

デザイン工学部A方式Ⅱ日程・理工学部A方式Ⅱ日程
生命科学部A方式Ⅱ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。

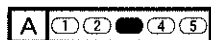
マークシート解答方法についての注意

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)。

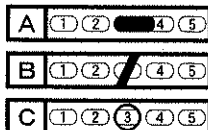
記入上の注意

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] 東日本大震災(2011年)直後に書かれたつぎの記事を読み、設問に答えよ。

Following the Fukushima nuclear accident and the subsequent planned power cuts affecting large parts of eastern Japan, there are some voices calling for a review of national energy policy and a shift in focus to renewable energy.⁽¹⁾

Officials in the Japanese Ministry of Economy, Trade and Industry, however, are keen to remind the public that “nuclear power is essential” because “renewable energy alone isn’t sufficient.”

Outside of Japan, some think tanks seem equally concerned that eliminating Japan’s nuclear power and replacing it with renewables would be too costly. They argue that producing the 203 gigawatts (GW) of solar capacity needed to meet the expected energy shortage would cost Japan the equivalent of US\$1.01 trillion. Alternatively, if wind energy were used, then 152 GW of newly installed wind capacity would cost \$375 billion and take up 50% of Japan’s land area.

While the financial cost of transitioning to renewables may be high, building thermal or fossil fuel power stations to replace the Fukushima nuclear plants would also be of major concern, as it would undermine efforts⁽²⁾ to move towards a low-carbon society.

For Japan, the challenge is not only to replace four nuclear reactors at the Fukushima Dai-ichi plant, but also to reconsider whether to build nine new nuclear power plants by 2020 and more than 14 by 2030. Still, the interests backing nuclear power in Japan are immense⁽³⁾ and their financial resources abundant. These interests include the ten regional electricity providers and the companies that design the plants. As a result, the chances of alternative low- or no-nuclear energy scenarios are slim.

This is unfortunate because any measures that Japan takes now could fundamentally influence future global energy policy. As Anthony Froggat, a

British researcher, points out, nuclear power currently only accounts for 6% of global energy and is a concern for just 30 countries, of which six are major players—the US, France, Japan, Germany, Russia, and South Korea. If a country like Japan, which has very few natural energy resources, were to find a new energy pathway with little or no nuclear and no fossil fuels, then this would be highly influential internationally.

Discussions of an energy strategy based on greater energy efficiencies and the more extensive use of renewable energy frequently point to their limitations, however. George Monbiot, a British columnist, recently elaborated upon why this kind of energy strategy encounters problems: he ⁽⁴⁾ claims that powering down and producing renewable energy sounds lovely “until you read the small print.” Energy demand is predicted to grow steadily, and therefore we need reliable, cost-effective, low-carbon energy sources. While renewables are ideologically attractive, they are expensive, unreliable, and come with their own environmental costs such as visual and noise pollution.

On the surface, powering down looks impossible. But the Fukushima accident may trigger a rethink of this assumption. The power cuts after the accident show the ability of people in eastern Japan to significantly reduce their electricity consumption without sacrificing their quality of life. Many of Tokyo’s iconic neon signs have been switched off, as have surplus-to-requirement lights at train stations and in shops. This has shown, without doubt, that energy consumption before the accident was wasteful and excessive.

The significant reduction of electricity consumption by the public in this crisis situation raises the question of whether or not Japan really needs nuclear power at all. One long-time supporter of renewable energy in Japan is social innovator Tetsunari Iida, Executive Director at the Institute for Sustainable Energy Policies (ISEP). Iida argues in a recent paper

entitled “From unplanned energy cuts to strategic energy shift” that Japan is experiencing its third historic reset with the Tohoku-Kanto triple disaster of earthquake, tsunami, and nuclear accident—the first reset was the Meiji Restoration in 1868 and the second was the end of World War II.

According to Iida, various short-term measures are likely in order to overcome the anticipated high electricity demand in the summer months as everyone switches on their air-conditioners. However, he claims that the only realistic long-term response is to promote an energy shift to 100% renewables by 2050.

