

# 英 語

## 医学部医学科

### 問 題 冊 子

#### 注意事項

- (1) 試験開始の合図があるまで、問題冊子を開かないこと。
- (2) 問題冊子は 13 ページで、解答用紙は 5 枚、白紙は 3 枚である。問題冊子や解答用紙に、落丁、乱丁、印刷不鮮明のものがあつた場合は、ただちに試験官に申し出ること。
- (3) 受験番号は、5 枚の解答用紙のそれぞれの指定箇所に丁寧に記入すること。
- (4) 問題は、

1
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 から 

3
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 の 3 つの大問よりなる。ただし、

1
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 は、

1-A
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 と 

1-B
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 からなる。
- (5) 解答は解答用紙の指定箇所に丁寧に記入すること。
- (6) 解答用紙は、持ち帰らないこと。
- (7) 問題冊子と白紙は、持ち帰ること。
- (8) 各大問には、満点に対する配点の比率(%)を表示してある。

**1-A**

次の英文を読んで、後の設問に答えなさい。(配点比率 10%)

A new study has shown that houses in areas rich with bird life sell for an average of \*£21,000 more than those with fewer birds. The research, which attempted to compensate ( ① ) factors such as house size, age and levels of urbanisation, found that the presence of even just one uncommon species of bird was an indication of higher house prices. The more species there were, ( あ ) the prices became, the researchers found. It suggests that house-hunters would do well to listen out for the sound of woodpeckers and nightingales to gauge the quality of a neighbourhood.

The researchers also found that nearby parks did ( い ) to influence the number of birds, meaning their presence was due to nearby domestic gardens in the area. Michael Farmer, from the Department of Agricultural and Applied Economics at Texas Tech University in Lubbock who led the research, which is published in the *Journal of Urban Ecosystems*, said: 'The addition of another desirable, less ubiquitous bird species improves mean home price ( ② ) £21,000. This is likely due ( ③ ) the human-created landscapes on private properties immediately surrounding a home sale'.

Bird song is already known to have a number of benefits such as ( う ) people to relax. One study in Liverpool found it could help calm young patients as they received injections in a hospital. The National Trust also suggests people listen to birdsong for a few minutes each day to help ( え ) their mood.

Miles Shipside, a housing analyst and commercial director at property specialists Rightmove, said the relationship between property prices ( ④ ) birds could be explained by the value home owners place on having a garden.

He said: 'Birds are very sensitive to their environment and it could be a sign of an area having ( お ) quality gardens. This would be reflected ( ⑤ ) the property prices. But in the UK particularly, people do also put a high value on wildlife, so an area where we can see it and be close to it would be more desirable'.

\*£21,000 約 300 万円

(Adapted from *The Daily Telegraph*, 7<sup>th</sup> June, 2013, <http://www.telegraph.co.uk/property/propertynews/>)

設問 1 ①～⑤に最も適した語を選んで解答欄に書きなさい。

- ( ① ) at / from / for / in / of
- ( ② ) at / by / in / on / to
- ( ③ ) at / between / in / of / to
- ( ④ ) and / from / in / out / with
- ( ⑤ ) at / between / beyond / in / of

設問 2 (あ)～(お)に最も適した語(句)を選んで解答欄に書きなさい。

- ( あ ) higher / lower / the higher / the low / the lower
- ( い ) a lot / few / little / much / many
- ( う ) help / helping / prevent / trouble / troubling
- ( え ) improve / include / increase / import / involve
- ( お ) bad / dirty / good / low / no

### The Practice of Medicine

( あ )

No greater opportunity, responsibility, or obligation can fall to the lot of a human being than to become a physician. In the care of the suffering, the physician needs technical skill, scientific knowledge, and human understanding. . . . Tact, sympathy, and understanding are expected of the physician, for the patient is no mere collection of symptoms, signs, disordered functions, damaged organs, and disturbed emotions. The patient is human, fearful, and hopeful, seeking relief, help, and reassurance.

