中等专业学校电子类教材

电子类专业英语

贾 杰
金 郁 编

Specialized English in Electronics

电子科技大学出版社

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内 容 提 要

本教材是根据机电部中专电子技术类专业教学指导委员会颁发的教学大纲，为已经学过公共英语，向科技英语和实用方面提高的中专生而编写的。全书共二十四个单元，题材广泛，内容丰富，专业性和实用性强。本书特点是：阅读量大、词汇量大、习题量大。全书授课约 120 学时。可作为电子类中专英语教学用书，也可作为电子类大专教学参考书，从事电子技术、无线电技术和通信工程人员的自学用书。

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前　言

本教材是根据机电部中专电子技术类专业教学指导委员会颁发的教学大纲，为已经学过公共英语，向科技英语和实用方面提高的中专生而编写的。

全书共含二十四个单元。每个单元都包括课文、语法、词汇学习、练习和阅读课文五个部分，并对大部分课文加以适当注释，书后还附有六篇阅读材料。课文和阅读材料均选自国内外近年出版的教科书和科普读物，题材广泛、内容丰富、专业性和实用性强。课文内容以无线电技术和通信类为主，兼顾了电子元器件内容，所以可适用于电子类和通信类各专业。每课后的阅读课文和书后的阅读材料可作为泛读材料。考虑到学生在公共英语中已学过基本语法，本书语法除侧重于讲解科技英语特点外，还对基本语法内容进行相互对比和归纳小结，旨在使学生对所学语法知识融汇贯通。

本教材的特点是：1. 阅读量大。可使学生通过较短时间的学习能较大幅度地提高阅读科技资料的能力。2. 词汇量大。学完全部课文后不用查字典可阅读一般电子类书籍和杂志。3. 习题量大。练习中安排了阅读理解选择练习，句子排列顺序练习等，培养学生的理解能力和阅读能力。大量的习题可使学生对所学的知识举一反三，适合青年人重复记忆的特点。4. 课文题材广泛，不同专业可根据本专业特点进行不同的取舍。全书授课时数约 120 学时。

金郁编写了 1—12 单元，贾杰编写了 13—24 单元及阅读材料。

本教材在编写过程中，纪嘉强、宋文涛两位同志为编者提供了宝贵的资料，刘君同志打印了全部稿件，在此一并表示衷心感谢！

由于编者经验不足、水平有限，书中错误之处敬请读者指正。

编　者

于辽宁电子工业学校

一九九五年四月十日

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Reading Material

Lesson 1

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Text　Practical Notes

Safety must be observed when dealing with equipment where the equipment chassis is used as the "common" circuit return path. In many (most) cases, it is advisable to make sure that the chassis is also connected to a good earth ground via some means to prevent inadvertent shock or life—threat—ening danger due to differences of potential between equipment chassis and earth ground. Earth ground connections are frequently made and via electrical connection made to a water pipe, or a metal rod driven into the ground. The ac electrical power system normally has one of the conductor paths "neutralized" by its being connected to an electrical earth ground.

There are some pieces of equipment that are designed to be operated with a " floating ground," which is not connected to earth ground. That is the chassis is NOT to be connected to earth ground. In those cases, it is a desirable safety habit to use an "isolation transformer" to isolate the ac power source earth ground from the chassis common circuit return path. You will learn more about transformers in a latter chapter. We simply wanted to CAUTION you to be careful when working with circuits and equipment that might shock (or kill) you if you touch both the chassis and an earth ground at the same time. Operate the equipment properly, and be aware of whether the chassis is property grounded or isolated. You must be aware of the ground condition that exist for the equipment you are using, working on, or testing. It is alway a good idea to check for difference of potential between equipment and earth grounds using a volt—meter. If the chassis is "hot" with respect to earth or power wiring grounds, you must determine whether you should even work on it at all, if it needs to be repaired prior to working on it, or whether the power plug need to be reversed.

