

平成 25 年度

医学部医学科一般・学士入学試験問題

(英 語)

- 注意事項
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 2. 解答用紙(マークカード)に、氏名・フリガナ・受験番号の記入および受験番号のマークを忘れないこと。
 3. マークは HB の鉛筆で、はっきりとマークすること。
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 6. 各問題の選択肢のうち質問に適した答えを 1つだけ 選びマークすること。1 問に 2 つ以上解答した場合は誤りとする。
 7. 問題用紙は解答用紙(マークカード)とともに机上に置いて退出すること。持ち帰ってはいけない。

I 次の英文を読み、下記の設問に答えなさい。

Anyone who knows the opposite sex well will tell you that, at times, men and women seem to be from different planets. The sexes often appear to think very differently from each other. However, until recently, researchers thought that these differences were caused by two things: social pressures, which have encouraged males and females to behave in certain ways, and secondly, hormones — chemical signals which tell different parts of the body, including the brain, what to do. Researchers didn't think the brain itself caused differences — on the contrary, they thought the brain's structure was mostly the same for both sexes. Interestingly, (1), new research is casting doubt on these assumptions: There may be a third factor that had not previously been considered seriously. Research is now revealing that male and female brains have many differences in structure. There are also differences in how the various parts of the brain are linked and in the chemicals that transmit messages between neurons. All this suggests that there is not just one kind of human brain, but two.

This is giving neuroscientists something of a headache, because most of what we know about the brain comes from studies of male animals and male humans. Generally, neuroscientists avoided using females in their research. This was (2) the monthly ups and downs of female hormones made it more complicated to interpret the results. If even a small proportion of what has been inferred from these studies does not apply to females, a huge body of research could be wrong.⁽⁶⁾

Male-female differences in brain structure are now becoming clear. In the past, the only structure that had long been known to differ slightly in males and females was the hypothalamus*¹, which helps to control basic human instincts such as regulating food intake.⁽⁷⁾ But new technology has helped scientists find other differences. For a start, the relative sizes of many of the structures inside female brains are different from those of males. In 2001, Jill Goldstein of Harvard Medical School and colleagues measured and compared 45 brain regions in healthy men and women. They found that parts of the frontal lobe*², which houses decision-making and problem-solving functions, were proportionately larger in women, as was the limbic cortex*³, which controls emotions. Other studies have found that hippocampus*⁴, involved in short-term memory and spatial navigation, is proportionately larger in women — perhaps surprisingly, (3) women's reputation as poor map readers. In men, proportionately larger areas include the parietal cortex*⁵, which processes signals from the sensory organs and is involved in spatial perception, and the amygdala*⁶, which controls emotions and social behavior.

Larry Cahill, a neurobiologist at the University of California, Irvine, has found evidence that, in some circumstances, people of different sexes use the same brain structures differently. In brain-imaging experiments, he asked groups of men and women to remember images they had been shown earlier. These images were chosen because they produce a strong emotional reaction. Both men and women consistently used the amygdala to complete the task. However, the men used the right side of the amygdala, while the women used the left side. What's more, each group remembered different aspects of the image. The men remembered the gist of the situation whereas the women concentrated on the details. This suggests men and women process information from emotional events in very different ways.

Research also suggests that the brain circuits that suppress pain may be different in males and females. In fact, a lot of research — but not all — suggests that females experience more pain than males. Some time ago, doctors noticed that some painkillers have different effects on men and women. For example, nalbuphine*⁷ works better for women than for men — in fact, it sometimes actually increases pain in men! Others appear to work better on men. So, with increasing understanding of how painkillers work, in the future we may be able to create painkillers that are more effective for women. However, developing drugs is very expensive, so we will probably have to wait for more research to show whether this will be financially worthwhile.

Another area where there are gender differences is mental health. For example, women appear to suffer from depression twice as often as men, and their brains typically produce about half as much serotonin — a neurotransmitter*⁸ linked to depression. Recently, Anna-Lena Nordström from the Karolinska Institute in Stockholm, Sweden, found that healthy women have more of the most common type of serotonin receptor*⁹ than men but fewer serotonin transporters*¹⁰, which are needed to recycle serotonin. It hasn't been shown that variations of this set-up make some women more prone to depression, but Nordström points out that transporter differences between men and women are (4) particular interest because this is where antidepressants like Prozac*¹¹ act, and because there is evidence that women respond better to such drugs than antidepressants that act on neurotransmitters other than serotonin.

Males may be less likely to suffer from depression, but this is balanced by other issues. Boys are more likely than girls to be diagnosed with a wide range of problems affecting brain systems, such as autism*¹², Tourette's syndrome*¹³, dyslexia*¹⁴, stuttering*¹⁵, attention-deficit disorder*¹⁶, and early-onset schizophrenia*¹⁷. So, a new approach to designing medicines, with one gender in mind, may also (5) males in the future. Again, we have to wait for further research.

