経済学部・医学部保健学科・医学部医学科　　前期日程

平成27年度入学試験問題

英　語

注　意　事　項

1．　この問題冊子は、試験開始の合図があるまで開いてはいけません。

2．　この問題冊子は、全部で８ページあります。

3．　解答用紙は、全部で４枚あります。

4．　解答は、解答用紙の該当欄に記入してください。

5．　受験番号は、解答用紙の指定された箇所に記入してください。決して氏名を書いてはいけません。

6．　解答用紙は、試験終了後回収します。

7．　この問題冊子は、持ち帰ってください。

1 次の英文を読んで以下の問に答えなさい。

In water-starved California, engineers take treated wastewater from sewage* processing plants and put it through many filters and purifiers that produce a fluid that is more than clean enough to drink. A facility opened in 2008 produces 70 million gallons of this recycled water a day, enough to meet the needs of 600,000 residents. But instead of piping the ultrapure water to their kitchen sinks, it is tragically pumped into the ground.

The reason has more to do with (a) than with engineering. The public was too uncomfortable about drinking recycled wastewater straight from the tap. So they came up with an alternative. About half of the reclaimed water is injected into wells to prevent seawater from seeping into local aquifers**; the other half goes into basins, where it filters through sand and gravel to replenish the aquifers that supply drinking water. "This perception of a natural barrier where it's blending and mixing with all of our other water supplies may help people to make the leap," remarks Eleanor Torres, director of public affairs for the Orange County Water District.

Technologically speaking, it's no huge feat to turn water contaminated with human waste into a usable (b). A report earlier this year by the National Research Council of the U.S. National Academies found that wastewater reuse could provide up to 27% of the public water supply in coastal communities in the United States. But getting communities to accept such projects often isn't easy. That's because — whatever the science says — winning people over involves the delicate work of overcoming deep-seated psychological barriers and cultural taboos surrounding human waste.

According to Valerie Curtis, an evolutionary psychologist at the London School of Hygiene and Tropical Medicine, the discomfort with human waste is deeply rooted in the human mind, and for the most part it serves us well. For our human and prehuman ancestors, diseases were probably a greater threat than predators. That's why we have a strong sense of disgust, Curtis says: "Pretty much all the things we find disgusting have some kind of connection to infectious (c)."

Such instincts can easily override reason, explains Paul Rozin, a psychologist at the

University of Pennsylvania and a pioneer of research on disgust. In one classic experiment in the 1980s, Rozin gave college students chocolate shaped like a dog turd***. "They know it's chocolate, okay, and they like chocolate, but most of them won't eat it," he says.

In fact, disgust can evoke what Rozin and colleagues call (1)"magical" thinking. In one (d) of this, they presented undergraduate students with a glass of juice. Then, a researcher dipped a dead, sterilized**** cockroach into the glass. Despite assurances that the juice was perfectly clean and safe, the students had a strong aversion to taking a sip. And it didn't stop there. Even when the researchers provided new glasses filled with juice, students still didn't want to drink. It was as if people believed that the newly poured juice had somehow been contaminated by the cockroach. A former graduate student of Rozin's, Carol Nemeroff thinks the same logic-defying thought process comes into play in getting people to accept recycled wastewater, especially for drinking. The question is how to get the cognitive sewage out, after the actual sewage is gone.

Sometimes you can't. Such mental (e) has led to the cancellation of wastewater recycling projects in San Diego, Los Angeles, and elsewhere. (2)Opponents of these projects effectively used slogans like "toilet to tap" to create a negative image that's hard to overcome, comments Paul Slovic, a psychologist at the University of Oregon. Since the 1990s, Slovic has studied the mental shortcuts people use to assess risk. "For most of us," he suggests, "risk perception is not the output of a scientific, mathematical calculation, but of (3)gut feelings." (Adapted from *Science*, *Getting Minds out of the Sewer*)

*sewage: 下水 **aquifer: 帯水層 ***turd: 糞 ****sterilized: 殺菌した

問1 （ a ）～（ e ）に入るもっとも適切な語を次の①～⑤から選び、その番号を書きなさい。ただし、同じ番号を繰り返して用いないこと。

① demonstration ② discomfort ③ disease ④ psychology ⑤ resource

問2 下線部（1）の内容を20字以内の日本語で説明しなさい。

問3 下線部（2）を和訳しなさい。

問4 下線部（3）の意味を文脈から推測し、それともっとも意味の近い語を本文中より1語抜き出し書きなさい。

2 次の英文を読んで以下の問に答えなさい。

Our understanding of time falls under a class of nonverbal communication called chronemics and is influenced by culture. Time is a potent force, communicating as powerfully as verbal language. In North America, for instance, lateness for a business appointment communicates lack of interest. A recent news report indicated that certain U.S. workers can lose half a day's wages ア[as, as, being, for, little, minute, one] late, according to one labor contract.

