

平成 28 年度 金沢医科大学医学部入学試験問題
一般入学試験 (英語)

1 For the blanks below, choose the most appropriate answer from each list.

1. A: Hi Jane. What's the forecast for tonight?

B: Just a moment. Let me check. 1

A: Thank you.

- ① Sure, it sounds just like today!
- ② Didn't you know that it had already been decided?
- ③ Hot and humid in the afternoon.
- ④ Scattered thunderstorms are likely.
- ⑤ The weather has been quite bad.

2. Open your books to page 37. Let's take a look at one theory that I personally 2 very interesting.

- ① find
- ② find it
- ③ regard to
- ④ observe
- ⑤ consider it

3. Having things to chew 3 very young puppies with one of their major sources of stimulation, especially when they are still too young to be able to stay still even for a short period of time.

- ① provide
- ② provides
- ③ are providing
- ④ is provided by
- ⑤ were to be provided by

4. The rising cost of health care is due not only 4 the aging of the population and the demand by growing numbers of elderly for health care but also because of many other reasons.

- ① as
- ② but
- ③ for
- ④ of
- ⑤ to

5. Well, if next week, I can meet you on the 10th or on the 12th. Would 5 of these days be convenient for you?

- ① some
- ② which
- ③ either
- ④ none
- ⑤ two

6. A: 6 heart disease remains our country's number one killer, since the mid-1960s there has been a rapid decline in deaths from the disease for both men and women, especially men.

B: Really? Could you tell us what contributed to the decline?

- ① As far
- ② Because
- ③ Regardless of
- ④ Although
- ⑤ During

7. Historians have shown that there were at least two industrial revolutions. The first one started in the late eighteenth century, 7 by new technologies such as the steam engine, and, more broadly, by the replacement of hand-tools with machines.

- ① characterizes
- ② characterized
- ③ characterizing
- ④ has characterized
- ⑤ were characterized

8. The second industrial revolution, about 100 years later, featured the development of electricity, science-based chemicals, and the beginning of communication technologies, with the spread of the telegraph and the 8 of the telephone.

- ① interference
- ② connections
- ③ happening
- ④ explosion
- ⑤ invention

2 Read the passage below and answer the questions about it.

Biotechnology is technology based on biology. It is the use of cells or whole living organisms to produce materials useful to people, such as foods, medicines, and chemicals. People 9 various forms of biotechnology for a long time. For example, the use of yeasts to make bread or beer dates back 10 8,000 years, and the use of bacteria to make cheese and yogurt is a technique many centuries old. For a long time people made (ア) [_____] and genes involved.

About 100 years ago it became clear that specific bacteria, yeasts, and other microorganisms* could be used as biological converters to make certain products. Alexander Fleming's discovery that *Penicillium** makes penicillin led to the large-scale commercial growing of microorganisms to produce medicine as well as other useful chemicals. Today microorganisms are grown in 11 quantities to make much of the industrial-grade alcohol and glycerin that are used as is or as starting materials in the manufacture of other products.

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In contrast, the commercial harvesting of proteins, including hormones and enzymes*, was until recently limited by the very small amounts that could be taken out from organisms that produce (イ) them naturally. Quantities were low, and removing harmful substances was difficult and costly. Gene cloning has changed all this. Now that almost any gene can be inserted into bacteria or yeasts and the cells can [12] to make and export the gene product in large amounts, these microorganisms have become convenient factories for important products.

注 * : microorganisms 微生物 ; *Penicillium* ペニシリンという薬の原料 ; enzymes 酵素

1. For [9] - [12] in the passage, choose the most appropriate word or phrase from each list.

- | | | | | | |
|------|------------|-------------------|------------------|------------------|-------------------|
| [9] | ① will use | ② have been using | ③ have been used | ④ would use | ⑤ would have used |
| [10] | ① toward | ② as always | ③ before | ④ as long | ⑤ at least |
| [11] | ① beyond | ② a lot | ③ far | ④ vast | ⑤ over |
| [12] | ① produce | ② produced | ③ be produced | ④ being produced | ⑤ be producing |

2. For (ア) [____], arrange the phrases ①-⑤ to complete the sentence.

For a long time people made (ア) [[13] [14] [15] [16] [17]] and genes involved.

