

The "if-clause" of conditional sentences most often is reduced to "infinitive phrase" and the "main clause" is changed from "active to passive"

2. Model: a. If you want to construct a simple transformer, you should wind two separate coils on one iron ring.
- b. To construct a simple transformer, two separate coils should be wound on one iron ring.

Part II

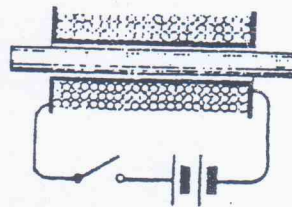
Reading for Comprehension

Electromagnets and Transformers

A simple electromagnet can be constructed by winding about 20 turns of cotton-covered wire around a two-inch nail. The nail will be magnetized as soon as the ends of the coil are connected to a flashlight battery. The strength of an electromagnet depends on the number of turns in the coil and on the strength of the current.



(a) Magnet

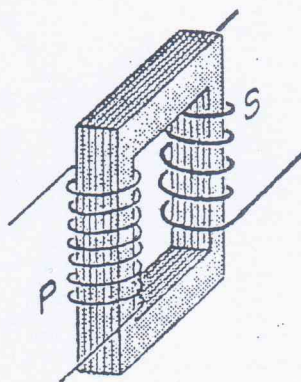


(b) Electromagnet

Electromagnets are used for many purposes in all kinds of electrical machinery. Powerful electromagnets, attached to cranes, are used to lift pieces of iron or steel rails. When the crane operator wants to lift a rail he lowers the magnet onto the rail, then switches on the current. This holds the rail to the magnet. He can now lift the rail from its place and deposit it elsewhere. When the current is switched off, the contact between the magnet and the rail is broken, and the rail drops. Electromagnets can also be used to remove little bits of iron from various materials. When chocolate has been ground, for example, the powder can be passed under a magnet which attracts any bits of metal introduced into the powder during the grinding process.

Electromagnets are also used in the construction of transformers. The principle comes from the fact that if a magnet is moved backwards and forwards through a coil, alternating current (A.C.) is produced in the coil. A better way to do this is to place inside the coil an electromagnet which already has alternating current. The result will be a flow of alternating current in the external coil. This simple process is known as induction which is actually the basis of transformers.

To construct a simple transformer, two separate coils are wound on one iron ring. When an alternating current is passed through one coil, an alternating current will be induced in the other coil. The voltage of the current in the second coil will be the same as the voltage in the first if there are the same number of turns of wire on each. But if the second winding has twice as many turns as the first, the voltage will be twice as great; the current that can be obtained from it, however, will be only half the current obtained from the first coil. This mechanism for changing the voltage of a current supply is called a transformer.



Simple transformer

When electric power is transmitted from one town to another, power losses caused by the resistance of the cables can be reduced by transforming the original voltage to several hundred thousand volts at the power station. At the other end of the line, in homes, factories, hospitals, etc. the voltage can be transformed back again to 240 volts or less. To transform something means to change its form. The form of electric power is changed when its voltage is raised or reduced, or the current increases or decreases. A transformer is a device for intensifying the voltage of electricity at the expense of its current or rate of flow. But before the voltage can be transformed in this way the current must be converted from direct current (D.C.) to alternating current (A.C.). This is another kind of transformation in the general sense of the word.

45 Conversion from high to low voltage, or from low to high voltage, requires a transformer; the devices required for converting D.C. to A.C. and A.C. to D.C. are called convertors and rectifiers, respectively.

A. Read each statement and decide whether it is true or false. Write "T" before true statements and "F" before false statements.

1. The construction of a transformer is based on the fact that an electromagnet placed inside a coil will induce an alternating current into that coil.
2. In a transformer, the number of turns of wire around the second coil are directly proportional to the amount of voltage and current induced in it from the first coil.
3. The strength of an electromagnet is directly proportional to the number of turns of wire in the coil and the strength of the current.
4. When electric power is transmitted from one town to another, the resistance of the cables causes extra power.
5. A power station has the ability to transform a certain voltage to several hundred thousand volts.
6. When the voltage of electric power is raised or reduced, the form of electric power remains the same.

B. Circle a,b,c, or d which best completes the following items.

1. A convertor is a device for converting
 - a. high voltage to low
 - b. low voltage to high
 - c. D.C. to A.C.
 - d. A.C. to D.C.
2. To make a transformer
 - a. one coil is wound on one iron ring
 - b. two coils are wound on one iron ring
 - c. one coil is wound on two iron rings
 - d. two coils are wound on two iron rings
3. Paragraph 2 mainly discusses
 - a. various uses of electromagnets
 - b. the mechanism of a crane
 - c. how bits of metal are extracted from chocolate powder
 - d. how a crane operator works

9. The of any piece of wire depends on its length, thickness and the material of which it is made.
10. Magnetism which is induced by an electric current is known as electro-magnetism.
11. A thin wire the flow of electricity more than a thick one.
12. A mixture of tin and lead is often used as solder to the ends of two wires together.

B. Fill in the blanks with the appropriate words from the list below. *There are more options than required.*

diameter	permeable
convert	external
properties	disconnect
physicist	rectifier
core	generator
lubrication	energy
batteries	electromagnetism
magnet	

1. Certain substances are known to have magnetic
2. The electric bell works on the principle of
3. A circular coil whose axial length is considerably greater than its is usually referred to as a solenoid.
4. Light, heat, and electric current are three different forms of
5. The magnetic field for a D.C. is usually provided by a field winding.
6. A transformer consists essentially of two coils wound on a laminated iron
7. A is often made in the shape of a bar or horseshoe.
8. Rectifiers are widely used for charging from A.C. mains.
9. The magnetic core of a transformer is made of highly material.

10. The function of a switch is to connect and
an electric current.

C. Match the words in Column I with their appropriate equivalents in Column II. Insert the letters a, b, c... in the parentheses provided. There are more options in Column II than required.

Column I

Column II

- | | |
|-------------------|---|
| 1. lamination () | a. device which produces electricity |
| 2. distortion () | b. group of wires enclosed in a sheath or covering |
| 3. rate () | c. inaccurate reproduction of an electric current |
| 4. magnetism () | d. substance that allows electricity to flow readily through it |
| 5. generator () | e. thin sheets of metal |
| 6. cable () | f. amount of something in relation to another |
| 7. conductor () | g. low resistance connection |
| | h. magnetic phenomena and properties |
| | i. tiny individual magnet |

Section Two:

Grammatical Exercises

A. Do the following exercises according to the explanations given in the Pre-reading Part. Write your sentences in the spaces provided.

1. a. He has recently bought a house which has three storeys.
b.
2. a. Our university published a book with two hundred pages last year.
b.