To meet this target, however, Japan would also be required to reduce its electricity consumption by % compared to 2010 levels through energy efficiency and power saving measures. As an interim target, Iida argues that Japan should reduce electricity consumption by % by 2020, while could grow from around 10% of electricity supply in 2010 to % in 2020.

Iida is in favor of phasing out nuclear power gradually, dropping from % in 2010 to % in 2020, to 0% in 2050. would remain at 25% in , while would drop from 40% to 15%. All would be removed as sources of electricity generation by . Under this scenario, nuclear and fossil-fuel-based electricity production are viewed as a short-term measure in the shift towards renewable energy.

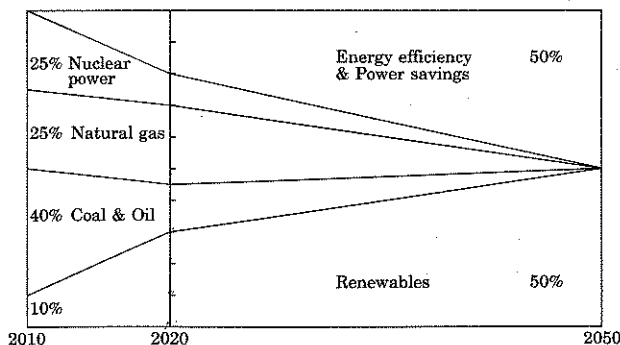


Figure 1 Shift to renewable energy by 2050 as proposed by the ISEP

There will of course be many who will continue to ⁽⁷⁾dismiss renewables as the way forward for Japan, despite the Fukushima accident. They will try to convince us that the Japanese public should continue with business as usual and that it should not take too long for things to get back to "normal." But if the goal for Japan is to create a secure, low-carbon, and safe energy system, then now may be the appropriate time for an objective assessment.

For Japan and elsewhere, nuclear power is a short-term solution with very long-term problems. These problems include the costs of closing nuclear plants and of dealing with the resulting nuclear waste. At present, Japan is still searching for a final disposal site for its nuclear waste, an issue for many other countries as well. The waste has to be buried deep underground (300-1000 meters below the surface) until the radioactive elements decay over many thousands of years.

Surely this fact alone is enough to convince us that we really do need an energy shift in response to Japan's continuing nuclear accident. What do you think?

問1 文脈に照らして下線部(1)~(7)に最も近い意味の語(句)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) calling for

イ requesting

□ taking

ハ showing

ニ improving

(2) undermine

イ devote

□ make

ハ abandon

○ニ weaken

(3) immense

イ small

○ □ huge

ハ meaningful

ニ real

(4) elaborated upon

イ explained in detail

□ understood clearly

ハ investigated thoroughly

ニ missed completely

(5) trigger

イ come for

□ stop

ハ lead to

ニ believe

(6) surplus-to-requirement

イ no more than

□ no less than

ハ more than necessary

ニ less than necessary

(7) dismiss

イ reject

□ expect

ハ include

ニ remember

問2 Figure 1を参照し、以下の問いに答えよ。ただし、各設問において同じ選択肢を2度使用してはならない。

(1) 空欄 ～ に入る最も適切な数字をそれぞれイ～トから一つ選び、その記号を解答用紙にマークせよ。

イ 0 ロ 10 ハ 20 ニ 25
ホ 30 ヘ 40 ト 50

(2) 空欄 ～ に入る最も適切な語(句)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。

イ coal and oil ロ natural gas
ハ nuclear ニ renewables

(3) 空欄 および に入る最も適切な年号をそれぞれイ～ニから一つ選び、その記号を解答用紙にマークせよ。

イ 2010 ロ 2015 ハ 2020 ニ 2050

問3 波線部(x)および(y)の内容を最もよく表わすものをそれぞれイ～ニから一つ選び、その記号を解答用紙にマークせよ。

(x) the small print

イ On the surface, powering down looks impossible.
ロ Energy consumption has been reduced since the accident.
ハ Renewables are expensive, unreliable, and environmentally costly.
ニ Energy consumption before the accident was wasteful and excessive.

