**МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ АМУРСКОЙ ОБЛАСТИ**

**ГПОАУ «РАЙЧИХИНСКИЙ ИНДУСТРИАЛЬНЫЙ ТЕХНИКУМ»**

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| РАССМОТРЕНО | УТВЕРЖДАЮ |
| на заседании ЦК общих гуманитарных,  социально-экономических, математических и естественно-научных дисциплин. | Зам. директора по УПР  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_А.Н.Балбалин |
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| Председатель ЦК  \_\_\_\_\_\_\_\_\_\_\_\_\_\_/О.А.Ковтун |  |

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| **МЕТОДИЧЕСКИЕ РЕКОМЕНДАЦИИ** |
| **К ПРАКТИЧЕСКИМ РАБОТАМ** |
| по дисциплине  ОГСЭ.03 Иностранный язык в профессиональной деятельности |
| для студентов специальности  13.02.06 Релейная защита и автоматизация электроэнергетических систем |

ПОЯСНИТЕЛЬНАЯ ЗАПИСКА

Данные методические рекомендации к практическим работам предназначены для студентов 2-4 курса специальности 13.02.06. Релейная защита и автоматизация электроэнергетических систем и разработано в соответствии с требованиями федерального государственного образовательного стандарта среднего профессионального образования и учебной программы курса английского языка.

Цель – формирование навыков работы с иноязычными текстами, навыков перевода, извлечения информации и её переработки на основе различных видов чтения, расширение активного и пассивного словарного запаса в профессиональной области. Методические рекомендации позволяют решать следующие *задачи* на занятиях иностранного языка (английского):

-  совершенствование процесса качественного произношения слов;

-  введение и закрепление лексики;

-  работа над грамматикой;

-  совершенствование навыков устной речи.

Специальная лексика вводится тематически, закрепляется в разнообразных упражнениях. Разделы включают в себя следующие задания:

-  прочитать и перевести текст;

-  дать ответы на вопросы к тексту;

-  заполнить пропуски подходящей по смыслу лексикой;

-  составить монологические и диалогические высказывания по предлагаемым для обсуждения темам с обязательным использованием лексики урока.

Разработанные упражнения предназначены для организации адекватного понимания содержания текстов.

**Перечень практических и самостоятельных работ**

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| №  п/п | Форма, тематика работ | Количество  часов |
| 1. | **Практическая работа № 1.**  Особенности фонетики. Транскрипция. | 2 |
| 2. | **Практическая работа № 2.**  Алфавит, правила чтения. | 2 |
| 3. | **Практическая работа № 3.**  Личные местоимения. | 2 |
| 4. | **Практическая работа № 4.**  Спряжение глагола to be. Глагол to have. | 2 |
| 5. | **Практическая работа № 5.**  Утвердительная и вопросительная форма глаголов. | 2 |
| 6. | **Практическая работа № 6.**  Математические действия. | 2 |
| 7. | **Практическая работа № 7.**  Числительные, дроби | 2 |
| 8. | **Практическая работа № 8.**  Электричество. Электрическая цепь. | 2 |
| 9. | **Практическая работа № 9.**  Электрические сети и системы. | 2 |
| 10. | **Практическая работа № 10.**  Моя будущая профессия. | 2 |
| 11. | **Практическая работа № 11.**  История изобретений. | 2 |
| 12. | **Практическая работа № 12**.  Грэхем Белл. Телефон. | 2 |
| 13. | **Практическая работа №13.**  Самюэль Морзе. Телеграф | 2 |
| 14. | **Практическая работа №14**  Исаак Ньютон. | 2 |
| 15. | **Практическая работа №15**  Эрнест Резерфорд. | 2 |
| 16. | **Практическая работа №16**  Джеймс Клерк Максвелл. | 2 |
| 17. | **Практическая работа №17**  Джеймс Джоуль. | 2 |
| 18. | **Практическая работа №18**  Джеймс Уатт. | 2 |
| 19. | **Практическая работа №19**  Альберт Эйнштейн. | 2 |
| 20. | **Практическая работа №20**  Томас Эдисон. | 2 |
| 21. | **Практическая работа №21**  Компьютер в нашей жизни. | 2 |
| 22. | **Практическая работа №22**  Билл Гейтс- король программного обеспечения. | 2 |
| 23. | **Практическая работа №23**  «Всемирная паутина» | 2 |
| 24. | **Практическая работа №24**  Преимущества и недостатки компьютера. | 2 |
| 25. | **Практическая работа №25**  Измерительные приборы. | 2 |
| 26. | **Практическая работа №26.**  Резистор. | 2 |
| 27. | **Практическая работа №27.**  Конденсатор. | 2 |
| 28. | **Практическая работа №28.**  Проводники и изоляторы. | 2 |
| 29. | **Практическая работа №29.**  Трансформатор. | 2 |
| 30. | **Практическая работа №30.**  Виды тока. | 2 |
| 31. | **Практическая работа №31.**  Самоиндукция и взаимоиндукция. | 2 |
| 32. | **Практическая работа №32.**  Фильтры. | 2 |
| 33. | **Практическая работа №33.**  Электронная лампа. | 2 |
| 34. | **Практическая работа №34.**  Электромагнитное реле. | 2 |
| 35. | **Практическая работа №35.**  Плавкий предохранитель. | 2 |
| 36. | **Практическая работа №36.**  Компоненты электрической цепи. | 2 |
| 37. | **Практическая работа №37.**  Электрические линии и их эффективность | 2 |
| 38. | **Практическая работа №38**  Линии передач | 2 |
| 39. | **Практическая работа №39**  Система безопасного заземления. Поражение электрическим током | 2 |
| 40. | **Практическая работа №40**  Электродвигатели. | 2 |
| 41. | **Практическая работа №41**  Неисправности моторов и способы их ремонта. | 2 |
| 42. | **Практическая работа №42**  Подстанции. | 2 |
| 43. | **Практическая работа №43**  Виды электростанций. Гидроэлектростанция. | 2 |
| 44. | **Практическая работа №44**  Атомная электростанция. | 2 |
| 45. | **Практическая работа №45**  Солнечная и ветряная электростанция. | 2 |
| 46. | **Практическая работа №46**  Защита окружающей среды при эксплуатации электростанций. | 2 |
| 47. | **Практическая работа №47**  Конверсия. | 2 |
| 48. | **Практическая работа №48**  Местоимение one. | 2 |
| 49. | **Практическая работа №49**  Времена глагола. | 2 |
| 50. | **Практическая работа №50**  Страдательный (пассивный залог) | 2 |
| 51. | **Практическая работа №51**  Страдательный (пассивный залог) | 2 |
| 52. | **Практическая работа №52**  Полнозначные и служебные слова. | 2 |
| 53. | **Практическая работа №53**  Неличные формы глагола. | 2 |
| 54. | **Практическая работа №54**  Причастие. | 2 |
| 55. | **Практическая работа №55**  Герундий | 2 |
| 56. | **Практическая работа №56**  Сослагательное наклонение | 2 |
| 57. | **Практическая работа №57**  Эмфатические конструкции. | 2 |

**Практическая работа № 1**

**Тема: Особенности фонетики. Транскрипция.**

1. Прочитайте и запомните.

English Alphabet.

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2. Изучите материал, сделайте конспект в тетрадь.

Фонетический строй английского языка существенно отличается от фонетического строя русского языка, что вызывает определённые трудности при овладении произношением. Основные различия определяются наличием специфических звуков, отсутствующих в родном языке, характерными артикуляционными и произносительными навыками, интонационным своеобразием.

Гласные звуки.Английские гласные делятся на долгие и краткие.

Краткие:[ı], [e], [æ], [o], [u], [Λ], [ε].

Долгие:[ı:], [a:], [ε:], [u:], [o:].

Соблюдение правила долготы и краткости является обязательным в английском языке, т. к. любая замена может привести к искажению смысла.

Например: ship [∫ıp] – корабль, sheep [∫ı:p] – овца.

Среди английских гласных звуков одинаковых на своём протяжении (монофтонги), имеются дифтонги т.е. гласные, состоящие из двух элементов, произносимых в пределах одного слога.

Например: boy [boı]

Дифтонги: [eı], [aı], [au], [ou], [oı], [ıε], [εε], [uε].

Согласные звуки.Так же, как и в русском языке, в английском есть глухие и звонкие согласные звуки. Но в отличие от русского языка английские звонкие согласные на конце слова и перед глухими согласными никогда не оглушаются. Оглушение английских звонких согласных в конце слова может привести к смещению значений слова.

Например: bat [bæt]летучая мышь – bad [bæd]плохой

Кроме того, английские согласные произносятся твёрдо перед любой гласной, в то время как в русском языке перед некоторыми гласными происходит смягчение согласных.

Звонкие: [b], [d], [g], [v], [ ], [z], [З], [dЗ], [m], [n], [ŋ], [l], [r], [j], [w].

Глухие: [p], [t], [k], [f], [θ], [s], [∫], [t∫], [h].

3. Выполните следующие упражнения:

Упражнение № 1Напишите транскрипцию гласных звуков следующих слов:

be, feel, we, me, see, meet

it, is, in, ill, sit, fill, live

bed, pen, ten, tell

tie, lie, my, pie, die, life

man, bad, hat, lamp, fat, cat

day, late, tale, main, rain

park, mark, arm, are

air, chair, care, fair

there, where

here, near, mere

hire, fire, tyre, buyer, flyer

our, flour, power, flower, down, town

her, term, bird, turn, learn

story, warm, door, taught, talk

Упражнение № 2 Напишите транскрипцию согласных звуков следующих слов:

think, thing, thin, thought, death, threat

sing, song, bang, long, something, going, hung, wrong

this, that, those, the, these, there, other, another

ship, shop, she, clash, sharp, shine, shame, shape

chess, chop, chamber, charm, charity, future

phone, photo, phenomenon, phantom, pharos, phase

knife, know, knock, knit, knight, knee, knack

what, where, when, wheel, whiff, whip, whim.

**Практическая работа № 2**

**Тема: Алфавит, правила чтения.**

1. Изучите данный материал. Сделайте конспект в тетради.

Правила чтения гласных букв и буквосочетаний.

Чтение гласных зависит от ряда факторов:

1) от типа слога, в котором она стоит (открытый, закрытый и т.п.);

2) от того, является она ударной или безударной;

3) от её положения среди других букв.

В английском языке существует 4 типа чтения гласных букв в слове:

I тип – открытый (оканчивается на гласную или немую –e). Гласная в этом типе читается как в алфавите.

Например: plate, student

II тип – закрытый (оканчивается на согласную).

Например: man, supper

III тип – слог, где за ударной гласной следует буква «r».

Например: car, girl

IV тип - слог, где за ударной гласной с буквой «r» следует ещё одна гласная.

Например: fire, prepare

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2. Распределите слова на две группы: слова с открытым слогом и слова с закрытым слогом.

cut – myth - tide – mix – box – lake – fly - plate – map – his – cat – dog – blue – site – meet – he – sit – rose – home – stop – fond – game – plan – tram – my – ill – system – tent – fell – feel – fine – we – but – fun – use – tune

3. Расставьте слова в колонки с соответствующим звуком.

[w] [h] [r]

What, who, wrestling, when, why, whose, wrong, where, whom, write, white, which, whole, wrangler

3. Расставьте слова в колонки с соответствующим звуком.

[s] [k]

Ice, celebrate, cold, corner, doctor, city, place, black, pencil, cage, club, nice, camp, cinema.

4. Расставьте слова в колонки с соответствующим звуком.

[g] [dʒ]

Give, good, cage, ginger, girl, gypsy, gold, grey, grace, beige, gift, gymnastics, bag, village, game.

5. Расставьте слова со слогом типа «гласная + r» в колонки с соответствующим звуком.

[a:] [o:] [ɜː]

Stern, far, curt, form, girl, hard, cart, curl, word, car, born, term, fur, bird, herb, fork, her, first.

6. Расставьте слова со слогом типа «гласная + r + e» в колонки с соответствующим звуком.

[o:] [ɛə] [ɪə] [aɪə] [juə]

Fare, here, pure, core, rare, cure, mare, fire, bare, during, stare, more, mere, store, tyre,

7. Распределите слова на три группы в зависимости от чтения окончания –s: [s], [z] или [ɪz].

closes, lakes, hands, pages, catches, boys, voices, helps, works, washes, girls, sees, months, horses, plays, kisses, plates, cars, runs

**Практическая работа № 3**

**Тема: Личные местоимения.**

1. Изучите данную тему.

Местоимение — это часть речи, которая обозначает действующее лицо или предмет, но не называет его. В целом роль и значение местоимений в английском языке схожа с данной частью речи в русском. В этом статье мы рассмотрим виды английских местоимений с переводом и примеры их употребления.

По своему значению местоимения английского языка делятся на следующие группы:

личные

притяжательные

указательные

возвратные

вопросительные

отрицательные

неопределенные

Разберем отдельно каждую группу местоимений.

Личные местоимения

Личные местоимения обозначают предметы или людей с точки зрения говорящего.

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| Личные местоимения | Притяжательные местоимения | Примеры |
| I (я) | my (мой, моя, мое, мои) | My ball |
| he (он) | his (его) | His ball |
| she (она) | her (ее) | Her ball |
| it (оно) | its (его, ее) | Its ball |
| we (мы) | our (наш, наша, наше, наши) | Our ball |
| you (вы) | your (ваш, ваша, ваше, ваши) | Your ball |
| they (они) | their (их) | Their ball |

**Практическая работа № 4**

**Тема: Спряжение глагола to be. Глагол to have.**

1. Изучите тему.

Глагол to be – быть, являться, находиться.

Глагол to be – один из самых главных глаголов английского языка. Он служит для называния предмета или человека, описания его качеств, описания его местоположения.

Я девочка. Он ученик. Они дети.

Я хорошая. Он рыжий. Они французы.

Я в парке. Он в классе. Они в музее.



Глагол to have - иметь, обладать



Выражения с глаголом to have

Глагол to have участвует в огромном числе выражений и словосочетаний, в которых он утрачивает свое основное значение. Вот основные из них, которые следует выучить и использовать в своей речи.

to have a lesson — быть на уроке/иметь урок

to have breakfast / dinner/supper/lunch — завтракать, обедать, ужинать

to have a rest — отдыхать

to have a bath/shower — принимать ванну /душ

to have a cold — простудиться

have a look — взглянуть

have no doubts — не сомневаться

have a cup of tee/coffee — выпить чашку чаю/кофе

have fun — веселиться

2. Выполните следующие упражнения:

Перепишите следующие предложения, вставив вместо точек глагол to be. Следите за согласованием глагола-связки с подлежащим в лице и числе:

1 Ann … a woman. 2. Ben … a man. 3. Dick and Peter … men. 4. They … our friends. 5. I … a doctor. 6. We … women. 7. Our house … in the centre. 8. These cities … in England. 9. The college … near the hospital. 10. Our town … not very big. 11. Peter’s cat … black and white. 12. These apples … nice. 13. I … not a teacher. 14. We … students. 15. London … inEngland.

Переведите на английский язык:

1. Я – ребёнок. 2. Он – мой друг. 3. Она – наш друг. 4. Они – дети. 5. Этот карандаш чёрный. 6. Он – чёрный. 7. Он доктор. 8. Мы доктора. 9. Они студенты. 10. Мы хорошие студенты. 11. Друг Петра – доктор. 12. Сестра Ани – учитель. 13. Я не учитель, я – студент. 14. Я не доктор, я – инженер. 15. Я не Анна, я – Мария. 16. Книга моего друга интересная. 17. Дом Бена большой и красивый.

