



中等职业教育特色精品课程规划教材
中等职业教育课程改革项目研究成果

电子专业英语

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副主编 李 明

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前 言

为了使中等职业学校的学生在毕业前能用英语系统、全面地了解电子类专业的特点，我们在原有的电子类教材基础上编写了这本《电子专业英语》。

本教材深入贯彻和落实教育部最新颁发的有关英语课程教学基本要求的最新文件，以切实提高广大职业学生的英语语言基础，强化英语使用和涉外交际能力为目的，在比较现行不同版本专业英语教材的优点和不足的基础上，组织专业英语教学经验丰富的教师进行编写。

本书针对性强、实用性强，可供中等职业院校学生在专业领域内的学习使用，也可供专业人士自学使用。

本教材在编写过程中侧重体现以下几个显著特点：

① 定位精确：本教材覆盖了所要求掌握的实用英语语言知识和交际技能，结合目前中等职业院校英语课程设置的特点和学生的实际水平，即社会对中等职业院校学生英语水平的期望，将基础知识、实用技能和专业知识融为一体，力求做到学用结合，学以致用。

② 实用为主，够用为度：该教材强调实用科学性，从网络文章中收集了一些与时俱进的材料，注重文章的可读性，使用大量的图片以增加文章的趣味性，力求使学生的交际能力和应用能力得到全面提高。

本教材的内容由浅入深、选材广泛、通俗易懂、形式多样、适合中等职业院校电子信息类和通信类专业的学生使用。教学中可根据具体教学要求进行内容的取舍，以满足不同层次学生的需要。

