英　语

ENGLISH

〔自控专业〕

上海纺织工学院

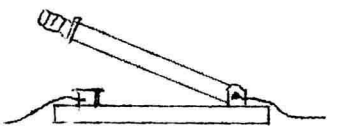
无锡轻工业学院纺织专科班翻印

Lesson One

Switches and Circuits

Text:

This is a switch.

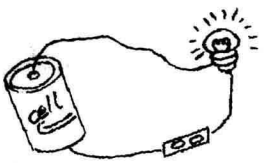


That is a circuit.

The switch is in the circuit.

These are switches.

Those are circuits.



The switches are in the circuits.

word list

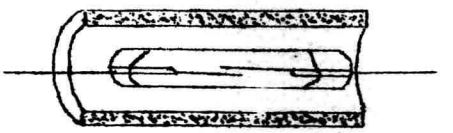
1.	switch	[switʃ]	1.	开关
2.	circuit	[sə:kit]	2.	电路

Lesson Two

Switches and Relay

Text:

What is this? It is a switch.
There is one switch in the circuit.
What is that?
It is a relay.
There is one relay in the cricuit.



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What are these? They are switches.
There are two switches in this circuit.
What are those? They are relays.
There are three relays in that circuit.

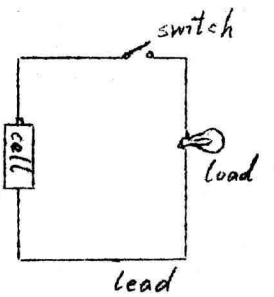
word list

/. relay ['ri:'lei] n. 继电器

Lesson Three

A Basic Circuit

Text:



Below is a basic circuit.

A basic circuit consists of a source of voltage, conductors, electrical devices and connectors.

The source of voltage causes current to flow.

The conductors provide a path for the current.

The devices are operated by the current.

The connectors (terminals) join conductors to a source or a device.

Since it is often desirable to open or close a circuit, nearly all circuits contain some form of a switch.

word list

1.	below	[bi'lou]	ad.	下面，下边
2.	cause	[kɔ:z]	vt.	引起，使
3.	conductor	[kən'dʌktə]	n.	连接[电]，插头，插塞
4.	desirable	[di'zaiərəbl]	a.	合乎需要的
5.	terminal	['tə:minl]	n.	接头，端点

Expressions

1	below is …	下面是…
2	a basic circuit	基本电路
3	a (the) source of voltage	电压源
4	cause … to (do)	引起…(做某事)
5	it is desirable to …	想要，需要
6	open a circuit	断开电路
7	close a circuit	闭合电路

Exercises

I. Translate to English

1. 下面是一个电四件.
2. 电流使电四件工作.
3. 电源为电路提供电流.
4. 接头连接导体与四件.
5. 几乎所有电路都含有开关.

Read at more length

1. Electricity

Electricity is a combination of voltage and current. The force of voltage can be compared to the force of a water pump. The force of a pump moves water through a distribution system, generally

an arrangement of pipes. The force of voltage causes electric current to flow through a system of wires.

Notes:

1.	… is a combination of	…是…的结合
2	can be compared to	可以比作
3.	the force of a water pump	水泵的力
4	move … through	驱使…通过
5	an arrangement of pipes	一套管子

2 A Circuit

In electricity, current makes a complete trip through an electrical circuit. If the circuit is not complete, current does not flow. Current flows only if the path through the circuit is complete. A broken wire, a loose connector, or a switch in the OFF position will prevent current from flowing.

Notes:

1	makes a complete trip through	流过整个
2	does not flow	不流动
3.	only if	只要
4	the path through the circuit	电路
5.	a switch in the OFF position	处于断开状态的开关

6. will prevent current from flowing 会阻止电流々通

3. Current

There is an important difference between current in wires and water in pipes, however. Water can flow out of a broken pipe, but current can not flow out of a broken wire. In fact, when the wire is broken, the force of the voltage is removed..

Notes:

1 between current in wires and water in pipes
在线路里的电流和管子里的水流之间

2. out of 从 3. can not flow

4 in fact 事实上

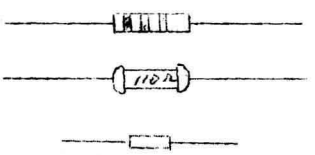
5 is removed 消失，被移去

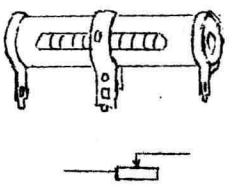
Lesson Four

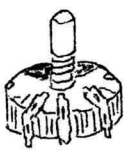
Resistors

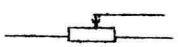
Text:

Resistors are classified in two ways: (1) in terms of their construction (wirewound and composition), and (2) in terms of their type or function (fixed, adjustable, variable).









A fixed resistor has only one nonvariable value. An adjustable resistor provides a range of resistance within the limits of its total value. With the help of a sliding contact, it provides accurately the required resistance value.

