



ДОНСКОЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ
УПРАВЛЕНИЕ ДИСТАНЦИОННОГО ОБУЧЕНИЯ И ПОВЫШЕНИЯ
КВАЛИФИКАЦИИ

Кафедра «Лингвистика и иностранные языки»

Методические указания
и контрольные задания по дисциплине

**«Радиотехника»,
«Инфокоммуникационные
технологии и системы
связи»**

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Аннотация

Методические указания предназначены для студентов заочной формы обучения по направлениям 11.03.01 «Радиотехника», 11.03.02 «Инфокоммуникационные технологии и системы связи»

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ОБЩИЕ ТРЕБОВАНИЯ К ВЫПОЛНЕНИЮ КОНТРОЛЬНОЙ РАБОТЫ

Памятка студенту

Контрольная работа предназначена для студентов заочной формы обучения по дисциплинам "Радиотехника" 11.03.01 и «Инфокоммуникационные технологии и системы связи» 11.03.02 , а также может быть использована для студентов сокращенной формы обучения.

Контрольное задание предлагается в четырех вариантах. Номер варианта определяется по последней цифре номера зачетной книжки студента:

- 1, 2 , 3 – 1-й вариант;
- 4, 5 , 6 – 2-й вариант;
- 7 , 8 – 3-й вариант;
- 9 , 0 – 4-й вариант.

Контрольная работа должна быть выполнена в отдельной тетради. На обложке тетради необходимо указать следующие данные: факультет, курс, номер группы, фамилию, имя и отчество, дату, номер контрольного задания и вариант.

Первую страницу необходимо оставить чистой для замечаний и рецензии преподавателя.

Все предлагаемые к выполнению задания (включая текст заданий на английском языке) переписываются на левой стороне разворота тетради, а выполняются на правой.

Контрольная работа должна быть написана четким подчерком, для замечаний преподавателя следует оставить поля.

Контрольная работа, выполненная не полностью или не отвечающая вышеприведенным требованиям, не проверяется и не засчитывается.

Проверенная контрольная работа должна быть переработана студентом (та часть ее, где содержатся ошибки и неточности перевода или неправильное выполнение заданий) в соответствии с замечаниями и методическими указаниями преподавателя. В той же тетради следует выполнить «Работу над ошибками», представив ее на защите контрольной работы.

Четыре варианта контрольной работы имеют одинаковую структуру. Все задания должны быть выполнены в письменной форме.

Темы по грамматике английского языка:

1. Сложное подлежащее.
2. Сложное дополнение.
3. Причастный оборот.
4. Причастие 1 и причастие 2.

1 ВАРИАНТ КОНТРОЛЬНОГО ЗАДАНИЯ

1. Прочитайте и устно переведите следующий текст. Переведите письменно второй и третий абзацы текста.

From The History Of The Radio

Broadcasting, Radio and Television are the primary means by which information and entertainment are delivered to the public in virtually every nation around the world. The term broadcasting refers to the airborne transmission of electromagnetic audio signals (radio) or audiovisual signals (television) that are readily accessible to a wide population via standard receivers.

Broadcasting is a crucial instrument of modern social and political organization. At its peak of influence in the middle of 20-th century, national leaders often used radio and television broadcasting to address entire countries. Because of its capacity to reach large numbers of people, broadcasting has been regulated since it was recognized as a significant means of communication.

Beginning in the early 1980s, new technologies – such as cable television and videocassette players – began eroding the dominance of broadcasting in mass communications, splitting its audiences into smaller, culturally distinct segments. Previously a synonym for radio and television, broadcasting has become one of several delivery systems that feed content to newer media.

Throughout history, long-distance communication had depended entirely upon conventional means of transportation. A message could be moved aboard a ship, on horseback, by pigeon, or in the memory of the human courier, but in all cases it had to be conveyed as a mass through space like any other material commodity.

