



中国科学院教材建设专家委员会规划教材
全国高等医药院校规划教材

Medical English
A Course Book

医学英语教程

第2版

◎ 杨小刚 主编



科学出版社

中国科学院教材建设专家委员会规划教材
全国高等医药院校规划教材

Medical English

A Course Book

医学英语教程

第2版

主 编 杨小刚
副主编 金双军 袁昌万
编 者 (以姓氏笔画为序)
王泽阳 冯 颖 吕鹏飞
刘映洁 杜 军 杨水平
李芋均 何丽芬

科学出版社

北 京

内 容 简 介

本书以快速学习医学英语为目标,对医学英语语言、医学术语构词及医学文献阅读翻译都有内容讲解。材料选自国外医学英语著作和医学教育网站,内容新颖、题材多样、难度适中,涵盖基础医学和临床医学两个方面。每个单元后配有单词表和医学术语构词法讲解。同时,通过医学术语翻译、选择、填空、搭配等练习帮助读者熟悉和掌握一定量的医学术语。

本书适用于大学医学及相关专业学生使用,可在短时间内快速提高医学专业英语水平。也可作为其他医学及相关人员补充医学英语的教科书。

图书在版编目(CIP)数据

医学英语教程 / 杨小刚主编. —2 版. —北京:科学出版社,2015. 1
中国科学院教材建设专家委员会规划教材·全国高等医药院校规划教材
ISBN 978-7-03-042972-8

I. 医… II. 杨… III. 社会医学-英语-医学院校-教材 IV. H31

中国版本图书馆 CIP 数据核字 (2014) 第 310423 号

责任编辑:朱 华 / 责任校对:胡小洁

责任印制:李 利 / 封面设计:范璧合

版权所有,违者必究。未经本社许可,数字图书馆不得使用

科学出版社 出版

北京东黄城根北街 16 号

邮政编码:100717

<http://www.sciencep.com>

文林印务有限公司 印刷

科学出版社发行 各地新华书店经销

*

2007 年 1 月第 一 版 开本:787×1092 1/16

2015 年 1 月第 二 版 印张:12 1/2

2015 年 1 月第八次印刷 字数:295 000

定价:28.00 元

(如有印装质量问题,我社负责调换)

前 言

随着科学技术的迅猛发展,我国大学外语教育也做出了相应改革。分类指导的个性化教学更加适合各类院校的办学目标、专业要求和学生的个性化发展。专门用途英语(English for Specific Purpose, ESP)的学习越来越受到重视。医学英语(English for Medical Purpose, EMP)是专门用途英语中特色鲜明的一个重要分支,是大学英语教学课程体系的有机组成部分。普通高等医学院校学生在进入高年级学习后,一般都要求在外语能力上能读懂与自己的专业有关的文章,能在无准备的情况下谈论一些与专业有关的话题。这就要求生要懂得本专业外语的语言特点,熟悉一定量的专业术语。国内现有的医学英语教材中,从基础到临床、从听力到会话、从医学术语学习到医学文献阅读、从医学写作到双语教学,可谓无所不有,满足了各种学习的需求。在这样的大环境下,我们仍然修订编写了这本书,以便满足某一层学习者的需要,即时间少但又想对医学英语语言、医学术语构词和医学文献阅读理解及翻译有一定了解的学习群体。本书第一版出版于2007年,经过几年的使用,编者和学习者都发现了一些值得改进的地方,为此,我们组织人员做了修订。在修订过程中,我们参阅了大量的国内外有关书籍和文献,同时利用语料库工具对相关教材的医学术语频率进行分析,以保证选材的典型性、针对性、实用性及难度。

本书各单元材料均选自国外医学语言著作和医学教育网站(有的地方编者做了相应的改动),内容新颖、题材多样、难度适中,涵盖了基础医学和临床医学两个方面。每个单元后面配有单词表和医学术语构词法讲解,同时,通过医学术语翻译、选择、填空、搭配等练习帮助读者熟悉和掌握一定量的医学术语。另外,编者还选编了与单元主题相关的短文,以训练读者阅读医学文献的能力。在阅读理解题型设置方面,除了传统的阅读选择题外,编者在参考大学英语四六级新题型的基础上,编写了选词填空题和信息匹配题。同时,在练习中还选编了一些医学英语长难句,培养学习者的医学文献长难句分析和翻译能力。总之,大量的练习让学生能进行体验学习,充分体现了以输入为基础、以输出为驱动力的教学理念。