Use the right form of the verb HAVE

My sister ...a well-paid job. That is why she can afford everything.

We ...2 pets: a dog and a cat. İ really like them but they require(требовать) great concern.(забота)

He ...a very strong will. He always expresses his identity.

They are the people who ...brightly coloured hair.

Our new teacher ...very elegant narrow trousers.

Jane likes boys who ... college-style hair-cut and neat clothes.

**Практическая работа № 5**

**Тема: Утвердительная и вопросительная формы глаголов to be и to have.**

1. Выполните следующие упражнения:

1 Переведите следующие предложения.

1. Dan has got a black cap.

2. He has got a blue shirt.

3. Helen has got a map.

4. Ada has got a red belt.

5. Nick has got a pen in his hand.

6. I have got a green hat.

7. She has got a red hat.

2. Заполнить пропуски глаголом to be и переведите предложения.

1. The bag … in the desk.

2. We … in the park.

3. The car … in the street.

4. I … in the bus.

5. The girl … in the garden.

6. The tree … green.

3. Запишите предложения в вопросительной и отрицательной форме:

1. The lamp is on the table.

2. The birds are in the tree.

3. The clock is on the shelf.

4. The sofa is in the corner.

5. The table is in the middle of the room.

6. The books are on the desk.

4. Запишите предложения в утвердительной форме:

1. Are the kittens in the box?

2. I am not in the car.

3. We are not at school.

4. Are they in the kitchen?

5. Напишите предложение в вопросительной и отрицательной форме:

1. I have got a kite.

2. He has got a book.

3. We have got a map.

4. She has got a cat.

5. You have got a dog.

6. You have got a clock.

**Практическая работа № 6**

**Тема: Математические действия.**

1. Изучите и запомните следующие слова.

addition - сложение

subtraction -вычитание

plus – плюс

minus – минус

to be equal – быть равным, ровняться

multiplication –умножение

multiplied by – умноженное на …

once – один раз

twice – дважды, два раза

division – деление

divided by – деленное на …

2. Примеры сложения и вычитания:

5+7=12 - five plus seven equals twelve.

a+b=c – a plus b is equal to c.

15-6=9 – fifteen minus six equals nine

3. Примеры умножения и вычитания.

12\*10=120 – twelve multiplied by ten is equal to one hundred and twenty.

35:7=5 – thirty-five divided by seven equals five.

4. Solve these problems and read them.

|  |  |  |
| --- | --- | --- |
| 34-12=  45+6=  b+d=  56-4=  78-9= | 11+67=  47-19=  8-3=  20+12=  33+13= | 21\*1=  1\*1=  36:4=  49:7=  6\*7= |

**Практическая работа № 7**

**Тема: Числительные, дроби.**

1. Translate into Russian

decimal fractions

common fractions

numeration

denominator

O [ ou ]

Ohm

ampere

volt

point

Decimal fractions.

0.002- zero point two zeros two

1.1- one point one

5.36- five point three six

65.57- sixty-five point five seven

zero point seven

0.7 o point seven

point seven

Read these decimal fractions:

|  |  |  |
| --- | --- | --- |
| 0.23  0.009  10.01 | 205.35  79.31  0.0003 | 66.66  12.000005  45.00450078 |

Common fractions.

½ one half (a half)

1/3 one third

2/7 two sevenths

3 ½ three and a half

5 1/7 five and seventh

Read these common fractions:

|  |  |  |
| --- | --- | --- |
| 1/3  2/5  5 1/2 | 7 1/7  12 3/7  1/9 | 2 ½  7/4  23 1/3 |

**Практическая работа № 8**

**Тема: Электричество. Электрическая цепь.**

1. Translate into Russian

circuit

conductor

function

difference

source

while

to reduce

to supply

to connect

to compare (with)

to pass through

to result in

to result from

to consist of

1. Translate the word – combinations:

Voltage source, to supply current, to reduce current, to connect the elements, to result from an open, to result in no current, trouble in a circuit.

1. Translate the sentence. Mind the word ,,while’’

Current passes through circuit (a) while no current passes through circuit (b).

1. Translate into Russian.
2. An open and a short are troubles in a circuit.
3. A trouble in a circuit results in no current in it.
4. What does an open in a circuit result in?
5. What does a short in a circuit result in?
6. What does a trouble in a circuit result from?
7. Read and translate the text.

This is a circuit. Its elements are a voltage source, a resistor and a conductor. The circuit consists of a voltage source, a resistor and a conductor. A voltage source supplies current. A resistor reduces current. A conductor connects the elements of the circuit.

Compare circuit a with circuit b. What is the difference between them? Current passes through circuit a while no current passes through circuit b. Circuit b has an open. No current through circuit b results from an open. An open and a short are troubles in a circuit. A trouble in a circuit may result in no current in it.

6. Complete these sentences, using the correct variant:

1.Circuit a consists of

a) resistors and conductors.

b) a voltage source and resistors.

c) a voltage source, a resistor and a conductor.

2. A voltage source

a) conducts current,

b) reduces current,

c) supplies current.

3. A conductor

a) connects the elements.

b) supplies voltage.

c) conducts current.

4. A resistor

a) connects the elements.

b) supplies current.

c) reduces current.

5. No current results from

a) an open.

b) a short.

**Практическая работа № 9**

**Тема: Электрические сети и системы.**

1. Translate into Russian.

cell

output

bulb

to light

to increase

to substitute

and so on=et cetera(etc)

2. Translate the word – combinations in writing.

current capacity

resistor temperature

voltage output

current value

to operate well

to operate badly

to increase the voltage output

to substitute the resistor

3.Translate into Russian. Saying forms are Participle I, Gerund or Verbal Noun

to start supplying energy

to stop operating

to start lightening

to stop lightening the bulbs

4. Read and translate into Russian. Mind one:

1. The element has a trouble. It operates badly. It should be substituted by a new one.
2. The element with a trouble was substituted with a new one and the cell started operating.

5. Read and translate the text.

Electric Cells

An electric cell is used to produce and supply electric energy. It consists of an electrolyte and two electrodes. Electrodes are used as terminals, they connect the cell to the circuit - current passes through the terminals and the bulb lights.

Cells can be connected in series, in parallel and in series-parallel. In order to increase the current capacity cells should be connected in parallel. In order to increase the voltage output cells should be connected in series. In case a battery has a large current capacity and a large voltage output, its cells are connected in series-parallel.

When cells are connected in series the positive terminal of one cell

is connected to the negative terminal of the second cell, the positive terminal of the second cell - to the negative terminal of the third ... and so on.

When cells are connected in parallel their negative terminals are connected together and their positive terminals are also connected.

In case a cell has a trouble it stops operating or operates badly. This cell should be substituted by another one.

6. Answer the following questions:

1. What is a cell used for?
2. What does a cell consist of?
3. What is the function of the terminals?
4. In what way are cells connected in order to increase the voltage output?
5. In what way are cells connected in order to increase the current capacity?
6. In what way are the terminals of series cells connected?
7. In what case does a cell stop operating?
8. What should be done in case it stops operating?

**Практическая работа № 10**

**Тема: Моя будущая профессия.**

1. Прочитайте и переведите текст.

My profession is an electrician

My future specialty is a work with electric equipment application. I have chosen this specialty not only because of deficiency in the engineers of this structure, but also because of my interest. It will serve us smoothly if we use it reasonably. After all the electricity brings set of new possibilities in our houses, facilitating us life. We use electric devices constantly. Our life today is impossible without electricity. Computers, domestic appliances, factory machines, medical equipment, electric trains, telephone communication and all kinds of gadgets will not run if there is a power failure. There must be somebody to fix it and this person must know what to do and how to do it properly. This is what electricians do: they install, maintain and repair electrical systems and equipment. I have always been interested in electrics, and Physics and Mathematics were my favorite subjects at school, so I decided to become an electrician. Besides having basic knowledge in physics and mathematics I must study mechanics and drafting and be able to read wiring diagrams and drawings. As we know, electrical mistakes can lead to shortages, shocks, fires and costly repairs. So people who have chosen the profession of an electrician must have a good reaction, be cautious and extremely attentive. Another important aspect of this profession is being physically fit and strong: electricians often have to move heavy equipment or stand or kneel for long periods of time. It is also necessary to have keen eyesight, good hand-eye coordination and a good sense of balance. Every day electricians perform new tasks in new locations and with new people, so I think I will never get bored with this profession. Electricity consumption in our country is increasing every year due to the development of technology and emergence of new equipment that needs professional maintenance. That is why the profession of an electrician is going to stay one of the most important in our world.

3.Выпишите слова и выражения, которые пригодятся вам для составления топика на тему «моя будущая профессия»

2. Составьте топик (10 предложений) «My future profession»

**Практическая работа № 11**

**Тема: История изобретений**

1. Ответьте на вопросы

1. What units and machines do you use in your household?

2. What do you use for watching films?

3. What do you use for calling somebody who is far from you?

4. What do you use for cleaning rooms?

5. What gadget do you use for taking photos?

6. What do you use for listening to music?

2. Соедините предмет и функцию, которую он выполняет.

|  |  |
| --- | --- |
| 1. a TV set  2. a car  3. a computer  4. a video player  5. a camera  6. a vacuum cleaner  7. a fridge  8. a mobile telephone  9. a plane  10. a telephone | g. to have fun and to entertain  j. to move wherever you want by yourself  i. to write programs, play games, find and use information  e. to watch pre-recorded videos  a. to take photographs  c. to perform everyday cleaning tasks  f. to keep food fresh for a long time  h. a system for sending or receiving speech over long distance  d. to move fast and quick around the world  b. to receive or make calls around the home |

3. Прочитайте и переведите факты об изобретениях.

Joseph Nicéphore Niépce from France pioneered photography in 1829.

In 1876 Alexander Graham Bell, an American engineer, invented telephone.

Karl Benz produced the world’s first petrol-driven car in Germany in 1878.

In 1895 the Lumiere brothers patented their cinematography and opened the world’s first cinema in Paris.

Wilbur and Orville Wright built the first airplane in 1903 (USA).

In 1908 James M. Spangler from the USA built the first vacuum cleaner.

In 1908 US automobile manufacturer Henry Ford created the world’s first car assembly line.

John Logie Baird from Scotland invented television in 1926.

The first Russia’s automobile was designed by P.A.Frez and E.A.Yakovlev. By May 1896 the car had been built.

In 1945 the Nobel Prize was given to Alexander Fleming for penicillin that had been discovered in 1928.

In 1928 Richard Drew perfected the Scotch tape, which had been invented by Jim Kirst from the USA in 1923.

The first ballpoint pen was produced in 1940 though it had been invented by L. Biro, a Hungarian artist and journalist, in 1905.

Sergey Korolyev (Russia) designed the first artificial satellite in 1957.

Akio Morita (Japan) developed the first personal stereo – Sony Walkman in 1957.

In 1981 Bill Gates (USA) created Microsoft-DOS (Disk Operating System).

Scottish scientist Ian Wilmat developed the idea of cloning in 1997.

4. Дополните предложения.

1. ……………..… had been invented by the end of the 19th century.

2. ……………...…. had been pioneered by the end of the 19th century.

3. ……………..…. had been patented by the end of the 20th century.

4. ……………..….. had been produced by the end of the 19th century.

5. ……………..….. had been designed by the end of the 20th century.

6. ………………… had been tested by the end of the 20th century.

**Практическая работа № 12**

**Тема: Грэхем Белл. Телефон**

1. Прочитайте и переведите.

Alexander Graham Bell

Inventor of the Telephone.

Born: March 3, 1847

Alexander Graham Bell designed the telephone in 1876. He wanted a faster way to talk to others who were not nearby. His success allowed for all people to communicate quickly!

Bell read books in the library about Herman von Helmholtz, a German scientist who experimented with electrical vibrations to make vowel sounds.

Herman von Helmholtz researched his experiments so that someday he might be able to reconstruct them in his own home. While Bell was in Massachusetts, he invented the harmonic telegraph, an instrument that makes it possible to send multiple telegraphs on one line. On March 7, 1876, Bell recieved his patent for the telephone.

The Telephone is рatented оn March 10, 1876, Alexander Graham Bell was in his testing room with his partner, Watson. The experiment they were working with had reeds that were thin and steel. One of the reeds was stuck so Watson plucked it to try to fix it. When he did, Graham heard the vibration clearly through the newly invented ‘telephone’.

The Simple Telephone. There are three parts to the simple telephone. The Speaker, the Microphone and the Switch, also known as the Hook Switch. The Hook Switch connects and disconnects the phone from the telephone network. The network is connected when you pick up the phone. The speaker picks up the sounds waves from the other line, and sends them through the network to your ear drums. The sounds vibrate in your ear, and you then have sound.

The microphone has a diaphragm where the sounds waves vibrate the area. The amplifier, a small part of the telephone then sends it through to the other line’s speaker, reinterpreting the sounds into physical vibrations.

The Telephone Today

Today, phones have been able to get even smaller and even have no cords. In the bottom left, there is a palm pilot that can also be used at a phone. The telephone is a unique piece of equipment. No one can imagine our world without it.

On August 2, 1922, Alexander Graham Bell died at his home in Baddek Nova Scotia.

2. Read the text about the inventor of the telephone. Put the verbs into the Past Simple.

Alexander Graham Bell \_\_\_\_ (be) born in Edinburgh, Scotland. His mother \_\_\_\_ (be) deaf, so all his life he \_\_\_ (want) to help his mother hear and speak. Alexander was very clever. He \_\_\_ (can) read and write when he was very young, and he \_\_\_ (finish) school when he was 14. At 14 he also \_\_\_ (invent) a “speaking” machine with his brother.

He \_\_\_\_ (study) other inventions, too. One day he \_\_\_ (make) a mistake, because he \_\_\_\_ (can not) read German well. But his mistake \_\_\_\_ (help) him to invent the telephone later!

In 1871 he \_\_\_\_ (leave) Scotland and \_\_\_\_ (go) to Boston, USA to teach deaf children to speak. He \_\_\_\_ (meet) his assistant Thomas Watson and he \_\_\_\_ (continue) his experiments.

On 10 March, 1876, Watson and Bell \_\_\_ (be) in different rooms with their machines. Then Watson \_\_\_ (hear) Bell’s voice from the machine. So, Alexander Graham Bell \_\_\_\_ (become) the inventor of the telephone at the age of 29. Two years later, there were telephones all over the USA.

**Практическая работа № 13**

**Тема: Самюэль Морзе. Телеграф**

1. Read and translate.

27, 1791, Charlestown, Massachusetts, U.S.—died April 2, 1872, New York, New York), American painter and inventor who developed an electric telegraph (1832–35). In 1838 he and his friend Alfred Vail developed the Morse Code. Samuel F.B. Morse developed an electric telegraph (1832–35) and then invented, with his friend Alfred Vail, the Morse Code (1838). The latter is a system for representing letters of the alphabet, numerals, and punctuation marks by arranging dots, dashes, and spaces. The codes are transmitted through either a telegraph machine or visual signals.

2. Find some information about telegraph and tell about it.

**Практическая работа № 14**

**Тема: Исаак Ньютон.**

1. Read and translate.

Isaac Newton

Newton, one of the greatest scientists of all times was born in 1642 in the little village in Lincolnshire, England. His father was a farmer and died before Newton was born. His mother was a clever woman whom he always loved.