The story of radio begins in the development of an earlier medium, the telegraph, the first instantaneous system of information movement. Patented simultaneously in 1837 in the United States by the inventor Samuel F. B. Morse and in Great Britain by scientists Sir Charles Wheatstone and Sir William Fothergill Cooke, the electromagnetic telegraph realized the age-old human desire for a means of communication free from the obstacles of long-distance transportation. The first public telegraph line, completed in 1844, ran about 64

km (about 40 mi) from Washington, D.C., to Baltimore, Maryland. Morse's first message, «What hath God withroudht?»- transmitted as a coded series of short and long electronic impulses (so- called dots and dashes)-conveyed his awareness of the momentous proportions of the achievement. The usefulness of telegraphy was such that over the next half century wires were strung across much of the world, including a transatlantic undersea cable(about 1866) connecting Europe and North America. The instantaneous arrival of a message from a place that required hours, days, or weeks to reach by ordinary transport was such a radical departure from familiar experience that some telegraph offices were able to collect admission fees from spectators wanting to witness the feat for themselves. Scientists in many countries worked to devise a system that could overcome the limitations of the telegraph wire. In 1895 Italian invent or Guglielmo Marconi transmitted a message in Morse code that was picked up about 3 km (about 2 mi) away by a receiving device that had no wired connection to Marcni's transmitting device. Marconi had demonstrated that an electrical signal could be cast broadly through space so that receivers at random points could capture it. The closed circuit of instant communication, bound by the necessity of wires, had at last been opened by a so-called wireless telegraph. The invention was also called a radiotelegraph (later shortened to radio), because its signals moved outward in all directions, or rapidly, from the point of transmission. The age of broadcasting had begun. Within 5 years a wireless signal had been transmitted across the Atlantic Ocean from England to Newfoundland, Canada. Broadcasting advanced on other fronts as well. In 1904 an American inventor Lee De Forest built a series of radio broadcasting stations in the Caribbean basin to facilitate greater efficiency in shipping perishable goods from Central America to ports in the United States. These linked stations, which shared current information on weather and market conditions, constituted the first broadcasting network. The work of Canadian inventor Reginald Fessenden, later elaborated upon by De Forest, allowed for the broadcast transmission of a wider range of sounds, including the human voice. Although in the early days of radio broadcasting was dominated by experimenters and hobbyists. Before 1917 the U.S. government, which had begun requiring licenses for radio operators in 1912, had issued more than 8000 licenses to hobbyist broadcasters.

2. Ответьте на вопросы к тексту:

1.How are broadcasting, radio and television defined?

2.What does the term broadcasting refer to?

3.What is broadcasting?

4. What did national leaders often use radio and television broadcasting for?

5. Why has broadcasting been regulated since it was recognized as a significant means of communication?

6. What happened in the early 1980s with the new technologies?

7. Broadcasting has become one of several delivery systems that feed content to newer media, has not it?

8. What had long-distance communication depended upon?

9. How could a message be sent?

10. How must a message be conveyed through space?

3. Выпишите в одну колонку предложения со сложным дополнением (Complex Object), а в другую — со сложным подлежащим (Complex Subject). Переведите предложения на русский язык.

1. Radio engineering is known to be the science about electric, magnetic vibrations of high frequency and radio waves.

2. Also radio engineering is defined to be the branch of technology, dealing with the practical use of magnetic vibrations and radio waves.

3. They consider radio engineering to be based on the processes of electrical magnetic vibrations exciting and alternating.

4. The appearance of radio engineering is said to originate thanks to the successes in physics.

5. They think radio engineering to be the part of physics at first.

6. They further development of radio engineering is said to be based on radio physics.

7. The development of radio engineering is evident to be connected to electronics and physics of semiconductors.

8. The modern radio engineering is sure to be impossible without the powerful sources of electric energy.

9. The modern radio engineering is considered to be impossible without modern electrical apparatus and electrical cables and wires.

10. The modern radio engineering is evident to be closely connected to electrical engineering.

4. Перепишите и переведите следующие предложения, тип причастного оборота.

1. The Sun-Mate Info-Mate being considered not to be one that one would expect in this kind of review.

2. Talking about satellite and Internet radio, a number of international broadcasters have been investing in updating and improving

their shortwave transmission systems.