本书的编写得到了许多同行及医学专家的支持与帮助,整个过程中他们给予了许多富有建设性的建议和实质性的帮助,在此一并表示衷心的感谢。由于编者的水平有限,书中难免存在不足或疏漏之处,恳请广大读者不吝赐教,以期再版时修正。

编 者

2014年5月于果城

Contents

Unit One	
Bones, Muscles and Nerves	1
Unit Two	
Skin	16
Unit Three	
Anatomy and Physiology of Respiration	28
Unit Four	
Urinary Organs and Urinalysis	42
Unit Five	
Anatomy and Physiology of the Heart	57
Unit Six	
Blood and Blood Groups	70
Unit Seven	
Lymph and Lymphatic Organs	85
Unit Eight	
Pharmacology	97
Unit Nine	
Psychiatry	112
Unit Ten	
Oral Cavity and the Esophagus	126
Unit Eleven	
Stomach and Intestines	139
Unit Twelve	
Cancer and Carcinogenesis	153
Unit Thirteen	
168Radiology	168
Unit Fourteen	
168Nuclear Medicine	182

Unit One

Bones, Muscles and Nerves

The musculoskeletal system includes the bones, muscles, and joints. Each has several important functions in the body. Bones, by providing the framework around which the body is constructed, protect and support our internal organs. Also, by serving as a point of attachment for muscles, bones assist in body movement. The inner core of bones is composed of hematopoietic tissue (red bone marrow manufactures blood cells), while other parts are storage areas for minerals necessary for growth, such as calcium and phosphorus.

Joints are places where bones come together. Several different types of joints are found within the body. The type of joint found in any specific location is determined by the need for greater or lesser flexibility of movement.

Muscles, whether attached to bones or to internal organs and blood vessels, are responsible for movement. Internal movement involves the contraction and relaxation of muscles which are a part of viscera, and external movement is accomplished by the contraction and relaxation of muscles which are attached to bones.

Bones are complete organs, chiefly composed of connective tissue called osseous (bony) tissue plus a rich supply of blood vessels and nerves. Osseous tissue is a dense connective tissue which consists of osteocytes (bone cells) surrounded by a hard, intercellular substance filled with calcium salts.

During fetal development, the bones of the fetus are composed of cartilage tissue, which resembles osseous tissue but is more flexible and less dense because of lack of calcium salts in its intercellular spaces. As the embryo develops, the process of depositing calcium salts in the soft, cartilaginous bones occurs, and continues throughout the life of the individual after birth. The gradual replacement of cartilage and its intercellular substance by immature bone cells and calcium deposits is called ossification (bone formation).

Osteoblasts are the immature bone cells which produce the bony tissue that replaces cartilage during ossification. Osteoclasts (-clast means to break) are large cells which function to reabsorb, or digest, bony tissue. Osteoclasts (also called bone phagocytes) digest dead bone tissue from the inner sides of bones and thus enlarge the inner bone cavity so that the bone does not become overly thick and heavy. When a bone breaks, osteoblasts lay down the mineral bone matter (calcium salts) and osteoclasts remove excess bone debris (smooth out the bone).

The formation of bones is dependent to a great extent on a proper supply of calcium and phosphorus to the bone tissue. These minerals must be taken into the body along with a sufficient amount of vitamin D. Vitamin D helps the passage of calcium through the lining of the small intes-

tine and into the bloodstream. Once calcium and phosphorus are in the bones, osteoblastic activity produces an enzyme which causes the formation of a calcium-phosphate compound giving bone its characteristic hard quality¹.

Not only are calcium, and phosphorus part structure of bone tissue, but calcium is also stored in bone and small quantities are present in the blood. If the proper amount of calcium is lacking in the blood, nerve fibers are unable to transmit impulses effectively to muscles; heart muscle becomes weak and muscles attached to bones undergo spasms.

The necessary level of calcium in the blood is maintained by the parathyroid gland, which secretes a hormone to release calcium from bone storage. Excess of hormone (caused by tumor or other pathological process) will raise blood calcium at the expense of the bones, which become weakened by the loss of calcium.