After the school, Newton studied mathematics at Cambridge university and received his degree in 1665. Then the university was closed because of the danger of plague and Newton went home for eighteen months. It was most important period in his life when he made his three great discoveries — the discoveries of the differential calculuses, of the nature of white light, and of the law of gravitation.

These discoveries are still important for the modern science. Newton had always been interested in the problems of light. Many people saw colours of a rainbow but only Newton showed, by his experiments, that white light consists of these colours.

It is interesting how he discovered the law gravitation. Once, as he sat at the garden, his attention was drawn by the fall of an apple. Many people saw such an usual thing before.

But it was Newton who asked himself a question: "Why does that apple fall perpendicularly to the ground? Why doesn't it go sidewards or upwards?" The answer to this question was the theory of gravitation, discovered by Newton.

Newton died at the age of 84, and was buried in Westminster Abbey, where his monument stands today.

2. Fill the table.

|  |  |
| --- | --- |
| He was born… |  |
| He studied at … |  |
| He was interested in … |  |
| He invented …. |  |
| It was … |  |
| He died … |  |

**Практическая работа № 15**

**Тема: Эрнест Резерфорд.**

1. Read and translate.

Ernest Rutherford is called the Newton of atomic physics. He was recognized by his fellow scientists as a man of colossal energy and tireless enthusiasm. As he himself remarked he lived in the "heroic age of physics". Ernest Rutherford was born in New Zealand. He graduated from New Zealand University and entered Trinity College, Cambridge. In 1919 he was appointed a Professor of experimental physics in the University of Cambridge. E. Rutherford's early researches concerned electromagnetic waves. His experiments led him to develop a magnetic detector, which at that time was the best detector of electromagnetic waves. His detector was later used by Marconi, one of the inventors of the radio, in his well-known investigations. Rutherford's big triumph began when he turned his attention to radioactivity. His brilliant researches established the existence and nature of radioactive transformations. He also investigated the electrical structure of matter and the nuclear nature of atom. He was one of the founders of the atomic theory of physics and creators of the first atomic model. He stated that the atom consisted of a nucleus around which electrons revolved in orbits. Even today his works did not lose their importance.

2. Continue the sentences.

He was born…

He studied at …

He was interested in …

He invented ….

It was …

He died …

**Практическая работа № 16**

**Тема: Джеймс Клерк Максвелл.**

1. Read and translate.

Maxwell, born in a well-known Scottish family, early showed signs of mathematical talent. At the age of 15 he contributed a piece of original work on the drawing of oval curves to the royal society of Edinburgh. The work was so well done that many refused to believe that such a young boy could be the author. At Cambridge, which he entered in 1856, he graduated the second in his class in mathematics. Maxwell was appointed to his first professorship at Aberdeen in 1859. In 1871 Maxwell was appointed a professor of experimental physics at Cambridge. While at Cambridge he organized the Cavendish Laboratory, named in honour of the eccentric English scientist of the previous century Henry Cavendish. Several decades later the Cavendish Laboratory was to do great work, which was connected with radioactivity. The most important work of Maxwell's life was carried on between 1864 and 1873. He placed into mathematical form the speculations of Faraday concerning magnetic lines of force. Maxwell's theory showed that electricity and magnetism could not exist in isolation. Where there was one, there was the other, so that his work is usually referred to as the electromagnetic theory. Maxwell died before the age of fifty in 1879. When Einstein's theories upset almost all of "classical physics", Maxwell's equations remained untouched and as valid as ever.

2. Continue the sentences.

He was born…

He studied at …

He was interested in …

He invented ….

It was …

He died …

**Практическая работа № 17**

**Тема: Джеймс Джоуль.**

1. Read and translate.

James Prescott Joule, famous British physicist, was born in 1818 in Salford, England. Joule was one of the most outstanding physicists of his time. He is best known for his research in electricity and thermodynamics. In the course of his investigations of the heat emitted in an electrical circuit, he formulated the law, now known as Joule's law of electric heating. This law states that the amount of heat produced each second in a conductor by electric current is proportional to the resistance of the conductor and to the square of the current. Joule experimentally verified the law

of conservation of energy in his study of the conversion of mechanical energy into heat energy.

Joule determined the numerical relation between heat and mechanical energy, or the mechanical equivalent of heat, using many independent methods. The unit of energy, called the joule, is named after him. It is equal to 1 watt-second. Together with the physicist William Thomson

(Baron Kelvin), Joule found that the temperature of a gas falls when it expands without doing any work. This phenomenon, which became known as the Joule-Thomson effect, lies in the operation of modern refrigeration and air-conditioning systems.

2. Continue the sentences.

He was born…

He studied at …

He was interested in …

He invented ….

It was …

He died …

**Практическая работа № 18**

**Тема: Джеймс Уатт.**

1. Read and translate.

James Watt was a Scottish inventor and mechanical engineer, known for his improvements of the steam engine. Watt was born on January 19, 1736, in Greenock, Scotland. He worked as a mathematical-instrument maker from the age of nineteen and soon became interested in improving the steam engine which was used at that time to pump out water from mines. Watt determined the properties of steam, especially the relation of its density to its temperature and pressure, and designed a separate condensing chamber for the steam engine that prevented large losses of steam in the cylinder. Watt’s first patent, in 1769, covered this device and other improvements on steam engine. At that time, Watt was the partner of the inventor John Roebuck, who had financed his researches. In 1775, however, Roebuck’s interest was taken over by the manufacturer Matthew Boulton, owner of the Soho Engineering Works at Birmingham, and he and Watt began the manufacture of steam engines. Watt continued his research and patented several other important inventions, including the rotary engine for driving various types of machinery; the double-action engine, in which steam is admitted alternately into both ends of the cylinder; and the steam indicator, which records the steam pressure in the engine. He retired from the firm in 1800 and thereafter devoted himself entirely to research work.

The misconception that Watt was the actual inventor of the steam engine arose from the fundamental nature of his contributions to its development. The centrifugal or flyball governor, which he invented in 1788, and which automatically regulated the speed of an engine, is of particular interest today. It embodies the feedback principle of servomechanism, linking output to input, which is the basic concept of automation. The watt, the unit of power, was named in his honor. Watt was a well-known civil engineer. He invented, in 1767, an attachment that adapted telescopes for use in the measurement of distances. Watt died in Heathfield, near Birmingham, in August 1819.Watt ватт (единица мощности)

2. Learn the words.

power мощность

fridge холодильник

cooker электроплита

bulb лампочка

kettle электрочайник

dishwasher посудомоечная машина

iron утюг

to adapt приспосабливать, видоизменять

steam engine паровой двигатель

to invent изобретать

to measure измерять

efficiency эффективность

development развитие

3. Answer the questions.

Who is James Watt?

What did he invent?

What did he adopt?

Do you think that his achievements were essential?

What are named after James Watt?

**Практическая работа № 19**

**Тема: Альберт Эйнштейн.**

1. Read and translate.

Albert Einstein is known all over the world as a brilliant theoretical physicist and the founder of the theory of relativity. He is perhaps the greatest scientist of the 20th century. Some of his ideas made possible the atomic bomb, as well as television and other inventions.

He was born in 1879 in a small German town. The Einstein family soon moved to Munich, where Albert went to school. Neither his parents, nor his school teachers thought much of his mental abilities. His uncle often joked: "Not everybody is born to become a professor." In 1895 Albert failed the entrance examination to a technical college in Zurich. A year later, however, he managed to pass the exam and entered the college. After graduating from the college, Einstein started to work at the Swiss Patent Office in Bern. In 1905 he wrote a short article in a science magazine. This was his 'Special Theory of Relativity', which gave the world the most famous equation relating mass and energy (E = me2), the basis of atomic energy.

Later, he became a professor in several European universities and in 1914 moved to Berlin as a member of the Prussian Academy of Sciences. After ten years of hard work he created his 'General Theory of Relativity'. In 1921 Einstein received the Nobel Prize for Physics.

A Jew, and a pacifist, he was attacked by the Nazis, and when Hitler came to power in 1933 he decided to settle in the United States.

In 1939 Albert Einstein wrote a letter to President Roosevelt, at the request of several prominent physicists, outlining the military potential of nuclear energy and the dangers of a Nazi lead in this field. His letter greatly influenced the decision to build an atomic bomb, though he took no part in the Manhattan Project. After the war he spoke out passionately against nuclear weapons and repression.

Einstein died in 1955. The artificial element einsteinium has been named in his honour.

2. Continue the sentences.

He was born…

He studied at …

He was interested in …

He invented ….

It was …

He died …

**Практическая работа № 20**

**Тема: Томас Эдисон.**

1. Read and translate.

Edison’s first invention.

When Edison was a boy of fifteen, he worked as a telephone operator. He had to be on duty from 7 p. m. to 7 a. m 1. and give a signal every hour to prove that he did not sleep. The signals were made with astonishing exactness. One night an inspector arrived and saw Edison sleeping, in a chair. He was about 2 to shake him when he caught sight 3 of a mechanism on a table near the telegraph instrument. He waited to see what would happen. When the hand of the clock pointed to the hour, the instrument got busy 4 and one lever threw open the key while the other sent signal over the wire. The inspector seized the sleeping boy, roused him and “ fired” 5 him. That is why the first of Edison’s numerous inventions was never patented.

Note:

1 p. m. – после полудня , днём, вечером; a. m. – до полудня, утром.

2 was about – собирался, имел намерения.

3 to catch sight – увидеть.

4 to get busy – заработать.

5 to “fire” - выгнать.

2. Reading check.

Which statements are true which are false?

1.Edison invented the telegraph.

2. When a boy of 15 Edison worked as a telegraph operator.

3. He worked from 7 a. m to 7 p. m.

4. He worked at night.

5. Edison sent signals with astonishing exactness.

6. The inspector came because no signals were coming.

7. Edison showed his invention to the inspector.

8. The inspector did not wake the boy up to see now the mechanism worked.

9.The inspector advised Edison to patent his invention.

10. Edison was fired for sleeping on duty.

**Практическая работа № 21**

**Тема: Компьютер в нашей жизни.**

1. Read and translate.

Attachment to your computer Our life would be boring without computers. It’s hard to believe that one device can provide people with entertainment, news, education, music. With the appearance of computer many things have lost their importance. People don’t watch TV anymore, don’t go to the cinema very often. They don’t listen to the radio, CD- or MP3-player. They’ve stopped buying newspapers and magazines. Many have taken online classes. Thus, computers and Internet have become an integral part of every family. Computer is a powerful tool. It helps to create colourful presentations, to calculate large numbers, to write articles, to save and edit photos, to keep documentation and, of course, to surf the web. What is the computer? Some parents worry about computer games because they think their children won't be able to communicate with real people in the real world. But parents do not need to worry. According to research children usually do well after they have left school. For most children computer games are a craze. Like any other craze, such as skate-boarding, the craze is short-lived. It provides harmless fun. Children have been interested in science and technology from a very early age, and they are usually very shy people who like being alone. Usage of computers gives them confidence. They love debugging and solving problems, developing programs and love learning programming languages. They learnt to communicate with other users through computer networks and the people they met in school and work think of them as of computer experts. Many people whose jobs are connected with computers complain on health problems such as headaches, RSI, backache, poor vision. Moreover, spending a lot of time at the computer results in eating a lot of foods which in its turn leads to the obesity. So we can summarize that modern technologies and computers in particular have both positive and negative effects on people’s life. And in order to live in a harmony people must find a proper balance. They should remember a computer was initially created to help people make their lives easier not to ruin them.

2. Find the words and words-combinations to our theme.

**Практическая работа № 22**

**Тема: Билл Гейтс- король программного обеспечения.**

1. Fill in the mind map. What for do we use the computer? And What comes to you mind when you heard the named “Bill Gates”?

2. Read and translate.

Chairman - председатель

To employ - трудоустраивать

Attorney - адвокат

Late mother - покойная мать

To devote one’s energies to smth - посвятить все свои силы

Valuable tool - незаменимая вещь

To receive wide critical acclaim - получить положительные отзывы

To donate - пожертвовать

Proceed - доходы

Non-profit organizations - неприбыльные общественные организации

Reading task:

William (Bill) H. Gates is chairman and chief software architect of Microsoft Corporation. Microsoft employs more than 39,000 people in 60 countries.

Born on October 28, 1955, Gates and his two sisters grew up in Seattle. Their father, William H. Gates II, is a Seattle attorney. Their late mother, Mary Gates, was a schoolteacher, University of Washington regent and chairwoman of United Way International.

At school Gates discovered his interest in software and began programming computers at age 13.

In 1973, Gates entered Harvard University. While at Harvard, Gates developed a version of the programming language BASIC for the first microcomputer.

In his junior year, Gates left Harvard to devote his energies to Microsoft, a company he had begun in 1975 with his childhood friend Paul Allen.

Guided by a belief that the computer would be a valuable tool on every office desktop and in every home, they began developing software for personal computers. Gates' foresight and his vision for personal computing have been central to the success of Microsoft and the software industry.

In 1999, Gates wrote "Business @ the Speed of Thought" a book that shows how computer technology can solve business problems in fundamentally new ways.

The book was published in 25 languages and is available in more than 60 countries. "Business @ the Speed of Thought" has received wide critical acclaim, and was listed on the best-seller lists of the "New York Times" "USA Today" the "Wall Street Journal and Amazon.com"

Gates has donated the proceeds of his book to non-profit organizations that support the use of technology in education and skills development.

In addition to his love of computers and software, Gates is interested in biotechnology. He is an investor in a number of biotechnology companies. Gates is an avid reader, and enjoys playing golf.

3. Homework

These are some facts about Bill Gates that you have found. And some facts have been sent to me by somebody that I don’t know myself. I don’t know about the source of this information but nowadays Windows users are sending this interesting information to each other through emails so there must be some truth in it.

1. Bill Gates earns US$250 every SECOND, that’s about US$20 Million a DAY and US$7.8 Billion a YEAR!

2. If he drops a thousand dollars, he won’t even bother to pick it up because during the 4 seconds he picks it, he would’ve already earned it back.

3. The US national debt is about 5.62 trillion dollars, if Bill Gates were to pay the debt by himself, he will finish it in less then 10 years

4. He can donate US$15 to everyone on earth but still be left with US$ 5 Million for his pocket money.

5. Michael Jordan is the highest paid athlete in US. If he doesn’t drink and eat, and keeps up his annual income i.e. US$30 Million, he’ll have to wait for 277 years to become as rich as Bill Gates is now.

6. If Bill Gates was a country, he would be the 37th richest country on earth.

7. If you change all of Bill Gate’s money to US$1 notes, you can make a road from the earth to moon, 14 times back and forth. But you have to make that road non-stop for 1,400 years, and use a total of 713 BOEING 747 planes to transport all the money.

**Практическая работа № 23**

**Тема: «Всемирная паутина»**

1. Read the text.

INTRODUCTION TO THE WWW AND THE INTERNET

Millions of people around the world use the Internet to search for and retrieve information on all sorts of top­ics in a wide variety of areas including the arts, business, government, humanities, news, politics and recreation. People communicate through electronic mail (e-mail), discussion groups, chat channels and other means of in­formational exchange. They share information and make commercial and business transactions. All this activity is possible because tens of thousands of networks are con­nected to the Internet and exchange information in the same basic ways.