出典 : *Academic Connections 3*, by Julia Williams and David Hill, pp. 6-8, p. 180 © 2010
 by Pearson Education, Inc. Adapted from: Hoag, H. (2008), *Sex on the brain, New Scientist, Australasian Edition, 2665*, pp. 28-31.

注 : * ¹ hypothalamus	[視床下部]
* ² frontal lobe	[前頭葉]
* ³ limbic cortex	[辺縁皮質]
* ⁴ hippocampus	[海馬]
* ⁵ parietal cortex	[頭頂葉皮質]
* ⁶ amygdala	[扁桃体]
* ⁷ nalbuphine	[ナルブフィン](合成麻薬性鎮痛剤)
* ⁸ neurotransmitter	[神経伝達物質]
* ⁹ serotonin receptor	[セロトニン受容体](セロトニンと結合し、細胞内に信号を伝達する膜タンパク質)
* ¹⁰ serotonin transporters	[セロトニン輸送体](セロトニンが神経細胞からシナプス間隙に放出された後に、それを再び元の神経細胞内に取り込む働きをする膜タンパク質)
* ¹¹ Prozac	[プロザック](抗鬱剤の一種、選択的セロトニン再取り込み阻害剤)
* ¹² autism	[自閉症]
* ¹³ Tourette's syndrome	[トゥレット症候群]
* ¹⁴ dyslexia	[失読症]
* ¹⁵ stuttering	[吃音症]
* ¹⁶ attention-deficit disorder	[注意欠陥障害]
* ¹⁷ early-onset schizophrenia	[若年発症統合失調症]

問 1 本文中の(1)~(5)の空欄に入る最も適切なものを、それぞれ①~⑤の中から一つずつ選びなさい。

- (1) ① but ② in short ③ therefore ④ though ⑤ while
 (2) ① because ② despite ③ instead ④ so that ⑤ why
 (3) ① if ② in case ③ given ④ provided ⑤ supposedly
 (4) ① at ② of ③ on ④ with ⑤ without
 (5) ① benefit ② corrupt ③ disguise ④ endanger ⑤ frustrate

問 2 本文中の(6)～(10)の語(句)に最も近い意味のものを、それぞれ①～⑤の中から一つずつ選びなさい。

(6) inferred

- ① gathered ② inhibited ③ mistaken
④ neglected ⑤ refused

(7) slightly

- ① a great deal ② by no means ③ extremely
④ significantly ⑤ somewhat

(8) consistently

- ① contradictorily ② rarely ③ regularly
④ roughly ⑤ unpredictably

(9) gist

- ① essence ② fault ③ nonsense ④ positive ⑤ trivia

(10) financially worthwhile

- ① ethical ② harmless ③ nutritious ④ profitable ⑤ therapeutic

問 3 下記の(11)～(15)の各文の内容が本文と一致するように、書き出しに続く最も適切なものを、それぞれ①～⑤の中から一つずつ選びなさい。

(11) Judging from the passage, the part of the brain that gives people a feeling of hunger is most likely to be the _____.

- ① amygdala ② frontal lobe ③ hippocampus
④ hypothalamus ⑤ parietal cortex

(12) Jill Goldstein of Harvard Medical School found that _____.

- ① differences between men and women in their behaviors were mainly caused by social pressures and hormones
② it would cause unexpected problems to include women in brain research
③ men and women process information in very different ways by means of using the opposite sides of the amygdala
④ women appeared to suffer from headaches twice as often as men because of the shortage of a certain brain chemical
⑤ there were differences between men and women in the sizes of structures inside the brain

- (13) According to the passage, it is true that _____.
- ① brain research has traditionally been conducted on both male and female animals
 - ② nalbuphine relieves pain more effectively in men than in women
 - ③ men and women are not affected the same way by all painkillers
 - ④ researchers suggest that males and females use the same circuits to block pain
 - ⑤ there will never be painkillers designed especially for women in the future
- (14) According to the passage, it is NOT true that _____.
- ① women seem to experience more depression than men
 - ② compared with men, women have more serotonin transporters and receptors
 - ③ boys are generally more likely to suffer from a broad variety of brain-system disorders than girls
 - ④ men normally produce approximately twice as much serotonin as women
 - ⑤ it appears that women respond better to drugs that affect the regulation of serotonin than those which work on other neurotransmitters
- (15) The main idea of the whole passage is that _____.
- ① neuroscientists have found no great differences between male and female brains
 - ② the brain has different parts, each of which carries out a different function
 - ③ the reason many researchers have failed to include females in their studies is understandable
 - ④ a neuroscientist has found that males and females sometimes use the same structure of the brain differently
 - ⑤ researchers have begun to make new discoveries about how male and female brains are different