Bones all over the body are of several different types. Long bones are found in the thigh, lower leg, and upper and lower arm. These bones are very strong, and broad at the ends where they join with other bones, and have large surface areas for muscle attachment.

Short bones are found in the wrist and ankle and have small, irregular shapes. Flat bones are found covering soft body parts. These are the shoulder bone, ribs, and pelvic bones. Sesamoid bones are small, rounded bones resembling a grain of sesame in shape. They are found near joints; the knee cap is the largest example of this type of bone.

The shaft, or middle region, of a long bone is called the diaphysis. Each end of a long bone is called the epiphysis. The epiphyseal line or plate represents an area of cartilage tissue which is constantly being replaced by new bony tissue as the bone grows. Cartilage cells at the edges of the epiphyseal plate form new bone and this is responsible for the lengthening of bones during childhood and adolescence. The plate calcifies and disappears when the bone has achieved its full growth.

The periosteum is a strong, fibrous, vascular membrane that covers the surface of a long bone, except at the end of the epiphyses. Bones other than long bones are completely covered by the periosteum. Beneath the periosteum is the layer of immature cells (osteoblasts) which deposit calcium-phosphorus compounds in the bony tissue.

The ends of long bones are covered by a thin layer of cartilage called articular cartilage. This cartilage layer cushions the bones at the place where they meet with other bones (joints).

Compact (cortical) bone is a layer of hard, dense tissue which lies under the periosteum in all bones and chiefly around the diaphysis of long bones. Within the compact bones is a system of small canals containing blood vessels which bring oxygen and nutrients to the bone and remove waste products such as carbon dioxide. These channels in the compact bone are called Haversian canals. Compact bone is tunneled out in the shaft of long bones by a central medullary cavity which contains yellow bone marrow². Yellow bone marrow is chiefly composed of fat cells.

Cancellous bone, sometimes called spongy bone, is much more porous and less dense than compact bone. The mineral matter in it is laid down in a series of separated bony fibers called a spongy latticework. It is found largely in the epiphyses of long bones and in the middle portion of

most other bones of the body as well. Spaces in cancellous bone contain red bone marrow. This marrow, as opposed to yellow marrow which is fatty tissue, is richly supplied with blood and consists of immature blood cells in various stages of development.

In an adult, the ribs, pelvic bone, sternum (breastbone), and vertebrae, as well as the epiphyses of long bones, contain red bone marrow within cancellous tissue. The red marrow in the long bones is plentiful in young children, but decreases through the years and is replaced by yellow marrow.

There are three types of muscles in the body.

Striated muscles, also called voluntary or skeletal muscles, are the muscle fibers which move all bones, as well as the face and eyes. We have conscious control over the activity of this type of muscle. Striated muscle fibers (cells) have a pattern of dark and light bands, or fibrils, in their cytoplasm. A delicate membrane called a sarcolemma surrounds each skeletal muscle fiber.

Smooth muscles, also called involuntary or visceral muscles, are those muscle fibers which move our internal organs such as the digestive tract, blood vessels, and secretory ducts leading from glands. We have no conscious control over these muscles. They are called “smooth” because they have no dark and light fibrils in their cytoplasm. While skeletal muscle fibers are arranged in bundles, smooth muscle forms sheets of fibers as it wraps around tubes and vessels.

Cardiac muscle is striated in appearance but like smooth muscle in its action. Its movement cannot be consciously controlled. The fibers of cardiac muscle are branching fibers and are found in the heart.

The nervous system is divided into the central nervous system and the peripheral nervous system; the central nervous system is composed of the brain and spinal cord; the peripheral nervous system consists of the cranial and spinal nerves, and their distribution. The nervous system may also be divided into the somatic and autonomic nervous systems.

The conducting cells of the nervous system are termed neurons. A typical motor neuron consists of a cell body which contains the nucleus and gives off a single axon numerous dendrites. The cell bodies of most neurons are located within the central nervous system, where they aggregate to form nuclei. Cell bodies in the peripheral nervous system aggregate in ganglia.

Axons are the nerve fibers and conduct action potentials generated in the cell body, to influence other neurons or affect organs. They may be myelinated or non-myelinated.