- | | | | |
|-------------------------------------|----------|--------------------|----------------------|
| ① being aware | ② use of | ③ of the organisms | ④ or changes without |
| ⑤ these biochemical transformations | | | |

3. What does (イ) them refer to? Choose your answer from the list below.

- | | | | | | |
|------|----------------------|------------------|------------|------------------------|-------------|
| [18] | ① starting materials | ② other products | ③ proteins | ④ hormones and enzymes | ⑤ organisms |
|------|----------------------|------------------|------------|------------------------|-------------|

3 Read the passage below and answer the questions about it.

The first step to solving big problems is to identify them. In the world of product design, this is called “need finding.” This is a skill that can be learned. [19], it is a key component of the curriculum for the BioDesign Program at Stanford University. Graduate students who have studied engineering, medicine, and business come together for a year to identify significant needs in medicine and then design products to address (ア) them. Paul Yock, a heart specialist, inventor, and businessperson, (イ) runs the BioDesign Program. Paul believes that “a well-characterized need is the DNA of an invention.” In other words, if we clearly define a problem, the solution will logically present itself.

The BioDesign Program students spend three months shadowing doctors in action and identifying problems doctors appear to be facing. Students watch carefully; they talk with all of the persons concerned at the hospital, including physicians, nurses, and patients, and figure out where things can be improved. They reduce a list of hundreds of needs to just a (ウ) handful, with the goal of picking the biggest problems they can find. After (エ) they settle on the challenge, they design and quickly build model products for a variety of solutions. After a focused, repeated process, they present their new product concepts to the key persons to find out if they have successfully met the need.

Interestingly, in many cases those who are on the front lines are so used to the problems they experience every day that they don't even see them, or can't imagine radical approaches to solving them. Paul Yock shared a story about the development of balloon angioplasty*, a (オ) technique that involves putting a balloon into an artery* and expanding it so that it opens up the blocked artery. Before this revolutionary invention, most heart specialists felt that the only way to deal with blocked arteries was to do bypass surgery to remove the damaged blood vessels*. This procedure requires open heart surgery, which [20] substantial risks. When the balloon angioplasty procedure, which is much less dangerous and invasive*, was first introduced, it was met with tremendous doubt and resistance among physicians. Pioneers of the procedure faced significant (カ) obstacles. However, over time, the effectiveness of balloon angioplasty was firmly established and became the standard of care for most patients with blocked arteries. This is a great example of “problem blindness,” where the existing conditions are so established that those closest to the situation cannot imagine anything different.

Problem blindness applies to consumer product development as well. For example, it is well documented that automatic teller machines (ATMs) failed in initial tests where potential customers were asked [21] they would use a machine to deposit and withdraw money from their accounts, as opposed to going into a local bank to do the same with a bank clerk. These customers could not imagine changing their behavior so dramatically. But, looking back, ATM machines represented a radically new and effective improvement for personal banking, one that few of us can now imagine living without.

I experienced problem blindness myself. About fifteen years ago I was given a cell phone. This was long before cell phones were everywhere, and I had no idea I needed one. Actually, I got somewhat annoyed, thinking it was one more electronic tool that would sit around unused. I was told to try it for a week. It took me only two days to figure out I couldn't live without it. Now I always try to [22] this story in mind when I look at new, potentially revolutionary, ideas.

注 * : angioplasty 血管形成 ; artery 動脈 ; blood vessels 血管 ; invasive 侵襲性の (生体を傷つける)

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1. For [19] – [22] in the passage, choose the most appropriate word or phrase from each list.

- | | | | | | |
|------|------------|-----------------|-----------------|--------------|--------------------|
| [19] | ① In fact | ② With contrast | ③ Say the least | ④ In summary | ⑤ Nevertheless |
| [20] | ① carry | ② carrying | ③ carries | ④ is carried | ⑤ might be carried |
| [21] | ① that | ② about | ③ whenever | ④ unless | ⑤ if |
| [22] | ① remember | ② follow | ③ take | ④ put | ⑤ keep |

2. What does (ア) them refer to? Choose your answer from the list below.

- [23] ① problems ② programs ③ students ④ engineering, medicine, business ⑤ needs ⑥ products

3. For (イ) runs and (ウ) handful, choose one word or phrase for each that is closest in meaning in context from each list.