II 次の学生と教授の対話を読み、下記の(16)～(20)の問の答えとして最も適切なものを、それぞれ①～④の中から選びなさい。

- Student: Thanks for seeing me, Dr. Barton.
- Professor: No problem. It's my office hour. What did you want to talk about?
- Student: I wanted to discuss the topic I've chosen for the paper I'm supposed to be writing for your anthropology*¹ course. The topic I'm thinking about is a bit unusual.
- Professor: Oh you know, it has to be related to some aspect of anthropology that we're studying. What topic did you have in mind?
- Student: I wanted to write about a test used by the Roman military to test soldiers' eyesight.
- Professor: Hmm ... an eyesight test used by the Roman military? Are you sure this is related to our anthropology class? Well, tell me about it. What is this eyesight test that the Roman military used?
- Student: Well, it was a test that the Romans used to determine if their soldiers would fight as foot soldiers on the front lines or as archers*² behind the front lines. Roman soldiers were required to undergo certain tests to determine their ability to perform as soldiers. One of these tests was simply to count the stars in the constellation*³, the Big Dipper*⁴. This test determined the acuity*⁵ of their vision. See. Look at this picture of the Big Dipper. You can see the seven stars in the Big Dipper. The star at the bend of the handle of the Big Dipper is called Mizar, and Mizar is a binary star*⁶. If you look closely, there's a second star called Alcor next to Mizar. If a Roman soldier's eyesight was good enough to see Alcor, he could fight as an archer. If he couldn't see Alcor, he had to fight as a foot soldier on the front lines.
- Professor: So this eye test was based on the ability of the soldier to see Alcor next to Mizar.
- Student: Yes, exactly.
- Professor: Well, that's a very interesting test, but I'm not sure that it's related to the material in our anthropology class. Well, let's put it this way. How would you relate it?
- Student: I'd relate it to the idea of "survival of the fittest."
- Professor: Um ... interesting ... and how would you relate it to this concept? Survival of the fittest has to do with the idea that those who're strongest or have some other physical or mental advantage will be more likely to survive.
- Student: Well, this test for eyesight was used not only by the Romans but also other groups of people for hundreds of years. The interesting point is that over time more people have been able to pass the test, and the fact that more people have been able to pass this test over time has been attributed to survival of the fittest. It was

certainly true for Roman soldiers that those who passed the test had a better chance of surviving for longer.

Professor: And why is that? Why did Roman soldiers who passed the test stand a better chance of surviving longer?

Student: Well, soldiers with better eyesight were not in direct enemy contact. Those with worse eyesight were sent to the front lines and, more often than not, were killed by the enemy. Archers stood a better chance of survival and had more chance to father children, who would also tend to have better eyesight than those who failed the test. This is what supports the concept of survival of the fittest.

Professor: Hmm. That's an interesting idea. As long as you concentrate on the idea of survival of the fittest in your paper and use this example of an eye test to support the concept, I think you would have a solid paper.

Student: That's what I'll do then. Thanks, Dr. Barton.

出典 : *Longman Preparation Course for the TOEFL® Test: iBT, Second Edition*, by Deborah Phillips, p. 585 © 2007 by Pearson Education, Inc.

- 注 : *¹anthropology [人類学]
*²archers [射手]
*³constellation [星座]
*⁴the Big Dipper [北斗七星]
*⁵acuity [鋭敏さ]
*⁶binary star [連星] (二つの恒星が両者共通の重心の周りを公転している天体)

- (16) Why does the student go to see the professor?
- ① To take a test he has missed.
 - ② To discuss the suitability of a particular topic.
 - ③ To ask a question about material from the course text.
 - ④ To ask why certain material has been assigned.
- (17) How does the professor respond to the student's visit?
- ① She assures the student that it is convenient for her to talk with him right now.
 - ② She apologizes for delaying the meeting.
 - ③ She indicates that the student is late for an appointment.
 - ④ She is embarrassed because she has to head for a lecture in a few minutes.
- (18) What is the topic the student wants to use for his paper?
- ① The use of stars in navigation.
 - ② Various positions in the Roman military.
 - ③ A method of determining the roles for certain soldiers.
 - ④ The importance of astronomy in ancient Rome.
- (19) Which statement best describes the possible outcomes from the Roman eyesight test?
- ① A soldier would fight as an archer or a stone thrower.
 - ② A soldier would fight on foot or on horseback.
 - ③ A soldier would remain a soldier or become an officer.
 - ④ A soldier would fight in a very dangerous position or from a less dangerous position.
- (20) How does the term "survival of the fittest" relate to the test that the student describes?
- ① The soldiers in the best physical shape tended to survive in battles.
 - ② The soldiers with better eyesight would more likely survive to pass on this physical advantage to their offspring.
 - ③ The fittest Romans were not in the military and therefore tended to survive.
 - ④ Those who could not see Alcor did not survive the Roman military tests.

