新编科技英语教程
教师手册

● 戴炜华　主编

● 下册

Teacher's Manual

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● 上海交通大学出版社

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内 容 简 介

本书是为配合理工科大学英语教材《新编科技英语教程》上、下册的教学需要而编写的教师手册，亦分为上、下册。内容包括教学安排、补充练习、课文参考译文、练习答案等，可供教师教学参考。

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本手册使用指南

《了解科技英语》下册使用60学时。

本教师手册由下列部分组成：

1．本课介绍

这部分对本课课文提供简短的概括，也介绍有关本课的背景知识。提供的材料可用于默写。

2．补充练习

每课均提供补充练习，用来帮助学生掌握一些重点词的知识。

3．练习答案

练习提供参考答案，没有答案的练习可能有几种回答。

4．课文译文

课文提供参考译文。由于全部课文选自科技英语原著，因此译文的重点在于忠诚原文。

A Guide To The Use of This Manual

'New Horizons In EST' Book Two is designed for use within 60 hours.

The Teacher's Manual of this book consists of the following parts;

1. Introduction to the lesson

This part provides a short summary of the lesson. Sometimes a background knowledge of the lesson can also be found in the introduction. The material contained in this part may be used for dictation.

2. Supplementary exercises

Each lesson provides an additional exercise which seeks to help the students acquire the knowledge of some key words.

3. Key to the exercises provided in the student's work-book

Suggested answers to the exercises will be found in a key. Exercises to which the key is not given can be answered in a variety of ways.

4. Chinese Version

Each lesson is given a Chinese version. Since all the passages are selected from the original technical literature, we lay our emphasis on the faithfulness of the translation.

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UNIT ONE

Lesson One

Introduction to Lesson 1

Machine is a device that uses force to accomplish something. Thus defined, such simple devices as the lever, the pulley, the inclined plane, the screw, and the wheel and axle are machines; they are called simple machines; more complicated machines are merely combinations of them.Machines are designated, as a rule, by the operations they perform, and the complicated devices used for sawing, planing, and turning, for example, are known as sawing machines, planing machines, and turning machines respectively and as machine tools collectively. Machines used to transform other forms of energy (as heat) into mechanical energy are known as engines, i. e. the steam engine or the internal combustion engine. Historically, the first machines were the result of man's efforts to improve his war-making capacity; the term engineer at one time had an exclusively military connotation.

Do you know ...?

Explain the following machine operations.

Basic machining operations are: (1) turning, the shaping of a piece having a cylindrical or conical external contour; (2)

facing, the shaping of a flat circular surface; (3) milling, the shaping of a flat or contoured surface; (4) drilling, the formation of a cylindrical hole in a workpiece: (5) broaching, the production of a desired contour in a surface; (7) threading, the cutting of an external screw thread; and (8) tappin, the cutting of an internal screw thread.

Key to the exercises

Useful words and Expressions

Exercise

1. When a hammer strikes a nail, part of the kinetic energy of the moving hammer is given to the nail.
2. He was so angry and wanted to strike him.
3. The auditorium can accommodate over two thousand people.
4. She expressed her thanks for our help.
5. The doctor struck upon the solution quite by accident.
6. Acceleration is the change in speed (or more correctly, the change in velocity) in the time taken for the change to take place, or can be easily expressed in the formula:

$$\text{Acceleration} = \frac{\text{change in velocity}}{\text{change in time}}$$

7. The young technician was struck by illness,

8. A rock rolling down a hillside strikes other rocks and makes them roll, too.
9. You should accommodate your thinking to the new conditions.
10. The express train runs faster than the slow one.
11. His bicycle struck the wall, and was damaged.
12. The college accommodates students with lodging.
13. It struck her that she ought to repeat her experiment.

Comprehension

Ⅰ. 1. T 2. F 3. T 4. T 5. F 6. T 7. F 8. F 9. T 10. T

Ⅱ. 1. ratio 2. accomplish 3. alternating current 4. muscle 5. definition 6. formula 7. in contact with 8. transmit 9. exert 10. in terms of

Ⅲ. 1. strength 2. effort 3. force 4. finished 5. completed 6. accomplish 7. involved 8. comprises 9. contains 10. includes

Ⅳ. 1. C 2. D 3. A 4. B 5.A

Ⅵ. 1. Internal combustion engines that use petroleum products as fuels are prime movers.

2. In a technical sense, the definitions of the mechanical advantage and the mechanical efficiency are not the same, because the former does not involve the friction.

3. Natural sources of energy are wind, water, steam

and petroleum not including the alternating current of electricity.

4. Work, force, and power are terms used frequently in physics.
5. There are many reasons why the efficiency of a machine never reaches 100%

Language Presentation

Exercises

1. 1) A plane is a machine which flies through the air.
   2) A dentist is a person who takes care of people's teeth.
   3) A dynamo is a machine which generates electricity.
   4) A triangle is a figure which has three sides.
   5) Gravity is a force which attracts bodies towards the centre of the earth.
   6) A shop is a place where things are bought and sold.
   7) A thermometer is an instrument which measures temperature.
   8) A biologist is a person who studies living organisms.
   9) A knife is an instrument which is used for cutting things.
   10) An amoeba is an animal which consists of only one cell.

2. 1) C 2) D 3) D 4) E 5) D 6) B 7) B 8) C
9) B 10) B

Lesson Two

Introduction to Lesson 2

Sounds are generally audible to the human ear if their frequency (number of vibrations per second) lies between 20 and 20,000 vibrations per second, but the range varies considerably with the individual. Sound waves with frequencies less than those of audible waves are called subsonic; those with frequencies above the audible range are called ultrasonic. From the point of view of physics, sound is considered to be the waves of vibratory motion themselves, whether or not they are heard by the human ear. Musical sounds are distinguished from noises in that they are composed of regular, uniform vibrations, while noises are irregular and disordered vibrations. The sound waves given off by different vibrating bodies differ in quality, or timbre. A note from a saxophone, for instance, differs from a note of the same pitch and intensity produced by a violin or a xylophone; similarly vibrating reeds, columns of air and strings all differ.