Most nerves in the peripheral nervous system are bundles of motor, sensory, and autonomic axons. The region of the head is largely supplied by the 12 cranial nerves. The remainder of the trunk and the limbs are segmentally supplied by the spinal nerves.

Word List

musculoskeletal	[ˌmʌskjʊləʊ'skelɪtəl]	a. 肌肉骨骼的
marrow	[ˈmærəʊ]	n. 骨髓
calcium	[ˈkælsiəm]	n. 钙
phosphorus	[ˈfɒsfərəs]	n. 磷

viscera	['visərə]	<i>n.</i> [<i>pl.</i>] 内脏
osseous	['ɔsiəs]	<i>a.</i> 骨的, 骨性的
fetal	['fi:tl]	<i>n.</i> 胎的
fetus	['fi:təs]	<i>n.</i> 胎儿
cartilage	['kɑ:tilidʒ]	<i>n.</i> 软骨
embryo	['embriəu]	<i>n.</i> 胚胎
debris	['debri:]	<i>n.</i> 碎屑, 碎片
enzyme	['enzaim]	<i>n.</i> 酶
spasm	['spæzəm]	<i>n.</i> 痉挛
parathyroid	[,pærə'thairɔid]	<i>n.</i> 甲状旁腺的
hormone	['hɔ:məun]	<i>n.</i> 激素
pathological	[,pæθə'lɔdʒikəl]	<i>a.</i> 病理的
pelvic	['pelvik]	<i>a.</i> 骨盆的
sesamoid	['sesəməɔid]	<i>a.</i> 籽样的 <i>n.</i> 籽骨
diaphysis	[dai'æfisis]	<i>n.</i> 骨干
vascular	['væskjulə]	<i>a.</i> 血管的
articular	[ɑ:'tikjulə]	<i>a.</i> 关节的
epiphysis	[i'pifisis]	<i>n.</i> 骨骺
cortical	['kɔ:tikəl]	<i>a.</i> 皮质的
sternum	['stə:nəm]	<i>n.</i> 胸骨
porous	['pɔ:rəs]	<i>n.</i> 多孔的
hematopoietic	[,hi:mətəupɔi'etik]	<i>a.</i> 造血的
medullary	[me'dʌləri]	<i>a.</i> 髓的, 髓状的
cancellous	[kænsələs]	<i>a.</i> 网眼状的
latticework	['lætiswɜ:k]	<i>n.</i> 格子
vertebra	['vɜ:tibrə]	<i>n.</i> 椎骨
striated	['straieitid]	<i>a.</i> 纹状的
cardiac	['kɑ:diæk]	<i>a.</i> 心(脏)的
periosteum	[,peri'ɔstiəm]	<i>n.</i> 骨膜
membrane	['membrein]	<i>n.</i> 膜
fibril	['faibril]	<i>n.</i> 纤维
sarcolemma	[,sɑ:kə'lemə]	<i>n.</i> 肌纤维膜
peripheral	[pə'rifərəl]	<i>a.</i> 边缘的, 周围的
somatic	[səu'mætik]	<i>a.</i> 体壁的, 身体的
neuron	['njuərɔn]	<i>n.</i> 神经细胞, 神经元
axon	['æksɔn]	<i>n.</i> 神经轴突
dendrite	['dendrait]	<i>n.</i> 树突
aggregate	['ægrigeit]	<i>v.</i> (使)聚集, 集合

Notes

1. ..., osteoblastic activity produces an enzyme which causes the formation of a calcium-phosphate compound giving bone its characteristic hard quality.
……, 成骨细胞的活动性产生一种酶使钙磷形成化合物, 使骨具有坚硬特性。
2. Compact bone is tunneled out in the shaft of long bones by a central medullary cavity which contains yellow bone marrow.
长骨的骨干致密骨的中心呈长的隧道为髓腔, 髓腔内含有黄骨髓。