(y) various short-term measures

イ Construction of more renewable energy plants
ロ Use of more fossil fuel power stations
ハ Creation of a secure, low-carbon, and safe energy system
ニ Preparation for earthquakes, tsunamis, and nuclear accidents

問4 原子力発電に対する Iida 氏の意見と一致する英文をイ～ニから一つ選び、その記号を解答用紙にマークせよ。

- イ To replace four nuclear reactors in Fukushima, new nuclear power plants should be built.
- ロ Nuclear power plants are essential to reduce CO₂ emissions. ?
- ハ Nuclear power plant operations should be resumed to meet increasing energy demand.
- ニ If Japan can decrease its energy consumption, nuclear power may not be necessary in the future.

問5 新しいエネルギー政策に関して、本文の内容と一致する英文をイ～ニから一つ選び、その記号を解答用紙にマークせよ。

- イ Powering down in eastern Japan has resulted in the discovery of a new energy pathway.
- ロ Japan is about to find a new energy pathway, without either nuclear or fossil fuels.
- ハ A new energy pathway can be found in developed countries.
- ニ A new energy pathway for Japan may change international energy policy.

問6 震災後の生活に関して、本文の内容と一致する英文をイ～ニから一つ選び、その記号を解答用紙にマークせよ。

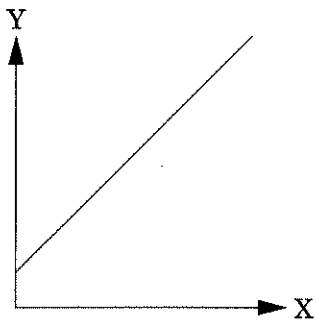
- イ Numerous people suffered from the planned power cuts every day.
- ロ The total amount of power was reduced without significantly affecting the quality of life.
- ハ Many people in eastern Japan wanted to lead normal lives as soon as possible.
- ニ The quality of life decreased significantly because of limited power in eastern Japan.

問7 核廃棄物に関して、本文の内容と一致する英文をイ～ニから一つ選び、その記号を解答用紙にマークせよ。

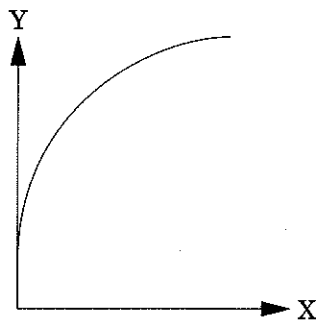
- イ Nuclear waste buried deep underground won't be harmful in the next millennium.
- ロ Japan has found a place to bury its nuclear waste, as have many other countries such as Finland.
- ハ Difficulties in treating nuclear waste should make us think of a shift to renewable energy.
- ニ Human beings have many strategies to deal with nuclear waste, one of which is to bury it deep underground.

問6 Which of the following graphs shows a constant rate (of increase) between the variables X and Y?

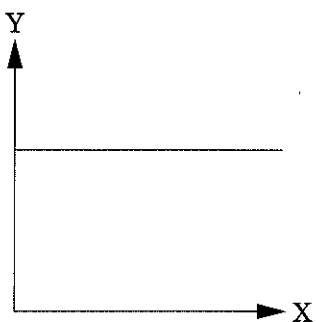
イ



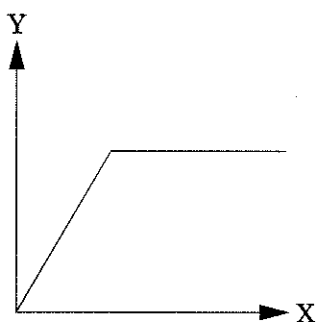
ロ



ハ

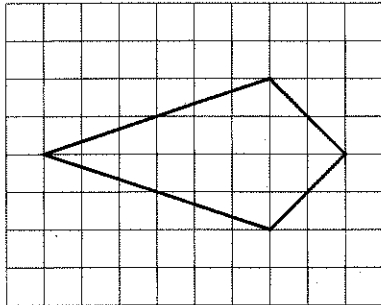


ニ

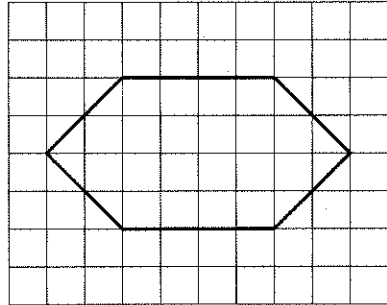


問7 Which of the following forms has an even number of sides, contains exactly one line of symmetry, contains one right angle, and has 3 pairs of parallel sides?