Ⅲ 次の(21)～(30)の各英文中の空欄に入る最も適切な語(句)を、それぞれ①～⑤の中から一つずつ選びなさい。

(21) It _____ saying that eating a wide variety of food is good for your health.

- ① goes without ② hardly in ③ is hardly to
④ is no ⑤ needless to

(22) That morning, Ken could not find where his favorite shoes were, because his dog _____ them to the backyard.

- ① carrying ② had carried ③ has carried
④ has been carried ⑤ was carried

(23) Our company has decided to give this software _____ wants to use it.

- ① however ② to whoever ③ of which
④ to whom ⑤ whomever

(24) One of the most effective and cheapest ways to detect the presence of disease in the body is by _____ the blood.

- ① examine ② examination ③ test
④ tested of ⑤ testing

(25) Because of the depth to which the ship sank, it is considered unfeasible _____ the Titanic from the floor of the Atlantic Ocean.

- ① attempted to raise ② attempt to rise ③ to attempt to raise
④ attempted to rise ⑤ to attempt the rising

(26) Vienna is one of the four headquarters of the United Nations, _____ New York, Geneva and Nairobi.

- ① being the others ② the others being
③ that the others were ④ the others which were being
⑤ which the others were

(27) He tried everything he could think of to rebuild his company, but his efforts were _____.

- ① in case ② in charge ③ in demand
④ in spite ⑤ in vain

(28) Athletes who participate in the Olympic Games must be very _____ about drugs they take, because even common painkillers may contain some prohibited substances.

- ① cautious ② informal ③ indifferent
④ random ⑤ willing

(29) Once you have made your recipe selection, all you have to do is to turn to the relevant page and follow our simple directions _____.

- ① behind the times ② step by step ③ less and less
④ once upon a time ⑤ ever since

(30) This hotel boasts a restaurant that has, for twenty years _____, achieved a five-star rating.

- ① have run ② ran ③ runner
④ running ⑤ to run

IV 次の(31)～(36)の各英文の下線部の語(句)に最も近い意味のものを、それぞれ①～⑤の中から一つずつ選びなさい。

(31) The new teacher was appalled at the chaotic state of his classroom.

- ① animated ② chronic ③ disorderly
④ refined ⑤ suitable

(32) The feeling of speed always made her feel exhilarated.

- ① boring ② exhausted ③ frightening
④ stimulated ⑤ urgent

(33) The splendor of the spring morning was breathtaking.

- ① calmness ② coldness ③ magnificence
④ melancholy ⑤ sightseeing

(34) The ancient Celts thought that spirits and ghosts roamed the countryside on Halloween night.

- ① destroyed ② plowed ③ rocked
④ rounded ⑤ wandered

(35) While they were away on vacation, they allowed their mail to accumulate in the mailbox.

- ① be delivered ② be returned ③ catch up
④ get lost ⑤ pile up

(36) It seems unjust that something so vital as dental care is out of reach for so many people.

- ① abnormal ② available ③ illegal
④ inaccessible ⑤ integral

V 次の(ア)～(ウ)の日本語の文の意味を表すように、それぞれ①～⑩の語(句)を並べ替えて英文を完成させ、(37)～(42)の空欄に入るものの番号を答えなさい。

(ア) チーム医療の考え方は、どの医療専門家も一人では、複雑な問題を抱える患者を適切に取り扱うのに十分な技術や知識を持っていないという認識の高まりから生じた。

The concept of team medical care has arisen from the growing () () (37) () () () (38) () () () a patient with complex problems.

- | | | |
|----------------|----------------------|-------------------|
| ① has | ② medical | ③ no one |
| ④ or knowledge | ⑤ professional alone | ⑥ properly handle |
| ⑦ realization | ⑧ sufficient skills | ⑨ that |
| ⑩ to | | |

(イ) 医療チームの中で、医師はリーダーシップを発揮するだけでなく、他のスタッフに遠慮なくアドバイスしてもらえらる雰囲気をつくる必要がある。

In a medical care team, doctors need not only to exercise leadership, but also to () () (39) () () () () (40) () () to them.

- | | | | |
|-----------------|-----------|------------|---------|
| ① an atmosphere | ② feel | ③ create | ④ free |
| ⑤ give advice | ⑥ members | ⑦ in which | ⑧ other |
| ⑨ to | ⑩ staff | | |

(ウ) チーム医療の成功は、患者とその家族の要求にどれほどうまく応えられるかにかかっている。

The success of team medical care () (41) () () () (42) () () () () and their families.

- | | | | | |
|------|------------|------------|-------------|-----------|
| ① to | ② depends | ③ satisfy | ④ it will | ⑤ of |
| ⑥ on | ⑦ patients | ⑧ how well | ⑨ the needs | ⑩ be able |