New Words

safety　['seifti]　n.　保险　安全设备　保险装置　安全
observe　[əb'zə:v]　vt.　观察　注意到　遵守
equipment　[i'kwipmənt]　n.　设备、装置

chassis [ˈʃæsi] n. 机壳 底板
common [ˈkɔmən] a. 公共的 普通的
path [pɑːθ] n. 小路 道路 路径
advisable [ədˈvaizəbl] a. 适当的 合理的 可行的
connect [kəˈnekt] vt. 连接 结合
via [ˈvaiə] n. 道路 prep 经过 经由
prevent [proˈvent] v. 防止 预防
inadvertent [inədˈvəːtənt] a. 不注意的 不经心的
shock [ʃɔk] n. 电击 震惊
means [miːns] n. 手段
life—threat—ening 危及生命
danger [ˈdeindʒə] n. 危险
frequently [ˈfriːkwəntli] ad. 常常
electrical [iˈlektrikəl] a. 电的 与电有关的
drive [draiv] vt. 驱动 把桩打入
normally [ˈnɔːməli] ad. 正常地
conductor [kənˈdʌktə] n. 导线 引线
neutralize [ˈnjuːtrəlaiz] vt. 使中和 抵消
floaging [ˈfloutiŋ] a. 浮动的 漂浮的
habit [ˈhæbit] n. 习惯 习惯性
isolation [aisəˈleiʃən] n. 绝缘 隔离
transformer [trænsˈfɔːmə] n. 变压器
isolate [ˈaisəleit] vt. 隔离 使绝缘
caution [ˈkɔːʃən] n. 谨慎 当心
careful [ˈkeəful] a. 小心的 谨慎的
operate [ˈɔpəreit] vi. 运转 运行
aware [əˈwɛə] a. 知道的 发觉
condition [kənˈdiʃən] n. 状况 情形 工作状态
exist [ˈeksit] n. 出口 引出端
check [tʃek] n. v. 检查
determine [diˈtəːmin] vt. 确定 决定 决心
prior [ˈpraiə] a. 先前的 居先的
reverse [riˈvəːs] vt. 颠倒 倒转 使变得相反

Phrases and Expressions

deal with 参与 从事
good earth ground 良好接地

life—threat—ening danger　生命危险
due to　由于
difference of potential　电位差
some pieces of　几件
power source　电源
(be) aware of　知道　意识到
in reverse　相反　反之
floating ground　浮地　虚地
respect to　关于　就…而论　相对于
connect to　连起来　相通
power plug　插头　插销

Grammar　名　词

1. 名词的句法作用

名词在句子中除了不能担任谓语外，可以用作句子的其他一切成份。

a. 作主语，位于动词前。

Telephone has become part of our daily necessity.

电话已成为我们日常生活中的必要部分。

b. 作宾语，们于动词之后。

Light produce a chemical change.　光产生化学变化。

c. 作介词的宾语，位于介词之后。

The sun is the source of energy.　太阳是能量的源泉。

d. 作表语，在联系动词之后。

Under the ordinary conditions, water, becomes steam at 100℃.

在一般情况下，水在摄氏一百度时变成蒸汽。

e. 作定语，在它修饰的名词之前。

The field concept is more valuable than in studying nonstatic phenpmena.

电场的概念对于研究非静电现象更有价值。

f. 作状语。

修饰动词，在动词之后。

Sound travels about 1，100 feet per second.　声速约为每秒一千一百英尺。

The earth's crust is about 25 miles thick.　地壳厚约二十五英里。

修饰副词，位于副词之前。

Light travels many times faster than sound.　光速比音速快许多倍。

2. 修饰名词数量的词

a. 修饰可数名词

few, a few, not many, several, a great number of, number of

The water contains a few minerals.

水含有少量矿物质。

b. 修饰不可数名词。

little, a little, not much, a large amount of, large amounts of, a great deal of

This water contains not much salt. 这种水含盐不多。

c. 既可修饰可数名词也可以修饰不可数名词。

a lot of, plenty of, enough, some

Do you have enough money to buy that one? 你买那件东西的钱够吗?