北京理工大学出版社为本书的出版提出了宝贵建议，并给予了极大的支持，在此我们表示衷心的感谢。

希望广大师生在使用本教材时能提出宝贵的意见和建议，以便进一步修改，使之日趋完善。在此对关心本书并为此付出辛勤劳动的同志们表示衷心的感谢。

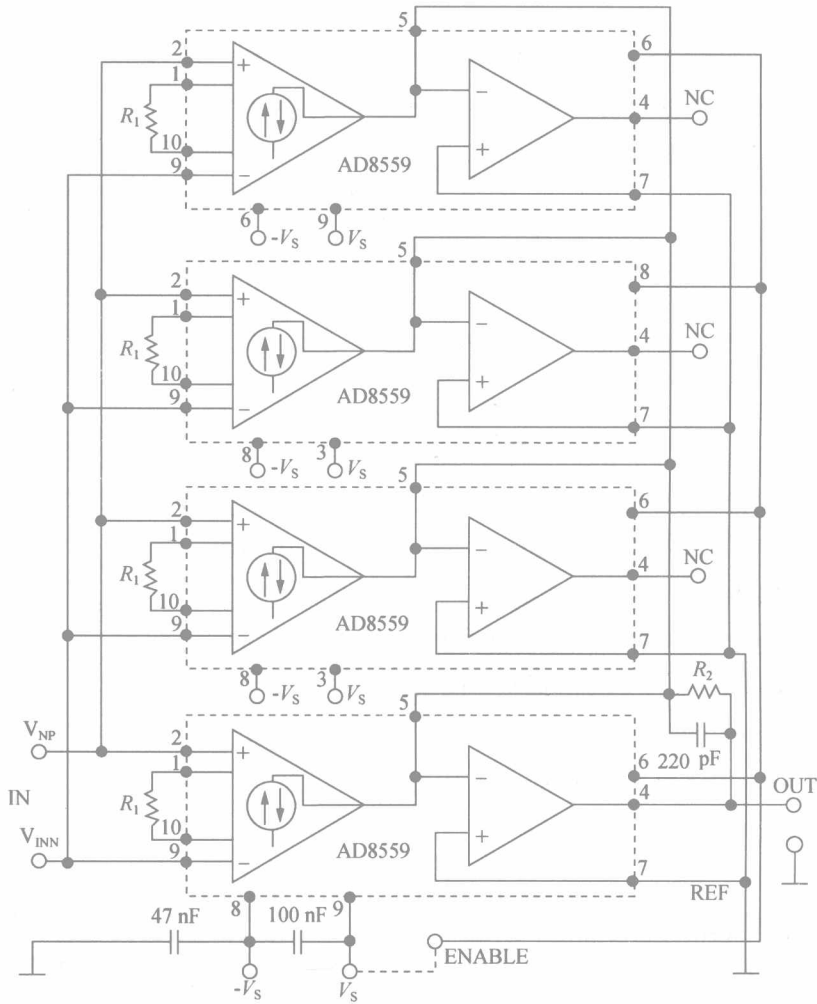
由于时间紧迫，编者水平有限，书中若有纰漏，敬请各位同仁和读者批评指正。

编者

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Unit One Circuit



Unit 1 Circuit

Warming-up

I. Can you point out the names of the following components of a circuit?







II. Do you know what the following symbols stand for?

I	R	Q	E	V
L	C	P	W	U

III. Talk about other components you know and describe what you want to express in English. And there are some patterns you can use:

- ◇ There are a lot of ...
- ◇ A power supply can provide electrical energy...
- ◇ A resistor is a device that consumes energy...
- ◇ A wire is used to transmit energy...
- ◇ A switch can join or break the wire.

Text Comprehension

Circuits

An electric circuit often consists of four basic parts: the power supply such as a battery, the

conductors or wires; the control device such as^① a switch, and the load or electric appliance, which converts the electrical energy into other forms of energy^②.

One or more circuits can be regarded as a network. The network consists of several elements such as branches, nodes, and loops. A branch represents a single element such as a resistor, a voltage source or a current source. A node is the point of connection between two or more branches. A loop is any closed path in a network.

A circuit usually has three states: closed circuit or loop, in which current flows; open circuit (a circuit that is disconnected, that's to say, no current flows in it) and short circuit (in such a circuit, no current passes through the load). Generally speaking, we should avoid the last one in our life. If it happens, the power supply and the wire will be burnt out.

Series and parallel circuits are the most typical circuits known^③. In a series circuit, the current has only one path to follow. There are no branches. One switch will turn the whole circuit on or off. However, in a parallel circuit, there are several paths. Switches can be used to turn the whole or just part of the circuit on or off.

Vocabulary

1. electric	<i>adj.</i>	电的, 导电的	12. node	<i>n.</i>	节点
2. circuit	<i>n.</i>	电路	13. loop	<i>n.</i>	(闭合)回路, 回线
3. power	<i>n.</i>	电力, 能力	14. represent	<i>vt.</i>	描绘, 代表, 表示
4. battery	<i>n.</i>	电池	15. resistor	<i>n.</i>	电阻器
5. conductor	<i>n.</i>	导线, 导体	16. voltage	<i>n.</i>	电压
6. switch	<i>n.</i>	开关	17. current	<i>n.</i>	电流
7. load	<i>n.</i>	负载	18. state	<i>n.</i>	状态
8. appliance	<i>n.</i>	用具, 器具, 装置	19. disconnect	<i>vt.</i>	断开
9. convert	<i>vt.</i>	使转变, 转换……	20. series	<i>n.</i>	串联
10. element	<i>n.</i>	要素, 元件	21. parallel	<i>n.</i>	并联
11. branch	<i>n.</i>	分支, 支路			

Phrases and Expressions

1. consist of	由……组成, 由……构成	4. voltage source	电压源
2. power supply	电源	5. current source	电流源
3. be regarded as	把……看做	6. burn out	烧坏, 烧断

Notes

1. such as 引出的一般是同位语。同位语一般是把一个名词或代词放在另一个名词或代词之后, 用来说明前一个名词或代词的性质或情况, 进一步说明它代表的是谁或者是什么事物, 例如:

There are different forms of energy, such as electric energy, heat energy and mechanical energy. 全句译为: 能有多种形式, 如电能、热能和机械能。

2. which converts the electrical energy into other forms of energy 作 electric appliance 的定语。全句译为: 把电能转变成其他形式的能量。

convert...into...把……转变成……

例如:

The power supply can convert other forms of energy into electrical energy.