Medical Word Building

1. Combining Form	Pronunciation	Meaning
oste/o	['ɔ:sti]	bone
sarc/o	[sɑ:k]	flesh, muscle
orth/o	[ɔ:θ]	straight; normal
calc/o	[kæl k]	calcium
vertebr/o	['və:tibr]	vertebra; backbone
spondyl/o	['spɒndil]	vertebra, spine
rachi/o	['reiki]	spine
lamin/o	['ləmin]	lamina
kyph/o	[kaif]	hump
lord/o	[lɔ:d]	inward curve
scoli/o	['skɔli]	laterally crooked
myel/o	[maiəl]	spinal cord; bone marrow
cervic/o	['sə:vik]	neck
thorac/o	[θɔ:ræk]	thorax or chest
lumb/o	[lʌmb]	loin; lumbar region
arthr/o	[ɑ:θr]	joint
articul/o	[ɑ:'tikjul]	joint
burs/o	[bə:s]	sac
synovi/o	[si'nəuvi]	synovia; synovium
chondr/o	[kɒndr]	cartilage
path/o	[pæθ]	disease
fibro/o	['faibrəu]	fiber
ten/o	[tən]	tendon
tend/o	[tənd]	tendon
tendin/o	['tendin]	tendon
ligament/o	['ligəmənt]	ligament
syndesm/o	[sin'dezm]	ligament
ankyl/o	['æŋkil]	bent or crooked; stiff

muscul/o	['mʌskjʊl]	muscle
my/o	[mai]	muscle
myos/o	['maiəʊs]	muscle
phag/o	[fæg]	eating; phagocyte
pub/o	[pju:b]	pubis
radi/o	['reidi]	X-ray; radius
femor/o	['femə]	femur
carp/o	[kɑ:p]	wrist bone
cost/o	[kɔst]	rib
crani/o	['kreini]	skull
2. Suffix	Pronunciation	Meaning
-cyte	[saɪt]	cell
-genic	['dʒenɪk]	producing; produced by
-blast	[blæst]	formative cell
-clast	[klæst]	break
-clasis	['klæsɪz]	break
-schisis	['skɪsɪs]	cleft or split
-physis	['fɪsɪs]	growing
-malacia	[mə'leɪʃɪə]	abnormal softening
-porosis	[pə'reʊsɪs]	lessening in density
-tomy	[təmi]	incision
-oma	['əʊmə]	tumor
-itis	['aɪtɪs]	inflammation
-plasty	['plæstɪ]	plastic surgery
-osis	['əʊsɪs]	(diseased) condition
-logy	['lədʒɪ]	field of study
-algia	['ældʒɪə]	pain
-poiesis	[pɔɪ'ɪsɪs]	formation; production
3. Prefix	Pronunciation	Meaning
a(an) -	[ə]	not; lacking; absence of
peri-	['peri]	near, around

Practice

I . Translate the following medical terms into Chinese.

- | | |
|-----------------------|-------------------------|
| 1. osteitis _____ | 2. spondylitis _____ |
| 3. rachopathy _____ | 4. myeloma _____ |
| 5. arthroplasty _____ | 6. arthrotomy _____ |
| 7. tendoplasty _____ | 8. chondromalacia _____ |

9. chondroma _____
 11. syndesmitis _____
 13. fibromyalgia _____
 15. lordosis _____
 17. pathogenic _____

10. osteoblast _____
 12. myosarcoma _____
 14. cervicitis _____
 16. osteology _____
 18. fibroblastoma _____

II. Translate the following medical terms into English.

1. 肌炎 _____
 3. 脊柱裂 _____
 5. 骨质疏松 _____
 7. 滑膜瘤 _____
 9. 骨关节炎 _____
 11. 韧带切除术 _____
 13. 纤维肉瘤 _____
 15. 脊柱侧凸 _____
 17. 病理学 _____

2. 破骨细胞 _____
 4. 骨软化 _____
 6. 滑膜切除术 _____
 8. 胸廓成形术 _____
 10. 骨软骨瘤 _____
 12. 肌瘤 _____
 14. 子宫颈切除术 _____
 16. 关节痛 _____
 18. 纤维细胞 _____

