

デザイン工学部 A 方式 I 日程・理工学部 A 方式 I 日程  
生命科学部 A 方式 I 日程

1 限 英 語 (90 分)

〈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. 解答はすべて解答用紙に記入しなさい。
3. マークシート解答方法については以下の注意事項を読みなさい。

マークシート解答方法についての注意

マークシート解答では、鉛筆でマークしたものを機械が直接読みとって採点する。したがって解答は HB の黒鉛筆でマークすること(万年筆, ボールペン, シャープペンシルなどを使用しないこと)。

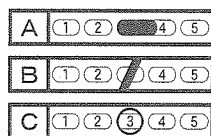
記入上の注意

1. 記入例 解答を 3 にマークする場合。

(1) 正しいマークの例



(2) 悪いマークの例



枠外にはみださないこと。

○でかこまないこと。

2. 解答を訂正する場合は、消しゴムでよく消してから、あらためてマークすること。
3. 解答用紙をよごしたり、折りまげたりしないこと。
4. 問題に指定された数よりも多くマークしないこと。

[ I ] つぎの英文中に入る最も適切な語(句)をイ～ニの中から一つを選び、その記号を解答用紙にマークせよ。

(1) My job is kind of boring sometimes. I would like to do something more .

イ disappointing

□ disappointed

ハ exciting

ニ excited

(2) Is your sister  this photo? I don't recognize her.

イ on

□ at

ハ of

ニ in

(3) The number of cars that do not use only fossil fuels is  the rise.

イ in

□ on

ハ above

ニ from

(4) He was silly  to follow your advice.

イ as

□ not

ハ such

ニ so

(5) All the persons  at the meeting were in favor of the proposal.

イ present

□ presentation

ハ presence

ニ presents

(6) My father does not allow me  my smart phone while we are having breakfast.

イ to use

□ from using

ハ of using

ニ with using

(7) Yoko  to Mr. Green about the math test.

イ asked

□ told

ハ spoke

ニ said

- (8) I could not imagine  would happen after the earthquake.  
イ where      □ when      ハ what      ニ how
- (9) Global issues  environmental destruction, violations of human rights, and ethnic conflicts.  
イ contain      □ accommodate  
ハ conclude      ニ include
- (10)  it is true, this statement is misleading.  
イ Nevertheless      □ In contrast  
ハ Even if      ニ However
- (11) Either the workers or the director  to blame for the mistake.  
イ is      □ are      ハ ought      ニ has
- (12) It's beautiful weather,  ?  
イ does it      □ doesn't it      ハ is it      ニ isn't it
- (13)  it be too early if I picked you up at six tomorrow morning?  
イ Never      □ Wouldn't      ハ Let      ニ Don't
- (14) You should try to talk to the people around you during your stay in Australia no matter  awkward your English is.  
イ quite      □ what      ハ how      ニ very
- (15) He's spending too much time on sports,  is not good for his school work.  
イ it      □ that      ハ which      ニ the time

〔Ⅱ〕 つぎの(1)~(5)の対話に関する後の質問(Q)に対して最も適切なものをそれぞれイ~ニの中から一つ選び、その記号を解答用紙にマークせよ。

(1) Shun: Hi Reina! Why are you up so late tonight?

Reina: I'm studying for our English grammar test tomorrow morning, but so far, I only understand about half of the grammar on the test.

Shun: You really do have a lot more studying to do tonight, don't you?

Reina: I know. Could you help me?

Shun: I'm not good at English and I haven't even started studying, but for you, sure!

Reina:  .

(Q) What might Reina say next?

イ Great! You should try it too

ロ Well, thanks but no thanks

ハ I see. You can't help it either

ニ I'd love to! See you later then

(2) Jack: Hi, Yuna. That's a new phone, isn't it?

Yuna: Yeah, I get a new phone every year. When did you last get a new phone, Jack?

Jack: Well actually, five years ago.

Yuna: I can't believe you use such an old phone!

Jack: Actually, my phone's even older than that. It's one I found at the recycling center and then repaired myself.

Yuna: .

(Q) What might Yuna say next?