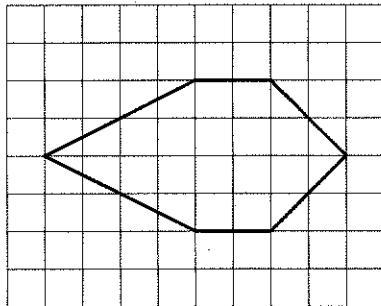
イ



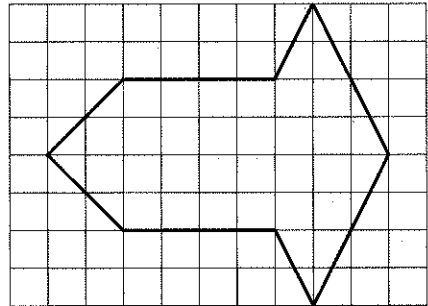
ロ



ハ



ニ



問8 How do you read $3\frac{1}{2}$?

イ three and one to two

ロ three and one half

ハ three and two to one

ニ three and second

問9 What is a figure bounded by five straight sides?

イ hexagon

ロ pentagon

ハ octagon

ニ decagon

〔Ⅲ〕 アメリカのあるセキュリティー会社が行った、携帯電話実態調査の結果に関するつぎの英文を読み、設問に答えよ。

Often emotion plays a role in our actions, so we conducted a survey to try and understand the emotional connection between people and their smartphones. By quantifying the most fundamental indicator of phone activity, we have clues to understanding individuals' mobile attachment.

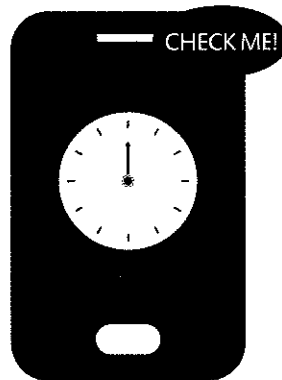
I. How much are you addicted to checking your phone?





The majority of Americans with smartphones (58%) said they typically don't go an hour without checking their phones. Unsurprisingly, this hourly phone-checking fixation was significantly greater among smartphone owners , and declined slightly as age went up. Smartphone owners check their phones least frequently, almost half as frequently as the youngest age group.