The practice of medicine has changed in significant ways since the first edition of this book appeared more than 60 years ago. The advent of molecular genetics, molecular biology, and molecular pathophysiology, sophisticated new imaging techniques, and advances in bioinformatics and information technology have contributed to an explosion of scientific information that has fundamentally changed the way physicians define, diagnose, treat, and prevent disease. This growth of scientific knowledge is ongoing and accelerating.

The widespread use of electronic medical records and the Internet have altered the way doctors practice medicine and exchange information. As today's physician struggles to integrate copious amounts of scientific knowledge into everyday practice, it is important to remember that the ultimate goal of medicine is to prevent disease and treat sick patients. Despite more than 60 years of scientific advances since the first edition of this text, 治療を成功させる鍵は医師と患者の間に深い信頼関係をはぐくむことにある点をここに強調しておきたい。

### The Science and Art of Medicine

( い ) Spectacular advances in biochemistry, cell biology, and genomics, coupled with newly developed imaging techniques, allow access to the innermost parts of the cell and provide a window to the most remote recesses of the body. Revelations about the nature of genes and single cells have opened the portal for formulating a new molecular basis for the physiology of systems. Increasingly, physicians are learning how subtle changes in many different genes can affect the function of cells and organisms. Researchers are beginning to decipher the complex mechanisms by which genes are regulated. Doctors have developed a new appreciation of the role of stem cells in normal tissue function and in the development of cancer, degenerative disease, and other disorders, as well as their emerging role in the treatment of certain diseases. The knowledge gleaned from the science of medicine has already improved and undoubtedly will further improve physicians' understanding of

complex disease processes and provide new approaches to disease treatment and prevention. Yet, (      う      )

When a patient poses challenging clinical problems, an effective physician must be able to identify the crucial elements in a complex history and physical examination; order the appropriate laboratory, imaging, and diagnostic tests; and extract the key results from the crowded computer printouts of data to determine whether to “treat” or to “watch.” Deciding whether a clinical clue is worth pursuing or should be dismissed as a “red herring” and weighing whether a proposed test, preventive measure, or treatment entails a greater risk than the disease itself are essential judgments that a skilled clinician must make many times each day. This combination of medical knowledge, intuition, experience, and judgment defines the art of medicine, これは合理的な科学的基盤であるとともに医の実践に不可欠である。  
②

(Adapted from *Harrison's Principles of Internal Medicine*, 18th edition, 2011.)

設問 1 本文中の空所( あ )に入れるのに最も適切な語句を以下より1つ選び、その記号を解答欄に記入しなさい。

- (A) Treatments of cancer
- (B) Medicine on the Internet
- (C) The Modern-day physician
- (D) Indications for drug therapy
- (E) Errors in the delivery of health care

設問 2 本文中の空所( い )に入れるのに最も適切な文を以下より1つ選び、その記号を解答欄に記入しなさい。

- (A) The confidentiality of the patient-physician relationship cannot be overemphasized.
- (B) Deductive reasoning and applied technology form the foundation for the solution to many clinical problems.
- (C) No problem is more distressing than the diagnosis of an incurable disease, particularly when premature death is inevitable.
- (D) A skilled physician must learn to use powerful diagnostic tools judiciously, always considering whether the results will alter management and benefit the patient.
- (E) The physician's challenge is to integrate into clinical practice the useful recommendations offered by experts without accepting practice guidelines blindly or being inappropriately constrained by them.

設問 3 本文中の空所( う )に入れるのに最も適切な文を以下より1つ選び、その記号を解答欄に記入しなさい。

- (A) clinicians generally use objective and readily measurable parameters to judge the outcome of a therapeutic intervention.
- (B) the fundamental principles of medical ethics require physicians to act in the patient's best interest and respect the patient's autonomy.
- (C) some adverse effects are so common and so readily associated with drug therapy that they are identified very early during clinical use of a drug.
- (D) skill in the most sophisticated application of laboratory technology and in the use of the latest therapeutic modality alone does not make a good physician.
- (E) the patient who presents with a new, severe headache has a differential diagnosis that is quite different from the patient with recurrent headaches over many years.