ㄱ No big deal. I'll get you a new one tomorrow

ㄴ No problem. I'll repair it for you again

ㄷ No wonder. I thought you lost yours

ㄹ No way. I bet you even reuse paper cups

(3) Anika: Happy birthday Keisuke!

Keisuke: Hi, Anika, thanks for coming to my party!

Anika: I've really been looking forward to it. And here's just a little something for you.

Keisuke: .

Anika: It's just some cookies I made for you.

Keisuke: How thoughtful of you!

(Q) What might Keisuke have said?

ㄱ Thanks, but I don't mind if you do

ㄴ Thanks, but you mustn't come again

ㄷ Thanks to you, I got the hang of it

ㄹ Thanks, but you shouldn't have

(4) Bob: Mom, have you seen my jean jacket?

Mom: No, not today.

Bob: Well, I wore it just yesterday.

Mom: Bob, you really should put your clothes away after you wear them. Then you'd be able to find them again without always having to ask me!

Bob: Oh, never mind, Mom! I found it here under the pile of books and papers on my bed. Thanks anyway!

(Q) How do Bob and his mother feel at the end of this conversation?

ㄱ Bob: calm, Mom: bored

ㄷ Bob: regretful, Mom: pleased

ㄴ Bob: happy, Mom: annoyed

ㄹ Bob: angry, Mom: proud

(5) Arisa: Dad, it's so hot standing here in the sun.

Mr. Tanaka: I know, but if you want to go on the rides, we have to stand in line here.

Arisa: What we need is shirts with a built-in cooling system.

Mr. Tanaka: That's an interesting idea.

Arisa: And it could be switched on with a smartphone app!

Mr. Tanaka: Maybe you should become an engineer and invent a system like that!

(Q) What kind of father is Mr. Tanaka toward Arisa?

ㄱ angry

ㄷ encouraging

ㄴ cautious

ㄹ severe

〔Ⅲ〕 アインシュタインに関するつぎの英文を読み、設問に答えよ。

[ 1 ] The ancient Greeks believed that heavier objects fall faster than lighter ones. They had good reason to do so; a heavy stone falls quickly, while a piece of paper flutters gently to the ground. But Galileo pointed out a problem with this belief. <sup>(1)</sup> Imagine taking the piece of paper and tying it to the stone. Together, the new combination is heavier than either of its components and should fall faster. But in reality, the paper slows down the descent of the stone.

<sup>(2)</sup> [ 2 ] Galileo argued that the rate at which objects fall would actually be a universal quantity, independent of their mass or their composition, if it weren't for the interference of air resistance. Apollo 15 astronaut Dave Scott\*<sup>1</sup> illustrated this point by dropping a feather and a hammer while standing in near-vacuum on the surface of the moon; as Galileo predicted, they fell at the same rate.

[ 3 ] Many scientists wondered why this should be the case. In contrast to gravity, particles in an electric field respond in various ways; positively charged particles are pushed one way, negatively charged particles the other, and neutral particles not at all. But gravity is universal; everything responds to it in the same way.

[ 4 ] Thinking about this problem led Albert Einstein to what he called "the happiest thought of my life." Imagine an astronaut in a spaceship with no windows or other way to see the outside world. If the ship is far away from any stars or planets, everything inside will be in free fall; there will be only a very weak gravitational field to push the objects inside around. Now put the ship in orbit around a massive object, where gravity is great. <sup>(3)</sup> Everything inside will still be in free fall, because all objects are affected by gravity in the same direction; no one object is pushed toward or away from any other one. Given just what is observed inside the spaceship, there's no

way we could detect the existence of gravity.

[ 5 ] Einstein, in his genius, realized the profound <sup>(4)</sup>implication of this situation: If gravity affects everything equally, it's not right to think of gravity as a "force" at all. Rather, gravity is a feature of spacetime itself, through which all objects move. In particular, gravity is the curvature of spacetime\*<sup>2</sup>. The space and time through which we move are not fixed and absolute, as Newton had it; they bend and stretch because of the influence of matter and energy. In response, objects are pushed in different directions by spacetime's curvature, a phenomenon we call "gravity." Using a combination of amazing mathematics and unparalleled intuition, Einstein was able to explain a puzzle unsolved since Galileo's time.