The World Wide Web (WWW) is a part of the Internet. But it's not a collection of networks. Rather, it is information that is connected or linked together like a web. You access this information through one interface or tool called a Web browser.The number of resources and serv­ices that are part of the World Wide Web is growing ex­tremely fast. In 1996 there were more than 20 million users of the WWW, and more than half the information that is transferred across the Internet is accessed through the WWW. By using a computer terminal (hard­ware) connected to a network that is a part of the Internet, and by using a program (software) to browse or retrieve information that is a part of the World Wide Web, the people connected to the Internet and World Wide Web through the local providershave access to a variety of information. Each browser provides a graphi­cal interface. You move from place to place, from site to site on the Web by using a mouse to click on a portion of text, icon or region of a map. These items are called hyperlinks or links. Each link you select represents a document, an image, a video clip or an audio file some­where on the Internet. The user doesn't need to know where it is, the browser follows the link.

All sorts of things are available on the WWW. One can use Internet for recreational purposes. Many TV and radio stations broadcast live on the WWW. Essentially, if something can be put into digital format and stored in a computer, then it's available on the WWW. You can even visit museums, gardens, cities throughout the world, learn foreign languages and meet new friends. And, of course, you can play computer games through WWW, competing with partners from other countries and continents.

Just a little bit of exploring the World Wide Web will show you what a lot of use and fun it is.

***Vocabulary:***

World Wide Web — «Всемирная Паутина»

to retrieve — извлекать

variety — разнообразие, спектр

recreation — развлечение

network — сеть

to share — делить

humanities — гуманитарные науки

business transactions — коммерческие операции

access — доступ

to browse— рассматривать, разглядывать

browser— браузер (программа поиска ин­формации)

to provide — обеспечивать (чем-либо)

provider — провайдер (компания, предоставляю­щая доступ к WWW через местные телефонные сети)

broadcast live — передавать в прямом эфире

site — страница, сайт

to link — соединять

hyperlink— гиперссылка

to compete— соревноваться

***General understanding:***

1. What is Internet used for?
2. Why so many activities such as e-mail and business transactions are possible through the Internet?
3. What is World Wide Web?
4. What is Web browser?
5. What does a user need to have an access to the WWW?
6. What are hyperlinks?
7. What resources are available on the WWW?
8. What are the basic recreational applications of WWW?

***Exercise***Which of the listed below statements are true/false. Specify your answer using the text.

1. There are still not so many users of the Internet.
2. There is information on all sorts of topics on the Internet, including education and weather forecasts.
3. People can communicate through e-mail and chat programs only.
4. Internet is tens of thousands of networks which exchange the information in the same basic way.
5. You can access information available on the World Wide Web through the Web browser.
6. You need a computer (hardware) and a special pro­gram (software) to be a WWW user.
7. You move from site to site by clicking on a portion of text only.
8. Every time the user wants to move somewhere on the web he/she needs to step by step enter links and addresses.

9) Films and pictures are not available on the Internet.  
10) Radio and TV-broadcasting is a future of Internet.

They're not available yet.

***Exercise***Define the following using the vo­cabulary:

1. Internet
2. World Wide Web
3. Web browser
4. Internet provider
5. Hyperlinks

***Exercise***Find the equivalents:

1. Объем ресурсов и услуг, которые являются час­тью WWW, растет чрезвычайно быстро.
2. Каждая ссылка, выбранная вами представляет документ, графическое изображение, видеоклип или аудио файл где-то в Интернет.
3. Интернет может быть также использован для це­лей развлечения.
4. Вы получаете доступ к ресурсам Интернет через интерфейс или инструмент, который называется веб-браузер.
5. Вся эта деятельность возможна благодаря десят­кам тысяч компьютерных сетей, подключенных к Интернет и обменивающихся информацией в одном режиме.
6. Пользователи общаются через электронную по­чту, дискуссионные группы, чат-каналы (многока­нальный разговор в реальном времени) и другие сред­ства информационного обмена.

***Exercise***Match the following:

1. You access the information through one interface or tool called a...
2. People connected to the WWW through the local... have access to a variety of information.
3. The user doesn't need to know where the site is, the... follows the...
4. In 1996 there were more than 20 million users of the...
5. Each... provides a graphical interface.
6. Local... charge money for their services to access... resources.

***Words to match with:***

1) web browser, providers, link, WWW

**Практическая работа № 24**

**Тема: Преимущества и недостатки компьютера**

1. Revision of all the theme; vocabulary; prepare to control work;

2. Topics for Essays, Oral or Written Reports

From the abacus to the computer.

The evolution of computers in terms of generations.

Computer — a God's gift or a Devil's toy?

If I were the inventor of computer ...

If there were no computers, they had to be thought out.

Science fiction: serving the science.

The future of “Hyper TV”.

Bill Gates and his schoolmates.

Gate's mansion (особняк).

Gate's empire.

Microsoft and IBM.

Hyper TV.

**Практическая работа № 25**

**Тема: Измерительные приборы**

1. Translate into Russian.

meter

battery

scale

readings

terminal

positive

negative

in this way

among

common

to calibrate

to measure

to take into

consideration

2. Translate the text in writing.

Meters

One of the important things that an engineer should take into con­sideration is "how much?" How much current is this circuit carrying? What is the value of voltage in the circuit? What is the value of resis­tance? In fact, to measure the current and the voltage is not difficult at all. One should connect an ammeter or a voltmeter to the circuit and read off the amperes and the volts.

Common ammeters for d. c. measurements are the ammeters of the magneto-electric system. In an ammeter of this type an armature coil rotates between the poles of a permanent magnet; but the coil turns only through a small angle. The greater the current in the coil, the greater the force, and, therefore, the greater the angle of rotation of the armature. The deflection is measured by means of a pointer connected to the armature and the scale of the meter reads directly in amperes.

When the currents to be measured are very small, one should use a galvanometer. Some galvanometers detect and measure currents as small as 10of an ampere per 1 mm of the scale.

A voltmeter is a device to be used for measuring the potential differ­ence between any two points in a circuit. A voltmeter has armatures that move when an electric current is sent through their coils. The deflection, like that of an ammeter, is proportional to the current flowing through the armature coil.

A voltmeter must have a very high resistance since it passes only very small currents which will not disturb the rest of the circuit. An ammeter, on the other hand, must have a low resistance, since all the current must pass through it. In actual use the ammeter is placed in se­ries with the circuit, while the voltmeter is placed in parallel with that part of the circuit where the voltage is to be measured.

In addition to instruments for measuring current and voltage, there are also devices for measuring electric power and energy.

3. Answer the questions.

1. What is the ammeter used for?
2. What is the voltmeter used for?
3. What is the ohmmeter used for?
4. What terminals does a meter have?
5. Should the measured circuit be opened when the voltmeter is used?
6. Should the measured circuit be opened when the ammeter is used?
7. In what way should the voltmeter be connected to the circuit?
8. In what way should the ammeter be connected to the circuit?
9. What is the difference between a voltmeter and an ammeter?
10. What common meters are used to measure the values in a circuit?
11. What is the wattmeter used for?
12. What does it consist of?
13. In what way are the elements connected?

**Практическая работа № 26**

**Тема: Резистор**

1. Translate into Russian.

capacity

power

heat

rate

low

high

fixed

in case

any

charge

pressure

protection in case

since

variable

the (more)

the (more)

to rise

to rate

to move

to left

to produce

to change

to vary

1. Translate the word- combinations:

Constant value, fixed resistors, high conductivity, free electrons, variable resistor, current- caring, capacity.

1. Translate into Russian using чем ... тем:
2. The more one studies nature, the better one knows its laws.
3. The longer one learns, the more one knows.
4. The higher the atmosphere, the less is its pressure.
5. The heavier the object, the more work one has to do in order to lift it.
6. The greater the number of free electrons in any metal, the higher is its conductivity.
7. Translate into Russian. Mind no.

1. There is no energy in this machine.

2. No charges move through an open circuit.

3. No material is a perfect conductor of electricity.

4. No electric machinery is used without protection.

5. No special material is needed in this case.

1. Read and translate the text.

Resistors

A resistor is one of the most common elements of any circuit. Re­sistors are used:

1. to reduce the value of current in the circuit;

2. to produce IR voltage drop and in this way to change the value of the voltage.

When current is passing through a resistor its temperature rises high. The higher the value of current the higher is the temperature of a resistor. Each resistor has a maximum temperature to which it may be heated without a trouble. If the temperature rises higher the resistor gets open and opens the circuit.

Resistors are rated in watts. The watt is the rate at which electric en­ergy is supplied when a current of one ampere is passing at a potential difference of one volt. A resistor is rated as a 1-W resistor if its resis­tance equals 1,000,000 ohms and its current-carrying capacity equals 1/1,000,000 amp, since P = E x I = IR x I = I2R where P - power is given in watts, R - resistance is given in ohms and I - current is given in amperes.

If a resistor has a resistance of only 2 ohms but its current-carrying capacity equals 2,000 amp, it is rated as a 8,000,000-W resistor.

Some resistors have a constant value - these are fixed resistors, the value of other resistors may be varied - these are variable resistors.

1. Complete the sentences using the correct variant:

1. A resistor is used a) to measure the resistance.

b) to reduce the current.

c) to change the resistance.

d) to produce IR voltage drop.

2. When current passes through a re­sistor

a) its temperature drops.

b) its temperature rises.

3. Resistors are rated

a) in ohms.

b) in volts.

c) in watts.

4. Power is given

a) in amperes,

b) in watts.

5. Fixed resistors have

a) a constant value.

b) a variable value.

6. The value of a variable resistor

a) is fixed.

b) is varied.

7. A two-ohm resistor rated as a

a) has a current-carrying capac­ity 8,000,000- W resistor equal to 2,000 amp.

b) has a current-carrying capac­ity equal to 200 amp.

**Практическая работа № 27**

**Тема: Конденсатор**

1. Translate into Russian.

сapacitor

insulator

frequency

distance

advantage

disadvantage

plate

part

reason

besides

provided that

for this reason

c-centigrade

to store

to apply

to move

to prevent

1. Translate the word- combinations

paper insulators

air insulators

electrolyte capacitors

advantages of electrolyte capacitors

disadvantages of air insulators

cells under test

capacitors in common use nowadays

radio sets under test

PC in common use nowadays

a radioman

radio work

radio parts

telephone and radio work

1. Translate into Russian. Mind provided that.

1. A circuit operates well provided that it does not have any trouble.

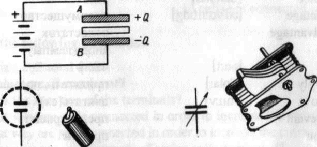
2. The bulb lights provided that the circuit is connected to the cell.

3. A cell supplies energy provided that its electrodes are of different mate­rials.

1. Read and translate the text

Capacitors.

A capacitor is one of the main elements of a circuit. It is used to store electric energy. A capacitor stores electric energy provided that a voltage source is applied to it.



The main parts of a capacitor are metal plates and insulators. They function of insulators is to isolate the metal plates and in this way to prevent a short. In the diagram one can see two common types of capacitors in use nowadays: a fixed capacitor and a variable one. The plates of a fixed capacitor cannot be moved; for this reason its capacity does not change. The plates of a variable capacitor move; its capacity changes. The greater the distance between the plates, the less is the capacity of a capacitor. Variable capacitors are commonly used by radiomen; their

function is to vary the frequency in the circuit. Fixed capacitors are used in telephone and radio work. Fixed capacitors have insulators produced of paper, ceramics and other materials; variable capacitors have air insulators. Paper capacitors are commonly used in radio and electronics; their advantage is their high capacity: it may be higher than 1,000 picofarad. Besides, electrolyte capacitors are highly in use. They also have a very high capacity: it varies from 0.5 to 2,000 microfarad. Their disadvantage is that they change their capacity when the temperature changes. They can operate without a change only at temperatures not lower than -40° C. Common troubles in capacitors are an open and a short. A capacitor stops operating and does not store energy in case it has a trouble. A capacitor with a trouble should be substituted by a new one.

1. Complete these sentences using the correct variant

1. A capacitor is used

a) to supply voltage.

b) to increase the voltage output.

c) to store energy.

2. The main parts of a capacitor are

a) insulators only.

b) metal plates only.

c) metal plates and insulators between

them.

3. The function of insulators is

a) to store energy.

b) to isolate the metal plates.

c) to prevent a short between the

metal plates

4. The capacity of a capacitor depends

on

a) the size of the plates.

b) the distance between the plates.

c) the material of the insulators.

5. The capacity of a fixed capacitor

a) is constant,

b) is varied.

6. The plates of a variable capaci

tor

a) can be moved,

b) cannot be moved.

7. In order to charge a capacitor a

voltage source is applied

a) to the metal plates.

b) to the insulators.

8. The greater the distance between

the plates,

a) the greater is the capacity of a

capacitor.

b) the less is the capacity.

9. Variable capacitors have

a) air insulators.

b) paper insulators.

c) ceramic insulators.

10. Electrolyte capacitors have

a) a very low capacity.

b) a very high capacity.

11. In case a capacitor has a trouble a) it operates.

b) it stops operating.

**Практическая работа № 28**

**Тема: Проводники и изоляторы**

1. Translate into Russian.

carbon

enough

plastics

wise

cheap

copper

decrease

load

make smb (smth)

do smth

thus

difficulty

rubber

since

increase

to decrease

1. Translate the word- combinations

diagram

coefficient

function

transformer

to transfer

1. Translate into Russian. Mind provided that.
2. Copper conductors are widely used since they are much cheaper than silver ones.
3. A minimum voltage drop is produced in copper wire conductors since they have a low resistance.
4. A bulb connected to an open circuit does not light since an open circuit has no current.
5. Read and translate the text

Conductors and Insulators

Conductors are materials having a low resistance so that current easily passes through them. The lower the resistance of the material, the more current can pass through it.

The most common conductors are metals. Silver and copper are the best of them. The advantage of copper is that it is much cheaper than silver. Thus copper is widely used to produce wire conductors. One of the common functions of wire conductors is to connect a voltage source to a load resistance. Since copper wire conductors have a very low re­sistance a minimum voltage drop is produced in them. Thus, all of the applied voltage can produce current in the load resistance.

It should be taken into consideration that most materials change the value of resistance when their temperature changes.

Metals increase their resistance when the temperature increases while carbon decreases its resistance when the temperature increases. Thus metals have a positive temperature coefficient of resistance while carbon has a negative temperature coefficient. The smaller is the tem­perature coefficient or the less the change of resistance with the change of temperature, the more perfect is the resistance material.

Materials having a very high resistance are called insulators. Cur­rent passes through insulators with great difficulty.

The most common insulators are air, paper, rubber, plastics. Any insulator can conduct current when a high enough voltage is applied to it. Currents of great value must be applied to insulators in or­der to make them conduct. The higher the resistance of an insulator, the greater the applied voltage must be.

When an insulator is connected to a voltage source, it stores electric charge and a potential is produced on the insulator. Thus, insulators have the two main functions:

1. to isolate conducting wires and thus to prevent a short between them and
2. to store electric charge when a voltage source is applied.
3. Complete these sentences using the correct variant

Insulators are materials having

a) low resistance.

b) high resistance.

Current passes through conductors

a) easily.

b) with great difficulty.

Copper and silver are

a) common conductors.

b) common insulators.

Air, paper and plastics are

a) common insulators.

b) common conductors.