全句译为: 电源可以把其他形式的能转化成电能。

3. known 过去分词作 circuits 的后置定语。

Comprehensive Exercise

I. Choose the right answer from A, B, and C according to the text.

【 】 1. A functional circuit consists of the power supply, conductors, load and _____.

A. wires

B. switch

C. electric appliance

- 【 】 2. A loop is a(n) _____.
A. closed circuit
B. open circuit
C. any circuit
- 【 】 3. The most typical circuits are _____.
A. series circuits
B. parallel circuits
C. series and parallel circuits
- 【 】 4. Does current flow in the circuit when it is disconnected?
A. Yes. B. No. C. hard to say.
- 【 】 5. A power supply _____.
A. provides electric energy to the circuit
B. consumes electric energy
C. transmits electric energy

II. True or false.

- ☐ 1. We can always find four basic parts in a circuit: power supply, conductors, a switch and a load.
- ☐ 2. A node is any point in a network.
- ☐ 3. A loop is any path in a circuit.
- ☐ 4. There is no current in a short circuit.
- ☐ 5. There are several paths in a parallel circuit.

III. Translate the following sentences.

1. An electric circuit often consists of the power supply, the wires, a switch and the load.
2. The network consists of several elements such as branches, nodes, and loops.
3. A node is the point of connection between two or more branches.
4. A circuit usually has three states: closed circuit, open circuit and short circuit.
5. Series and parallel circuits are the most typical circuits known.

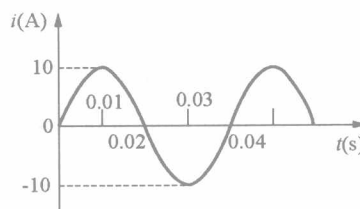
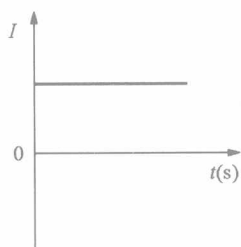
IV. Put the following expressions into English.

1. 控制设备
2. 闭合路径
3. 开路, 断路
4. 短路
5. 串联电路

Unit 2 Current

Warming-up

I. Can you point out the differences between the following pictures?



II. Do you know what the following abbreviations or symbols stand for?

DC

AC

A

III. Talk about current in English. And here are some patterns you can use.

- ◇ Do you know how current flows?
- ◇ Could you tell me how many kinds of current / voltage there are? And what are they?
- ◇ Could you tell me the unit of current / voltage...?
- ◇ What is the symbol of current / voltage...?
- ◇ The unit / symbol of current / voltage is...

Text Comprehension

Current

An electric current is the flow of electrons, which is minute^① negative charges of electricity, through a metal conductor. The electrons flow along a wire much the same way as^② water runs through a pipe. Though the electrons move from minus to plus, the electric current is conventionally considered to flow from the positive to the negative terminal in a completed circuit.

It's known to all^③ that there are two types of current: DC and AC. The current which moves continuously in one direction is called a direct current(DC). It's always associated with^④ batteries. The electrical system in an automobile and an airplane, the telephone and the trolley-bus use the direct current. However, a direct current has one disadvantage. As yet, there is no easy and economical way to increase or decrease its voltage.

At present, practically most cities make use of another type of electric current for lighting, heating, industry and other purposes. The current flowing first in one direction and then in the other. We call it an alternating current(AC). The alternating current doesn't have this disadvantage. By using a special device^⑤, called transformer, it is possible to transform a high voltage into a low voltage or a low voltage into a high voltage. The alternating current can also be changed easily into the direct current using a rectifier.