語注\*

\*<sup>1</sup> Apollo 15 astronaut Dave Scott : デイビット・スコット, アポロ15号の船長

\*<sup>2</sup> curvature of spacetime : 時空のひずみ

問1 本文中の下線部(1)~(4)の語について, 意味が最も近いものをそれぞれイ~ニから一つ選び, その記号を解答用紙にマークせよ。

(1) flutters

イ drifts

□ rises

ハ hurries

ニ circulates

(2) descent

イ fall

□ flight

ハ growth

ニ slide

(3) orbit

イ order

□ control

ハ demand

ニ rotation

(4) profound

イ distant

□ delicate

ハ deep

ニ diverse



問2 本文の内容に関する(1)~(7)の問いの答えとして最も適切なものをそれぞれ  
イ~ニの中から一つ選び、その記号を解答用紙にマークにせよ。

(1) What does paragraph [ 1 ] suggest?

- イ Paper was invaluable in ancient times.
- ロ Stone was used as money in ancient Greece.
- ハ Galileo was in agreement with the ancient Greeks.
- ニ Galileo was in disagreement with the ancient Greeks.

(2) Why does the author refer to Apollo 15?

- イ to support Galileo's argument
- ロ to raise a question about Galileo's argument
- ハ to illustrate the mystery of Apollo 15
- ニ to show how Apollo 15 has affected scientific research

(3) Why are particles referred to in paragraph [ 3 ]?

- イ to show how reasonable Galileo's belief is
- ロ to identify a feature similar to gravity
- ハ to make a comparison with gravity
- ニ to indicate how Apollo 15 affected subsequent space development

(4) What was Einstein referring to when he talked about "the happiest  
thought of my life?"

- イ seeing a lot of stars and planets
- ロ feeling as if he had been an astronaut
- ハ discovering the mystery of gravity
- ニ feeling gravity himself

(5) According to Einstein, what is gravity?

イ a force

ロ energy

ハ volume

ニ a phenomenon

(6) Which of the following statements is Galileo most likely to agree with?

イ A hammer falls faster than a feather.

ロ Mass does not affect the rate at which things fall.

ハ Being an astronaut demands expertise in Greek.

ニ Intuition matters less in physics than in math.

(7) Which of the following would be the best title for the text?

イ Particle theory

ロ Universality of space and time

ハ A puzzle to be solved

ニ Rethinking gravity

〔IV〕 未来の自動車に関するつぎの英文を読み、設問に答えよ。

The spread of driver-assistance technology will be gradual over the next few years. However, in the not-too-distant future fully autonomous cars will most likely become a reality. When they do, they will make existing cars look as old-fashioned as steam engines\*<sup>1</sup> and landline telephones\*<sup>2</sup>.

For a vision of this future, visit Heathrow airport outside London, and head to a “pod\*<sup>3</sup> parking” area. Transfers between the car park and terminal are provided by driverless electric pods moving on dedicated roadways above the street. Using a touchscreen kiosk, you summon a pod and specify your destination. A pod, which can seat four people, pulls up, parks itself, and opens its doors. Jump in, sit down, and press the start button. It drives you to your destination, avoiding other pods and neatly parking itself when you arrive, before heading off to pick up its next passengers.

Self-driving cars have enormous benefits. Today 94% of car accidents are due to human error, and the three leading causes are alcohol, speeding, and interruptions. Accidents kill around 1.2 million people a year worldwide. Driverless cars cannot drink alcohol, break the speed limit, or get interrupted by a text message, so accidents should occur much less often. A new study estimates that if 90% of cars on American roads were autonomous, the number of accidents would fall from 5.5 million a year to 1.3 million, and road deaths from 32,400 to 11,300.

As well as being safer, self-driving vehicles would make traffic flow more smoothly, because they would not brake unpredictably, could be routed to avoid crowded roads, and could travel close together. All of these factors would increase road capacity. A study by the University of Texas estimates that if 90% of cars in America were self-driving it would be equivalent to a doubling of road capacity. Delays would be cut by 60% on motorways and

15% on suburban roads. And riders in self-driving vehicles would be able to do other things. The resulting productivity gains would be worth \$1.3 trillion a year in America and \$5.6 trillion worldwide. Children, the elderly and the disabled could gain more independence.