In intercultural communication encounters, our and the other person's concepts of time may influence our communication behavior. Many village meetings in Africa begin when everyone is ready. A forty-five minute wait may not be unusual for a business appointment in Latin America, even though such a period seems insulting to a North American.

North Americans tend to think of time as a road or long ribbon stretched out in a progressive linear path, having a beginning and an end. They also believe that this road has compartments, or segments, that should be kept discrete from one another. This compartmentalization of time is so distinct that the term *monochronic time* applies to many North Americans, a concept meaning that members of that culture prefer doing one thing at a time. In contrast, many other cultures prefer operating with several people, ideas, or projects simultaneously, illustrating the concept of (1)*polychronic time*. Researchers sometimes describe the differences between Latin Americans and North Americans in terms of these categories, with the former falling into the polychronic time category. Whether time is perceived as monochronic or polychronic depends not only on culture but also on training, occupation, and personality.

Time can also be viewed in terms of cultural *synchrony*. Cultural synchrony refers to the rhythms, movement, and timing of a culture. For instance, when you walk along the streets of New York, you move faster than you would in a rural town in Montana. The movements of East Africans are quite different from those of Germans. The rhythms themselves have a time dimension to them. One aspect of effective intercultural

communication involves "being in sync" with those timed rhythms.

In general, North Americans feel that time is a commodity, something to be used, bought, wasted, saved, spent, and in other ways (A). By contrast, many cultures, including African, Latin American, and Southeast Asian, view time more flexibly. One reason for these differing views of time is the difference that cultures maintain concerning *types* of time. *Informal* time refers to loose calculations of time, such as "after a while," "later," and "some time ago." *Formal* time refers to exact points in time, such as "by 2:00 p.m. today," and "yesterday at 5:00 p.m."; in other words, clock time. One of the most frequent (2)intercultural communication breakdowns occurs when a member of one culture operates on formal time and a member of a different culture operates according to an informal time orientation. The one person shows up for a meeting at 2:00 p.m., and the other person arrives some time in the afternoon. Our understanding of these different perceptual expectations can enormously reduce our stress levels in intercultural communication.

(Adapted from Carley H. Dodd, *Dynamics of Intercultural Communication*)

問１　文中ア[　　] の中の語を文意に沿うように並べかえなさい。

問２　下線部（１）が表す内容を 15 字以内の日本語で説明しなさい。

問３　（ A ）に入るもっとも適切な語を①～⑤から１つ選び、その番号を書きなさい。

① concealed　② imagined　③ manipulated　④ observed　⑤ published

問４　下線部（２）の内容を 20 字以内の日本語でまとめなさい。

3 ***Read the following text and answer the questions below in full English sentences.***

Everyone has made the wrong choice at some point in life and suffered regret because of it. Now, a new study shows we're not alone in our reaction to incorrect decisions. Rats too can feel regret. Regret is thinking about what you should have done, says David Redish, a neuroscientist at the University of Minnesota in Minneapolis. It differs from disappointment, which you feel when you don't get what you expected. And it affects how you make decisions in the future. If you really want to study emotions or feelings like regret, says Redish, you can't just ask people how they feel. So when psychologists and economists study regret, they look for behavioral and neural manifestations of it. Using rats is one way to get down into the feeling's neural mechanics.

Redish and colleague Adam Steiner, also at the University of Minneapolis, found that rats expressed regret through both their behavior and their neural activity. When Redish and Steiner looked for neural activity, they focused on two areas in the brain that are known in people — and in some animals — to be involved in decision-making and the evaluation of expected outcomes. Brain scans have revealed that people with damage in those two areas don't express regret.

To record nerve-cell activity, the researchers implanted electrodes in the brains of four rats — a typical sample size in this kind of experiment — then trained them to run a specially designed maze. The maze consisted of a circle with four spokes radiating out from its circumference. At the end of three spokes was food flavored with banana, cherry, or chocolate. At the end of the fourth spoke was unflavored food. When a rat arrived at a spoke, a tone would sound before it received the food. The tone's pitch indicated how long the rat would have to wait before getting the treat; it could be anywhere from one to 45 seconds. The rat then had to make a choice. It could either wait the allotted time before getting the food, or it could move on to the next spoke. The rats were allowed to run the maze for only an hour, so their searching for food needed to be as efficient as possible.