III. Multiple Choices

- _____ is a kind of benign bone tumor.
 A. Myeloma B. Myoma C. Osteoma D. Synovioma
- Softening of the bones caused by a deficiency of vitamin D, either from a poor diet or lack of sunshine or both is _____.
 A. osteoblast B. osteomalacia C. chondromalacia D. chondrogenesis
- A cell, originating in the mesoderm of the embryo, that is responsible for the formation of bone is called _____.
 A. chondroclast B. osteoclast C. chondroblast D. osteoblast
- Bony means _____.
 A. skeletal B. muscular C. osseous D. chondrogenesis
- _____ is a bone cell; an osteoblast that has ceased activity and has become embedded in the bone matrix.
 A. Phagocyte B. Chondrocyte C. Fibrocyte D. Osteocyte
- _____ is the formation of bones, which takes place in three stages by the action of special cells(osteoblasts).
 A. Ossification B. Calcification C. Cartilage D. Sternum
- _____ is a large multinucleate cell that resorbs calcified bone and is only found when bone is being resorbed and may be seen in small depressions on the bone surface.
 A. Periosteum B. Osteoclast C. Hemopoietic D. Sesamoid
- A cell that is able to engulf and digest bacteria, protozoa, cells and cell debris, and other small particles is known as _____.
 A. myocyte B. osteocyte C. phagocyte D. fibrocyte
- _____ is a sustained involuntary muscular contraction, which may occur either as part of a

generalized disorder or as a local response to an otherwise unconnected painful condition.

- A. Vertebra B. Sternum C. Parathyroid D. Spasm

10. _____ is the part of the alimentary canal that extends from the stomach to the anus.

- A. Intestine B. Enzyme C. Embryo D. Diaphysis

IV. Fill in the following blanks with proper words.

1. A layer of dense connective tissue that covers the surface of a bone except at the articular surfaces is known as _____.
2. Cervical traction is applied as a treatment for an injured _____.
3. The sternum is commonly called the _____.
4. A _____ is a collection of nerve cell bodies.
5. The wrist bones are the _____.
6. Inflammation of the cervix of the uterus is known as _____.
7. The suffix means split, cleft, or fissure is _____.
8. The bones of the fingers and toes are called _____.
9. _____ is the suffix meaning pain.
10. The study of fungi is known as _____.
11. Excision of the lamina of the vertebral posterior arch is called _____.
12. _____ is the inflammation of the spine.
13. The _____ is the upper arm bone, extending from the shoulder to the elbow.
14. The _____ is the inner and larger bone of the forearm, on the side opposite to the thumb.
15. The hip bone is the _____, formed by the sacrum, coccyx (tailbone), and the ilium, pubis and ischium.

V. Choose the definition from Column B that best matches the word, combining form or affix in Column A.

Column A

1. arthr/o
2. path/o
3. fibr/o
4. -clast
5. -tomy
6. -poetic
7. osteomyelitis
8. chondrocostal
9. epiphysis
10. diaphysis

Column B

- a. the end of a long bone
- b. inflammation of the bone and bone marrow
- c. break
- d. pertaining to cartilage attached to a rib
- e. joint
- f. incision
- g. the shaft of a long bone
- h. disease
- i. fiber
- j. productive

VI. Reading Comprehension A

Directions: In this section, there is a passage with ten blanks. You are required to select one word for each blank from a list of choices given in a word bank following the passage.

Spinal fusion, also known as spondylodesis or spondylosyndesis, is a surgical technique used

to join two or more vertebrae. Supplementary bone tissue, either from the patient (autograft) or a donor 1, is used in conjunction with the body's natural bone growth (osteoblastic) processes to fuse the vertebrae.

Fusing of the spine is used primarily to eliminate the pain caused by abnormal motion of the vertebrae by immobilizing the faulty 2 themselves, which is usually caused by degenerative conditions. However, spinal fusion is also the preferred way to treat most spinal 3, specifically scoliosis and kyphosis.

Spinal fusion is done most commonly in the lumbar region of the spine, but it is also used to treat 4 and thoracic problems. The indications for lumbar spinal fusion are controversial. People rarely have problems with the thoracic spine because there is little normal motion in the thoracic spine. Spinal fusion in the thoracic region is most often associated with spinal deformities, such as scoliosis and kyphosis.

Patients requiring spinal fusion have either neurological deficits or severe pain which has not responded to conservative treatment. Spinal fusion surgeries are also common in patients who suffer from moderate to severe back deformities that require reconstructive 5.