- | | | | | | | | |
|------|--------------------|-----------|----------------|----------------|-----------|---------|--------------|
| [24] | (イ) <u>runs</u> | ① extends | ② competes | ③ flows | ④ passes | ⑤ races | ⑥ directs |
| [25] | (ウ) <u>handful</u> | ① one | ② small number | ③ five figures | ④ trouble | ⑤ ten | ⑥ difficulty |

4. What does (エ) they refer to? Choose your answer from the list below.

- [26] ① students ② three months ③ doctors ④ persons at the hospital ⑤ things ⑥ problems

5. For (オ) technique and (カ) obstacles, identify the most stressed vowel. Then choose one word for each that has the same vowel pronunciation from the list below.

- [27] (オ) technique
[28] (カ) obstacles

- ① feet ② fit ③ head ④ bad ⑤ cut ⑥ hot ⑦ bone ⑧ bay ⑨ buy ⑩ cool

6. According to the passage, which ONE of the following statements is NOT TRUE about the BioDesign Program at Stanford University? Choose your answer from the list.

- [29] ① Graduate students from different fields work together.
② The program aims to teach problem identification skills.
③ The students work with each other for 12 months.
④ The program teaches students how to define DNA.

7. According to the passage, which ONE of the following statements is NOT mentioned about the program details? Choose your answer from the list.

- [30] ① The students follow the doctors while they are working.
② The students have meetings with other product designers.
③ The students collect hundreds of potential problems.
④ The students develop and present ideas for new products.

8. According to the passage, which ONE of the following statements is TRUE about balloon angioplasty? Choose your answer from the list.

- [31] ① It was invented by Paul Yock.
② It was a radical solution.
③ It blocks arteries with a balloon.
④ It completely replaced surgery.

9. According to the passage, which ONE of the following statements can be implied from the three examples of balloon angioplasty, ATMs, and cell phones? Choose your answer from the list.

- [32] ① They are examples of successful products the students have created.
② New products are not always popular among users at first.
③ Introducing a new product to potential users requires a lot of advertising.
④ Only business people can solve problem blindness.

4 Read the passage below and answer the questions about it.

One benefit of the study of science is that it can help you learn to think more critically. Critical thinking is not being “critical” or judgmental. Rather, it is a process that allows us to objectively analyze* facts, issues, problems, and information.

Ultimately, critical thinking helps us distinguish between beliefs (what we believe to be true) and knowledge (facts well supported by research). In other words, critical thinking is not just thinking deeply about a subject; it is a process by which we separate judgment, which can be incorrect, from facts. It is our most ordered kind of thinking. Critical thinking subjects facts and conclusions to careful analysis, looking for errors of reasoning. Critical thinking skills, [33], are essential to analyzing a wide range of facts, issues, problems, and information.

There are four critical thinking rules that are useful when you read the newspaper, watch the news, listen to speeches, and study new subjects in school. Here is a brief description of each one.

The first rule of critical thinking is to gather complete information. People often express opinions based on little, if any, information. We may adopt a position based on our parents’ beliefs or the beliefs of friends. We hold fast to those beliefs, even in the face of conflicting information. For example, despite an enormous body of scientific research on biological evolution, many people still question its validity.

Critical thinking requires us to confirm what we believe with facts—and lots of them. To think critically we must gather [34] information from reliable sources. By continually being on the lookout for new facts, you can develop a well-informed viewpoint. You can prevent that very common problem of many people—mistaking their ignorance for perspective.

Don’t make the common mistake of only accepting facts that support your point of view, however. Many of us tend to employ confirming strategies, according to University of Massachusetts professor Thomas Kida, author of *Don’t Believe Everything You Think*. That is, we selectively gather information that confirms an already established viewpoint, ignoring evidence that conflicts with it. “Information,” he says, “that is consistent with our beliefs is easily accepted. That which is not is dismissed or ignored.”

The second rule of critical thinking is to clearly understand all terms. Understanding terms and making sure that others define them in discussions helps to make issues and debates clear. The Greek philosopher Socrates destroyed many an argument in his time by insisting [35] clear definitions of terms. As you analyze any information or issue, always be certain that you understand the terms, and make sure that others define their terms.