Each rat had its own preferences regarding flavor and patience. And those preferences manifested in specific nerve-cell patterns in its brain. When a rat passed up food at one

spoke and moved on to the next, then realized it would have to wait even longer for food at the second spoke, two things happened. It would look back to the previous spoke, and the specific nerve-cell pattern in its brain that represented that first choice would light up.

"That's the regret," says Redish. Not only were the rats physically looking backward; they were also thinking about the choice they hadn't made. "What's more, just like humans," says Redish, "the rats were more likely to take a bad deal — or wait longer than they normally would for their next piece of food — after a regretful decision. "

Rats that met with disappointment reacted very differently. Some would sit and look at the choice in front of them. Others would visualize their next choice. These rats, says Redish, were looking toward the future. Matt Roesch, a neuroscientist at the University of Maryland who was not involved in the study, was intrigued by the experiment. Finding a human emotion like regret in an animal, he says, and being able to see it manifested in brain activity is exciting. "If you have a strong feeling of regret, you should be able to use that information to guide future decisions, to make better ones," Roesch says.

(Adapted from Jane Lee, *Rats Show Regret After Wrong Choices, Scientists Say*)

Question 1 What is the difference between regret and disappointment?

Question 2 How do psychologists and economists study regret?

Question 3 How exactly did University of Minneapolis researchers David Redish and Adam Steiner record nerve-cell activity in rats?

Question 4 How did the researchers know if the rats felt regret?

Question 5 Give an example of how the rats that met with disappointment behaved.

4 次の英文を読んで以下の問に答えなさい。

Serendipity is a word that means "the occurrence and development of events (a) chance in a happy or beneficial way," and it certainly describes the work of Wilhelm Konrad Roentgen (1845-1923). A physicist by training, Roentgen was fascinated by the Crookes tube, a vacuum-sealed glass tube. These gadgets emitted beams of electrons (negatively charged particles) when charged with electricity. Working alone one night in his laboratory, Roentgen noticed that another invisible energy caused a fluorescent cardboard screen to glow brightly. With increasing (ア), Roentgen shone the beam through all sorts of objects — wood, decks of playing cards, and metal sheets. [①] The metal sheets did the best job of partially blocking the beam, showing that lead was the only metal to completely block the mystery rays.

Accidentally, Roentgen's fingers got (b) the way. It was only then that the real possibilities for X-rays (so-called by Roentgen, because to him they were a mystery) became apparent. His hand was illuminated by the rays. Within the outline of his hand, the bones were visible, because bone has a greater density than surrounding tissue. [②] One last experiment remained. Roentgen asked his wife to place her hand on a piece of photographic film. He directed the rays on the hand. When the film was developed, there was a complete outline of the hand and all its bones, with her wedding ring visible (c) her ring finger.

Roentgen's (イ) earned the Nobel Prize for Physics in 1901. Later researchers discovered that when a patient swallowed a barium solution, the X-rays could be used to illuminate the hollow organs (d) no harm to the patient. [③] During World War I, the X-ray was used extensively to diagnose battlefield injuries, and its (ウ) in medicine and health was soon apparent. Yet early researchers also noticed that heavy (エ) to X-rays was dangerous. Large doses caused radiation burns and the (オ) of cancer. However, X-rays were used carelessly and frivolously until the 1950s — an X-ray machine was even used in shoe stores to ensure that shoes fit properly! [④]

The breakthrough in X-rays has led to ever more complex and useful technologies. A

CT scan is a series of X-rays, taken sequentially and then restructured by a computer. [⑤] In addition, by showing that body tissues have different densities, X-ray technology undoubtedly inspired later scientists. Using different energy sources, magnetic resonance imaging (which uses radio waves and powerful magnets) and ultrasound (which uses sound waves) were derived (e) the talent (and luck!) of Wilhelm Roentgen.

(Adapted from Sylvia Mader, *Human Biology, 11th edition*)

問１　（ａ）～（ｅ）に適切な前置詞を入れなさい。

問２　（ア）～（オ）に以下の単語を文意に沿った名詞に変えて入れなさい。ただし、同じものを繰り返して用いないこと。

apply　　develop　　discover　　excite　　expose

問３　None of these objects could completely block the beam. が入るもっとも適切な箇所を本文中の［①］～［⑤］から１つ選び、その番号を書きなさい。