1 次の(1)～(8)の(　　)に入れるのに最も適切なものを，下の(a)～(d)からそれぞれ1つずつ選び，その記号をマークせよ。

1. My sister is getting married to her boyfriend at the beginning of 2022. We are planning for our (　　) to India together around Christmas.
(a) engagement (b) marriage (c) wedding (d) vacation

2. Since online information showed no clear answers to my physical (　　), I finally decided to go to the hospital.
(a) symptoms (b) symbols (c) marvels (d) theories

3. Our product is crucial for (　　) protected cloud computing, and it might become a key ingredient for real-life applications, especially when considering the challenges of making powerful computers safe and secure.
(a) unconditionally (b) inaudibly (c) sincerely (d) disputedly

4. This safe wreck dive offers not only the chance to get a (　　) glimpse into history, but also to meet its squatters — a variety of invertebrates, angelfish and glowing flashlight fish that live in the wreck.
(a) tedious (b) fascinating (c) boring (d) monotonous

5. The woman has spent a number of years looking into how much genetic (　　) there is between populations.
(a) axis (b) deployment (c) urine (d) variability

6. After the terrible storm, our tiny broken boat was at (　　) of strong winds and waves, but fortunately, one of the crew noticed a rescue plane flying toward us.
(a) their leisure (b) this sight (c) that rate (d) the mercy

7. He had predicted that, in the new millennium, new telecommunications technology will (　　) a powerful influence for change on the democratic process.
(a) entail (b) erode (c) evaporate (d) exert

8. Now that I am back, I am grateful for how easy it is to be in a safe country, living with an amazing family and meeting wonderful new friends. After a week of adventure in a very foreign city, the (　　) of being back home with the Chrois family, while not mind-blowing, is greatly appreciated.
(a) disbursement (b) awkwardness (c) coziness (d) struggle

2 次の(1)と(2)の各パラグラフ(段落)には，まとまりをよくするために取り除いた方がよい文が一つある。取り除く文として最も適当なものを，それぞれ下線部(a)～(d)のうちから一つずつ選び，その記号をマークせよ。ただし，各パラグラフは独立したものである。

1.

In the emergency department (ED), a reliable triage system is essential to assess the patients' severity of injury or illness within a short time after their arrival, to assign priorities and to transfer each patient to the appropriate place for treatment. (a)The Canadian Triage and Acuity Scale (CTAS) is one of the most widely accepted web-based triage systems that has shown high validity and reliability in many research studies in various countries. (b)Web-connectivity had become an issue in the Japanese context. (c)In April 2012, the Japanese Society for Emergency Medicine translated and implemented the CTAS in the Japanese EDs. (d)This system was named the Japanese Triage and Acuity Scale (JTAS). The JTAS has been well accepted in many EDs in Japan. However, the validation studies of the JTAS have been limited, and it has several issues to solve.

(Funakoshi, H., Shiga, T., Homma, Y. et al. Validation of the modified Japanese Triage and Acuity Scale-based triage system emphasizing the physiologic variables or mechanism of injuries. Int J Emerg Med 9, 1 (2016). https://doi.org/10.1186/s12245-015-0097-9. Creative Commons Attoribusion 4.0 International License, http://creativecommons.org/licenses/by/4.0/.より一部改変)

2.

The Japanese healthcare system provides universal health coverage through both a fec-for-service system under governmental control and a free-access system. (a)The free-access system allows private facilities to establish hospitals or clinics if they meet the requirements of the Medical Care Act, a Japanese law covering the healthcare system. (b)Patients can seek treatment at whatever public or private medical facility they prefer, with no difference in cost. (c)Also, they are not always required to have a regular primary care doctor. (d)Newly certified physicians must go through 2 years of postgraduate training as general medical residents before they choose a clinical specialty.

(Kaneko, M. (2017). *British Journal of General Practice* より一部改変)

3 次の英文が完成した文章になるように，文意に沿って，(1)～(4)の(a)から(f)を並べ替えた後，それぞれ１番目，３番目，６番目にくるものの記号をマークせよ。

Researchers at Lund University in Sweden have succeeded in restoring mobility and sensation of touch in rats that had a stroke by modifying human skin cells to become nerve cells, which were then transplanted into the rats' brains. The (1) [(a) to patients (b) by strokes (c) study has given (d) who have (e) hope (f) been affected]. Six months after the transplantation, researchers could see how the new cells had repaired the injury that a stroke had caused in the rats' brains.

Several previous studies from the same team of researchers and others have shown that it is possible to transplant nerve cells derived from human stem cells or from altered cells into the brains of rats afflicted by stroke. However, it was not known whether the transplanted (2) [(a) form connections (b) a way that (c) movement and feeling (d) correctly in the rat brain in (e) cells can (f) restores normal].

The researchers used tracking techniques, electron microscopy and other methods, such as light to switch off activity in the transplanted cells, as a way to show that they really have connected correctly in the damaged nerve circuits. They were also able to see that (3) [(a) transplanted cells (b) the fibers (c) side of the brain (d) to the other (e) from the (f) have grown], the side where they did not transplant any cells, and created connections. No previous study has shown these results, even though the scientists involved in the study have been studying the effect of strokes on the brain for many years.