3. Having been a venerable 1970s-era multiband receiver the RF-2200 was thought to be one of the best analog transistor radios ever made.

4. Having problems Grundig sent three very different sets to test.

5. Being of poor design a radio is completed with fabric speaker cloth and brass emblems.

7. Worrying about a power source, the solar-powered Info-Mate must be bought.

5. Подберите русские эквиваленты английским терминам:

1. наука об электромагнитных колебаниях – a} telegraphy

2. беспроводная телеграфия b} science about electromagnetic vibrations

3. высокая частота c} physics of semiconductors

4. физика полупроводников d} wire

5. электрический кабель f} frequency

6. провод g} electrical cable

7. мощные источники электроэнергии h} processes of excitement and changes

8. электроаппаратура i} radio-technics

9. процессы возбуждения и преобразования j} powerful sources of electrical energy

10. радиотехника k} electrical apparatus

6. Вставьте в предложение соответствующее слово, данное под чертой.

1. The term refers to the airborne transmission of electromagnetic audio signals (radio) or audiovisual signals (television) that are readily accessible to a wide population via standard receivers.

2. Morse's first message, «What hath God withroutdht?»- transmitted conveyed his awareness of the momentous proportions of the achievement.

3. Within 5 years a wireless signal.....across the Atlantic Ocean from England to Newfoundland, Canada.

4. The instantaneous arrival of a message from a place that required hours, days, or weeks to reach by ordinary transport was such a radical departure from familiar experience that some telegraph offices were ablewanting to witness.

5. Although in the early days of radio broadcasting was domi-

nated by

6. Throughout history, had depended entirely upon conventional means of transportation.

7. Beginning in the early 1980s, new technologies -..... – began.

8. In 1904 an American inventor Lee De Forest built a series..... in the Caribbean basin.

as a coded series of short and long electronic impulses, experimenters and hobbyists, broadcasting, of radio broadcasting stations, had been transmitted, to collect admission fees from spectators, long-distance communication, such as cable television and videocassette players.

7. Составьте резюме на английском языке на основе вакансии инженера связи и телекоммуникаций.

2 ВАРИАНТ КОНТРОЛЬНОГО ЗАДАНИЯ

1. Прочитайте и устно переведите следующий текст. Переведите письменно второй и третий абзацы текста.

Short wave Receiver

Despite all the talk about satellite and Internet radio, a number of international broadcasters have been investing in updating and improving their shortwave transmission systems. And while many people may not have noticed, manufacturers of shortwave receivers have been similarly busy. To get a sense of what sorts of receivers are available today, I requested and received samples from Grundig, Sangean and Sun-mate. For good measure, and to serve as a basis for comparison, I also hauled out my trusty Panasonic RF-2200. The RF-2200 is a 1970s-era multiband receiver that, for many, was one of the best analog transistor radios ever made.

Grundig sent three very different sets to test. The first was the GrundigSatellit 800 Millennium. With a weight of 6.5 kilograms, measurements of 52 x 22.8 by 20.3 centimeters, and unmatched audio quality, the Millennium is the top-of-the-line offering from Grundig. It has all the bells and whistles: continuous coverage, digital circuitry, direct keypad input, single sideband (SSB) for amateur radio and CW (code) reception, three adjustable bandwidth filters, digital readout and programmable memories. At the other end of the scale was the

Grundig Mini World 100 PE; the smallest set . In fact, the 100 PE is often called the "World's Smallest Shortwave Receiver". At 6.9 by 10.1 by 1.9 centimeters in size and a weight of just 125 grams, the label fits. This is an analog, dial-driven set that can use either a built-in speaker or head-sets. In features six shortwave bands, plus AM and FM; and there is no SSB or adjustable filters. In between was the Grundig Classic 960. This is a 50th anniversary version of the classic Grundig AM/FM/SW radio. In a word it is beautiful: A solid wood-cased radio complete with fabric speaker cloth and brass emblems. In fact, the Classic 960 looks like it is fresh from the 1950s. It sounds good, too.ATS-505 was received from Sangean. This unit has the same features as the Grundig Millennium, including digital circuitry, direct keypad entry, SSB and memory presets. Yet it is only about the size of a paperback book.Granted, the audio is not quite as good as the giant-sized Grundig- but it is still very good. As well, you can always use the supplied ear-bud headphones.