The third rule of critical thinking is to question the methods by which the facts are derived. In science, many debates over controversial* topics depend upon the methods used to discover new information. The first question you should ask is, was the information gained from careful experiments, or is it the result of inaccurate observations or rumor? You [36] how often people’s opinions are based on inaccurate observations or on what others tell them. Many of us prefer stories to data. For example, many documentaries on television about unidentified flying objects (UFOs) or ghosts consist only of stories. Producers ignore scientific data that suggest that the phenomena under discussion do not exist.

Surprisingly few opinions are based on (ア) sound evidence. (イ) As you analyze a person’s positions or statements, check to see if his or her conclusions are based on facts obtained from experiments or careful and accurate observation. Ask people for the data they have to back up their statements.

The fourth rule of critical thinking is to question the conclusions derived from facts. Surprisingly, even if an experiment is run correctly, there is no guarantee that the conclusions drawn from the results are correct. How can that be? The answer may lie in bias, ignorance, and error. Bias refers to personal beliefs that spoil the interpretation of results. Ignorance is a lack of full knowledge. This, in turn, may lead a scientist to misinterpret his or her results. Finally, error does occur, [37] our best efforts.

Two questions should be asked when one analyzes the conclusions of an experiment: (1) Do the facts support the conclusions? and (2) Are there alternative interpretations? Consider an example.

One of the earliest studies on lung cancer showed that people who consumed large quantities of table sugar had a higher occurrence of lung cancer than those who ate table sugar in moderate amounts. 《 ① 》 The researchers concluded that lung cancer was caused by eating sugar. 《 ② 》 Many people had trouble believing this conclusion, which forced a re-examination of the study. 《 ③ 》 Subsequent studies showed that smoking, not consuming sugar, is responsible. 《 ④ 》 It seems that smokers do consume more sugar, but it is smoking that causes lung cancer, not eating sugar. 《 ⑤ 》

注*: analyze 分析する; controversial 議論の的になる

1. For [33] – [37] in the passage, choose the most appropriate word or phrase from each list.

- | | | | | | |
|------|-----------------|-----------------|----------------------|----------------------|---------------------|
| [33] | ① as though | ② whereas | ③ on the contrary | ④ however | ⑤ therefore |
| [34] | ① alarming | ② collect | ③ abundant | ④ satisfied | ⑤ pleasant |
| [35] | ① on | ② of | ③ over | ④ in | ⑤ under |
| [36] | ① will surprise | ② are surprised | ③ will be surprising | ④ would be surprised | ⑤ would surprise at |
| [37] | ① according to | ② even if | ③ because of | ④ except for | ⑤ in spite of |

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2. For (ア) sound, choose one word that is closest in meaning in context from the list.

- 38 ① opposite ② religious ③ valid ④ informal ⑤ noisy

3. For the underlined sentence (イ), find the MAIN VERB of the sentence. Choose your answer from the list.

- 39 ① analyze ② check ③ see ④ are based ⑤ obtained

4. Look at the brackets 《 ① 》 - 《 ⑤ 》, which indicate where the following sentence could be added to the passage.

It, in turn, showed that the group with a higher occurrence of lung cancer included a higher percentage of cigarette smokers.

- 40 Choose a number from ①-⑤ that indicates where the sentence would best fit.

5. According to the passage, which TWO of the following statements are NOT TRUE?

Choose TWO answers from the list.

- 41 ① Critical thinking is a process by which we separate facts from judgment.
② Many people still do not believe in the existence of large-body animals.
③ Kida thinks that we tend to ignore evidence that conflicts with established viewpoints.
④ We should always make sure that others define the terms they use in discussions.
⑤ TV producers prefer UFO stories to ghost stories because they are more scientific.
⑥ Conclusions drawn from the results of experiments or accurate observations can still be wrong.

6. According to the passage, which ONE of the following titles would be the most appropriate for the passage?

Choose ONE answer from the list.

- 42 ① Benefits of Studying Science
② Critical Thinking and University Students
③ The Media vs. Critical Thinking
④ Guidelines for Critical Thinking
⑤ Creating Facts that Support Your Opinions
⑥ Distinguishing Facts from Issues