Conditions where spinal fusion may be considered are 6 disc disease, spinal disc herniation, spinal tumor, vertebral fracture, scoliosis, kyphosis, spondylolisthesis, spondylosis, other degenerative spinal conditions, and any condition that causes instability of the spine.

There are two main types of lumbar spinal fusion, which maybe used in conjunction with each other:

Posterolateral fusion places the bone graft between the 7 processes in the back of the spine. These vertebrae are then fixed in place with screws and/or wire through the pedicles of each vertebra attaching to a metal rod on each side of the vertebrae.

Interbody fusion places the bone graft between the vertebra in the area usually occupied by the intervertebral disc. In preparation for the spinal fusion, the disc is removed entirely. A device may be placed between the vertebra to maintain spine alignment and disc height. The intervertebral 8 may be made from either plastic or titanium. The fusion then occurs between the endplates of the vertebrae.

In most cases, the fusion is augmented by a process called fixation, involving the placement of metallic screws, rods, plates, or cages to stabilize the vertebrae and facilitate bone fusion. The fusion process typically takes 6 to 12 months after surgery. During this time 9 may be required. External factors such as smoking, osteoporosis, certain medications, and heavy activity can prolong or even prevent the fusion process. If fusion does not occur, patients may require reoperation.

Some newer technologies are being introduced which avoid fusion and preserve spinal motion. Procedures, such as artificial disc replacement, are being offered as 10 to fusion in the cervical spine. Their advantage over fusion has not been well established. Minimally invasive techniques have also been introduced to reduce complications and recovery time for lumbar spinal fusion.

- | | | |
|---------------|-----------------|----------------|
| A. device | F. progressive | K. cervical |
| B. orthotics | G. degenerative | L. epiphysis |
| C. spinous | H. vertebrae | M. surgery |
| D. transverse | I. sternum | N. cure |
| E. allograft | J. alternatives | O. deformities |

VII. Reading Comprehension B

Directions: *In this section, there are two passages followed by some questions or unfinished statements, each with four suggested answers marked A, B, C and D. Choose the one that you think is the correct answer.*

Passage One

In order to carry out their specialized activities, the cells of the body are grouped together into larger structures. A tissue consists of a group of similar cells along with the material between the cells, which are organized to carry out a particular function. There are 4 major type of tissue: epithelial, connective, nervous, and muscular, each of which has a special function to perform.

Different types of tissue are combined into larger functional units known as organs. An organ is defined as a group of tissue working together to perform a particular function. The heart, for example, is an organ made up of epithelial tissue which protects it, muscle tissue which is responsible for the actual contractions, nervous tissue which controls it, and connective tissue which holds the other tissue together.

Finally, a number of different organs may act together to perform a particular function. Such a collection of organs is known as an organ system. In the human body there are 9 organ systems: the muscular system, the circulatory system, the digestive system, the respiratory system, the excretory system, the reproductive system, the nervous system, the immune system, and the endocrine system. The lungs and the air tubes form the respiratory system; the heart and the blood tubes along which blood flows round the body compose the circulatory system; and the stomach and the food tubes constitute the digestive system.

To sum up, there are 4 basic levels of organization within the body: the individual cells, tissues, organs and the organ system.

- () 1. Groups of cells are combined to form a higher unit called _____.
A. an organ B. a system C. an organ system D. tissue
- () 2. There are _____ major types of tissue.
A. 4 B. 9 C. 6 D. 3
- () 3. In the human body there are _____ organ system.
A. 7 B. 10 C. 8 D. 9
- () 4. The function of epithelial tissue is to _____.
A. hold the other tissue together B. make actual contractions
C. control the organ D. protect the organ
- () 5. The digestive system is composed of the stomach and the _____.

- A. food tubes B. blood tubes C. water tubes D. air tubes

Passage Two

Northern Europeans spend a lot of time in their cold and cloudy winters planning their summer holidays. They are proud of their healthy color when they return home after the holiday. But they also know that a certain amount of sunshine is good for their bodies and general health.

In ancient Greece people knew about the healing powers of the sun, but this knowledge was lost. At the end of the nineteenth century a Danish doctor, Niels Finsen, began to study the effect of sunlight on certain diseases, especially the diseases of the skin. He was interested not only in natural sunlight but also in artificially produced rays. Sunlight began to play a more important part in curing sick people.