設問 4 下線部①の日本語と同じ意味になるように/(スラッシュ)で区切られた語(句)を並べ替え、英文を作りなさい。このとき不必要な語(句)があれば、それを解答欄に記入し、なければ「なし」と記入しなさい。ただし、不必要な語(句)がある場合は1つとは限らない。

and / at / between / care / critical / cultivating / establish / is / it / lies / of / on / patient / patient / physician / successful / that / the heart / the intimate relationship / to / underscore /

設問 5 下線部②の日本語と同じ意味になるように/(スラッシュ)で区切られた語(句)を並べ替え、英文を作りなさい。このとき不必要な語(句)があれば、それを解答欄に記入し、なければ「なし」と記入しなさい。ただし、不必要な語(句)がある場合は1つとは限らない。

a / as / as is / base / for / is / medicine / necessary to / of / practice / scientific / sound / this / the / which /

2 次の英文を読んで、後の設問に答えなさい。(配点比率 50%)

In 1980, the young Swedish psychologist Anders Ericsson found himself working with the great William Chase, one of the pioneers of cognitive psychology. Chase, at Carnegie Mellon University in Pittsburgh, helped explore the implications of chunking, the memory technique used by all human beings to convert a scattered collection of details into a single distinct memory. Phone numbers, for example, are not stored in our brains as ten separate numbers but in three easy chunks: 513-673-8754. Remembering ten unrelated items in the right order is next to impossible; remembering three is no problem. The same notion applies to (1) remembering words, music, chess positions, or any other constellation of symbols. Great minds don't recall more raw data than others; rather, they recognize patterns faster and form chunks more efficiently.

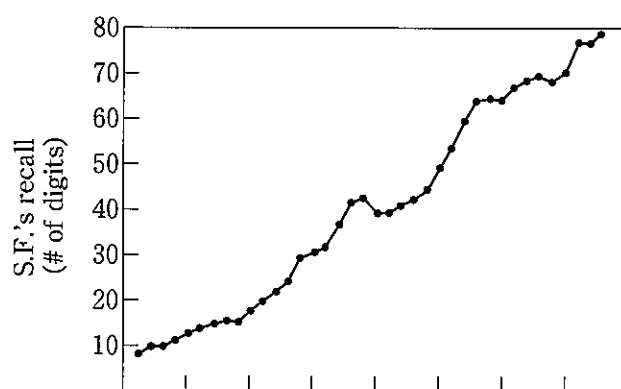
Chunking had offered a major breakthrough in understanding how the mind works. Now Ericsson and Chase were interested in learning even more about the severe limits of short-term memory and how to avoid them. While our long-term memory capacity is apparently limitless, new memories are almost pathetically fragile: the average healthy adult can reliably remember only three or four new, unrelated items. Such a limit, noted Ericsson and Chase, "places severe constraints on human ability to process information and solve problems."

But what about apparent exceptions to this rule — the handful of famous memory experts ("mnemonists") who've been able to recall prodigious amounts of new and disconnected information? Ericsson and Chase wanted to know if these remarkable performers had innate memory gifts or if they had somehow acquired their extraordinary skills. To answer that question, they embarked on an unusual and ambitious experiment. They attempted to create a mnemonist from scratch.

(4) Could an ordinary person's short-term memory be trained, like a juggler, to handle a much larger amount of information? There was only one way to find out. Ericsson and Chase recruited an undistinguished college student for an epic experiment. The student, known by his initials, S.F., tested normal for intelligence and normal for short-term memory performance. Memory-wise, he was just like you or me. Then they began the training. It was grueling work. In one-hour sessions, three to five sessions per week, researchers read (5) sequences of random numbers to S.F. at the rate of one digit per second: 2... 5... 3... 5... 4... 9... At intervals, they stopped and asked him to echo their list back. "If the sequence was reported correctly," the researchers noted, "the next sequence was increased by one digit; otherwise it was decreased by one digit." 2... 5... 3... 5... 4... 9... 7... At the end of every session, S.F. was asked to recall as many of that day's numbers as possible. 2... 5... 3... 5... 4... 9... 7... 6...