In case a high voltage is applied to an insulator

a) it does not conduct current.

b) it conducts current.

Insulators are used

a) to store electric charge.

b) to reduce voltage.

c) to prevent a short between conducting wires.

Metals increase their resistance

a) when the temperature de­creases.

b) when the temperature in­creases.

Carbon decreases its resistance

a) when the temperature increases.

b) when the temperature de­creases.

Metals have

a) a positive temperature coefficient of resistance.

b) a negative temperature coef­ficient of resistance.

1. Complete the sentences using while.
2. Conductors have a low resistance……
3. Current passes through insulators with great difficulty….
4. Metals are common conductors…..
5. To make insulators conduct, currents of great value must be applied….
6. Carbon decreases its resistance when the temperature increases ....
7. Metals have a positive temperature coefficient of resistance ....

**Практическая работа № 29**

**Тема: Трансформатор.**

1. Translate into Russian

iron

primary

frequency

due to

coil

time

device= instrument

core

winding

turn

to step up

to step down

to receive

1. Put down the Russian for:

iron core

closed core

input voltage

output voltage

primary winding

secondary winding

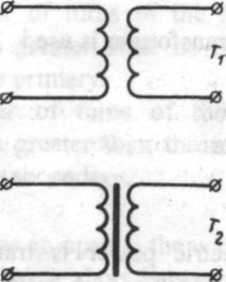
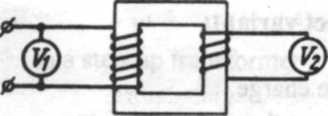
step-up transformer

step-down transformer

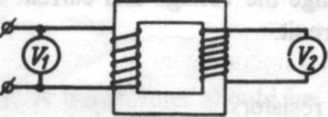
1. Read and translate the text.

Transformers

A transformer is used to transfer energy. Due to the transformer electric power may be transferred at a high voltage and reduced at the point where it must be used to any value. Besides, a transformer is used to change the voltage and current value in a circuit.



 A two-winding transformer consists of a closed core and two coils (windings). The primary winding is connected to the voltage source. It receives energy. The secondary winding is connected to the load resis­tance and supplies energy to the load.



The value of voltage across the secondary terminal depends on the number of turns in it. In case it is equal to the number of turns in the primary winding the voltage in the secondary winding is the same as in the primary. In case the secondary has more turns than the primary the output voltage is greater than the input voltage. The voltage in the secondary is greater than the voltage in the primary by as many times as the number of turns in the secondary is greater than the number of turns in the pri­mary. A transformer of this type increases or steps up the voltage and is called a step-up transformer. In case the secondary has fewer turns than the primary the output voltage is lower than the input. Such a trans­former decreases or steps down the voltage, it is called a step-down transformer.

Compare T1 and T2 in the diagram. T1 has an iron core. For this rea­son it is used for low-frequency currents. T2 has an air core and is used for high frequencies.

Common troubles in transformers are an open in the winding, a short between the primary and the secondary, and a short between turns. In case a transformer has a trouble it stops operating or operates badly. A transformer with a trouble should be substituted.

1. Complete the sentences using the correct variant:

1. A transformer is used

a.to store charge.

b. to prevent the change of energy.

c. to transfer energy.

d. to change the voltage and current value in a circuit.

2. Electric power is trans­ferred at a

high voltage and reduced to any value

a. due to resistors.

b. due to capacitors.

c. due to transformers.

3. A transformer consists of

a. cores only.

b. the primary and the secondary windings.

c. a core and the primary and the secon­dary windings.

4. The function of the pri­mary is

a. to prevent the change of voltage.

b. to supply energy.

c. to receive energy.

5. The function of the secondary is

a. to receive energy  
b. to supply energy

c. to transfer energy.

6.A step-up transformer is used

a. to step down or decrease the secondary voltage.

b. to step up or increase the primary volt­age.

7. A step-down transformer is used

a. to step down the secondary voltage

b. to step down the primary voltage.

8. A transformer with an iron core

a. is used for high-frequency currents

b. is used for low-frequency currents.

9. A transformer with an air core is used

a. for high-frequency currents and for low frequency currents.

b. for high-frequency currents only.

10. In a step-up transformer

a. the number of turns of the secondary

winding is greater than the number of turns of the primary.

b. the number of turns of the primary winding is greater than the number of turns of the secondary.

11. A transformer should be substituted

a. in case it has an open in the winding.

b. in case it has a short between the pri­mary and the secondary.

c. in case it has a short between turns.

5. Pair work. Put these questions to your groupmate and ask him/her to answer them.

1. What is a transformer used for?

2. What does a transformer consist of?

3. What is the function of the primary winding?

4. What is the function of the secondary winding?

5. What type of transformer is called a step-up transformer?

6. What type of transformer is used for high-frequency currents?

7. What type of transformer is called a step-down transformer?

8. What type of transformer is used for low-frequency currents?

9. What is the relation between the number of turns in the windings and the value of current?

10. What are common troubles in a transformer?

11. What should be done in case a transformer has a trouble?

**Практическая работа № 30**

**Тема: Виды тока**

1. Translate into Russian

seldom

alternating

direct

direction

flow

necessary

to consider

use

2. Read the words and write down their Russian equivalents:

cycle

type

per second

3. Put down the Russian for:

one time

five times

sixty times

4. Read and translate the text

Types of Current

Current is a flow of electricity through a circuit. Let us consider two main types of current: direct and alternating. A direct current (d.c.) flows through a conducting circuit in one direction only. It flows pro­vided a direct voltage source is applied to the circuit.

An alternating current (a.c.) is a current that changes its direction of flow through a circuit. It flows provided an alternating voltage source is applied to the circuit. Alternating current flows in cycles. The number of cycles per second is called the frequency of the current. In a 60-cycle alternating current circuit the current flows in one direction 60 times and in the other direction 60 times per second.

It is easy to transform a.c. power from one voltage to another by a transformer. Transformers are also used to step down the voltage at the receiving point of the line to the low values that are necessary for use.

When necessary a.c. can be changed into d.c. but this is seldom nec­essary.

5. Complete the sentences using the correct variant:

1. D.c. is a current that

a) changes its direction of flow.

b) flows in one direction.

2. A.c. flows provided

a) a direct voltage source is applied.

b) an alternating voltage source is applied.

3. In an alternating cur-circuit second.

a) current flows in one direction 60 times per rent

b) current flows in one direction 60 times and in the other direction 60 times per second.

4. A.c.

a) can be changed into d.c.

b) cannot be changed into d.c.

1. Complete these sentences using while. Follow the model on page 13.
2. An alternating current changes its direction of flow….
3. A direct current flows provided a direct voltage source is applied…
4. Look up the meanings of these words in a dictionary, if necessary. How are they translated in the sentences below? Mind the word order.

balance, amount, water, fuel, control, measure, cause, increase

1. The fuel-and-energy balance is important for industry.
2. Conductivity increases with heating.
3. The machine should be re-fuelled.
4. The amount of power used in the world in a year amounts to 12,000 million tons of equivalent fuel.
5. Water barriers are crossed by submarine cables.
6. The instrument is foot-controlled by a pedal.
7. Force and motion go together; one is a cause, the other, a result.
8. An electromotive force causes the electrons to move.
9. Control of the apparatus is placed on the panel.  
   10. The volt is a measure of electromotive force.
10. Answer the following questions:
11. What is current?
12. What types of current do you know?
13. When does a direct current flow?
14. What type of current is called an alternating current?
15. What type of current is called a direct current?
16. What is called the frequency of current?
17. What device is used to transform a.c. power from one voltage to another?
18. Is it often necessary to change a.c. into d.c?

**Практическая работа № 31**

**Тема: Самоиндукция и взаимоиндукция**

1. Translate into Russian

inductance

close

coil

though

size

unit

fast

mutual

definite

that is

to induce

to provide

to touch

to bring

1. Translate into Russian and put down the Russian equivalents. Then translate them back into English (orally).

a. definite value

primary coil

wire coil

mutual inductance

varying current

one ampere per second

b. 1. Coils of wire are called inductors.

1. Two coils are brought close together.
2. A source of current is applied to one of the coils.
3. Mutual inductance is measured in henries.

1. Which of the words are nouns and which are verbs?

resistor, resist, resistance; induce, induction, inductor, inductance; conductor, conduct, conductance; compute, computer

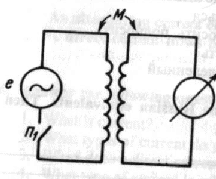
1. Read and translate the text

Inductance and Mutual Inductance

Any conductor has some definite value of inductance. The induc­tance of a conductor shows how well it can provide induced voltage.

Elements of a circuit with a definite value of inductance are coils of wire called inductors. The inductance of a coil depends upon its size and material. The greater the number of turns of a coil, the higher is its inductance. An iron core also increases the value of inductance. Coils of this type are used for low-frequency currents while coils with an air core are used for high-frequency currents. Two coils A and В are brought close together and a source of vary­ing current is applied to coil A. If a measuring device is connected across the terminals of coil В it will be found that a voltage is induced in this coil though the two coils do not touch. The secondary voltage, that is the voltage in coil B, is called induced voltage and energy from one coil to the other transfers by induction. The coil across which the current is applied is called the pri­mary; that in which voltage is in­duced is called the secondary. The primary and the secondary coils have mutual inductance. Mutual induc­tance is measured in the same units as inductance, that is in henries.

Thus, when a rate of change of one ampere per second in the primary coil will produce one volt in the sec­ondary coil, the two coils have one henry of mutual inductance. It should be taken into consideration that induction by a varying cur­rent results from the change in current not in the current value. The faster the current changes, the higher the induced voltage.



5. Answer the following questions:

1. What value of inductance do conductors have?

2. What is the function of inductors?

3. What are elements with a definite value of inductance called?

4. What does the inductance of a coil depend upon?

5. How does the inductance of a coil depend upon the material of its core?

6. In what units is the value of mutual inductance measured?

7. What does induction by a varying current result from?

8. What is the relation between the current changes and the value of in­duced voltage?

9. What is the unit of resistance?

10. What is the unit of potential difference?

11. For what type of current is an air core used?

12. What is the relation between the number of turns of a coil and its in­ductance value?

**Практическая работа № 32**

**Тема: Фильтры**

1. Read.

filter [ˈfɪltə] фильтр

bypass [ˈbaɪpɑːs] шунт

choke [tʃouk] дроссель

high-pass [ˈhaɪpɑːs] высокопроходной

low-pass [louˈpɑːs] низкопроходной

to oppose [əˈpouz] оказывать сопротивление

on the other hand с другой стороны

choke coil дроссельная катушка

bypass coil шунтовая катушка

bypass condenser шунтирующий конденсатор

high-pass filter фильтр верхних частот

low-pass filter фильтр низких частот

opposing coils противодействующие витки

opposed current противоток

2. Read and translate.

Filters

This filter is used to separate direct current from alternating current. It consists of a capacitor and a choke coil. Direct current cannot flow through the capacitor since its insulators oppose the flow of direct current. Therefore, it flows through the choke coil. Its windings easily pass direct current through them. Alternating current, on the other hand, passes through the capacitor, since it cannot easily pass through the choke coil. In this way the direct and the alternating currents are separated.

I. A high-pass filter is used to pass high frequencies and to prevent the flow of low frequencies. It consists of a condenser and an inductance coil. The condenser passes currents of high frequencies and opposes the flow of low frequency currents. Low frequencies must be returned to the source and the inductance coil is used for a bypass.

II. A low-pass filter is used to pass low frequencies and to prevent the flow of high frequencies. It consists of an inductance coil and a condenser. The inductance coil passes low frequencies and opposes the flow of high frequencies. To return the high frequencies back to the source, a condenser is used for a bypass. Its capacity opposes the flow of low frequencies through it.

3. Complete the sentences using the correct variant

1. A filter is used in order a) to separate d.c. from a.c.

b) to transfer energy from the primary to the secondary.

c) to separate low frequencies from high frequencies.

2. A filter consists of

a) a resistor and a transformer.

b) a choke coil and a capacitor.

c) an inductance coil and a capacitor.

3. Direct current easily passes

a) through a choke coil.

b) through a capacitor.

4. Alternating current easily passes

a) through a capacitor.

b) through a choke coil.

5. A low-pass filter is used

a) to pass high frequencies and to prevent the flow of low frequencies.

b) to pass low frequencies and to prevent the flow of high frequencies.

6. In a low-pass filter

a) a capacitor is used as a bypass.

b) an inductance coil is used as a bypass.

7. In a high-pass filter

a) an inductance coil is used as a bypass.

b) a capacitor is used as a bypass.

**Практическая работа № 33.**

**Тема: Электронная лампа**

1. Read.

tube [tjuːb] электронная лампа

bulb [bʌlb] баллон

grid сетка

screen экран

to contain [kənˈteɪn] вмещать

to collect [kəˈlekt] собирать

to emit [ɪˈmɪt] излучать

to suppress [səˈpres] глушить, подавлять

control circuit контрольная цепь

control grid управляющая сетка

screen grid экранирующая сетка

screen grid tube экранированная лампа

suppressor grid защитная сетка

counter flow противоток

oscillatory circuit колебательный контур

2. Form nouns adding -er and translate them.

Model: to heat  heater

to emit  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to control  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to suppress  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Distribute the words below into the three columns.

Model: action process doer

emit emission emitter

collector, heat, collection, suppress, collect, suppressor, suppression, contain, reaction, container, react, heater, reactor, computer, compute, oscillate, oscillating, oscillator

4. Read the words and put down their Russian equivalents. Then translate them back into English.

diode [daɪəd] \_\_\_\_\_\_\_\_\_\_\_ cathode [ˈkæθoud] \_\_\_\_\_\_\_\_\_\_\_

triode [traɪəd] \_\_\_\_\_\_\_\_\_\_\_ metal [ˈmetl] \_\_\_\_\_\_\_\_\_\_\_

tetrode [tetˈroud] \_\_\_\_\_\_\_\_\_\_\_ glass [ɡlɑːs] \_\_\_\_\_\_\_\_\_\_\_

pentode [penˈtoud] \_\_\_\_\_\_\_\_\_\_\_ oscillator [ˈɔsɪleɪtə] \_\_\_\_\_\_\_\_\_\_\_

5.Read and translate.

Electron Tubes

Let us consider electron tubes. Among the electron tubes in use nowadays there are a diode, a triode, a tetrode and a pentode. The main parts of electron tubes are electrodes. Electrodes are placed into a glass or metal bulb.

A diode contains the cathode and the plate. When a diode operates the cathode emits electrons, the plate collects them. A triode contains the cathode, the plate and the control grid. When the tube operates the cathode emits electrons, the plate collects them and the grid controls the flow of electrons. Therefore, the grid is called a control grid. A tetrode contains the cathode, the plate, the control grid and the screen grid. When a tube operates it may oscillate. The function of the screen grid is to eliminate oscillations. Therefore it is called a screen grid.

A pentode contains two electrodes and three grids: the control grid, the screen grid and the suppressor grid. When a pentode operates the suppressor grid eliminates the secondary emission.

Common troubles in tubes are an open heater and low emission. These troubles result from constant use or from some other reason. In case a tube has a trouble it stops operating or operates badly. A tube with a trouble should be replaced by another one.

6. Complete the sentences using the correct variant:

1. A pentode contains a) the cathode, the plate, two screen grids and the suppressor grid.

b) the cathode, the plate, the control grids, the screen grid and the suppressor grid.