Vocabulary

1. electron	n. 电子	9. associate	vt. 与……相关
2. negative	n. 负的, 阴性的	10. automobile	n. 汽车
3. charge	n. 负荷, 电荷	11. airplane	n. 飞机
4. electricity	n. 电, 电学	12. trolley-bus	n. 无轨电车
5. pipe	n. 管子, 管道	13. industrial	adj. 工业的
6. minus	n. 负号, 减号, 负数 adj. 负的	14. disadvantage	n. 缺点
7. plus	n. 正号, 加号, 正数 adj. 正的	15. economical	adj. 经济的
8. conventionally	adv. 习惯地, 按照惯例地	16. transformer	n. 变压器, 转化器
		17. transform	vt. 转换, 转变
		18. rectifier	n. 整流器

Phrases and Expressions

1. negative (positive) charge	负(正)电荷
2. positive (negative) terminal	正(负)极
3. DC/ AC	直流/交流
4. make use of	使用
5. transform...into...	把……转变成

Notes

1. minute 此处不是名词“分钟”,而是形容词,意为“微小的”。
2. much the same way as 与……差不多一样地
3. 这个 all 意为“大家,所有人”。
4. be associated with 意为“与……相关的(相联系的)”。
5. Using a special device 为现在分词短语作条件状语,译成“如果使用一种专门的设备”。

Comprehensive Exercise

I. Choose the right answer from A, B, and C according to the text.

【 】 1. A current is the flow of _____.

- A. charges
- B. positive charges
- C. electrons

【 】 2. The current flows in a(n) _____.

- A. closed circuit

- B. open circuit
C. any circuit
- 【 】 3. We use _____ in the telephone.
A. AC
B. DC
C. not mentioned
- 【 】 4. _____ flows first in one direction and then in another.
A. AC
B. DC
C. not mentioned
- 【 】 5. _____ can change alternating current into direct current.
A. Transformer
B. Receiver
C. Rectifier

II. True or false.

- ☐ 1. The electrons move from plus to minus.
☐ 2. The current flows from the positive to the negative terminal.
☐ 3. The direct current can easily increase and decrease its voltage.
☐ 4. The transformer can transform a low voltage into a high voltage and vice versa.
☐ 5. The rectifier is used to change a direct current into an alternating current.

III. Translate the following sentences.

1. The electrons flow along a wire much the same way as water runs through a pipe.
2. The electric current is conventionally considered to flow from the positive to the negative terminal in a completed circuit.
3. The current which moves continuously in one direction is called a direct current.
4. At present, practically most cities make use of another type of electric current for lighting, heating, industry and other purposes.
5. By using a special device, called transformer, it is possible to transform a high voltage into a

low voltage or a low voltage into a high voltage.

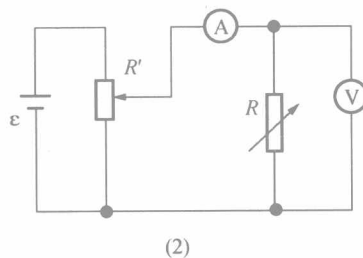
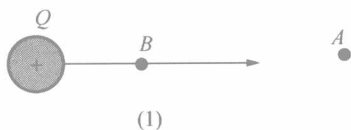
IV. Put the following expressions into English.

1. 电子流
2. 从负极流向正极
3. 直流电
4. 交流电
5. 电气系统

Unit 3 EMF

Warming-up

I. Can you point out the differences between the following pictures?



II. Do you know what the following formulas stand for?

$$(1) U_B = W_B / q \quad U_A = W_A / q$$

$$(2) U_{BA} = (W_B - W_A) / q$$

$$(3) U_{AB} = \varepsilon - Ir$$

III. Talk about current in English. And here are some patterns you can use.

- ◇ Do you know how electricity flows?
- ◇ Could you tell me how many kinds of current / voltage there are? And what are they?
- ◇ Could you tell me the unit of current / voltage...?
- ◇ What is the symbol of current / voltage...?
- ◇ The unit / symbol of current / voltage is...