Do you know ...?

Say something about noise pollution.

Noise pollution is man-created noise harmful to health

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or welfare. Transportation vehicles are the worst offenders, with aircragy, rail road stock, trucks, buses, automobiles, and motorcycles all producing excessive noise. Noise intensity is measured in decibel units. At a distance of 2,000 ft (600m), the noise of a jet takeoff reaches about 110 decibels. Subjected to 45 decibels of noise, the average person cannot sleep. At 120 decibels the ear registers pain; hearing damage begins at a much lower level, about 85 decibels. There is evidence that among young Americans hearing sensitivity is decreasing year by year because of exposure to excessive noise.

Key to the exercises:

Useful words and Expressions

Exercise

1. The office was transferred from Chicargo to Washington, D. C.
2. Transmit the letter by air.
3. Call me if I don't wake up in time.
4. Electricity cannot be transmitted through the rubber covering the wire.
5. Water will allow sound to transmit through itself.
6. We haven't fixed when to do the experiment.
7. He called you at your office at three o'clock this afternoon.

8. The BBC will transmit at 10 o'clock.
9. He called a technician to fix his TV set.
10. The ship's radio transmitted signals for help.
11. That football player is hoping to be transferred to another team soon.
12. I called him this morning but he was out.
13. They put something into the material to fix it.
14. You may call it three kilometres from here to the seaside.

Comprehension

Ⅰ. 1. F 2. T 3. T 4. T 5. T 6. F 7. F 8. T 9. F 10. T

Ⅱ. 1. A 2. B 3. C 4. D 5. D 6. B 7. C 8. A 9. C 10. D

Ⅲ. 1. comes 2. change 3. arrived 4. reach 5. reached 6. vary 7. arrived 8. vary 9. changed 10. come

Ⅳ. 1. B 2. A 3. B 4. D 5. C

Ⅵ. 1. Man can pluck a guitar, but it is not as easy for him to play it well.

2. You can hear the sound when you strike a tuning fork gently. This indicates that sound can be transmitted through a medium of vibrating air.

3. Whatever the frequency of the sound, it still travels at the same speed in the same medium.

4. The mumber of blades in each wheel varies accord-

ing to the size of the turbine.

5. He arrived in Hongkong by air, and then reached Paris.

Language Presentation

Exercises

1. 1) Musical instrument is an instrument for producing musical sounds.
   2) Reflected sound is a sound which can be reflected.
   3) Test-tube baby is a baby who grows in a test tube.
   4) Sand-glass is a glass with two bulbs containing enough sand to take a definite time in passing from one bulb to the other.
   5) Linear programme is a programme which consists of a series of small steps.
   6) Potential energy is an energy waiting to be released.
   7) Stainless steel is an alloy usually containing about 18% chrome and 8% nickel.
   8) A hores-shoe magnet is a magnet shaped like a horse-shoe.
2. 1) A plane figure is figure which has only two dimensions.
   Common examples are rectangles.
   A plane figure ... such as rectangles.
   2) An equation is a mathematical expression in which

the two sides balance.

Common examples are; $(a+b)^2=a^2+2ab+b^2$;

$$F=ma$$

An equation is a ... such as $(a+b)^2=...$; $F=ma$.

3) Lenses are rounded pieces of glass uses for controlling light rays.

Typical examples are a pair of spectacles and sun glasses.

Lenses are ... such as spectacles and sun glasses.

4) Fuel is a material for burning.

Typical examples are wood, coal, oil and uranium.

Fuel is a ... such as wood, coal, oil and uranium.

5) Density is defined as the mass of a substance per unit volume.

Typical example is the density of water, i. e. 1g/cm^3.

6) An inorganic compound is a compound not having an organized physical structure, esp. as plants and animals have.

Common examples are rocks and metals,

Lesson Three

Introduction to lesson 3

Classification is on purpoes to arrange things in classes or groups in their own fields, usually grading in accordance with particle size, shape, function, order, density, etc., by fluid means. The base to make the classification is criterion. Different criteria will make different classifications. Yet, there are mainly two types of classification. One is from general to specific, for example, x comprises y and z; the other is from specific to general, for example, y is a member of x, or y is placed in the class of x. However, criterion is either use-oriented or process-oriented in many cases. This lesson gives us some typical examples to illustrate how to use a criterion and make classifications.

Do you know ...? Do you know anything about consumption?

Consumption may be considered either productive or unproductive. Productive consumption involves wealth used in the process of producing other wealth (e. g.. the use of materials and capital to produce other goods), and unproductive consumption involves using wealth for the direct satisfaction of human wants. The process of consumption

is central to any system of economics; it is the sole end of production. Production, the wholesale and retail trades, and consumption are closely linked, and the exchange of goods and services for money along the various stages from the producer to the ultimate consumer is the foundation of modern economy. Advertising is today the chief means by which manufacturers and retailers seek to increase consumption.

Key to the exercises:

Useful Words and Expressions

Exercise

1. The old man rests for a while every day in the afternoon.
2. If you consider the fact that she's been studying English only a year, she speaks it quite well.
3. This story concerns a general in World War II.
4. The noise was so loud that she covered her ears from it with her hands.
5. I am considering a very good suggestion.
6. The professor's talk covered the history of rockets from ancient China to the present day.
7. The ball came to rest when it was close to the corner of the room.
8. Force is considered to be an effort that results in mo-

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