The findings of the study mean that it is possible to repair a stroke-damaged brain and recreate nerve connections that have been lost. The study kindles hope that in the future it could be possible to replace dead nerve cells with new healthy nerve cells also in stroke patients, even though there is much research to be done before this can be said with total confidence.

The researchers have used human skin cells that have been reprogrammed in the laboratory to become nerve cells. They were then (4) [(a) rats, in the (b) damaged after a stroke (c) part of the (d) transplanted into the (e) brain that is most often (f) cerebral cortex of]. Now the researchers will undertake further studies that they hope will further their understanding of this complex issue.

Those involved in the study still want to find out more about how the transplanted cells affect the opposite hemisphere of the brain. They also want to take a closer look at how a transplant affects intellectual functions such as memory. They will also study any possible side effects of the experiments.

(Lund University. (2020). *Researchers successfully repair stroke-damaged rat brains* より一部改変)

4 次の英文を読んで，以下の問いに答えよ。

A new machine learning approach classifies a common type of brain tumor into low or high grades with almost 98% accuracy, researchers report in the journal IEEE Access. Scientists in India and Japan, including from Kyoto University's Institute for Integrated Cell-Material Sciences (iCeMS), (1) the method to help clinicians choose the most effective treatment strategy for individual patients.

Gliomas are a common type of brain tumor affecting glial cells, which provide support and insulation for neurons. Patient treatment varies depending on the tumor's aggressiveness, so it's important to get the (2) right for each individual. Radiologists obtain a very large amount of data from MRI scans to reconstruct a 3D image of the scanned tissue. Much of the data available in MRI scans cannot be detected by the naked eye, such as details related to the tumor shape, texture, or the image's intensity.

Artificial intelligence (AI) algorithms help extract this data. Medical oncologists have been using this approach, called radiomics, to improve patient diagnoses, but accuracy still needs to be (3). iCeMS bioengineer Ganesh Pandian Namasivayam collaborated with Indian data scientist Balasubramanian Raman from Roorkee to develop a machine learning approach that can (4) gliomas into low or high grade with 97.54% accuracy.

Low grade gliomas include grade Ⅰ pilocytic astrocytoma and grade Ⅱ low-grade glioma. These are the less aggressive and less malignant of the glioma tumors. High grade gliomas include grade Ⅲ malignant glioma and grade Ⅳ glioblastoma multiforme, which are much more aggressive and more malignant with a (5) short post-diagnosis survival time.

The choice of patient treatment largely depends on being able to determine the glioma's grading. The team, including Rahul Kumar, Ankur Gupta and Harkirat Singh Arora, used a dataset from MRI scans belonging to 210 people with high grade gliomas and another 75 with low grade gliomas. They developed an approach called CGHF, which stands for computational decision support system for grouping gliomas using hybrid radiomics and stationary wavelet-based features.

They chose specific algorithms for extracting features from some of the MRI scans and then (6) another predictive algorithm to process this data and categorize the gliomas. They then tested their model on the rest of the MRI scans to assess its accuracy. "Our method outperformed other state-of-the-art approaches for predicting glioma grades from brain MRI scans," says Balasubramanian. "This is quite considerable."

(Artificial intelligence enhances brain tumour diagnosi (c) Mindy Takamiya/Kyoto University iCeMS. Creative Commons Attoribusion 4.0 International License, https://creativecommons.org/licenses/by/4.0/deaed.en.より一部改変)

1. 本文の空所(1)～(6)に入れるのに最も適切な語を，下記の(a)～(d)からそれぞれ１つ選び，その記号をマークせよ。

(1)	(a)	grew	(b)	abandoned	(c)	developed	(d)	condemned
(2)	(a)	diagnosis	(b)	decree	(c)	oblivion	(d)	rationality
(3)	(a)	assumed	(b)	inspired	(c)	decreased	(d)	enhanced
(4)	(a)	classify	(b)	confuse	(c)	refuse	(d)	exacerbate
(5)	(a)	protractedly	(b)	relatively	(c)	hardly	(d)	broadly
(6)	(a)	cured	(b)	coerced	(c)	trained	(d)	destroyed

2. 本文の内容と適合するものを下記の(a)～(h)から３つ選び，その記号をマークせよ。

(a) A glioma is a common type of cell that causes brain tumors.
(b) Radiologists acquire data from MRI scans to recreate a three-dimensional image of the tissue.
(c) Low-grade gliomas are the less threatening than high-grade type gliomas.
(d) A new type of machine is learning how to approach brain tumors with high accuracy.
(e) Artificial intelligence algorithms help the patients to research their own diagnosis.
(f) The type of glioma discussed is not related to the method of treatment of the patient.
(g) Details related to the tumor shape and texture can be easily seen by looking at MRI scans.
(h) According to an Indian scientist, their method was much better for estimating types of gliomas by using MRI scans of the brain.