2. A tetrode contains a) the cathode, the plate, the suppressor grid and the screen grid.

b) the cathode, the plate, the screen grid and the control grid.

3. A triode contains a) the cathode, the plate and the screen grid.

b) the cathode, the plate and the control grid.

4. The function of the cathode is a) to collect electrons.

b) to eliminate the secondary emission.

c) to emit electrons.

5. The function of the plate is a) to eliminate oscillations.

b) to emit electrons.

c) to collect electrons.

6. The function of the control grid is a) to emit electrons.

b) to control the electron flow.

c) to eliminate secondary emission.

7. The function of the screen grid is a) to collect electrons.

b) to reduce the capacity.

c) to eliminate oscillations.

8. The function of the suppressor grid is a) to control the electron flow.

b) to eliminate secondary emission.

c) to eliminate oscillations.

9. Constant use of a tube results in a) high emission.

b) low emission.

c) an open heater.

**Практическая работа № 34.**

**Тема: Электромагнитное реле**

1. Read.

spring пружина

cross-section поперечное сечение

to close [klouz] замыкать, закрывать

close to [ˈklous tə] близко к (от)

to move двигаться), приводить в движение

to switch on включать

to switch off выключать

various [ˈvɛərɪəs] различный, разнообразный

2. Read and translate.

Electromagnetic Relay

Electromagnetic devices called relays are widely used in various branches of industry.

The main parts of a relay are an electromagnet, a spring and an armature. When a current starts flowing in the electromagnet winding, the armature moves and the spring closes the contacts. The primary circuit of a relay is its electromagnet circuit and the secondary circuit is the one closed by the contacts.

When there is no current in the relay’s primary circuit, the spring pulls the armature and the contacts open.

Fig. 18 shows how a relay is used to control the work of an electric motor. The relay is placed close to the motor which is connected to its secondary circuit. The armature closes the contacts of the secondary circuit, and the motor starts operating; it will stop when the relay opens.

Without a relay, conductors with a large cross-section would have to be brought to the motor. This would be very uneconomical. The current in a relay is tens and even thousands of times smaller than that used to power the motor. Therefore, the connecting wires can have small cross-sections.

In many systems the relay primary circuit operates automatically. Every evening and morning street lights are switched on and off from the main control panel by means of a great number of relays.

3. Answer the following questions:

1. What are the main parts of a relay?

2. How is a relay put into operation?

3. When does the spring pull the armature?

4. What wires connect the panel with the relay?

5. By what means are street lights switched on and off?

**Практическая работа № 35.**

**Тема: Плавкий предохранитель**

1.Read.

fuse [fjuːz] плавкий предохранитель

link [lɪŋk] звено, связь

fault [fɔːlt] дефект, неисправность

faulty неисправный

equipment [ɪˈkwɪpmənt] оборудование

installation [ˌɪnstəˈleɪʃn] установка; pl. сооружения

to protect [prəˈtekt] защищать, предохранять

to utilize [ˈjuːtɪlaɪz] использовать

to equip [ɪˈkwɪp] оборудовать, снаряжать

to serve служить

to melt плавить

up to вплоть до

2. Read and translate.

Fuses

Fuses are widely used nowadays as protection devices. They are utilized in various circuits, electrical equipment and installations. Fuses serve to protect them against overcurrents and short-circuits.

There are different types of fuses in use nowadays. Of them, quartz-sand fuses serve for voltages up to 500 volts; fuses of this kind are produced with current ratings of 15 to 60 amp and of 100 to 350 amp.

Fuses are commonly used in low-voltage industrial installations rated up to 1,000 V.

Fuse protection is based on a very simple principle: in case of a short-circuit or overcurrent, when the maximum value of current has been exceeded, the fusible link of a fuse is heated to its melting point. This opens the circuit and disconnects the circuit from the power source. In case of a fault, one should replace the faulty fusible element by a new one.

Fuses are used both in direct current (d.c.) and alternating current (a.c.) circuits.

3. Complete the sentences using the correct variant:

1. A fuse serves

a) as a load.

b) as a protection.

2. Fuses are used

a) for d.c. only.

b) for both a.c. and d.c.

3. In case of a fault

a) the whole fuse should be replaced.

b) the faulty link should be replaced.

4. Fuse protection is based on

a) a simple principle.

b) a complex principle.

4. Memorize the questions. Use them in a talk with your groupmate:

1. What does a fuse serve for?

2. For what type of current are fuses used?

3. What should be done in case of a faulty fuse?

4. What principle is fuse protection based on?

**Практическая работа № 36**

**Тема: Компоненты электрической цепи**

1.Translate into Russian

|  |  |
| --- | --- |
| Incandescence  incandescent lamp  switch  fuse  relay  copper | steel  according to  etc.= et cetera  to convert  to utilize  to deliver |

2. Read the words and put down their Russian equivalents:

aluminium

chemical

generator

material

mechanical

thermal

motor

3. Translate into Russian:

a. convertible values, protected power source, various fuses, variable resistors, chemical cells

b. cells delivering electric power generator converting mechanical energy circuits utilizing common fuses

c. Primary cells deliver electric power.

d. Different kinds of energy can be converted into electric energy. Protection devices are utilized in any circuit.

4. Read and translate the text.

Components of Electric Circuits

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

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

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

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

Besides, electric circuits use different types of switches, protection devices (relays and fuses), and meters (ammeters, voltmeters, wattmeters, etc.).

5. Complete the sentences using the correct variant:

1. The main components of electric circuits are

a) loads and wires.

b) power sources, load and wires.

2. Power sources are used

a) to produce electric energy.

b) to deliver it to the loads.

3.Electric conductors are used

a) to connect the circuit elements.

b) to deliver electric power.

4.Protection devices are utilized

a) in some circuits.

b) in any circuit.

5. A switch is utilized

a) in some circuits.

b) in any circuit.

**Практическая работа № 37**

**Тема: Электрические линии и их эффективность.**

1. Read and translate the text

Electric Lines and Their Efficiency

Wires are used to deliver electric power and to interconnect different components of electrical installations. Conductors used for electric wiring are commonly produced of copper and aluminium. Aluminium is widely used nowadays due to its low cost. Copper is also widely used in electrical engineering but its cost is much higher.

Wires connecting the components of various installations may be insulated. They may also be used without insulation. Since in short lengths of wire power loss is exceedingly low one can ignore it. In long wires (longer than 10 m), power loss cannot be ignored since it is rather high. Power loss in a line should not exceed a definite value. If this value is exceeded the line becomes inefficient.

One should know that the efficiency of a line is not constant - it may change. The value of the line efficiency depends on the load: the greater the load the lower is the line efficiency. At voltage losses of 2 to 5 per cent the efficiency of a line is 98-95 per cent. Protecting devices, fuses and relays are used to protect the circuit against overcurrent’s and short-circuits.

2. Complete the sentences using the correct variant:

1. Aluminium is used due to its

a) high cost.

b) low cost and high efficiency

2.Cross-section of different conductors

a) varies.

b) is the same.

3. Power loss can be ignored

a) in short wires.

b) in long wires.

4. A definite value of loss

a) can be exceeded.

b) should not be exceeded.

5. Electric lines nowadays are

a) efficient.

b) inefficient.

6. Installations are protected

a) by switches.

b) by fuses.

3. Complete these sentences using while. Follow the model on page 13:

1. The cost of aluminium is comparatively low while ....

2. In a short length of wire power loss is extremely low while ....

3. The greater the load the lower is the efficiency of the line ....

4. Answer these questions:

1. Why is aluminium widely used nowadays?

2. Is its cost very low or comparatively low?

3. What is the cross-section of copper conductors?

4. May one ignore power loss in short wire? Why?

5. What does the efficiency of a line depend on?

6. What are fuses used for?

7. When does a line become inefficient?

**Практическая работа № 38.**

**Тема: Линии передач.**

1. Translate into Russian

area

network

support

cord

bus

enterprise

accordingly

as to

by means of

indoor

overhead

to serve

to baze

to term

to support

to distribute

2. Put down the Russian for:

long distance

length of transmission lines

power consumption

distribution centre

city area

interdependent city areas

interacting underground lines

interconnected overhead lines

transmitting power lines

transmission and distribution lines

overhead lines

step-down transformer

indoor lines

underground lines

3. Read and translate the text

Transmission Lines

A power system is an interconnection of electric power stations by high voltage power transmission lines. Nowadays the electricity is transmitted over long distances and the length of transmitting power lines varies from area to area.

A wire system is termed a power line in case it has no parallel branches and a power network in case it has parallel branches.

According to their functions, power lines and networks are subdivided into transmission and distribution lines.

Transmission lines serve to deliver power from a station to distribution centres. Distribution lines deliver power from distribution centres to the loads.

Lines are also classed into: 1) overhead; 2) indoor; 3) cable (underground).

Overhead lines include line conductors, insulators, and supports. The conductors are connected to the insulators, and these are connected to the supports. The greater the resistance, the higher are the heating losses in the conducting wires. In order to reduce the losses, a step-down transformer can be used.

Indoor lines include conductors, cords, and buses. The conductor may include one wire or a combination of wires not insulated from one another. They deliver electric current to the consumers.

As to underground lines, they are used in city areas. Accordingly, they are used in cities and towns, and in the areas of industrial enterprises.

4. Complete these sentences using the correct variant.

1. Electric power is transmitted

a) by electric lines.

b) by power networks.

2. Lines are divided into

a) overhead and underground.

b) overhead, indoor and underground.

3. An overhead line includes

a) conductors and supports.

b) conductors, insulators and supports.

4. The insulators are connected

a) to the buses.

b) to the supports.

5. Conductors consist of

a) bare wire.

b) insulated wire.

6. Underground lines are used

a) in cities.

b) in areas of enterprises.

c) in agricultural areas.

5. Complete the sentences using while or as to. Follow the model on page 13.

1. The system is termed a power line in case it has no parallel branches

2. Transmission lines deliver power from a station to distribution centres ....

3. Low current results in decreased heating losses ....

4. Overhead lines are used in open areas ....

6. Answer these questions:

1. By what means is electric power system transmitted?

2. Which system has no parallel branches?

3. Into what groups are all the transmitting lines classed?

4. What components does an overhead line have?

5. What elements do conductors consist of?

6. In what areas are overhead (underground) lines used?

**Практическая работа № 39.**

**Тема: Система безопасного заземления. Поражение электрическим током**

1. Translate into Russian.

safe

safety

danger

strength

earth

ground

dead

dangerous

strong

live

dry

wet

to save

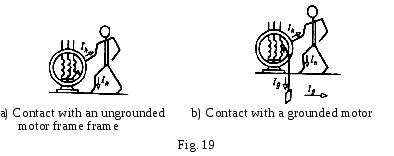
to disappear

to appear

2. Read and translate the text

Safety Earthing System. Electric Shock

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



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

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

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

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

3. Complete the sentences using the correct variant:

1. Earthing system serves

a) as protection from an electric shock.

b) as connection with ground.

1. Voltage appears on

a) dead parts.

b) live parts.

1. Contact with live conductors is

a) dangerous.

b) safe.

1. Connection to ground is made

a) dangerous.

b) safe.

1. Danger of an electric shock disappears if the frame

a) is earthed.

b) is unearthed.

4. Answer these questions:

1. What does an earthing system serve for?

2. What parts are termed dead (live)?

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

4. By what means is connection to ground made?

5. What does an electric shock result from?

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

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

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

5.  Read the text and write four questions about it. Ask your groupmates to answer them.

A man can get an electric shock when he comes into contact with the electric fish. One of this kind is found in the tropical waters of South America: it is the electric eel. Small electric eels, one-inch-long, give a small shock. When the fish is 6 inches long its internal battery gives as much as 200 volts. A very big fish can generate 600 volts! When it is short-circuited, a current of one ampere can be obtained. A two-meter long eel can light a dozen 50 watt lamps. The eel's head is positively charged and the opposite end is negatively charged.

**Практическая работа № 40.**

**Тема: Электродвигатели**

1. Translate into Russian

condition

plant

pole

torque

poor

nameplate

1. Read the words and put down their Russian equivalents. Then trans­late them back into English.

industry

service

transport

motor

practical

potential

1. Read and translate the text

Electric Motors

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

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

Electric motors are used practically in every branch of industry, transport, and agriculture. Naturally, they are produced in many dif­ferent designs. They are used in industrial plants, and operate under dif­ferent conditions.

Each motor is supplied with a nameplate which bears machine ratings: output power, voltage, the rated current, the starting current, the power factor, the efficiency, and the rated torque.

These motor ratings should be taken into consideration since they are necessary for the users. On them depends the length of motors' service life, which is normally equal to about 10 years, provided that the operating conditions are normal. Naturally, under abnormal condi­tions the service life becomes much shorter: motors operate poorly and may have different faults.

1. Complete the sentences using the correct variant:
2. Motors are used

a) for transmitting energy.

b) for converting energy.

1. Motor's main part is

a) the frame.

b) the armature.

c) the stator.

1. The armature is placed

a) between the poles of the magnet.

b) about the poles of the magnet.

1. Motors' service life becomes shorter

a) under normal conditions,

b) under abnormal conditions

1. Faulty motors operate

a) normally.

b) poorly.

5 Answer these questions. Use them in a talk with your groupmate:

1. What are motors used for?

2. What is the motor's main part?

3. Where is the armature placed?

4. What ratings does the nameplate of a motor bear?

5. Under what conditions does a motor operate normally (poorly)?

**Практическая работа № 41.**

**Тема: Неисправности моторов и способы их ремонта**

1. Translate into Russian

brush

gap

spark

speed

noise

slow

excessive

check

to repair

to adjust

1. Read the words and put down their Russian equivalents:

commutator

stator

rotor

contact

to contact

process

1. Put down the verbs corresponding to the given nouns and translate them:

check to check проверять

spark

brush

repair

slow

1. Put down the Russian equivalents of these word combinations. Trans late them back into English (orally).

air gap

brush sparks

slow speed

excessive speed

safety devices

5. Answer these questions:

1. What do motors' faults result from?

2. Are there any faults that can be ignored?

3. What makes motors' service life shorter?

4. What does voltage supply stop result in?

5. What processes show the (dis)advantages of devices?

1. Are the words: spark, short, slow, brush, fault, load, test nouns? Are they verbs? Translate the sentences into Russian:

1. New motors are given a no-load and under a load tests.

2. When the motor is tested it should produce no abnormal noise.

3. In case this noise appears the motor must be disconnected.

4. This generator must be checked; one should give it a test.

5. The motor's brushes seem to be sparking. Can you see the sparks?

6. The windings of the coil are shorted. I have detected a short in the windings.

7. The armature rotates slowly; let's check it up!

8. The speed of rotation is too excessive; it must be slowed down.

9. In case the rotor brushes against the stator, the motor operates slowly. The faulty brushes should be replaced.

1. Read and translate the text

Faults of Motors and Ways of Their Repair

Motors may have different faults. A faulty motor does not start, or, when it is started, it operates at an excessive speed.

Its brushes may spark and its windings and the commutator may be overheated and burnt. Besides, a motor may produce an abnormal noise, etc. All these and other faults should be detected and repaired.

