

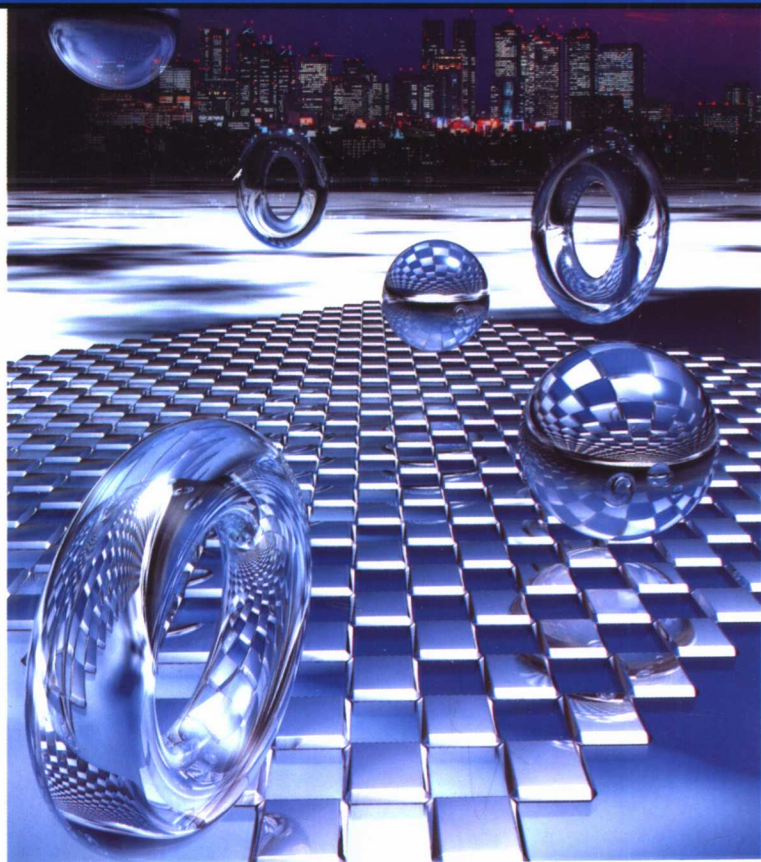
致用 科技英语

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致用科技英语

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内 容 简 介

科技英语是特殊用途英语(ESP)的一个重要分支,本书所选课文涵盖当今新兴科技,选材适宜,从知识的全面性和专业性角度出发,着重讲解科技英语概念、科技英语文体特征、科技英语翻译和写作等方面的知识。适合高等院校本科生、研究生及工程技术人员使用。

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前 言

科技英语是特殊用途英语(ESP)的一个重要分支。科技英语作为大学公共英语的后继课程或拓展课程,其重要性愈来愈被人们所认识。这尤其体现在大学生毕业后,更多地使用科技英语服务于社会各行各业。大学生们通过两年公共英语的学习,达到大学英语教学要求之后,继续加强科技英语学习,进一步提高大学生实用英语能力的培养,是我们编著此书的主要目的。

本书共分8个单元。每个单元由课文、阅读文章、单词表、练习、科技英语基本知识等部分组成。课文涵盖当今新兴科技,选材适宜。其中有关科技英语的基本知识,我们从知识的全面性和专业性角度出发,着重讲解了科技英语概念、科技英语文体特征、科技英语翻译和写作等方面的知识。例如,从文体学角度,不仅分析了科技英语的语言文体特点,还通过比较,多角度地剖析了科技英语与日常英语在修辞、语用等方面的不同,这更有利于学生较快地掌握科技英语的应用技能;在科技英语翻译方面,介绍了科技翻译文体特征,即形式程式化、内容复杂化、学科跨度大等特点;在翻译策略上,用实例说明了全译和变译两种翻译体系,使翻译理论与实践相结合,从一般理

论研究过渡到应用理论研究;在科技英语写作方面,我们注意到科技学术论文和报道的写作中确实存在着某些模式化、程式化的写作方法,所以,尽可能多地提供语言素材,并尽可能多地介绍科技应用文经常使用的写作手法,如下定义、对比、类比、分类、因果、假设、例举、描写、举证、实验、计算、报告等;每一种写作方法都用实例说明,并提供一般写作原则,真正实现“授人以渔”的教学理念。