A Swiss doctor, Auguste Rollier, made full use of the sun in his hospital at Lysine. Lysine is a small village high up in the Alps. The position is important; the rays of the sun with the greatest healing power are the infra red and ultra violet rays; but ultra violet rays are too easily lost in fog and the polluted air near industrial towns. Dr. Roller found that sunlight, fresh air and good food cure a great many diseases. He was particularly successful in curing certain forms of tuberculosis with his "sun-cure".

There were a large number of children in Dr. Roller's hospital. He decided to start a school where sick children could be cured and at the same time continue to learn. It was not long before his school was full. In winter, wearing only shorts, socks and boots, the children put on their skis after breakfast and left the hospital. They carried small desks and chairs as well as their school books. Their teacher led them over the snow until they reached a slope which faced the sun and was free from cold winds. There they set out their desks and chairs, and school began. Although they wore hardly any clothes, Roller's pupils were very seldom cold. That was because their bodies were full of energy which they got from the sun.

But the doctor knew that sunshine can also be dangerous. If, for example, tuberculosis is attacking the lungs, unwise sunbathing may do great harm. Today there is not just one school in the sun. There are several in Switzerland, and since Switzerland is not the only country which has the right conditions, there are similar schools in other places.

- () 1. According to the passage, when did sunlight begin to play a more important part in the treatment of disease?
- A. From ancient times.
B. At the end of the nineteenth century.
C. Not until this century.
D. Only very recently.
- () 2. Why are a Danish doctor and a Swiss doctor mentioned in the second and third paragraphs?
- A. Because they both made use of sunlight to treat illness.
B. Because they were the first people who used sunlight for treatment.
C. Because they were both famous European doctors.

- D. Because they used sunlight in very different ways.
- () 3. Dr Roller set up a “sun-cure” school probably for the reason that _____.
A. most children could stay in his hospital
B. children could study while being treated
C. the school was expected to be full of pupils
D. the school was high up in the mountains
- () 4. What can be inferred from the last paragraph of the passage?
A. “Sun-cure” schools are becoming popular everywhere.
B. Switzerland is the only country where “sun-cure” schools are popular.
C. Proper conditions are necessary for the running of a “sun-cure” school.
D. “Sun-cure” schools are found in countries where there is a lot of sunshine.

VIII. Reading Comprehension C

Directions: *In this section, you are going to read a passage with ten statements attached to it. Each statement contains information given in one of the paragraphs. Identify the paragraph from which the information is derived. You may choose a paragraph more than once.*

Characteristics of Alzheimer's Disease

A. The course of Alzheimer's disease (AD) is divided into four stages, with progressive patterns of cognitive and functional impairments.

B. The first symptoms are often mistakenly attributed to ageing or stress. Detailed neuropsychological testing can reveal mild cognitive difficulties up to eight years before a person fulfills the clinical criteria for diagnosis of AD. These early symptoms can affect the most complex daily living activities. The most noticeable deficit is memory loss, which shows up as difficulty in remembering recently learned facts and inability to acquire new information.

C. Subtle problems with the executive functions of attentiveness, planning, flexibility, and abstract thinking, or impairments in semantic memory can also be symptomatic of the early stages of AD. Apathy can be observed at this stage, and remains the most persistent neuropsychiatric symptom throughout the course of the disease. Depressive symptoms, irritability and reduced awareness of subtle memory difficulties also occur commonly. The preclinical stage of the disease has also been termed mild cognitive impairment, but whether this term corresponds to a different diagnostic stage or identifies the first step of AD is a matter of dispute.

D. In people with AD the increasing impairment of learning and memory eventually leads to a definitive diagnosis. In a small portion of them, difficulties with language, executive functions, perception (agnosia), or execution of movements (apraxia) are more prominent than memory problems. AD does not affect all memory capacities equally. Older memories of the person's life (episodic memory), facts learned (semantic memory), and implicit memory are affected to a lesser degree than new facts or memories.

E. Language problems are mainly characterized by a shrinking vocabulary and decreased word fluency, which lead to a general impoverishment of oral and written language. In this stage, the person with AD is usually capable of communicating basic ideas adequately. While performing fine