There is plenty of oil in that area. 那个地区有大量的油。

3. 可数名词与不可数名词

表示人或物体的名词系可数名词，有单复数。绝大多数可数名词加"s"或"es"构成复数，少数名词有不规则的复数形式。

student —— students	tooth —— teeth
month —— months	foot —— feet
box —— boxes	nucleus —— nuclei
man —— men	axis —— axes

表示无定形物质的物质名词和表示动作、状态、品质等抽象概念的抽象名词是不可数名词，没有复数，常用 a piece of ，a sheep of，a set of 来表示数量的概念。

a piece of paper	一张纸	a sheet of steel	一块薄钢板
a bottle of ink	一瓶墨水	a grain of sand	一粒砂

Word Study

experiment 指为了检验某种科学理论或假设而进行某种操作或从事某种活动。

1. In those days people seldom did experiments to test their ideas.

在那时候，人们很少做实验去检验他们的想法。

2. The scientist made several experiments before he found the correct chemicals.

这位科学家作了几次实验后才发现了那种合适的化学药品。

test 指为了察看某事物的结果或事物的性能而从事的某种活动。

1. The new plane passed all the tests.

新飞机通过了所有的试验。

2. Tests have shown that the soil on the moon is much like the soil on the eateh.

试验已表明，月球上的土壤和地球上的很相似。

Exercises

I. Comprehension

Complete the following statements with a, b or c, score one mark for each corrct answer.

1. Safety must be observed when

a. you use an equipment that connected to a good earth ground.

b. You dealing with equipment where the equipment chassis is used as the circuit return path.

c. the equipment chassis is the "common" circuit return path.

2. We must be sure _____ before we use the equipment.

a. that the chassis is connected to a good earth ground

b. that the current is zero.

c. that the coltage is not very high

3. Shock means

a. unpleasant or angry.

b. following damage to the body.

c. bad news.

4. The differences of potential _____ will cause danger.

a. on the equipment

b. between equipment and wire

c. between equipment chassis and earth ground

5. The "floating ground" eans

a. The equipment is not connected to earth ground.

b. It is not connected to the water pipe.

c. It is connected to earth ground.

6. To isolate the ac power source earth ground from the chassis common circuit return path

a. There will be a good earth ground

b. floating ground will be used

c. We use an " isolation transformet"

7. _____ if you touch both te chassis and an earth ground at the same time.

a. The equipment and circuit might shock you

b. The electricity might kill you

c. you might be knock down

8. If the chassis is "hot" with respect to earth

a. the power plug needs to be reversed

b. You should turn off the machine

c. You must determine whether you should work on it

I. Fill in the blanks with a, b, or c.

1. Machies can do _____ work in a short time, but a man can't do _____ by hand.

a. much, a great deal b. a great deal of , much c. a great deal, much

2. Is there _____ water in the tank?

Yes, _____ .

a. much, little b. a lot, a little c. any, a little

3. Not _____ shops remain open during the festival.

a. much b. many c. a number of

4. Diesel engines deliver _____ more energy than gasoline engines.

a. much b. a few c. little

5. Among semiconductors are chemical element like silicon, and _____ chemical compounds such as oxides.

a. large amount of b. much c. a lot of

6. Air in the countryside contains _____ oxygen.

a. a great number of b. much c. plenty of

7. The river is three _____ kilometers long.

a. thousand b. thousands c. thousands and five hundred

8. China has about _____ in habitants.

a. ten hundreds millions b. ten hundred millon c. ten million hundreds

9. The engine develops fifty _____ .

a. horse power b. horse powers c. long

Ⅲ. Translat the following into English

1. 这种设备的底盘通常与大地相接。
2. 有些设备是在浮地状态下运行的。
3. "浮地"意为底盘不与大地相接。
4. 你同时接触设备底盘和大地是很危险的，可能遭受电击。
5. 用电压表检查设备和大地之间电位是个好主意。

Ⅳ. Vocabulary and spelling

1. Sa _____ must be ob _____ when dealing with eq _____ where the eq _____ _____ ssis is used as the common circuit return _____ .

2. Earth ground con _____ are fre _____ made _____ elec _____ con _____ made to a water _____ , or a metal _____ dri _____ into the ground.

3. There are some _____ of eq _____ that are _____ gned to be op _____ with a _____ ating gr _____ , which is not con _____ to eatth ground.

4. In those ca _____ , it is a de _____ sa _____ ha _____ to use an iso _____ _____ former to iso _____ the ac power sorce earth fround from the cha _____ common cir _____ return _____ .

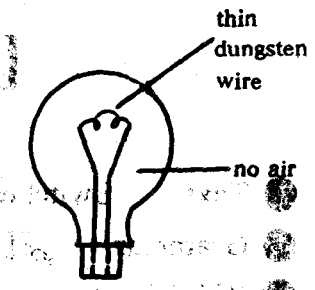
5. It is always a good _____ to ch _____ for di _____ of pot _____ between equi _____ and earth grounds using a _____.