Solar power.The Sun-Mate Info-Mate radio is not one that one would expect in this kind of review, because its main feature is that the radio can be powered using a built-in hand generator, built-in solar panels, a car lighter adaptor, AC or included rechargeable Ni-Cad batteries. However, since the 11-band Info-Mate uses Hitachi technology and tunes a number of shortwave bands, I decided to include it. It is about the size of ATS 505. Finally, there is old Panasonic RF2200: a bit long in the tooth right now, but still going strong after all these years. All the radios were compared against each other, on the same frequencies and at the same time. For reception, I either used the built-in antenna on the set or the 6-meter rollout wire antenna supplied by Grundig. The Grundig Millennium won hands down in all categories except portability and price. It has good sensitivity to signals. In particular, the bandwidth filters on the Millennium, which allow users to block out adjacent stations by narrowing the amount of spectrum being received, are a blessing. Easily the best all-round listening set I worked with.

Close behind in second place was the Sangean ATS-505. It just did not sound as good as the Millennium due to its smaller speaker. However, it is worth remembering that the ATS-505 costs a good bit less.When it came up to performance, the ATS-505 & the Millennium were head-to-head. For instance, the Millennium won out receiving Radio Sweden International on 18960 kHz at 12:50 UTC.

However, the ATS-505 did better with the BBC on 9515 kHz 25 minutes earlier, simply because it somehow avoided an annoying hum that the Grundig picked up. So, the verdict is: for versatile per-

formance on a budget, the ATS-505 is the best choice. The number three slot was shared by Panasonic RF2200, the Mini World 100 PE and surprise the Info-Mate. Depending on the station, each set showed better performance than the other two. The morale is that if portability is what is most important, then buy the Mini World 100 PE. If you don't want to worry about a power source, then buy the solar-powered Info-Mate. Which brings me to the Grundig Classic 960. It has a great look; it even has input jacks for CDs or computer audio. But as for shortwave reception, the two world bands on the Classic 960, although continuous, are too crowded; just like a 50-year-old radio would be. This is a receiver for those who love the look of a classic radio, & whose shortwave listening tends towards BBC & other strong, easily received stations. So Grundig Classic 960 is still a work of art as far as I am concerned.

2. Ответьте на вопросы к тексту:

1. What was the first receiver?
2. What radio-set was at the other end of the scale?
3. What devices were used in dial-driven set?
4. What radio-unit has the same features?
5. How is the solar power connected with the receivers?
6. Could you tell about the Millenium receiver?
7. Whataboutitsportability?
8. Could you tell about its shortwave listening?
9. How does the radio avoid an annoying hum?
10. What about Millennium-radio sensitivity to signals?

3. Переведите следующие предложения на английский язык, обращая внимание на перевод причастия 1 и причастия 2 (Participle 1, Participle 2).

1. Электронная аппаратура, разработанная для решения задач радиотехники, применяется также в самых различных областях науки.

2. Возможность применения одной и той же аппаратуры для радиотехнической, промышленной привела к возникновению объединяющего понятия радиоэлектроника.

3. В первые годы своего развития радиотехника служила для только что созданной беспроводной телеграфии.

4. Разработанные электронные лампы позволили осуществить другие виды радиосвязи.

5. К основным областям радиотехники относятся: генерирование, усиление электромагнитных колебаний, излучение, распространение радиоволн и их приём, осуществляемый различными людьми.

6. Основы радиотехники изучаются также в радиофизике, изложенной в учебнике.

4. Перепишите и переведите следующие предложения, определяя тип причастного оборота: зависимого-независимого.

1. With the developing of an earlier medium, the telegraph the story of radio begins.

2. Having the age-old human desire for a means of communication free from the obstacles of long-distance transportation was realized by the electromagnetic telegraph.