In case the motor does not start it may have different faults (see the ta­ble):

Possible causes of faults

Ways of repair

1. Fuses are faulty.

1. Replace the fuses.

2. Motor is overloaded.

2. Reduce motor load.

3. Circuit in armature winding has an open.

3. Repair the armature winding.

In case the motor, when started, stops:

1. Rheostat is shorted.

1. Check the rheostat and re­pair it.

2. Rheostat switches from one position to another.

2. Slow down operation of rheostat handle.

Brushes may spark in case:

1. Motor is overloaded.

1. Reduce the load and re­move overload.

2 Brushes are in poor condition.

2. Replace the brushes.

3. Pressure is low.

3. Adjust the pressure.

4. Pressure is excessive.

4. Adjust the pressure.

In case the armature winding is overheated:

1. Motor is overloaded.

1. Remove the overload.

2. Ventilation fails to operate properly.

2. Check for slowing down the speed of the motor.

In case of abnormal motor speed:

1. Motor is overloaded.

1. Reduce the load.

2. Rotor circuit has poor contact.

2. Repair the shorting mechanism.

In case rotor brushes against stator:

Rotor brushes against stator.

Adjust air gap.

8. Answer these questions:

1. When does a motor operate poorly?

2. What should be done in case the motor is overloaded?

3. What should be done in case the fuses are faulty?

4. What should be done in case the rheostat is shorted?

5. What should be done in case the brushes spark?

6. What should be done in case the pressure is low?

7. What should be done in case the ventilation does not operate?

8. What should be done in case the rotor brushes against stator?

**Практическая работа № 42.**

**Тема: Подстанции.**

1.Translate into Russian

auxiliary

breaker

busbar

feeder

flexible

to comprise

to distribute

as ... to

as well as

2.Put down the Russian equivalents of these word combinations Translate them back into English (orally).

circuit breaker

auxiliary units

distribution centre

flexible construction

reliable operation

switch gear bus

hydraulic as well as solar sources of energy

as to phase-word motors

3. Read and translate the text

Substations

A substation is designed to receive energy from a power system, convert it and distribute it to the feeders. Thus a substation serves as a distribution centre. Substations feed (supply) various consumers provided that their basic load characteristics are similar. Therefore the energy is distributed without transformation of the voltage supplied.

Common substations comprise isolators, switchgear buses, oil circuit breakers, fuses, power and instrument transformers and reactors.

Substations are classed into step up and step down ones. The step up substation includes transformers that increase the voltage. Connected to the busbars of the substation are the power transmission lines of power plants of the system.

As to step down substations, they reduce the voltage to 10 or 6 kV. At this voltage the power is supplied to the distribution centres and to the transformer substations of power consumers.

A transformer substation serves for transmitting and distributing electric power. It comprises a storage battery, control devices and auxiliary structures.

Transformer substations are classed into indoor and outdoor; both types are used for feeding industrial enterprises. Compared to other types of substations, transformer substations have certain advantages. They have flexible construction and easy and reliable operation. In case of a fault in the left-hand section, the main circuit breaker opens while the normally open section circuit breaker closes and puts the voltage of the section to normal. Power from a substation is delivered to distribution centres.

4.Complete the sentences using the correct variant:

1. A substation serves

a) to consume energy.

b) to distribute energy.

c) to convert energy.

2. A substation feeds consumers

a) with various load characteristics.

b) with similar load characteristics.

3. The lines of power plants are connected

a) to the busbars.

b) to the switchgear.

4. A substation comprises

a) the main elements.

b) the main and auxiliary elements.

5. Flexible construction is

a) an advantage.

b) a disadvantage.

**Практическая работа № 43.**

**Тема: Виды электростанций. Гидроэлектростанция**

1. Translate into Russian

blade

level

magnitude

head

plant

runner

shaft

to rotate

to influence

to fluctuate

2.Put down the Russian equivalents of these word combinations. Then translate them back into English (orally).

runner blade

turbine runner

turbine shaft

water level

water head

large capacity power plant

magnitude of the water head

daily inflow of water

turbine runner shaft

3.Read and translate the text

Hydroelectric Power Plants

Hydroelectric power plants are built on rivers. Large-capacity hydroelectric power plants are commonly located at considerable distances from the consumers of electric power.

The production process at these plants is rather simple: the water flows into the hydroturbine runner, acts upon the runner blades and rotates the runner and the turbine shaft.

The generator shaft is connected to the turbine runner shaft. The difference in the water level influences the power capacity of a plant, i.e. the magnitude of the water head and the daily inflow of water fluctuates considerably according to the season.

The production process is different at power plants of different constructions and of different kinds. In atomic power plants, for example, it is not so simple as in hydroelectric plants.

4.Complete the sentences using the correct variant:

1. Hydroelectric power plants are built

a) on rivers, b) on waterfalls,

2. Large-capacity power plants located power.

a) at a short distance from consumers of power,

b) at a considerable distance from consumers of are

3. The production

a) is very complex, process at the

b) is rather simple, plants

4. The power capacity of a plant

a) remains constant.

b) changes considerably.

c) is influenced by the difference in the water level.

5. The daily inflow of water

a) fluctuates according to the consumption.

b) fluctuates according to the season.

6. The production process

a) depends upon the construction of the plant.

b) is the same at power plants of different constructions.

**Практическая работа № 44.**

**Тема:** Атомная электростанция

1.Translate into Russian

exchanger

steam

tube

dust

attending personnel

to deliver

to pollute

to shield

2. Read and translate the text

Atomic power plants.

Atomic power plants are modern installations. They consist of several main units and a great number of auxiliary ones.

In a nuclear reactor uranium is utilized as a fuel. During operation process powerful heat and radioactive radiation are produced. The nuclear reactor is cooled by water circulation. Cooling water circulates through a system of tubes, in which the water is heated to a temperature of 250-300°C. In order to prevent boiling of water, it passes into the reactor at a pressure up to 150 atmospheres.

A steam generator includes a series of heat exchangers comprising tubes. The water heated in the reactor is delivered into the heat exchanger tubes. The water to be converted into steam flows outside these tubes. The steam produced is fed into the turbogenerator.

Besides, an atomic power plant comprises a common turbogenerator, a steam condenser with circulating water and a switchboard.

Atomic power plants have their advantages as well as disadvantages. The reactors and steam generators operate in them noiselessly; the atmosphere is not polluted by dust and smoke. As to the fuel consumption, it is of no special importance and there is no problem of fuel transportation.

The disadvantage of power plants utilizing nuclear fuel is their radiation. Radioactive radiation produced in the reactors is dangerous for attending personnel. Therefore, the reactors and steam generators are installed underground. They are also shielded by thick (up to 1.5 m) concrete walls. All their controls are operated by means of automatic devices. These measures serve to protect people from radioactive radiation.

3. Pair work. Put these questions to your groupmate and let him/her answer them:

1. What are the main units of an atomic power plant?

2. By what means is the nuclear reactor cooled?

3. At what pressure does the water pass into the reactor?

4. What types of power plants pollute the air with dust and smoke?

5. Why is it necessary to protect attending personnel?

6. By what means is it done?

**Практическая работа № 45.**

**Тема: Солнечная и ветряная электростанция**

1. Find the information in Internet and do the topic.

2. You are going to give a talk about ecological problems. You will have to start in 1.5 minutes and will speak for not more than 2 minutes (10-12 sentences).

Remember to say:

• what the biggest ecological problems of the 21st century are

• what the main reasons of these problems are

• how these ecological problems can be solved

You have to talk continuously.

1. Without any doubt, the 21st century has more ecological problems than any other century.

2. Firstly, global warming is a huge problem.

3. To my mind, there is nothing more important.

4. The whole planet is getting warmer and it is becoming more difficult to grow food.

5. Moreover, a lot of creatures in the sea are dying because it is too hot.

6. Secondly, the cause of air pollution and global warming is people.

7. Factories and cars produce so many toxic fumes.

8. Besides, factories also dump terrible chemicals into lakes and rivers.

9. Thirdly, people produce too much rubbish and throw everything away that they no longer need.

10. Last but not least, it goes without saying that if people don’t change their habits, our ecological problems will only get worse.

11. As far as I can see, all the problems are due to people themselves.

12. I think that governments around the world need to make new laws to limit pollution and waste and punish people who break the law.

**Практическая работа № 46.**

**Тема: Защита окружающей среды при эксплуатации электростанций. Аварии на АЭС**

1. Translate into Russian

concrete

environment

fission

(stainless) steel

vessel

waste

to confine

to release

to withstand

to dispose

2. Put down the Russian equivalents of these word combinations. Then translate them back into English (orally):

nuclear fuel

nuclear fission

steel vessel

reactor vessel

fission release

sealed tubes

concrete housing

waste products

nuclear waste

shielded cylinders

3. Read and translate the text

Protection Against Environmental Pollution

Any operating nuclear power plant releases fission products into the environment, which causes environmental pollution.

To prevent the harmful effects of nuclear power release, the nuclear power plants are supplied with protective installations that serve as barriers to the pollution.

First, the nuclear fuel and the fission products are confined within sealed tubes made of stainless steel or zirconium. Then the assembly of tubes is placed in a steel reactor vessel. And finally the steel reactor vessel is placed in a large steel and concrete housing.

As to the hot radioactive waste products they are disposed in heavily shielded cylinders. The cylinders are buried 305 to 610 metres underground.

4. Complete the sentences using the correct variant:

1. A nuclear power plant

a) liquid products, releases

b.fission products.

2.Operating nuclear power plants

a) pollute the environment.

b) prevent the pollution.

3. The protective power plant installations

a) produce the release of fission products.

b) prevent the release of fission products.

4. The sealed tubes are made of

a) bronze.

b) stainless steel.

5. The fission products are confined

a) within sealed tubes.

b) within open tubes.

6. The steel reactor vessel is placed

a) in a concrete housing.

b) in a zirconium housing.

7. The waste products are disposed

a) in an open vessel.

b) in shielded cylinders.

5. Pair work. Put these questions to your groupmate and let him/her answer them:

1. What kind of products does the operating nuclear power plant release?

2. What installations are used to prevent the harmful effects of a nuclear power plant operation?

3. What material are the tubes made of?

4. Where are the fission products confined?

5. In what part of the installation is the reactor vessel placed?

6. In what way are the hot radioactive waste products disposed?

**Практическая работа № 47.**

**Тема: Конверсия.**

1. В отличие от русского языка, в английском языке одно и то же слово может выступать в предложении в качестве разных частей речи. Так, в данных ниже предложениях слово water является существительным (1), глаголом (2), играет роль прилагательного (определения) (3), является частью сложного слова (4).

1. Water is necessary for life.  Вода необходима для жизни.

2. Water the flower-bed, please.  Полей(те), пожалуйста, клумбу.

3. Water mills served a source of energy.  Водяные мельницы служили источником энергии.

4. water-supply system  система водоснабжения

water-proof watch  водонепроницаемые часы

Значения подобных слов и их перевод на русский язык зависят от того, каким членом предложения они являются. Они могут быть подлежащим, сказуемым (или его частью), определением, обстоятельством. Функцию слова помогает определить твердый порядок слов в английском предложении и контекст.

2. Look up the meanings of these words in a dictionary, if necessary. How are they translated in the sentences below? Mind the word order.

a) place, iron, lift, house, light, heat, use, form, change, wire

1. The conductor wires are placed high up.

2. Electromagnets lift iron weights.

3. The plastic box houses the conducting and the insulating elements of the apparatus.

4. The house is lighted and heated by solar energy.

5. The light went out. Light the candle, please.

6. After the metal was heated it changed its colour to a red heat.

7. Numerous changes are taking place in the uses of atomic energy.

8. Electric power is used universally.

9. The newly made invention has a great number of uses.

10. The wire and the source form a circuit.

b) balance, amount, water, fuel, control, measure, cause, increase

1. The fuel-and-energy balance is important for industry.

2. Conductivity increases with heating.

3. The machine should be re-fuelled.

4. The amount of power used in the world in a year amounts to 12,000 million tons of equivalent fuel.

5. Water barriers are crossed by submarine cables.

6. The instrument is foot-controlled by a pedal.

7. Force and motion go together; one is a cause, the other, a result.

8. An electromotive force causes the electrons to move.

9. Control of the apparatus is placed on the panel.

10. The volt is a measure of electromotive force.

**Практическая работа № 48.**

**Тема: Местоимение one.**

Функции местоимения ONE

Значения one

Примеры

Перевод

…один из…

(one of)

Nuclear energy is one of the forms of energy.

Ядерная энергия- одна из форм энергии.

Заменитель ранее упомянутого существительного (ones-мн.число)

The old turbine was a water turbine and the new one is a steam turbine.

Старая турбина бы­ла водной турбиной, а новая - паровая тур­бина.

One + модальный глагол

One can, one may-

можно

One must, one should-

нужно, следует

One should control the chain reaction

Следует контролировать цепную реакцию.

Неопределенно-личное подлежащее

(one –вы, тот)

One knows that these installations do not operate on nuclear power.

Вы знаете, что эти установки не работают на ядерной энергии.

1. Translate the sentences. Mind one.

1. The second sputnik was launched about a month after the first one.

2. There are many insulating materials from which one may choose.

3. Some substances are efficient conductors, others, poor ones.

4. One uses special devices to measure current, voltage, and resistance.

5. One should take into consideration the difference between these circuits.

6. One should take into consideration that the ammeter is connected to the circuit in series.

7. What should one take into consideration using the ohmmeter?

8. One must choose only one of those variants.

1. Translate the sentence. Mind Complex Subject, one.

The new method proved to be much more efficient that the old one.

**Практическая работа № 49.**

**Тема: Времена глагола**

1. State the tense forms of the following verbs.

Model: link  Present Indefinite (active voice)

does not link  Present Indefinite (negative form)

is circulating, have not moved, transmits, emitted, did not emit, has burnt, will not operate, act

2. Put down the tense forms of the verbs.

Model: to lower  Pres. Perf. have (has) lowered

to heat  Past Indef.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to discharge  Pres. Contin.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to remove  Pres. Perf.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to bum  Pres. Perf. Contin.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to waste  Future Ind.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to demand  Past Perf.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

to move  Future Perf.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Translate these negative sentences into Russian. What is the difference between the English constructions and the Russian ones?

1. No charges can move in an open circuit.

2. Nothing less than a map of the Universe is planned by the research.

3. No special equipment is necessary to carry out the experiment.

4. A current which does not change its polarity is called a direct current.

3. A dry battery is a type of a small battery containing no free liquid.

6. The efficiency of a machine can never be greater than unity; it is often given as a percentage.

7. A fast reactor is a reactor in which little or no moderator is used and in which, therefore, the nuclear fissions are caused by fast neutrons.

8. Electrically safe locations are those where conditions causing extremely high danger of electric shock do not exist.

9. No electric device has only advantages. All of them have also disadvantages.

4. Put down the negative form of the following verbs.

Model: moved  did not move

required  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

was operating  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

links  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

has demanded  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

will have been replaced  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

release  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

is transmitting  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

fissioned  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Практическая работа № 50,51**

**Тема: Страдательный (пассивный залог)**

1. State the voice and the tense form of the following verbs.

Model: was removed  Past Indefinite Passive

is discharged  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

was being discharged  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

has discharged  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

had not been attached  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

is circulating  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

will not be heated  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

extends  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

does not maintain  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

is not maintained  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

will be linked  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

will release  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

will have been removed  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Change the sentences into questions:

1. There are various types of nuclear reactors.

2. The use of underground transmission lines must be increased.

3. The fuel can be enriched uranium.

4. The fission heat is used to generate steam, which drives a turbine generator.

3. Think of three questions of your own about each of the given sentences. Put them down.

1. Electric charges are acted upon by forces when they move in the magnetic field.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Copper has been used as a conductor since the beginning of the industry.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Nuclear reactors decrease air and land pollution but they increase thermal and radiation pollution.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Use the required tense form. What are the meanings of the word time in the sentences?