WE'RE ADDICTED TO CHECKING OUR PHONES

58%
OF SMARTPHONE USERS

**DON'T GO
1 HOUR
WITHOUT CHECKING
THEIR PHONES**



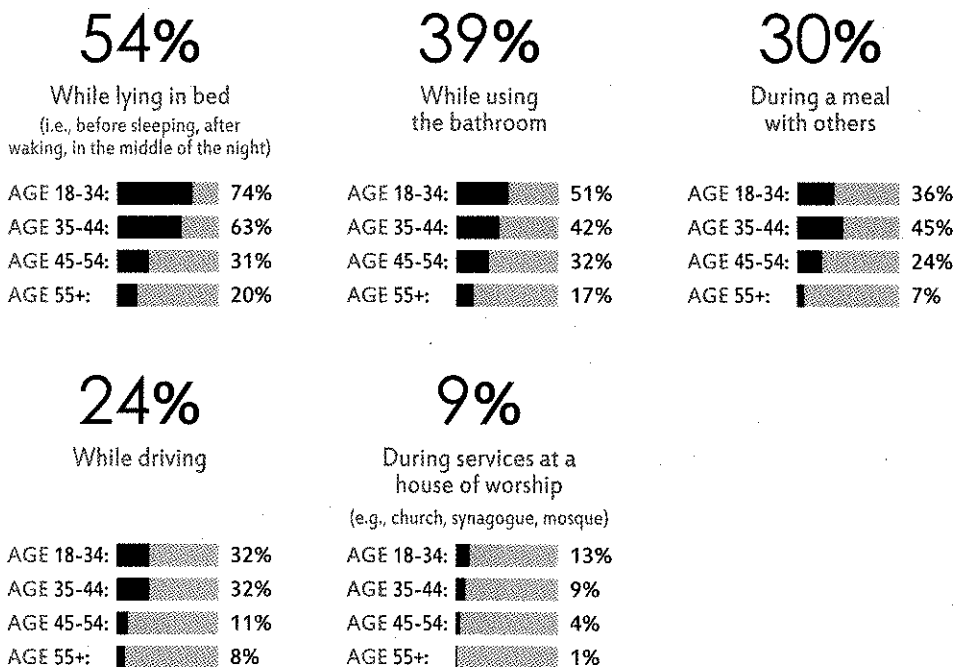
AGE 18-34:	 68%
AGE 35-44:	 61%
AGE 45-54:	 55%
AGE 55+:	 36%

The data confirms what you have probably noticed in restaurants, parks, on the bus, and in any other public setting: habitual phone-checking is widespread with the smartphone-owning population checking their phone at least once an hour.

II. Where do you check your phone?

As universally important as smartphones are to our lives, there are still some basic social standards and rules of etiquette that most of us can agree on. When someone texts during a meal, others may roll their eyes and utter one word: “ D .” And experts have told us time and time again that electronics in the bedroom—mobile phones included—affect the soundness of both our sleep and our relationships. But is Americans’ emotional connection to their phones strong enough to override what most of us consider good etiquette? Or is what we consider good etiquette changing as we become more attached?

WHERE DO YOU CHECK YOUR PHONE?



There’s no question about it, our grandmothers would be disappointed in us.

- あ % admitted that they check their phones during a meal with

others.

- % said they check their phones while driving.
- Nearly % said they check their phones during religious services at a house of worship.

Beyond bad phone etiquette, there were indications that Americans are obsessed with checking their phones; % of the smartphone owners said they check their phones while lying in bed: before they go to sleep, after they wake up, even in the middle of the night. And while no one says you can or cannot use your phone in the toilet, nearly out of 10 confessed to checking their phones while using the bathroom.

Who are the worst actors in terms of bad phone behavior? Young adults. Eighty-eight percent of adults aged 18 to 34 admitted to some smartphone rule-breaking. In almost every one of the behaviors, this group's level of phone usage was statistically higher than the other age groups'. The two exceptions: adults were as bad about using their smartphone while driving and during a meal with others as their younger counterparts.

Whether or not you think Americans are rule-breakers in general, it seems that our phones have become so to us that we check and use them at any time, even if it could be perceived as uncivil or dangerous.

問1 文中の空欄 ~ に入る最も適切な語(句)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。

- | | | | | | | | | |
|---|---|------------|----------------|----------|-------------------|-----------------------|---|-------|
| A | イ | aged 18-34 | | ロ | aged 35-44 | | | |
| | | ハ | aged 45-54 | | ニ | aged 55+ | | |
| B | イ | aged 18-34 | | ロ | aged 35-44 | | | |
| | | ハ | aged 45-54 | | ニ | aged 55+ | | |
| C | イ | almost all | | ロ | three quarters of | | | |
| | | ハ | more than half | | ニ | a small proportion of | | |
| D | イ | natural | ロ | cruel | ハ | agreeable | ニ | rude |
| E | イ | aged 18-34 | | ロ | aged 35-44 | | | |
| | | ハ | aged 45-54 | | ニ | aged 55+ | | |
| F | イ | convenient | ロ | personal | ハ | essential | ニ | smart |