3. The usefulness of telegraphy was such that over the next half century wires were strung across much of the world, including a transatlantic undersea cable (about 1866) connecting Europe and North America.

4. The first public telegraph line -having been completed in - it ran about 64 km (about 40 mi) from Washington, D.C., to Baltimore, Maryland.

5. Being transmitted within 5 years a wireless signal was sent across the Atlantic Ocean from England to Newfoundland, Canada.

6. It allowed for the broadcast transmission of a wider range of sounds, including the human voice.

7. Being dominated by experimenters and hobbyists in the early days broadcasting developed quickly.

5. Подберите русские эквиваленты английским терминам:
updating and improving their shortwave transmission-a}
цифровая схема

to haul out -b}

multiband receiver -c} из (сети)

digital circuitry-d} вход прямой клавиатуры

direct keypad input- e} усовершенствовать и улучшать их передачу на коротких волнах

single side band-f} встроенная колонка

built-in speaker -g} единственная помеха

the supplied ear-bud head phones-h} выдвижная проводная антенна

built-in-solar panels- i} для зажигалки в машине

a car lighter adaptor- k} встроенные солнечные панели

roll out wire antenna -прилагаемые наушники

jacks- прослушивание на короткой волне

short wave listening - o} клеммы

6. Вставьте в предложение соответствующее слово, данное под чертой.

1. To get a sense of what sorts of receivers are available today,

I requested and received samples from

2. The main feature is that the radio can be powered using a built-in hand....., built-in solar panels, a car lighter adaptor.

3. All the radios were compared against each other, on the same and at the same time.

4. So,it is: for versatile performance on a budget, the ATS-505 is the best choice.

5. In particular, the bandwidth filters on the Millennium, which allow users narrowing the ammount of spectrum being received, are a blessing.

6.. .This is a for those who love the look of a classic radio.

7.So 960 is still a work of art as far as I am concerned.

frequencies , generator , Grundig, Sangean and Sunmate; the verdict, to block out adjacent stations by, Grundig Classic, receiver.

7. Составьте резюме на английском языке на основе вакансии инженера связи и телекоммуникаций.

3 ВАРИАНТ КОНТРОЛЬНОГО ЗАДАНИЯ

1.Прочитайте и устно переведите следующий текст. Переведите письменно второй и третий абзацы текста.

Radio-frequency engineering

Radio-frequency engineering is a subset of electrical engineering that deals with devices that are designed to operate in the radio frequency (RF) spectrum. These devices operate within the range of about 3 kHz up to 300 GHz.

Radio-frequency engineering is incorporated into almost everything that transmits or receives a radio wave, which includes, but is not limited to, mobile phones, radios, Wi-Fi, and two-way radios. Radio-frequency engineering is a highly specialized field falling typically in one of two areas: providing or controlling coverage with some kind of antenna/transmission system; generating or receiving signals to or from that transmission system to other communications electronics or controls. To produce quality results, an in-depth knowledge of mathematics, physics, general electronics theory as well as specialized training in areas such as wave propagation, impedance transformations, filters, microstrip circuit board design, etc. may be required. Because of the many ways RF is conducted both through typical con-

ductors as well as through space, an initial design of an RF circuit usually bears very little resemblance to the final optimized physical circuit. Revisions to the design are often required to achieve intended result.

Radio electronics is concerned with electronic circuits which receive or transmit radio signals. Typically, such circuits must operate at radio frequency and power levels, which imposes special constraints on their design. These constraints increase in their importance with higher frequencies. At micro wave frequencies, the reactance of signal traces becomes a crucial part of the physical layout of the circuit. Radio-frequency engineers are specialists in their respective field and can take on many different roles, such as design, installation, and maintenance. Radio-frequency engineers require many years of extensive experience in the area of study. This type of engineer has experience with transmission systems, device design, and placement of antennas for optimum performance. A radio-frequency engineer at a broadcast facility is responsible for maintenance of the stations high-power broadcast transmitters and associated systems. This includes transmitter site emergency power, remote control, main transmission line and antenna adjustments, microwave radio relay STL/TSL links, and more.