Instead of jumping off a bridge or transferring to another college, S.F. kept returning to the memory lab. In fact, he continued to participate most days of the week for more than two years — more than 250 hours of lab time. Why? Perhaps because he was seeing results. Almost immediately, his short-term memory performance started to improve: from seven digits to ten after a handful of sessions, then to an amazing twenty digits after several more dozen training hours. Already he had clearly escaped the normal bounds of short-term memory. From there, the improvements continued unabated: to thirty digits, forty, fifty, sixty, seventy, and finally to a staggering eighty-plus digits before the team concluded the experiment.

S.F.'s progress is represented on the graph below.



S.F.'s memory lab sessions (in 5-day increments)

There was no indication as the sessions ended that he had reached any sort of boundary. “With practice,” Ericsson and Chase concluded, “there is seemingly no limit to memory performance.”

How did he do it? Through interviews with S.F., Ericsson and Chase realized that their subject had neither tapped into a hidden memory gift nor somehow transformed the brain circuitry of his short-term memory. Rather, he had simply employed clever strategies that enabled him to get around his — and all of our — natural limits.

Here's how:

S.F. happened to be a competitive runner. Early on, after trying in vain simply to remember as many random numbers as possible, he realized that when he pictured an unconnected string of three or four digits as one single race time — for example, converting the numbers 5-2-3-4 into five minutes and twenty-three point four seconds — the numbers would come back to him quite easily. ( ① )

This was not a new technique; attaching disconnected pieces of information to older memories goes back all the way to the Greek “memory palaces” of the fourth century B.C. The trick is to assign new information to some system or image that's already in your head. For example, a classroom teacher could mentally “place” the face and name of each new





設問 1 下線部(1)~(10)の意味として最も適当なものをそれぞれ(A)~(L)から選びなさい。

- (A) to use
- (B) rapidly
- (C) to avoid
- (D) very easy
- (E) very large
- (F) exhausting
- (G) without success
- (H) to start from the beginning
- (I) almost no chance of happening
- (J) without becoming any weaker
- (K) to change back to a situation that existed in the past
- (L) something that limits your freedom to do what you want

設問 2 下の文は、Ericsson と Chase が、下線部(ア)の実験で明らかにしようとした内容をまとめたものです。空欄に適切な日本語を補って文を完成させなさい。

Ericsson と Chase の実験は、例外的な記憶行動が、( )か、 ( )かを明らかにしようとした。
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設問 3 下の文は、文中の[ イ ]の部分に入る文である。文中の( )に入る語を、(A)~(G)から選び、その記号を書きなさい。

These data suggest that... it is not possible to ( 1 ) the capacity of ( 2 ) memory with extended practice. Rather, increases in memory span are due to the ( 3 ) of mnemonic association in ( 4 ) memory. With an appropriate mnemonic system and retrieval structure, there is seemingly no ( 5 ) to improvement in memory ( 6 ) with practice.

- (A) increase            (B) limit            (C) long-term            (D) problem
- (E) short-term            (F) skill            (G) use

設問 4 空所( ① )~( ④ )のうち, 以下の文が入る最も適当な箇所はどこか。番号で答えなさい。

S.F., like every impressive mnemonist before him, had not transformed his natural memory limit; instead he had changed the way he formed new memories to take advantage of a different, less restrictive memory system.

設問 5 下線部(ウ)の内容から示唆される Ericsson が発見した内容として最も適当なものを(A)~(D)から選びなさい。

- (A) Genes and the environment never interact with each other.
- (B) Individual differences in talent and intelligence are predetermined by genes.
- (C) No one is genetically designed into greatness and all of us are biologically restricted from attaining it.
- (D) Limitations in achievement are not due to inadequate genetic assets, but to our inability to use what we already have.