問2 文中の空欄 ~ に入る最も適切な数字をそれぞれイ~
リから一つ選び、その記号を解答用紙にマークせよ。

- | | | | | | | | | | |
|---|----|---|----|---|----|---|----|---|----|
| イ | 2 | ロ | 3 | ハ | 4 | ニ | 5 | ホ | 10 |
| ヘ | 24 | ト | 30 | チ | 39 | リ | 54 | | |

〔Ⅳ〕 次の設問に答えよ。

問1 (1)~(5)において、最も強いアクセントがある母音の発音が他の三つと異なる語をそれぞれイ~ニから一つ選び、その記号を解答用紙にマークせよ。

(1)

イ suc-cess

□ rub-bish

ハ in-ter-rupt

ニ lux-u-ry

(2)

イ de-cent

□ pre-vi-ous

ハ spe-cies

ニ di-rec-tion

(3)

イ 'en-dan-ger

□ per-suade

ハ im-me-di-ate

ニ a-pron

(4)

イ ad-vice

□ cat-e-go-ry

ハ fas-ci-nate

ニ col-lapse

(5)

イ so-lu-tion

□ pre-sume

ハ im-pulse

ニ cru-cial

問2 (1)~(5)の会話において、空欄に入る最も適切な語をそれぞれイ~ニから一つ選び、その記号を解答用紙にマークせよ。

(1) A : The between the rich and poor countries of the world is increasing daily.

B : You're right. We have to think about appropriate actions to stop it as soon as possible.

イ space □ gap ハ length ニ interval

(2) A : Don't tell Allan about John and Mary. You know he can't a secret.

B : OK. I got it.

イ hold □ stop ハ save ニ keep

(3) A : May I borrow your pen, Jane? I seem to have mine at home.

B : Here you are.

イ had □ stolen ハ left ニ missed

(4) A : I can't eat this meat! It's too .

B : You can't complain. It is very cheap.

イ tough □ tender ハ mild ニ strong

(5) A : I was caught for parking my motorcycle on the pavement on the first day I bought it and had to pay a 10,000 yen parking .

B : That's too bad!

イ cost □ fee ハ price ニ fine

問3 (1)~(7)において、それぞれ下の語句を並びかえて空所を補い、最も適当な文を完成させよ。解答は2番目と4番目に入るもののみをイ~ホから選び、その記号を解答用紙にそれぞれマークせよ。なお、頭文字の大文字、小文字の区別は問わない。

(1) The first thing I 2 4
 London was to go on a sightseeing tour.

イ did □ got ハ I
 ニ to ホ when

(2) If 2 4 , you're left with 75.

イ 100 □ take away ハ 25
 ニ from ホ you

(3) Is she responsible 2 4
 and for managing the office?

イ the □ for ハ all
 ニ phone calls ホ handling

(4) 2 4 also lives in Tokyo.

イ about □ you ハ I
 ニ the girl ホ told

(5) It was as 2 4 could ever dream of.

イ as □ a ハ happy
 ニ anyone ホ marriage

(6) Only 2 4 at the concert.
 It was very disappointing.

イ up □ people ハ a handful
 ニ of ホ turned

(7) They had to rely
given by the villagers.

イ were

ロ whatever

ハ they

ニ on

ホ food

[V] 南極での越冬に関するつぎの英文を読み、設問に答えよ。

The Amundsen-Scott South Pole Station is the southernmost of the three U.S. research stations down in Antarctica. It **A: locate** about a hundred meters from the pole itself. It can house around 150 people during the summer and around 50 during the winter.

The airplanes of the U.S. Antarctic research program do not fly over Antarctica during the winter, even between bases, because temperatures get below -45 degrees, the point **(あ)** which gasoline freezes. The final flight out of the South Pole was Friday, February 13—the last chance to leave until mid-November. Those 40 or so people staying during the winter this year will have no way to leave Antarctica for around nine months. They will not even be able to venture more than a mile or two off the base, because all the facilities are in a small area, and there is no point in sightseeing during the four months of darkness and two more of semi-darkness.

In the depths of winter, around the beginning of July, temperatures can drop below -70 degrees. Adding to the cold is the altitude—the South Pole station is more than 3,000 meters above sea level. In such conditions, even breathing can be painful.