With cars in constant use, much less parking space would be needed. Parking accounts for as much as 24% of the area of American cities. Some urban areas have as many as 3.5 parking spaces per car; even so, people looking for parking account for 30% of total driving time in urban business districts. By liberating space wasted on parking, autonomous vehicles could allow more people to live in city centers; but they would also make it easier for workers to live farther out. If you can sleep on the trip, a longer commute becomes feasible.

Car-lovers will doubtless regret the passing of machines that, in the 20th century, became symbols of personal freedom. But in a future without drivers, people will come to wonder why they tolerated such a high rate of road deaths, and why they spent so much money on machines that mostly sat unused. A world of self-driving vehicles may sound odd, but coming generations will probably consider the era of car ownership to have been much stranger.

語注\*

\*1 steam engine : 蒸気機関車

\*2 landline telephone : 固定電話

\*3 pod : ポッド(カプセル状の乗り物)

問1 本文中の下線部(1)~(3)の語について、意味が最も近いものをそれぞれイ~ニから一つ選び、その記号を解答用紙にマークせよ。

(1) dedicated

イ memorial

ロ committed

ハ common

ニ exclusive

(2) accounts for

イ explains

ロ makes up

ハ saves

ニ finishes off

(3) passing

イ movement

ロ end

ハ approval

ニ advance

問2 本文中の下線部(あ)~(え)の中から、意味の異なるものを一つ選び、その記号を解答用紙にマークせよ。

問3 本文の内容に関する(1)~(8)の問いの答えとして最も適切なものをそれぞれイ~ニの中から一つ選び、その記号を解答用紙にマークせよ。

(1) What does the pod parking area at Heathrow airport show?

イ why fewer people now park at airports

ロ the need for more car park attendants

ハ how self-driving cars may operate in the future

ニ how to improve driver assistance technology

(2) How would self-driving cars decrease accidents?

イ by limiting text messages while driving

ロ by eliminating mistakes made by people

ハ by decreasing the speed limit

ニ by forbidding cars to drink alcohol

(3) If 90% of cars were self-driving, by how much would accidents decrease?

- 90%                       76%                       65%                       42%

(4) How can self-driving cars double road capacity?

- by predicting braking  
 by expanding the width of roads  
 by giving emergency vehicles first priority  
 by allowing traffic to move more efficiently

(5) In addition to increasing road capacity, what effects would self-driving cars have on society?

- lower taxes and carbon dioxide emissions  
 make driving more exciting and competitive  
 increase economic efficiency and mobility for more people  
 reduce the number of police cars and ambulances on roads

(6) Why would fewer parking spaces be needed with the introduction of self-driving cars?

- Urban business districts would become larger.  
 The same cars would be used over and over.  
 Fewer people would live outside cities and commute to work.  
 More people would go to work on foot.

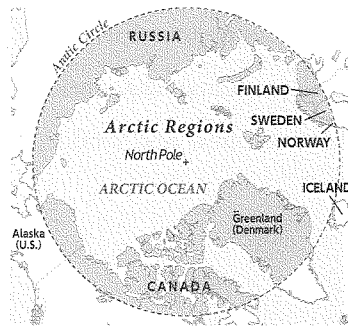
(7) How might people in the future view our use of cars today?

- safe and predictable                       dangerous and wasteful  
 odd but practical                               strange but smart

(8) What is the best title for this passage?

- イ The dangers of self-driving cars
- ロ Long-term research key to vehicle safety
- ハ Self-driving cars to change the world
- ニ Coexistence between new and traditional technologies

[V] 北極圏(the Arctic)に関するつぎの英文を読み、設問に答えよ。



The Arctic consists of deep ocean covered by floating ice and is surrounded by continents and archipelagos\*<sup>1</sup> around the North Pole. It has diverse animal life, with more than 2,000 species. But by the end of this century, the Arctic will be a very different place. First, temperatures are warming more than twice as fast as they are for the planet as a whole.<sup>(1)</sup> This has implications for people, wildlife, and the relationship between them. Second, the exploration of Arctic resources may also endanger its environment.