本书适合通过大学英语四级考试的本科生,包括英语专业本科生,以及广大工程科技人员使用。

由于时间较紧,错误不当之处在所难免,望专家同仁不吝赐教。

编 者

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Unit One Telecommunications

Text

Telecommunications

Telecommunications: devices and systems that transmit electronic or optical signals across long distances. Telecommunications enables people around the world to contact one another, to access information instantly, and to communicate from remote areas. Telecommunications usually involves a sender of information and one or more recipients linked by a technology, such as a telephone system, that transmits information from one place to another. Telecommunications enables people to send and receive personal messages across town, between countries, and to and from outer space. It also provides the key medium for delivering news, data, information, and entertainment.

Telecommunications devices convert different types of information, such as sound and video, into electronic or optical signals. Electronic signals typically travel along a medium such as copper wire or are carried over the air as radio waves. Optical signals typically travel along a medium such as strands of glass fibers. When a signal reaches its destination, the device on the receiving end converts the signal back into an understandable message, such as sound over a telephone, moving images on a television, or words and pictures on a computer screen.

Telecommunications messages can be sent in a variety of ways

and by a wide range of devices. The messages can be sent from one sender to a single receiver (point-to-point) or from one sender to many receivers (point-to-multipoint). Personal communications, such as a telephone conversation between two people or a facsimile (fax) message, usually involve point-to-point transmission. Point-to-multipoint telecommunications, often called broadcasts, provide the basis for commercial radio and television programming.

Telecommunications begin with messages that are converted into electronic or optical signals. Some signals, such as those that carry voice or music, are created in an analog or wave format, but may be converted into a digital or mathematical format for faster and more efficient transmission. The signals are then sent over a medium to a receiver, where they are decoded back into a form that the person receiving the message can understand. There are a variety of ways to create and decode signals, and many different ways to transmit signals.

Devices such as the telegraph and telephone relay messages by creating modulated electrical impulses, or impulses that change in a systematic way. These impulses are then sent along wires, through the air as radio waves, or via other media to a receiver that decodes the modulation. The telegraph, the earliest method of delivering telecommunications, works by converting the *contacts* (connections between two conductors that permit a flow of current) between a telegraph key and a metal conductor into electrical impulses. These impulses are sent along a wire to a receiver, which converts the impulses into short and long bursts of sound or into dots and dashes on a simple printing device. Specific sequences of dots and dashes represent letters of the alphabet. In the early days of the telegraph, these sequences were decoded by telegraph operators. In this way, telegraph operators could transmit and receive letters that spelled words. Later versions of the telegraph could decipher letters and

numbers automatically. Telegraphs have been largely replaced by other forms of telecommunications, such as electronic mail (e-mail), but they are still used in some parts of the world to send messages.

The telephone uses a *diaphragm* (small membrane) connected to a magnet and a wire coil to convert sound into an analog or electrical waveform representation of the sound. When a person speaks into the telephone's microphone, sound waves created by the voice vibrate the diaphragm, which in turn creates electrical impulses that are sent along a telephone wire. The receiver's wire is connected to a speaker, which converts the modulated electrical impulses back into sound.

Broadcast radio and cellular radio telephones are examples of devices that create signals by modulating radio waves. A radio wave is one type of electromagnetic radiation, a form of energy that travels in waves. Microwaves are also electromagnetic waves, but with shorter wavelengths and higher frequencies. In telecommunications, a transmitter creates and emits radio waves. The transmitter electronically modulates or encodes sound or other information onto the radio waves by varying either the amplitude (height) of the radio waves, or by varying the frequency (number) of the waves within an established range. A receiver (tuner) tuned to a specific frequency or range of frequencies will pick up the modulation added to the radio waves. A speaker connected to the tuner converts the modulation back into sound.

Broadcast television works in a similar fashion. A television camera takes the light reflected from a scene and converts it into an electronic signal, which is transmitted over high-frequency radio waves. A television set contains a tuner that receives the signal and uses that signal to modulate the images seen on the picture tube. The picture tube contains an electron gun that shoots electrons onto

a photo-sensitive display screen. The electrons illuminate the screen wherever they fall, thus creating moving pictures.