Reading Material Electric Wire

Electric wire is usually made of copper. Copper lets the electric current flow easily throught it. We say that it has a low resistance. Some other metals also have a low resistance, but copper is the most useful. There are copper wires in millions of houses in the world.

These wires carry the current to our lamps. There is a thin wire inside an electric lamp; you can see it if you look carefully. A thin wire has a higher resistance than a thick one. It tries to stop the flow of current. Then it gets very hot.

The thin wire is not made of copper; it is made of tungsten. All metals melt when they get hot. (Mercury melts at a lower temperature than our usual ones.) Tungsten does not melt easily. It has to be very hot indeed before it melts.



electric lamp

When the tungsten gets hot, it also gets bright. It shines and gives a good light. It also lasts a long time without breaking.

An American, Edison, invented the first small electric lamp. He wanted a thin wire for his lamp, and tried to make one; but he had a lot of trouble. Thin wires easily melt if they are made of copper. He decided to use carbon because it does not melt. He tried cotton and hundreds of other materials to make his thin piece of carbon. But at first all of them broke. They were too thin and weak. They had to be thin because they had to shine brightly. Thick pieces do not have a high resistance. So they did not get hot enough, and they gave no light. Edison did not stop trying and after a lot of trouble he made his first lamp.

Our tungsten lamps are better than the old carbon lamps. They are brighter and they last longer. The tungsten does not easily melt or break. There is not much air inside an electric lamp; we have to take it out. Air contains oxygen, and the hot tungsten could burn in it. Usually we put some gas in the place of the air.

Electric fires also have wires which get hot. These wires are thick, but they are not made of copper. They have a high resistance. A large current flows through them and makes them hot. So we can use electric fires in winter to keep us warm.

In some houses an electric current also makes the water hot. This is useful when we want a bath. The wire gets hot like the wires of electric fires; but we must keep them away from the water. We have to separate the wires from the water with some special material. It is not safe to let an electric wire touch water. Water has a low resistance to an electric current. Sometimes a person touches an electric wire a wet hand; he ought not to do this. He might kill himself. The water lets the current flow easily to his body. Then it can escape to the ground through his legs. The current can easily flow through his body, and it can go through his heart. Then his heart will stop beating.

Lesson 2

- Text Switches and Fuses
- Grammar 冠词
- Word Study Late Lately Latest Last
- Reading Material Energy

Text Switches and Fuses

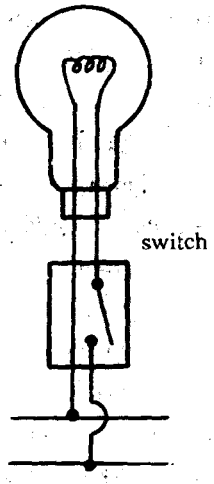
An electric switch is often on a wall near the door of a room. Two wires lead to the lamp in the room. The switch is fixed in one of them. The switch can cause a break in this wire, and then the light goes out. The switch can also join the two parts of the wire again, then we get a light.

Switch can control many different things. Small switches control lamps and radio sets because these do not take a large current, larger switches control electric fires. Other switches can control electric motors.

Good switches move quickly. They have to stop the current suddenly. If they move slowly, an electric spark appears. It jumps across the space between the two ends of the wire. This is unsafe and it heats the switch. Very big switches are sometimes placed in oil. Sparks do not easily jump through oil, and so the oil makes the switch safer.

A large current makes a wire not. If the wire is very thin, even a small current makes it hot. This happens in an electric lamp.

The electric wires in a house are covered with some kind of insulation. No current can flow through the insulation; so the current can never flow straight form one wire to the other. but the insulation on old wires is often broken; then the copper of the two wires can touch. A large current may flow; and if this happens, the wires will get very hot. Then the house may catch fire.



Fuses can stop this trouble. A fuse is only a thin wire which easily melts. It is fixed in a fuse—holder. The fuse—holder is made of some material which cannot burn. A large current makes the fuse hot and then it melts away. We say that the fuse " blows". The wire is broken and no current can flow. So the house does not catch fire; but all the lights and electric fires go out because there is no current.