In addition, a radio-frequency design engineer must be able to understand electronic hardware design, circuit board material, antenna radiation, and the effect of interfering frequencies that prevent optimum performance within the piece of equipment being developed.

Many notable individuals have contributed to the advancement of Radio-frequency engineering theory and design, including the following:

Heinrich Hertz, demonstrated the existence of radio waves and developed the unit of measure to describe frequency of a wave.

Nikola Tesla, known for his high-voltage, high-frequency power experiments in New York and Colorado Springs. Tesla's primary interest was wireless power transmission through a medium (primarily the Earth) with demonstrations in 1893 in St. Louis, Missouri, at the Franklin Institute In Philadelphia, Pennsylvania, and at the National Electric Light Association but saw communication as a side aspect.

Guglielmo Marconi, who developed the first successful commercial wireless telegraphy system based on air-born radio frequency waves -called Herzian waves at the time- and transmitted the first radio signal across the Atlantic Ocean.

Phillip H. Smith, who developed a graphical method of calculating impedances, admittances, reflection coefficients and scattering

parameters.

2. Ответьте на вопросы к тексту:

1. What is radio-frequency engineering incorporated into?
2. What are the two areas of radio-frequency engineering?
3. What do radio-frequency engineers require?
4. What is a radio-frequency engineer at a broadcast facility responsible for?
5. Who has contributed to the advancement of Radio-frequency engineering theory and design?
6. What is radio electronics concerned with?
7. What is H. Hertz famous for?
8. What is Nikola Tesla famous for?
9. What is G. Marconi famous for?
10. What is P.H. Smith famous for?

3. Выпишите в одну колонку предложения со сложным дополнением (Complex Object), а в другую — со сложным подлежащим (Complex Subject). Переведите предложения на русский язык.

1. The modern radio engineering is evident to be closely connected to electrical engineering.
2. The development of radio engineering is evident to be connected to electronics and physics of semiconductors.
3. The further development of radio engineering is said to be based on radio physics.
4. The modern radio engineering is considered to be impossible without modern electrical apparatus and electrical cables and wires.
5. The modern radio engineering is sure to be impossible without the powerful sources of electric energy.
6. They consider radio engineering to be based on the processes of electrical magnetic vibrations exciting and alternating.
7. Also radio engineering is defined to be the branch of technology, dealing with the practical use of magnetic vibrations and radio waves.
8. They think radio engineering to be the part of physics at first.
9. The appearance of radio engineering is said to originate thanks to the successes in physics.
10. Radio engineering is known to be the science about electric, magnetic vibrations of high frequency and radio waves.

4. Перепишите и переведите следующие предложения, определяя тип оборота (зависимый или независимый причастный оборот).

1. The Panasonic RF2200 being designed some decades ago, it is still going strong after all these years.

2. Having discovered some problems Grundig sent three very different sets to test.

3. Being worried about a power source, they decided to buy the solar-powered Info-Mate.

4. Talking about satellite and Internet radio, a number of international broadcasters have been investing in updating and improving their shortwave transmission systems.

5. Having made a lot of experiments completed a solid wood-cased radio with fabric speaker cloth and brass emblems.

6. Having used Hitachi technology and tunes on a number of shortwave bands, I decided to include it into 11 band Info-Mate.

7. Knowing RF-2200s a venerable 1970s-era multiband receiver they thought it to be one of the best analog transistor radios ever made.

8. The Sun-Mate Info-Mate radio is considered not to be one being expected in this kind of review.

5. Подберите русские эквиваленты английским терминам:

1. radio-frequency engineering – a) работать в диапазоне

2. to operate within the range – b) работающая в диапазоне радио частот

3. wave propagation – c) изменения полного сопротивления

4. board design d) проводники

5. impedance transformations – e) распространение волн

6. conductors - f) дизайн панели

7. electronic circuits- d) специальные ограничения

8. micro wave radio relay- e) цепи

9. reactance – f) радио реле

10. to impose special constraints – g) реактивное сопротивление

6. Вставьте в предложение соответствующее слово, данное под чертой.