- 3 以下の英文を読み、空白となっている下線部①～⑤に入れるのに最も適した英語の文を、13ページにある/(スラッシュ)で区切られた語(句)を並べ替えて作りなさい。そして、に入る語(句)のみを、解答欄に記入しなさい。(配点比率 20%)

**\*MIT Physics Professor Walter Lewin Announces Massive Open Online Course**

Cambridge, MA, January 23, 2013

Walter Lewin, the MIT physics professor who has achieved an unparalleled following through his video lectures on the MIT Open Course Ware (OCW) site, is now offering a massive open online course (MOOC). The course, *Electricity and Magnetism*, is available through edX (MIT and Harvard's not-for-profit online learning enterprise). Announced today and starting February 18th, the course may well become the biggest of the MOOC yet offered.

① \_\_\_\_\_ to recognize their achievement.

In the past two years, MOOCs have been putting up impressive numbers. The first MOOC offered by MIT, *Circuits and Electronics*, enrolled more than 150,000 learners, and other edX courses have been attracting learners numbering in the tens of thousands. Millions worldwide have taken free massive open online classes through edX and other providers.

But these numbers pale in comparison to the numbers associated with Professor Lewin's online course materials published through MIT Open Course Ware:

- Professor Lewin's courses — including *Classical Mechanics*, *Electricity and Magnetism* and *Vibrations and Waves* — have been visited more than 8 million times on OCW
- The \_\_\_\_\_ times on YouTube
- ② \_\_\_\_\_
- The first lecture for *Classical Mechanics* has been viewed more than 1.2 million times on YouTube
- Translations of Professor Lewin's courses in Chinese, Spanish, Portuguese, Korean, Turkish and Thai have been accessed by hundreds of thousands of learners

The extent of Professor Lewin's global recognition through OCW \_\_\_\_\_  
③ \_\_\_\_\_ to his edX course.

Professor Lewin's course, however, has more to offer than just size. His lectures are recognized worldwide for their quality and clarity, and approach the material with MIT-level rigor. Learners taking the course will get a taste of what it's like to attend a first-year physics class at MIT, complete with assessments similar to those MIT students receive. The \_\_\_\_\_  
④ \_\_\_\_\_ through Professor Lewin's lectures to test their

understanding using the latest online learning tools, and to receive a certificate recognizing their achievement.

Prerequisite courses for *Electricity and Magnetism* include *Classical Mechanics* and *Single Variable Calculus*, both of which are available for independent study on the OCW site in the unique OCW Scholar format. OCW Scholar courses \_\_\_\_\_<sup>⑤</sup> \_\_\_\_\_ at any time, but do not include instructor support or recognition for completion.

In addition to Professor Lewin's class, MIT has announced another new course, *The Challenges of Global Poverty* from Esther Duflo, to be offered through edX; *Introduction to Computer Science and Programming* and *Introduction to Solid State Chemistry*, both offered in 2012, are again available in 2013.

\*MIT = Massachusetts Institute of Technology

(Adapted from <http://ocw.mit.edu/about/media-coverage/press-releases/lewin-mooc-announced/>)

①～⑤の文における並べ替える語(句)群

① \_\_\_\_\_  \_\_\_\_\_

a/bearing/certificate/course/Learners/Professor Lewin's/receive/signature/  
successfully completing/the/will

② \_\_\_\_\_  \_\_\_\_\_

11. 4/been/courses/for/have/lectures/million/more/than/these/video/viewed

③ \_\_\_\_\_  \_\_\_\_\_

an/attract/enormous/has/learners/number/of/potential/the/to

④ \_\_\_\_\_  \_\_\_\_\_

a new appreciation/class/for/gained/have/of/offers/physics/  
the millions/the opportunity/who

⑤ \_\_\_\_\_  \_\_\_\_\_

a self-guided format/accessed/be/can/in/MIT course materials/provide/that