When a fuse blows, something is wrong. We must find the fault first. Perhaps two wires are touching. We must cover them with new insulation of some kind. Then we must find the blown fuse and repair it. We put a new piece of fuse—wire in the holder. (Sometimes we can find the right fuse—holder because it is rather warm; but the others are cold.) If we do not repair the fault first, the new fuse will blow immediately.

Some men get angry when a fuse blows. So they put a thick copper wire in the fuse—holder! Of course this does not easily melt; if the current rises suddenly, nothing stops it. The thick wire easily carries it. Then the wires of the house may get very hot and the house may catch fire. Some of the people in it may not be able to escape. They may lose their lives. So it is always best to use proper fuse—wire. This will keep everyone and everything in the house safe.

New Words

fix	[fiks]	vt.	使固定 装配
break	[breik]	vt.	折断 打破 切断
join	[dʒɔin]	vt.	连接 结合
control	[kən'troul]	vt.	控制 管理 支配
suddenly	['sʌdnli]	a.	突然的 迅速的
spark	[spɑ:k]	n.	火花
appear	[ə'piə]	vi.	出现 显露 出版
jump	[dʒʌmp]	vi.	跳 跳起 跃变 突变
hot	[hɔt]	a.	热的

thin [θin] a. 薄的 细的
cover ['kʌvə] vt. 覆盖 遮盖
insulation ['insjuleiʃən] n. 绝缘 绝热
copper ['kɔpə] n. 铜
trouble ['trʌbl] n. 麻烦 困难
fuse [fju:z] n. 保险丝
melt [melt] vt. 使融化 使熔化 使溶解
fuse—holder 保险盒
burn [bə:n] vt. 燃烧 点着
blow [blou] vi. 吹 （保险丝）烧断
wrong [rɔŋ] a. 错误的
fault [fɔ:lt] n. 故障 事故 损坏
immediately [i'mi:djətli] ad. 立即的 瞬时的
thick [θik] a. 粗的 厚的
rise [raiz] vi. 站立 升起 上升
carry ['kæri] vt. 搬运 传送 携带
escape [is'keip] vi. 逃脱 避免

Phrases and Expressions

Electric switch 电开关
lead to 导致
catch fire 着火
melt away 熔化掉
burn out 烧断 烧坏

Grammar 冠 词

1. 不定冠词 a (an) 的用法

a. 不定冠词 a (an)，a 用在辅音前，an 用在元音前，这里所讲的辅音和元音是指发音，不是指字母。

例如：a useful tool [ə'ju:sful'tu:l]

an up—to—date instrument [ən ʌptə'deit 'instrumənt]

下面的单词是以紧辅音发音开头，所以冠词用 a。

house home heavy half uniform university universal union

下面的单词是以元音发音开头，所以冠词用 an.

uncle umbrella hour heir

b. 具体指“一种”，“一阵”等含义时，带不定冠词。

Steel is a metal.

钢是一种金属。

Electronics is a science that is concerned with the study and application of phenomena of electrons.

电子学是一门研究和应用电子现象的学科。

c. 在科技文章中下定义时，a (an) ＋名词单数代表某一类人或物。

A person who flies an aircraft is called a pilot.

驾驶飞机的人称为飞行员。

2. 定冠词的用法

a. 定冠词用在特指名词之前

The boy in the corner in my friend.

在墙角的那个男孩是我的朋友。

The laboratory is the most modern building in the college.

这所实验室是该校最新的建筑物。

b. 世界上独一元二的东西的名词前要用 the

the moon, the sun, the earth

c. 表示方向部位的名词前加 the

the north, the east, the west

The sun rises in the east and sets in the west.

太阳升起地东方而落下在西方。

d. 多于一个单词的国名前要加 the.

the United States　　美国

the Peoples Republic of China　　中华人民共和国

Word Study

1. late　　可做形容词和副词用，表示“晚”，“迟”。

He is never late for work.　　他工作从不迟到。

He often sorks late into the night.　　他常工作到深夜。

2. lately　　是副词，表示“最近”，“不久前”。

He came lately.　　他不久前来的。

I have been busy lately.　　我近来很忙。

3. latest　　表示“最近的”，“最新的”。

This is the latest fashion.　　这是最新样式。

Please be here tomorrow at the latest.　　请最晚明天来这里。

4. last　　表示“最后的”，“上次”，指顺序先后。

Their last attempt was successful.　　他们最后的尝试成功了。