The Arctic is home to four million people. For thousands of years, Arctic indigenous peoples\*<sup>2</sup> have hunted animals for food, clothing, and other essential uses. Hunting is still part of the cultural identity of many northern peoples, and for some, still an essential part of their livelihoods. People still hunt because other foods available to people in northern communities are often less healthy than traditional foods, and too expensive for people to buy.

The Arctic is also home to a wide range of wildlife. Thousands of years of evolution have prepared Arctic species like the polar bear, walrus, and narwhal\*<sup>3</sup> for life on and around the sea ice. However, because of climate change, the ice has been changing rapidly, in both extent and thickness, and shrinking far too quickly for these species to adapt.



As Arctic sea ice thins and covers a smaller area, increasing numbers of polar bears are spending longer periods of time in the summer resting along Arctic coastlines, rather than in the open water. Here, their powerful sense of smell attracts them to human waste, stored food, dog teams, and dead animal bodies — bringing them into greater conflict with Arctic people.

As powerful predators, polar bears pose a major risk to human life and property. Throughout the polar bear's range, attacks on humans and property are rising. In recent years, more than 20 direct attacks on humans have been reported within the polar bear's range. In order to ensure the safety of people living near polar bears, one village started a patrol team. Patrol members escort children to school and to daycare, patrol the village for bears, and keep people informed about the current situation. The patrol also works to preserve unique places for wildlife, and to help local people participate in scientific research on polar bears and other Arctic animals. In the short term, these programs may help prevent conflicts.

In the long term, nature may solve the problem another way. It's a law of physics that the world will warm as greenhouse gas concentrations rise. There will be no stable state unless we lessen the effects of the rise of greenhouse gases. Without such action, polar bears will be found only in increasingly northern areas until they finally wink out. When the last traces of sea ice are gone, so will the polar bears be gone.

The Arctic contains vast resources, but exploitation of these resources may further threaten its environment. The Arctic is estimated to hold the world's largest untouched gas reserves and some of its largest undeveloped oil reserves. A significant proportion of these reserves lie offshore, in the Arctic's shallow and biologically productive seas off the coast. Oil spills, whether from blowouts, pipeline leaks, or shipping accidents, pose a tremendous risk to Arctic ecosystems. Marine ecosystems are particularly

in danger, but there is no proven, effective method for containing and cleaning up an oil spill in icy water.

Moreover, offshore oil exploration, drilling, and production can disturb the fish and animals that are cornerstones of the material and cultural livelihoods of indigenous peoples in the Arctic. Whales and other marine mammals use sound to navigate, find mates, and find food in the often dark waters of the ocean. Large noises, like the air guns used by oil and gas companies to explore for oil offshore, can be much too loud for these species. Excessive noise from oil and gas exploration and drilling in the ocean could cause injury, confusion, and even death. Consequently, the Arctic fishing industry, which provides both food and economic value far beyond the Arctic, is also at risk.

We humans must prevent damaging exploration of the Arctic from happening. In a joint statement on March 10, 2016, the president of the United States and the prime minister of Canada agreed to several initiatives to advance Arctic conservation. The plan includes the establishment of protected areas. Their statement says, “We will work directly with indigenous partners, state, territorial, and provincial governments to establish this year a new, ambitious conservation goal for the Arctic based on the best available climate science and knowledge, indigenous and non-indigenous alike. We will also play a leadership role in engaging all Arctic nations to develop a pan-Arctic marine protection area network.” Hopefully these promises will be followed by action.

語注\*

\*1 archipelago : 列島

\*2 indigenous peoples : 原住民

\*3 polar bear, walrus, and narwhal : シロクマ, セイウチとイッカク(一角)

問1 本文中の下線部(1)~(5)の語について、意味が最も近いものをそれぞれイ~ニから一つ選び、その記号を解答用紙にマークせよ。

(1) planet

イ ocean                      □ region                      ハ pole                      ニ earth

(2) predators

イ aggressors                      □ attendants

ハ players                      ニ wrestlers

(3) informed

イ alarmed                      □ calm                      ハ aware                      ニ worried

(4) wink

イ die                      □ shut                      ハ blink                      ニ try

(5) cornerstones

イ bases                      □ materials                      ハ bricks                      ニ signals

問2 本文の内容に関する(1)~(8)の問いの答えとして最も適切なものをそれぞれイ~ニの中から一つ選び、その記号を解答用紙にマークせよ。

(1) Which of the following is **not** mentioned about hunting in the lives of Arctic indigenous peoples?