5 次の英文を読んで，以下の問いの答えを，それぞれ(a)～(d)より１つずつ選びマークせよ。

We are fast approaching the point where diseases that we cannot treat could cause the same damage as the 1918 pandemic. We are in danger of a world where a trip to the hospital could be considered a life-threatening event. A world where routine surgery, such as an appendectomy or a hip replacement, or even childbirth, would carry terrifyingly high mortality rates; where many of us will sit helplessly by the hospital beds of our loved ones as their lives are claimed by the common diseases we thought we had defeated 40 years ago. This is not a post-apocalyptic fantasy. The shocking truth is that 25,000 people now die in Europe every year from antibiotic-resistant infection.

The problem is simple: we overuse and abuse antibiotics. Many of us are guilty of demanding medicine from our doctors the second we have a sore throat or a runny nose. But our personal antibiotic consumption is only a small part of the problem. Most of our antibiotics are used in food production with almost 50% of antibiotics in the UK and about 80% in the United States used on livestock. The scientific consensus is that most antibiotic resistance in human infections is of farm-animal origin.

This is a global problem and will require a global solution. The key to successful negotiations will be the United States, China and India: where they lead, others will follow. The United States is only just coming round to the position, adopted by Europe in 2006, that growth-promoting antibiotics should be banned from use on livestock. Its lack of oversight and regulation is putting us all in danger.

The Chinese have reduced the use of antibiotics in their hospitals but their use in livestock is widespread. There is little prospect of this changing without international pressure. Even if a ban was imposed, enforcement in a country with millions of farmers and limited infrastructure would be almost impossible. The problem in India is similar with antibiotics perceived as a universal remedy. Until recently the most potent antibiotics were available over the counter without a prescription. These drugs were often produced illegally and then diluted, with the poor unable to pay for a full course, all of which creates the perfect breeding ground for resistant diseases.

If we are to persuade other countries to sign up to strict global standards we are going to have to be robust. There will undoubtedly be significant resistance to any action. The vested interests of the drugs industry and the belligerence of some governments will be a substantial obstacle. But the dangers of inaction are too great.

It needs to be made plain to all countries that this carelessness and such a reckless disregard for all our lives will cost them greatly. If we are to safeguard our only defense against disease, we need to make it absolutely plain that the civilized world will not tolerate this and we must make that known. We are running out of time to act.

(Tanaka, T. et al. (2016). *Exploring the Globe through The Times and The Guardian* より一部改変)

1. Why does the author quote the 1918 pandemic in the first paragraph?
(a) to make readers feel nostalgic about what happened about a hundred years ago
(b) to point out how dangerous going to the hospital must have been
(c) to confirm that common diseases were eradicated many years ago
(d) to illustrate diseases could cause serious consequences regardless of the times

2. What do we know about the United States according to the article?
(a) Its antibiotic consumption on livestock is smaller than that of the UK.
(b) It is reconsidering the use of antibiotics on livestock.
(c) Its antibiotics use is more or less similar to what India is doing.
(d) Its antibiotics use on people has been causing more severe problems.

3. What does the author foresee for China in the near future regarding the problem?
(a) Farmers will be in favor of reducing antibiotics.
(b) It might follow the path that the United States took.
(c) Its antibiotics use on patients may eventually increase.
(d) External intervention can be one of the ways to discourage antibiotics use.

4. According to the article, what was the reason for widespread antibiotics use in India?
(a) Naturally produced medicine was preferred to antibiotics as an alternative.
(b) Universally recognized medicine is not commonly used.
(c) Both legal and illegal purchases of antibiotics were possible.
(d) People tended to buy expensive medicine even if it was illegal.

5. What motivated the author to write this article?
(a) to indict leading countries
(b) to call for action
(c) to criticize pharmaceutical companies
(d) to suggest tolerance

6. According to the article, which of the following is correct?
(a) One of the solutions is to convey firm as well as clear messages to other countries.
(b) The active use of antibiotics from now would contribute to the decrease of common diseases.
(c) Pharmaceutical companies and political administrations are likely to support the author.
(d) International solidarity would not solve the fundamental problem of antibiotics use.

6

1. 次の日本語を読み，大学生にとってのスマートフォンの功罪を**30語程度の英語**でまとめよ。なお，設定語数を大幅に超えるもの，全訳をしたものは採点の対象としない。

スマートフォンを持つようになったおかげで，大学生はインターネットを簡単に使えるようになった。以前は図書館や書店に行かなくてはならなかったが，現在はスマートフォン上で情報を得ることができる。その一方で，コンピューターを使う回数が減少し，将来の仕事に必要なスキルを，身に付けられなくなっている。

2. 次の英語を読み，ヨーロッパで留学することのメリットを**50字程度の日本語**でまとめよ。なお，設定字数を大幅に超えるもの，全訳をしたものは採点の対象としない。

An advantage to study at a European university is the environment to learn two languages. Most courses for international students are usually taught in English since learning the local language from scratch takes a lot of their time. You can improve your English skills while communicating with your teacher and friends from other countries. In addition, you can learn the local language when you talk in shops or restaurants.