Telegraphs, telephones, radio, and television all work by modifying electronic signals, making the signals imitate, or reproduce, the original message. This form of transmission is known as analog transmission. Computers and other types of electronic equipment, however, transmit digital information. Digital technologies convert a message into an electronic or optical form first by measuring different qualities of the message, such as the pitch and volume of a voice, many times. These measurements are then encoded into multiple series of binary numbers, or 1s and 0s. Finally, digital technologies create and send impulses that correspond to the series of 1s and 0s. Digital information can be transmitted faster and more clearly than analog signals, because the impulses only need to correspond to two digits and not to the full range of qualities that compose the original message, such as the pitch and volume of a human voice. While digital transmissions can be sent over wires, cables or radio waves, they must be decoded by a digital receiver. New digital telephones and televisions are being developed to make telecommunications more efficient.

Personal computers primarily communicate with each other and with larger networks, such as the Internet, by using the ordinary telephone network. Increasing numbers of computers rely on broadband networks provided by telephone and cable television companies to send text, music, and video over the Internet at high speeds. Since the telephone network functions by converting sound into electronic signals, the computer must first convert its digital data into sound. Computers do this with a device called a modem, which is short for *modulator/demodulator*. A modem converts the stream of 1s and 0s from a computer into an analog signal that can then be

transmitted over the telephone network, as a speaker's voice would. The modem of the receiving computer demodulates the analog sound signal back into a digital form that the computer can understand.

Telecommunications systems deliver messages using a number of different transmission media, including copper wires, fiber-optic cables, communication satellites, and microwave radio. One way to categorize telecommunications media is to consider whether or not the media uses wires. Wire-based (or wireline) telecommunications provide the initial link between most telephones and the telephone network and are a reliable means for transmitting messages. Telecommunications without wires, commonly referred to as wireless communications, use technologies such as cordless telephones, cellular radio telephones, pagers, and satellites. Wireless communications offer increased mobility and flexibility. In the future some experts believe that wireless devices will also offer high-speed Internet access.

New Words

optical *adj.* 眼的,视力的,光学的

recipients *n.* 收件人

copper *n.* 铜,警察

facsimile *n.* 摹写,传真

analog *n.* 类似物,相似体

modulate *vt.* 调整,调节,(信号)调制

decipher *vt.* 译解(密码等),解释

n. 密电译文

diaphragm *n.* [解] 横隔膜,控光装置,照相机镜头上的光圈,(电话等)振动膜

membrane *n.* 膜,隔膜

magnet *n.* 磁体,磁铁

vibrate *v.* (使)振动, (使)摇摆

electromagnetic *adj.* 电磁的

amplitude *n.* 广阔, 丰富, 振幅

illuminate *vt.* 照明, 照亮, 阐明, 说明, 使灿烂, 以灯火装饰
(街道等)

vi. 照亮

binary *adj.* 二进位的, 二元的

cordless *n.* 不用电线的

pager *n.* 呼机, 寻呼机

课文注释

1. Telecommunications enables people around the world to contact one another, to access information instantly, and to communicate from remote areas. (para. 1)

1) enable *vt.* 使能够, 授予权利或方法

enable sb. to do 使人能(做)……

e. g. The e-mail enable more people to connect with each other freely.

电子邮件使得更多的人能够彼此自由联系。

2) contact *n. vt.* 接触, 联系

e. g. establish contact with the outer world 建立与外界的联系

contact sb. by telephone 打电话与某人联系

3) access *n.* 通路, 访问, 入门

vt. 存取, 接近

e. g. The only access to the town is across the bridge.

到镇上唯一的通路是经过一座桥。

2. Telecommunications? devices convert different types of information, such as sound and video, into electronic or optical signals. (para. 2)

convert...into 把……改变为, 变换成

e.g. convert defeat into victory 转败为胜

e.g. Many Africans were converted to Christianity.

许多非洲人都改信基督教。

3. There are a variety of ways to create and decode signals, and many different ways to transmit signals. (para. 4)

1) a variety of *adj.* 多种的

e.g. A variety of trees can be found in rain forest.

热带雨林有多种树木。

2) transmit *vt.* 传输, 转送, 传达, 传导, 发射, 传播, 遗传

vi. 发射信号, 发报

e.g. Parents transmit some of their characteristics to their children.