イ It is a part of traditional religious customs.

□ It is essential for their livelihoods.

ハ It is necessary in order to eat low-cost, healthy food.

ニ It is important for their cultural identity.

(2) Why are polar bears becoming more dangerous to Arctic people?

イ because they have increased in number

□ because they are becoming more powerful

ハ because they are threatened by neighborhood patrols

ニ because they live closer to human beings than before

(3) What has to be done to avoid pushing polar bears further north?

- イ stop the hunting of Arctic animals
- ロ slow the rise of greenhouse gases
- ハ reduce attacks on humans and property
- ニ provide special shelter for polar bears

(4) What resources does the Arctic offer to the world?

- イ vast mineral reserves and marine products
- ロ whales, polar bears, walruses, and narwhals
- ハ four million indigenous people
- ニ huge sea ice and land

(5) Why are Arctic ecosystems endangered by oil spills?

- イ because pipelines leak frequently
- ロ because Arctic seas are too shallow
- ハ because Arctic oil reserves are still undeveloped
- ニ because there are no effective ways to clean up spills

(6) What impact do large noises have on Arctic marine mammals?

- イ They drive them offshore.
- ロ They make their survival difficult.
- ハ They make them more biologically productive.
- ニ They decrease their food and mineral supplies.

(7) What will the new conservation goal for the Arctic be based on?

- イ more international agreements
- ロ a pan-Arctic marine protection area network
- ハ the best science and knowledge of the Arctic climate
- ニ preservation of the traditions of indigenous peoples

(8) What is the best title of this article?

- イ The fate of polar bears
- ロ The wonders of Arctic wildlife
- ハ Conservation of Arctic ecosystems
- ニ Resource development in the Arctic

[VI] Ken 君は “Why do you think people attend college or university? Use specific reasons and examples to support your answer.” という課題に対して、つぎの英文を書きました。本文中の(1)～(5)空欄の中に当てはまる語句・文をそれぞれイ～ニから一つ選び、その記号を解答用紙にマークせよ。

People attend college or university for many different reasons. I believe that the three most common reasons are to prepare for a career, to have new experiences, and to increase knowledge of oneself and the world.

Career preparation is probably the (1) reason that people attend college. These days, the job market is very competitive. Career fields such as information technology will need many additional workers in the near future. (2) .

Students (3) go to college to have new experiences. At college, they can meet new people from many different places. They can see what life is like in a different city. For some, it is their first time away from home. They can learn to live on their own and take care of themselves without always having their family nearby.

As well as being a place to prepare for a career and have new experiences, college is an opportunity to learn about oneself and the world. As students decide what they want to study, pursue their studies, and interact with their classmates, they learn a lot about themselves. They also, of course, have the opportunity to learn about many subjects in their classes. (4) the skills and knowledge related to their career, college students also have the chance to take classes in other areas. For some, this will be their last chance to study a variety of different subjects.

College offers the opportunity to have new experiences and to learn many kinds of things. (5)

- (1) イ controversial                      □ unlikely  
 ハ primary                                ニ same
- (2) イ At college, students can learn career skills to increase their future opportunities.  
 □ At college, students can study abroad to get master and doctoral degrees.  
 ハ At college, students can become qualified for generous scholarships.  
 ニ At college, students can drop out anytime they want to.
- (3) イ however                              □ also  
 ハ on the contrary                      ニ therefore
- (4) イ In addition to                      □ But for  
 ハ Without                                ニ Instead of
- (5) イ I believe that these are not necessarily the reasons people attend college.  
 □ I think all of these are reasons why people attend college.  
 ハ You should choose a private rather than a public college for these reasons.  
 ニ You should pay close attention to what college provides for you.

