ВВЕДЕНИЕ

Настоящие методические указания предназначаются для студентов заочного отделения, обучающихся по специальностям 200800 Проектирование и технология радиоэлектронных средств; 120100 Технология машиностроения; 060800 Экономика и управление на предприятии (по отраслям), продолжающих изучение английского языка на II этапе обучения (III и IV семестры) и составлены с требованиями программы по английскому языку для неязыковых специальностей высших учебных заведений.

Структурно в целях лучшего восприятия содержания предлагаемые методические указания состоят из 3 вариантов контрольных работ (для каждой специальности по три контрольные работы), целью выполнения которых является самостоятельное приобретение знаний студентами по английскому языку и их контроль преподавателем.

В каждом варианте контрольной работы имеются основной и дополнительный тексты, заимствованные из оригинальной научно-технической литературы на английском языке с учетом уровня знакомства студентов II курса с технической терминологией и типичности отобранного языкового материала для стиля научно-технической литературы. Также имеются послетекстовые и творческие упражнения, обеспечивающие надежность усвоения материала.

Контрольная выполняется студентом письменно. Ее выполнение рассчитано на работу со словарем.

III семестр

Специальность 200800 Проектирование и технология радиоэлектронных средств

Variant I

History of electronics

Electronics is the science dealing with devices operated by control of the movement of electric charges in a vacuum, in gases, or semiconductors; or with the processing of information or the control of energy by such devices. This definition covers the whole complex family of vacuum and gaseous electron tubes and their applications. It also includes metallic contact or semiconductor rectifiers and the transistors which utilize the control of electrons or positive charges (holes) to process information or to convert energy.

Electronics was born in the 19^{th} century. Like hydrolysis or chemistry it has come into its own only recently. Electronics first established itself, however, in wireless telegraphy. Industrial applications of electronics include control

gauging, counting, heating, speed regulation, etc. But in a larger field, electronics leads to automatic control of large-scale industrial operations.

Today, electronics has started a new era. Electronic devices are doing simple, but human-like thinking. Some industries are controlled by electronic robots. Automation is the industrial keynote of the day. Planes and rockets are electronically controlled. Some radiotelescopes work like radar to receive radio waves from outer space. Shortly speaking, electronics is not so much a new subject as a new way of looking at electricity.

Notes to the text

to deal with - иметь дело с...
to operate - работать
charge - заряд
semiconductor - полупроводник
to process - обрабатывать
tube - лампа
rectifier - выпрямитель
to utilize - использовать
to convert - преобразовывать
gauge - мера, измерительный прибор
large-scale - крупномасштабный
has come into its own - заняла подобающее место

Answer the following questions.

1. What is the electronics?
2. When was electronics born?
3. Where did electronics first establish itself?
4. What does electronics lead to in a larger field?
5. What thinking is electronics doing?
6. In what branches of science and technology is electronics used?

Capacity and Condensers

When we bring two insulated conductors, one charged and another uncharged, into contact, the charge spreads over both conductors. The uncharged conductor becomes charged. A larger conductor receives a larger part of the charge. The potential of the two conductors becomes the same but the quantity of electricity is not the same on each. The larger portion of charge is on the larger conductor. We say that conductors have not the same capacity for electricity. The capacity of the conductor depends upon its size. We measure the capacity of the

conductor by the quantity of electricity which raises its potential to a given amount. From this definition we see that if the capacity of a conductor increases, while the quantity of electricity on it remains constant, its potential becomes less.

Any arrangement by which we increase the capacity of a conductor artificially is called a condenser. The most usual form of a condenser is a large number of thin sheets of tin-foil separated from each other by sheets of paraffin paper.

The capacity of a condenser depends directly upon the area of the sheets of the tin-foil. Condensers are of great practical use. We use them in some systems of telephony and telegraphy, in wireless communication, and in electronic machines, and induction coils.

Condensers used in all cases of electrical and radio work are of two main types: fixed condensers and variable condensers.

Notes to the text

to insulate - изолировать
to spread over - распространяться на...
amount - количество, сумма, величина
arrangement - устройство
to depend upon (on) - зависеть
induction coil - индукционная катушка
fixed condenser - постоянный конденсатор
variable condenser - переменный конденсатор

Answer the questions.

1. What does the capacity of conductor depend upon?
2. What is the most usual form of a condenser?
3. What are the main types of the condensers?

Translate the following sentences.

1. Without electronics there might be no radio, television, sound pictures or long-distance telephone calls.
2. Having been discovered many years ago this metal found a wide application in industry only last year.
3. Since no heating is required there is no delay in transistor equipment waiting for things to warm up.
4. We know of his having contributed much to the research of transistors.
5. The equipment tested required further improvement.