695 South 23 Madison Avenue
(1) New York, (2) NJ 08887

(3) Mr. R. Calvert
Director of Marketing
(4) Smith Printing Company
590 (5) Lincoln Street
Chicago, WI 53216

Соотнесите информацию под определенным номером на конверте с тем, что она обозначает:

- 1) the addressee's company name
- 2) the town the letter comes from
- 3) the addressee
- 4) the ZIP Code in the return address
- 5) the street name in the mailing address

7. Ответьте на вопросы, пользуясь информацией на конверте.

New York Power Company
3638 North 25 Road
(1) Summerfield, (2) NK 09346

(3) Mr. Paul Brown
Director of Purchasing Department
Smith Electronic Company
360 (5) Fifth Avenue
Roanoke, (4) VA 24040

1. What is the ZIP Code in the return address?
2. What is the ZIP Code in the mailing address?
3. Who is the addressee?
4. What town does the letter come from?
5. What is the street name in the mailing address?

8. Определите, к какому виду делового документа относится представленный ниже

отрывок:

19 Elm Street
Elmont,
New York

The Jameson Constructions Co.
Harbour Road
Melbourn 6
Australia

June 24 2007_

Dear Sirs

We were very interested in your display at the latest Exhibition held in Moscow.

We would be very much obliged if you would send us your illustrated catalogue of your products together with the pricelist, with special reference to all sizes and quantities. We would also like to know what discounts you grant for large quantities.

If you can guarantee prompt delivery we would be prepared to place a large order.

We can supply the names of several firms as references.

Yours faithfully

Donald Vance
Manager

ОТВЕТ:

1. Letter of enquiry (request)
2. Invitation
3. Memo

9. Определите, к какому виду письменного сообщения относится следующее.

DYNATEAM Innovations

Mr. Rigley
Rainbow Homecenter
1212 Westlake Ave,
Seattle, Wash. 98404

Dear Mr. Rigley,

We thank you for your inquiry of 5 July in which you asked about sports swimming suits we advertised in June's edition of 'Sports News'. These sports swimming suits are made of new generation of micro fibers ideally suitable for sensitive skin. They are MicFib™ products, which is a brand name you are familiar with. Their unique hygienic properties have proved the main selling point of this product. All dealers who have displayed our brightly colored, jazzy products have reported a tremendous increase in sales. You can choose from more than twenty-five designs in all sizes. We would be pleased to add you to our list of customers and could promise you excellent products and prompt supply. As we execute all orders in strict rotation, we strongly advise you to order early.

Thank you for your interest. Our services are at your disposal.

M. Kerr
Sales Manager
Enc. 2007 Catalog

ОТВЕТ:

1. order
2. offer
3. invitation

10. Определите, к какому виду письменного сообщения относится следующее:

22 May 2001

The Chairman
South California District
Export Council
11777 San Vicente Blvd.
Los Angeles, Calif. 90049

Dear Sir,

We are a large store in the Center of Montreal and we are interested in importing wine from California, Please send us a list of California wine exporters.

I would appreciate a prompt reply.

Yours sincerely,

M. Pino

Chief Buyer

ОТВЕТ:

1. memo
2. order
3. inquiry

11. Определите, к какому виду письменного сообщения относится следующее

Bronson Machines Inc.

2244 Lincoln Ave., Bonneyvihe, S. D.

Date: 17 September 2007

Subject: Incorporation

To:

All employees in all departments

From:

Jim Gerry, CEO

You all know that Bronson Machines has incorporated and is now called Bronson Machines Inc.

Details concerning restructuring will be sent to the heads of the departments in question. However, this memorandum is being circulated to reassure you of the following:

1. There will be no firing as a result of this change.
2. Restructuring will finish at the tail end of this year.
3. Salaries and wages will not be cut.
4. Management positions will not be affected. Managers will be offered special training.

Jim Gerry

CEO

ОТВЕТ:

1. invitation
2. minutes
3. memo

12. Определите, к какому виду письменного сообщения относится следующее:

Walter and Rose Inc.

173 Lombard St., Toronto, Ont.

Date: 10 November 2000

To: All staff

From: Head Office

Selection of Mr. Caldwell The CEO of the Year for 2000.

We are pleased to inform you that 2000 CEO of the Year Advisory Board has selected Mr. Caldwell, the CEO of our company, the CEO of the Year. Mr. Caldwell was selected on criteria including sense of vision, leadership, innovation, and social responsibility.

Marc Geisler
Chairman of the Board of Director

ОТВЕТ:

1. minutes
2. invitation
3. memo

13. Определите, к какому виду письменного сообщения относится следующее:

HOWAKD & PRATT

Ladies' Clothing

306, 3d Avenue

Chicago, Ill. 60602

JACKSON & MILES

118 Regent Street

London W1C 37D

UK

Gentlemen:

21 Oct, 2000

We saw your women's dresses and suits in your October catalogue. The lines you showed would be most suitable for our market.

Would you kindly send us your quotation for spring and summer clothing that you could supply to us by the end of January next.

We would require 2,000 dresses and suits in each of the sizes 10-14, and 500 in sizes 8 and 16. Please quote c.i.f. Chicago prices.

Payment is normally made by letter of credit.

Thank you for an early reply.

Very truly yours,

P.Pratt

P.PRATT. Jr

Buyer

ОТВЕТ:

1. inquiry
2. order
3. memo

14. Определите, к какому виду делового документа относится представленный ниже отрывок:

7th July, 2007

Dear Mr. Sign,

I am writing to apologize for the late delivery of this order.

Our revised delivery date is now Friday November 22.

We hope that this revised date is suitable and we greatly regret by inconvenience that may have been caused.

Best regards,

Fred North

ОТВЕТ:

1. Contract
2. Letter of apology
3. Memo
4. CV

15. Определите, к какому виду делового документа относится представленный ниже отрывок:

19 Elm Street
Elmont,
New York

The Jameson Constructions Co.
Harbour Road
Melbourn 6
Australia

June 24 2007_

Dear Sirs

We were very interested in your display at the latest Exhibition held in Moscow. We would be very much obliged if you would send us your illustrated catalogue of your products together with the pricelist, with special reference to all sizes and quantities. We would also like to know what discounts you grant for large quantities.

If you can guarantee prompt delivery we would be prepared to place a large order.

We can supply the names of several firms as references.

Yours faithfully

Donald Vance

Manager

ОТВЕТ:

1. Letter of enquiry (request)
2. Invitation
3. Memo

16. Ответьте на вопросы, пользуясь информацией на конверте.

New York Power Company
3638 North 25 Road
(1) Summerfield, (2) NK 09346
(3) Mr. Paul Brown
Director of Purchasing Department
Smith Electronic Company
360 (5) Fifth Avenue
Roanoke, (4) VA 24040

1. What is the ZIP Code in the return address?
2. What is the ZIP Code in the mailing address?
3. Who is the addressee?
4. What town does the letter come from?
5. What is the street name in the mailing address?

17. Выберите слова или сочетания слов для заполнения пропусков так, чтобы они отражали особенности оформления служебной записки:

To _____: Secretarial Supervisor

(1) _____: John Davis

(2) _____: automated equipment

The (3) _____: of Smart Equipment will visit us on 28 April to demonstrate their new material handling equipment which you are sure to be interested in.

Please arrange the time to meet him so that all your staff could be present.

(4) _____

1. Subject
2. From
3. Sales Manager
4. J.D.