1. A radio-frequency design engineer must be able to understand electronic hardware design, circuit board material, antenna radiation, and within the piece of equipment being developed.

2. Radio-frequency engineering is a that deals with devices that are designed to operate in the radio frequency (RF) spectrum.

3. Radio electronics is concerned with which receive or transmit radio signals.

4. At micro wave frequencies, the reactance of signal traces be-

comes a crucial part of the... ..

5. Tesla's primary interest was through a medium (primarily the Earth) with demonstrations in 1893.

6. Guglielmo Marconi developed the first successful commercial system based on air-born radio frequency waves.

the physical layout of the circuit , electronic circuits, subset of electrical engineering, the effect of interfering frequencies that prevent optimum performance; wireless power transmission, wireless telegraphy.

7. Составьте резюме на английском языке на основе вакансии радиомонтажника.

4 ВАРИАНТ КОНТРОЛЬНОГО ЗАДАНИЯ

1.Прочитайте и устно переведите следующий текст. Переведите письменно второй и третий абзацы текста.

History of the Institute of Radio Engineers 1912-1963

At the turn of the century, a new electrical technology, radio, or wireless as it was originally known, emerged out of principles coming from physics, most notably the electromagnetic spectrum. Italian inventor Guglielmo Marconi's 1901 wireless broadcast of Morse code across the Atlantic began a global period of feverish activity, especially among young men with an technological bent. It was the "hot" technology of the day. By 1912, it was a young profession, with radio telegraph stations connecting ships at sea. A small group of men representing local societies in New York and Boston met in New York in May 1912, and led by Robert Marriott, Alfred Goldsmith, and John V.L Hogan, formed the Institute of Radio Engineers. Marriott became the first IRE president. To a large extent, they modeled their Institute on the AIEE, with membership grades, a journal, local sections, standards activities, and technical meetings, but there were other influences as well. They established their journal, the Proceedings of the IRE along the lines of scientific journals, with papers directly submitted and peer review, which allowed for faster publication than the AIEE's policy that papers be presented at meetings first. They deliberately did not include "American" in their name, to signify the transnational nature of radio.

Growth of Radio

Radio itself was transformed by the development of the vacuum tube amplifier, the first electronic device, from its origins in the Audion three-element vacuum or electron tube, patented in 1906 by inventor and 1930 IRE President Lee de Forest. Morse code yielded to sound

and radio broadcasting swept the world. Between 1920 and 1930 the number of U.S. homes with radio climbed from 0 to 14 million. Radio broadcasting evolved towards large interconnected systems of radio networks, such as the United States' NBC and CBS.

The Rise of Electronics

The 1940s electronics rose to a new prominence as governments throughout the world organized their scientists and engineers to devise technologies for use in World War II. One set of efforts produced pioneering electronic digital computers such as Colossus in England and ENIAC the United States that used thousands of vacuum tubes. An even larger effort, centered on the euphemistically named Radiation Lab established at MIT, developed radar as an important war tool. To the chagrin of IRE, physicists played a far more prominent role in these advances than engineers. With the invention of the transistor, the first solid state electronic amplifier and switch in 1947, the possibilities for electronics seemed endless.

Rapid Post-War Growth

The IRE in grew rapidly alongside these changes, expanding from 6,000 members in 1940 to 17,000 members in 1945 and 21,000 members in 1950, In 1948, IRE adopted a decentralized "professional group" structure that allowed it to incorporate the new fields, such as electronic computers and information theory, hold specialized conferences, and publish specialized journals. In 1956, the IRE passed the AIEE in the number of student members as students increasingly turned to electronics. In the following year IRE became the larger society in total number of members as well with both societies over 50,000. While the IRE had always accepted members from other countries, most of whom joined to receive its highly regarded journals, that number grew as well, and IRE members formed sections in countries including Japan, Italy, Israel, and Colombia. By the early 1960s, IRE had over 90,000 members. The relative rate of growth, and the increasing centrality of electronics to all parts of electrical engineering, led to increased interest on the part of both societies to merge and form a single society that would be a single center for all electrical engineers. The two societies merged on January 1, 1963 to form the Institute of Electrical and Electronic Engineers. (IEEE)