父母把一些特有的素质遗传给儿女。

4. These impulses are then sent along wires, through the air as radio waves, or via other media to a receiver that decodes the modulation. (para. 5)

1) impulse *n.* 推动, 刺激, 冲动, 推动力

vt. 推动

act on impulse 凭冲动行事

e.g. A sudden impulse of anger arose in him.

他突然升起一阵怒火。

2) via *prep.* 经, 通过, 经由

travel via London 取道伦敦的旅行

e.g. I will contact you via e-mail.

我会通过电子邮件联系你。

5. A receiver (tuner) tuned to a specific frequency or range of frequencies will pick up the modulation added to the radio waves. (para. 7)

1) frequency *n.* 频率, 周率, 发生次数

其形容词为 frequent *adj.* 时常发生的, 频繁的

e. g. a frequent caller (visitor) 常客

2) range *n.* 山脉, 行列, 范围, 射程

vt. 排列, 归类于, 使并列, 放牧

vi. 平行, 延伸, 漫游

e. g. a wide range of knowledge 广博的知识

e. g. Prices ranged from 5 dollars to 10 dollars.

价格自 5 美元至 10 美元不等。

range 与 scope 的区别:

range 指“运用心、眼、机器、力量等所能概括的整个范围”。

e. g. the range of his knowledge 他的知识面

scope 指“活动、影响等的范围”, 特指“了解、见解、适用性以外的范围”。

e. g. It is within my scope.

那是在我的范围之内。

6. Finally, digital technologies create and send impulses that correspond to the series of 1s and 0s. (para. 9)

correspond to 相应, 符合

e. g. The American Congress corresponds to the British Parliament.

美国国会相当于英国议会。

e. g. His expenses do not correspond to his income.

他入不敷出。

7. Wire-based (or wireline) telecommunications provide the initial link between most telephones and the telephone network and are a reliable means for transmitting messages.

1) initial *adj.* 最初的, 词首的, 初始的

n. 词首大写字母

e. g. the initial issue of a magazine 杂志的创刊号

e. g. the initial letter of a word 一个词的首字母

2) reliable *adj.* 可靠的, 可信赖的

e.g. It is reported on reliable authority that ...

据可靠方面消息……

Exercises

I . Answer the following questions

1. What's the definition of telecommunications according to this article?
2. What are the main functions of telecommunications?
3. What are the main variety of ways to send telecommunications message?
4. What's the earlist method of delivering telecommunications, and what is its working principle?
5. In telecommunications, what creates and emits radio waves?
6. How does a TV set work?
7. How many forms of analog transmission are mentioned in this passage?
8. Why digital information can be transmitted faster and more clearly than analog signals?
9. By what way does personal computers communicate with each other?
10. How many transmission media are using in telecommunications systems delivering?

II . Cloze

Personal computers use telecommunications to provide a transmission link for the (1) of audio, video, text, software, and multimedia services. Many experts believe that the convergence of these services will generate consumer demand (2) new generations of high-speed, (3) networks. Currently, the delivery of most of these audio, (4), and text services occurs over existing telephone connections using the Internet. Some computers connect

directly to the digital portion of the telephone (5) using the Integrated Services Digital Network (ISDN) or (6) Subscriber Lines (DSL), but this requires special equipment at user locations. (7) and cable television companies must also make upgrades to their lines so that they can handle high-speed data (8). In many locations companies and individuals with high-speed (9) requirements now have the option of securing DSL service from telephone companies and cable modem service from (10) television companies.

(11) mail, or e-mail, is a key attraction of the Internet and a common form of computer (12). E-mail is a text-based message (13) system that allows information such as typed (14) and multimedia to be sent to (15) computer users. Local e-mail messages (within a building or a company) typically reach (16) by traveling through wire-based internal networks. E-mail that must travel across town or (17) a country to reach the final (18) usually travels through the telephone network. Other computer telecommunications technologies that businesses frequently use include automated banking (19) and devices for credit card (20) that bill charges directly to a customer's bank account.

Access to Scientific English

科技英语的概念及其文体特征

1. 科技英语的概念

1.1 特殊用途英语(English for Special Purposes)及其分类

英语是目前国际上的主要科技语言。为了提高科技专业人才的英语交际水平及非科技人员的科技英语理解水平,20 世纪 60 年代~70 年代,特殊用途英语(English for Special Purposes, ESP)