A variable resistor uses a shaft to control the resistance value. This shaft is usually connected to a know on the front panel of a device. The volume

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control of a radio or TV set is an example.

word list

1.	adjustable	[ə:dʒʌstəbl]	a	可调的
2.	composition	[kɔmpə'ziʃən]	n.	组织成分
3.	front	[frʌnt]	a.	前部的
4	knob	[nɔb]	n	按钮，旋钮，调节旋
5	nonvariable	[nɔn'vɛəriəbl]	a.	不可变的
6	panel	['pænl]	n.	配电板，仪表盘板
7	shaft	[sa:ft]	n.	轴，杆
8.	sliding	['slaidiŋ]	a.	滑动的
9	total	['toutl]	a.	总的，全体的
10	value	['vælju:]	n.	值，价值
11	variable	['vɛəriəbl]	a.	可变的
12	wirewound	['waiəwaund]	a.	线绕的

Expressions

1.	a fixed resistor	固定电阻(器)
2	an adjustable resistor	可调电阻(器)
3.	within the limit of	在…的范围内
4	total value	总值
5	with the help of	借助…
6.	a sliding contact	滑动接点

7 a variable resistor 可变电阻(器)

8 the resistance value 电阻值

9 the volume control 音量(控制)

Exercises to the Text

I. Select the word from the following list that best completes the sentences below

provide connected has use

1. The devices are to a source of voltage.
2. This circuit only one switch.
3. The conductors a path for the current.
4. We a switch to open or close a circuit.

II. Translate to English:

1. 电阻按作用分 类.
2. 电流可从分成两类
3. 导体为电流提供通道.
4. 电流一般与开关相连.

III. Read at more length

1. Resistance

Resistance is the property of a material to oppose the flow of electric current. Different

materials offer different magnitudes of resistance. The length of a material also affects its resistance. The longer the material is, the greater is its resistance. Resistance is also affected by the cross-section of the material. The less the cross-section, the greater will be its resistance.

Notes:

1. to oppose the flow of electric current 阻碍电流流通
2. different magnitudes 不同的量值
3. is affected by 受…的影响
4. the cross-section 截面

2

Resistance also depends on the temperature of the material. In some materials, an increase in temperature causes an increase in resistance, while in others, an increase in temperature causes a decrease in resistance.

The unit of resistance is the ohm. The symbol for the ohm is omega (Ω). In an electrical formula, the symbol R stands for resistance.

Notes:

1. depend on 取决于
2. an increase in temperature 温度升高
3. in others = in other materials
4. a decrease in resistance 电阻变小
5. the symbol for the ohm 欧姆的符号
6. stand for 代表

3

Wirewound resistors are more expensive to manufacture. They are used in circuits to carry large currents.

Composition resistors are the least expensive to manufacture. However, composition resistors have certain limitations. They can not handle large currents and their measured values may vary as much as 20% from their rated resistance.

Notes:

1. more expensive to manufacture 生产的费用较大
2. are used to carry large currents 用来传送大电流
3. the least expensive to manufacture
   生产的费用最小

4. can not handle 不能处理
5. their measured values 它们测出的数据
6. may vary … from 可能和…相差
7. as much as 多至
8. rated resistance 额定电阻

Lesson Five

Conductors and Insulators

Text

Some materials provide an easy path for current. They are called conductors.

Nearly all metals will conduct current. Silver is the best conductor but is much more expensive than other metals. Other more economical metals, such as copper and aluminum, are good conductors and are quite easily formed into wire. When connected into a circuit, wire is most often referred to as a conductor.

Some materials provide a very poor path for current. They are called insulators. An insulator is also called a nonconductor. Rubber is an insulator. Plastics is another insulator. Current can not flow easily through them.

Word List

1. economical [iːkə'nɔmikəl] a. 经济的，节约的
2. nonconductor [nɔnkən'dʌktə] n. 非导体
3. plastics ['plæstiks] n. 塑料，塑料制品

4. refer [ri'fə:] vt. 涉及，与…有关；参考。

Exercises to the Text

Give the missing words

1. Some materials _____ an easy path _____ current. They are _____ conductors.

2. Nearly all _____ will _____ current.

3. Silver is the _____ conductor but is much _____ expensive _____ other metals.

4. Other more economical metals, such _____ copper and aluminium, are quite easily _____ into _____.

5 When _____ into a circuit, wire is most often _____ to as a _____.

6. Some materials are _____ insulators. Current can _____ flow easily _____ them.

Ⅱ. Select the word from the following list that best completes the sentences below

referred called formed connected

1. Wire is usually _____ into a circuit.

2. Rubber is often _____ to as an insulator.

3. Silver is quite easily _____ into wire.

4 Copper and aluminum are _____ conductors.

Ⅲ. Translate to Chinese

1. in terms of
2. with the help of
3. use … to (do)
4. be connected to
5. resistance value
6. in two ways
7. conduct current
8. much more
9. flow through
10. referred to as

Ⅳ. Translate to English

1 铜与铝被称为导体.

2 铜非常容易制成导线.

3 电流能容易地通过铜.

4 铜为电流提供了一个容易的通道.

Ⅴ Read at more length

1

There is no perfect conductor. Even the best conductors resist the pressure to release electrons. On the other hand, the best insulators have some atoms. These atoms, under conditions of sufficiently high voltage, give up some electrons.

The resistance of a material, then, is determined

by its atomic structure. Keep in mind that no material is a perfect conductor or a perfect insulator.

Most metals contain some atoms. These atoms release electrons very easily. Therefore, they offer the least resistance to current flow.

Insulators have the greatest resistance because their atoms resist the release of electrons.

The in-between materials are neither good conductors nor insulators. Among these are certain materials, the semiconductor.

Notes:

1 there is no … 没有…

2 the pressure to release electrons 释放电子的压力

3 on the other hand 另一方面

4 under conditions of 在…的情况下

5 give up 放弃

6 is (are) determined by 取决于

7 atomic structure 原子结构

8 keep in mind that 记住

9 No material is a perfect conductor or a perfect insulator. 不存在绝对的导体，也不存在绝对的绝缘体.

10 offer the least resistance to 对…的阻力最小