For a more detailed history of the IRE, see the two books the IEEE published in 1984 on the occasion of the centennial of the older predecessor organization, AIEE:

2. Ответьте на вопросы к тексту:

1. How did the new electrical engineering appear?
2. When was the Institute of Radio Engineers formed?

3. Whendid aglobal period of feverish activity begin?
4. How was the Radio transformed?
5. Who patented the electron tube?
6. Where was the electronics technology used in 1940s?
7. What was invented in 1947?
8. Which countries were the part of the IRE?
9. How many people were joined to the IRE by 1960s?
10. When the Institute of Electrical and Electronic Engineerswas formed?

3. Переведите на русский язык следующие предложения, определив тип причастного оборота (зависимый, независимый).

1. The IRE grew rapidly alongside these changes being characterized by expanding from 6,000 members in 1940 to 17,000 members in 1945 and 21,000 members in 1950.

2. In 1948, IRE adopted a decentralized "professional group" structure allowing to incorporate the new fields, such as electronic computers and information theory.

3. Having accepted members from other countries, most of whom joined to receive its highly regarded journals, the IRE number grew.

4. With one set of efforts produced pioneering electronic digital [such as Colossus in England and ENIAC the United States] used thousands of vacuum tubes.

5. The papers being directly submitted and reviewed, it allowed for faster publication than the AIEE's policy that papers be presented at meetings first.

6. Having met in New York and Boston in May 1912, Robert Marriott, Alfred Goldsmith and John V.L Hogan formed the Institute of Radio Engineers.

4. Переведите следующие предложения на английский язык, обращая внимание на перевод причастия 1 и причастия 2 (Participle 1, Participle 2).

1. В первые годы своего развития радиотехника служила для только что созданной беспроводной телеграфии.

2. Основы радиотехники изучаются также в радиофизике, изложенной в учебнике.

3. К основным областям радиотехники относятся: генерирование, усиление электромагнитных колебаний, излучение, распространение радиоволн и их приём, осуществляемый различными людьми.

4. Возможность применения одной и той же аппаратуры для радиотехнической, промышленной привела к возникновению объ-

единяющего понятия радиоэлектроника.

5. Электронная аппаратура, разработанная для решения задач радиотехники, применяется также в самых различных областях науки.

6. Разработанные электронные лампы позволили осуществить другие виды радиосвязи.

5. Подберите русские эквиваленты английским терминам:

1. wireless –a}электронный усилитель звука и переключатель

2. electronic amplifier and switch -b} радио

3. electronic digital computers-c}вакуумная или электронная трубка

4. vacuum or electron tube – d}электронные цифровые компьютеры

5. electromagnetic spectrum – e}азбука Морзе

6. electrical engineers – f}электромагнитный спектр

7. Morse code- g}электротехники

8. the transnational nature of radio –h}сливаться воедино

9.to merge –i} характер радио

6. Вставьте в предложение соответствующее слово, данное под чертой.

1. At the turn of the century, a new electrical technology, radio, or wireless as it was originally known, emerged out of principles coming from physics, most notably the

2. Between 1920 and 1930 the number of U.S. homes with radio climbed from 0 to 14 million. Radio broadcasting evolved towards large of radio networks, such as the United States' NBC and CBS.

3. The relative rate of growth, and the increasing centrality of electronics to all parts of electrical engineering, led to increased interest on the part of both societies to merge and form a single society that would be a single center for all

4. To a large extent, they modeled their Institute on the AIEE, with, a journal, local sections, standards activities, and technical meetings.

5. Italian inventor Guglielmo Marconi's 1901 of Morse code across the Atlantic began a global period of feverish activity.

6. They deliberately did not include "American" in their name, to signify theof radio.

Inter connected systems, membership grades, electromagnetic spectrum, wireless broadcast, electrical engineers, transnational nature

7. Составьте резюме на английском языке на основе вакан-



сии инженера связи и телекоммуникаций.