1. The experiment (repeat) many times.

2. The power which (radiate) as light is almost three times as great as that radiated as heat.

3. It (know) that iron molecules are magnets at all times.

4. Under ordinary room lightning the resistance of transistors (decrease) millions of times.

3. Ruby crystals about ten centimetres long can (intensify) light ten times.

6. The density of a semiconductor laser radiation (be) hundreds of times as great as that of the ruby laser.

7. The power which (transmit) along a wire is the product of the voltage times the amperage.

**Практическая работа № 52.**

**Тема: Полнозначные и служебные слова**

1. Полнозначные и служебные слова

Все слова в языке подразделяются на полнозначные и служебные. К полнозначным относятся существительные, смысловые глаголы, прилагательные, наречия, числительные. Служебные слова не обозначают конкретных предметов, действий, качеств. В предложениях они связывают полнозначные слова и помогают обратить их в связную речь. К числу служебных (их называют и «короткие слова»  «small words») относятся артикли, предлоги, служебные и модальные глаголы, их заменители, союзы, послелоги. Знание служебных слов и понимание их роли необходимы для грамотного осмысления английского текста. Не следует, выписав из словаря полнозначные слова, пытаться связывать их «по смыслу». Перевод следует осуществлять только с опорой на значения «коротких слов».

2. In the following examples the verb to be has different meanings. What are they?

1. These stations can be linked up into a network.

2. It is advisable to link up these stations into a single network.

3. These stations are to be linked up into a single network.

4. Will the stations be linked up into a single network?

5. They are linking up the stations into a network.

3. Complete the sentences using the required prepositions: according to, because of, though of, at, for, by, during, in, in case of, into:

1. The power transmitted … a wire is the product … the voltage times the amperage. … resistive losses, it is desirable to transmit power … low amperage and high voltage. … doubling the voltage, the capability … a given circuit can be quadrupled.

2. Devices are classed … the operation they are intended … .

3. This type … aerial is useful and popular … its small size.

4. … a faulty device its readings are not to be relied … .

3. Coal and oil contain sulfur … concentrations … a few percent.

6. As these fuels are burned, the sulfur is converted … sulfur-dioxide gas. … the operation … a plant, the sulfur-dioxide and other products are discharged … the air stacks, some … which are about 303 metres high.

4. Complete the sentences using the required conjunctions (both … and, than, until, since, provided, before).

1. Some devices work equally well … on direct … alternating current.

2. The set is used in regions without electricity … it operates without a battery.

3. One should turn the knob … a click is heard.

4. … one flies to other planets one should collect as much information as possible about them.

3. Glass becomes a conductor … it is heated to a red hot.

6. A small current is cheaper … great because the wires need not be so thick.

**Практическая работа № 53.**

**Тема: Неличные формы глагола**

1. Перевод инфинитива на русский язык зависит от его функции в предложении и от его формы.

2. Underline the infinitives in the sentences. Translate the sentences into Russian.

1. To magnetize a body requires some energy.

2. In order to build the power plant near Northfield (USA), three miles of tunnels were drilled.

3. The distance to be covered was equal to ten miles.

4. To reduce the power losses, thick wires should be used.

5. No additional components were used since they were not needed to actuate the relay.

6. Various installations were used in order to transform electric power into mechanical, heat, and chemical power.

7. At least 90 per cent of electric energy to be generated at present is a.c.

8. A.c. can be increased, or decreased to meet industrial requirements.

9. Gas turbines can be started within minutes, while steam plants may require hours to be put into operation.

3. What forms of infinitives are used in the Infinitive Complexes given below  Complex Subject or Complex Object?

1. Communication is supposed to have no limits nowadays.

2. The line appeared to be demagnetized.

3. Every battery is known to possess two terminals.

4. The output of machinery is known to be steadily increasing all over the world.

5. In some countries, the nuclear power plants are believed to produce about 80 per cent of the whole amount of energy.

6. The capacity of generating units was said to have been doubled.

7. What two conditions are necessary to cause an electric current to flow?

8. Ebonite, rubber, and glass are considered to be good insulators.

9. Nuclear plants are expected to be located away from urban areas.

10. The use of underground transmission lines is known to have been increased.

11. By 1959, maximum transmission voltages were proclaimed to have been increased to 345,000 volts.

12. The most important problems in atomic power generation are known to be concerned with the reactor. The light-water reactor types seem to be most promising.

**Практическая работа № 54.**

**Тема: Причастие**

1.В английском языке имеется пять форм причастия:

Active Passive

Participle I using being used

Participle II  used

Perfect Participle having used having been used

2. Copy the sentences below and underline participles. Say what forms of participles are used. Translate the examples into Russian in writing.

1. The energy lost in the capacitor appears in the form of heat being generated in the dielectric.

2. The problem being discussed is of no great importance for practice.

3. The generators constructed at the plant have no commutators.

4. The code widely used is called Morse code.

5. While passing through the conductor, resistance results in the production of heat.

6. Having been insulated with polythene, the line was tested under unfavourable conditions.

7. Having made a number of tests, the researcher got some useful results.

8. Having been tested under different conditions, the motors were put to use.

9. When being rubbed, some substances produce electric charges.

10. Decelerating trains and descending elevators use negative, or braking, torque.

11. In what way is the transmitter controlled in an amplitude-modulated system?

3. Say which -ing and -ed forms are parts of the predicates and which are participles.

1. Water-turbine plants are called hydroturbines.

2. The measures discussed are to be used for determining the faults in the conducting wires.

3. The transmission system selected for everyday use is based on the combined activity of telecommunication and computers.

4. Being a semiconductor, germanium is widely used in transistors.

3. Switch board is an assemblage of controlling and indicating devices mounted upon a frame.

6. The data obtained formed the basis for further activity.

7. Gas coolants used to remove heat losses help to increase the current- carrying capacity of the motor’s main parts.

8. Water power is being used to drive a dynamo.

9. Nuclear fuel is undergoing nuclear fission.

4. Which of the examples contain the Nominative Absolute Construction? Underline «the doer» in the constructions.

1. The reflected signal having been received, the distance to the object was counted.

2. Having been impregnated, paper is used as resistor.

3. What is an electric arc? It is a discharge accompanied by a temperature of over 3,000°C, produced when an electric current flows through a gap between two electrodes, the current being carried by the vapour of the electrode.

4. Various kinds of windings used depend on the type of building and location. The supplies required include metal conduits, boxes, fuses, and other elements.

3. Other factors being constant, the current is known to be directly proportional to conductivity.

**Практическая работа № 55**

**Тема: Герундий**

1. Герундий имеет четыре формы:

Active Passive

Indefinite supplying being supplied

Perfect having supplied having been supplied

2. What are the forms of the gerund in the examples given below? Translate the sentences into Russian.

1. Programming is the process of preparing, testing and correcting instructions for a computer.

2. Is any metal capable of being drawn out into a wire?

3. After having been subjected to severe testing the material was recommended for use.

4. A motor-starter is a device for starting motors from rest by the simple act of closing the switch.

5. A constant speed of the device is maintained by supplying it with energy.

6. Steam is an important factor in producing usable energy because of the power being created by its expansion.

7. One of the problems modem research laboratories are working at is the problem of finding materials that can serve as electrical conductors in fusion reactors.

8. On having lost some of its electrons, the atom has a positive charge.

3. Use Participle I, Participle II or the Gerund of the verb in brackets and translate the sentences.

1. (Cool) an electric conductor results in its reduced resistance to electric current.

2. What is the name of an (insulate) material (use) to prevent an electric shock?

3. The (apply) technique brought about quite unexpected results.

4. Mica is used as a dielectric due to (have) high voltage strength.

5. The world’s first tidal power station, a plant on the Ranсe River in France, began (operate) in 1966.

6. Solar energy has been converted to electricity by (use) solar cells, which are semiconductor devices (produce) from thin slices of silicon.

**Практическая работа № 56**

**Тема: Сослагательное наклонение**

1. Read the following sentences, containing the Subjunctive Mood forms. Which of the sentences refer to the Present (the Future) and which to the Past?

1. Zero-resistance transmission lines would be very economical!

2. Without these means of communication the scientists would have great difficulties in observing man-made satellites.

3. If thin wires had been used in this device the wires would have melted.

4. If the operators had used some additional components they would have been able to actuate the relay.

5. We know a moving magnet to induce a current in a wire, the effect being stronger if the wire were in the form of a coil.

6. It was a job one could have done much better.

7. Without the Sun there would be no light, no heat, no energy of any kind.

8. Oxygen is an element of greatest importance to the Earth as all living things would die without it.

9. If it were not for lasers a great number of technological developments would not have taken place.

10. In some hot countries the use of only one percent of the solar energy would serve an enormous source of energy.

11. No subject is more surprising than magnetism; what would you think if you found that on mixing ebonite and bakelite in some definite proportions a good conductor is formed or that a mixture of copper and iron forms a good insulator?

**Практическая работа № 57.**

**Тема: Эмфатическая конструкция**

1. Translate the sentences into Russian.

1. It is from the Greek word electron that the word electricity is formed.

2. It is the force of gravitation that makes the satellites move round the Earth.

3. It was the need for large-scale ballistic computations which gave rise to the development of electronic computers.

4. It was in 1882 that P. Chebyshev invented the arithmometer performing multiplication and division.

2. Change the following sentences into the emphatic ones in writing.

Model: B. Pascal invented the mechanical computer.

It was B. Pascal that invented the mechanical computer.

1. N. Wiener is considered to be the father of cybernetics.

2. The special terms in any subject serve the keys to understanding it.

3. Oil, natural gas and nuclear power each have important roles to play in the energy industry.

4. The most precise clocks are being produced due to the invention of radio frequency quantum generators.

КРИТЕРИИ ОЦЕНИВАНИЯ

1. Критерии оценки перевода оригинального текста

(с использованием словаря)

При письменном учебном переводе текста оценивается адекватность перевода, т.е.

точность и полнота передачи как ключевой, так и второстепенной информации. Перевод оценивается в 100 баллов. При этом за правильный перевод:

1) лексических единиц дается от 0 до 40 баллов (верный выбор эквивалентов слов; переведены все слова, как нейтральной, так и терминологической лексики; переданы все реалии и имена собственные; правильно переведены все свободные и условные словосочетания);

2) грамматических единиц и конструкций- 0-40 баллов (верный перевод видовременных форм глаголов, залога и наклонения глагола, модальных глаголов, неличных форм глагола и конструкций с ними; правильно передано число и падеж существительных; учтены при переводе степени сравнения прилагательных и наречий);

3) синтаксических конструкций- 0-10 баллов (верно выбрано значение слов-заместителей; переданы эмфатические конструкции);

4) стилистически правильный (адекватный) перевод- 0-10 баллов. За творческие находки, удачные и оригинальные трансформации, и другие способы уточнения смысла текста добавляется от 0 до 10 баллов.

Соответствие количества набранных баллов оценке:

100 баллов-85 баллов - «отлично»

84 балла- 75 баллов - «хорошо»

74 балла- 50 баллов - «удовлетворительно»

Менее 50 баллов - 2 неудовлетворительно.

2.Критерии оценки устного монологического сообщения по теме

Нормативные требования. Объем высказывания 12-20 фраз.

«Отлично»

Полное раскрытие темы.

Богатый лексический запас.

Правильное лексическое, грамматическое и фонетическое оформление высказывания.

Естественный темп речи. Отсутствие заметных пауз.

Полная смысловая завершенность и логичность высказывания.

Наличие выводов, заключения.

«Хорошо»

Тема раскрыта почти полностью. Достаточный лексический запас.

Небольшое количество грамматических, лексических и фонетических ошибок. Естественный темп речи с незначительными паузами и повторами.

Смысловая завершенность и логичность высказывания несколько нарушены.

Наличие выводов, заключения.

«Удовлетворительно»

Тема раскрыта не полностью. Запас лексики недостаточен.

Умеренное количество ошибок в грамматике и лексике.

Темп речи замедленный с частыми паузами и повторами.

Смысловая завершенность, логичность высказывания значительно нарушены.

Выводы и заключение отсутствуют.

«Неудовлетворительно»

Тема не раскрыта.

Бедный лексический запас.

Большое количество грамматических, лексических и фонетических ошибок.

Медленный темп речи. Длительные паузы.

Смысловая незавершенность высказывания.

Отсутствие логики высказывания.

Отсутствие выводов и заключения.

3.Творческие письменные работы (письма, разные виды сочинений)

Оцениваются по пяти критериям:

а) Содержание (соблюдение объема работы, соответствие теме, отражены ли все

указанные в задании аспекты, стилевое оформление речи соответствует типу задания,

аргументация на соответствующем уровне, соблюдение норм вежливости).

При неудовлетворительной оценке за содержание остальные критерии не оцениваются, и работа получает неудовлетворительную оценку;

б) Организация работы (логичность высказывания, использование средств

логической связи на соответствующем уровне, соблюдение формата высказывания и

деление текста на абзацы);

в) Лексика (словарный запас соответствует поставленной задаче и требованиям

данного года обучения языку);

г) Грамматика (использование разнообразных грамматических конструкций в

соответствии с поставленной задачей и требованиям данного года обучения языку);

д) Орфография и пунктуация (отсутствие орфографических ошибок, соблюдение

главных правил пунктуации: предложения начинаются с заглавной буквы, в конце

предложения стоит точка, вопросительный или восклицательный знак, а также

соблюдение основных правил расстановки запятых).

4. Устные ответы

(монологические высказывания, пересказы, диалоги, работа в группах)

Оцениваются по пяти критериям:

а) Содержание (соблюдение объема высказывания, соответствие теме, отражены все

аспекты, указанные в задании, стилевое оформление речи соответствует типу задания,

аргументация на соответствующем уровне, соблюдение норм вежливости).

При неудовлетворительной оценке за содержание остальные критерии не

оцениваются и работа получает неудовлетворительную оценку;

б) Взаимодействие с собеседником (умение логично и связно вести беседу,

соблюдать очередность при обмене репликами, давать аргументированные и

развернутые ответы на вопросы собеседника, умение начать и поддерживать беседу, а

также восстановить ее в случае сбоя: переспрос, уточнение);

в) Лексика (словарный запас соответствует поставленной задаче и требованиям

данного года обучения языку);

г) Грамматика (использование разнообразных грамматических конструкций в

соответствии с поставленной задачей и требованиям данного года обучения языку);

д) Произношение (правильное произнесение звуков английского языка, правильная

постановка ударения в словах, а также соблюдение правильной интонации в

предложениях).

5.Критерии оценивания уровня знаний за проверочные работы тестового типа

Оценка «5» (отлично) - 95% - 100 %

Оценка «4» (хорошо) - 75% - 94%

Оценка «3» (удовлетворительно) -60 - 74%

Оценка «2» (неудовлетворительно) - менее 60%

6. Выполнение письменных лексико-грамматических упражнений

Время и критерии выполнения каждого упражнения зависит от его количественного и качественного наполнения, указывается перед каждым заданием (устно или письменно).

Итоговый контроль по результатам освоения обучающимися учебной дисциплины «Иностранный язык (английский)» проводится в форме дифференцированного зачета.

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