One of the most confusing parts of living in Antarctica is that the sun neither rises nor sets. If a full day is the time between two sunrises, a full day in the South Pole **B: last** approximately 8,760 hours (24 hours multiplied by 365). This is because, at the North and South Pole, the sun rises just once a year and sets many months later. During the summer there are 24 hours of sunlight and during the winter 24 hours of darkness.

There are significant health concerns that result from extended periods without sunlight. The most remarkable health effect is depression. As a result, according to Peter West, one of the scientists in Antarctica, there is a

Careful examination for prospective workers. The tests for physical and mental health are much like those given to astronauts. The best way to avoid emergencies, West says, is to reduce risk.

The examination is generally successful. Still, no matter how mentally fit the person is, lack of sunlight causes a shortage in Vitamin D. Without ⁽³⁾ enough sunlight—the amount needed C: depend on the color of a person's skin, and how much is exposed—it's common to become sick and depressed. When asked whether bases typically have a special "sunroom" for those who stay during the winter, West replied, "Individuals may have their own lamps to make up (v) sunlight. But there is no common room provided with such lamps."

The people I spoke with did not seem overly concerned about any instances of depression that might result from Vitamin D shortage. Katy Jensen, a manager who has spent a winter at the South Pole, says, "I think each of us experienced occasional periods of homesickness or feeling blue, but we tried to recognize that it was normal, and temporary, and we were ⁽⁴⁾ surrounded by good friends who could help each other get through it." Another experienced researcher takes a more casual stance, "Naturally months of isolation have their ups and downs."

Peter Rejcek, who experienced a winter as a "carpenter helper" in 2004 and is now an editor for a newspaper titled *the Antarctic Sun*, argues that winters are not as lonely as they might seem. "You are living and working in pretty close quarters, so the problem is more about finding personal space than being ⁽⁵⁾ lonely. You are working long hours, so by the end of the winter, you are pretty exhausted, even if your job is not that physical."

Most people who stay through the winter do so to keep the bases D: operate. A year-round maintenance staff ensures that drains, electricity, and other essential operations continue to run smoothly. Rejcek says, "There is a core group of positions that need to be filled each year,

such as power plant mechanic or cook. My winter involved major construction of the new research station, so there was a large construction crew (5) site. On the other hand, facility upgrades, installations, and maintenance for experiments are scheduled for the summer." Most of the scientists leave before the arrival of winter, Rejcek says, but each experiment has a winter-overseer to solve any problems, and a few research assistants stay to maintain automatic experiments.

In winter people often work more than ten hours a day, six days a week. But when they have some free time, the base has a gym, a crafts room, a library, and a greenhouse. "People are always volunteering to teach different classes, like yoga, dance, or even a foreign language," Rejcek says. "There is usually a band or two that will form and play shows during the winter."

Jensen found an even better way to pass the hours. "After sunset in March, there is about a month of gradual darkening, so every day you can walk outside and see more stars than you saw the day before. The moon is up above the horizon for two weeks at a time, so you can watch it change phases. And the auroras!"

問1 A ~ D に与えられた動詞について、本文中で最も適切な形をそれぞれイ~ニから一つ選び、その記号を解答用紙にマークせよ。

A: locate

イ locates

ロ is located

ハ has located

ニ has been located

B: last

イ lasts

ロ to last

ハ lasted

ニ would have lasted

C: depend

イ depend

ロ depends

ハ to depend

ニ depended

D: operate

イ operate

ロ to operate

ハ operated

ニ operating

問2 空欄 (あ) ~ (う) に入る最も適切な語をそれぞれイ~ニから一つ選び、その記号を解答用紙にマークせよ。

(あ)

イ at

ロ from

ハ through

ニ on

(い)

イ from

ロ for

ハ of

ニ with

(う)

イ to

ロ with

ハ on

ニ off

問3 文脈に照らして、下線部(1)~(5)に最も近い意味の語をそれぞれイ~ニから一つ選び、その記号を解答用紙にマークせよ。

(1) facilities

イ destinations

ロ territories

ハ buildings

ニ instruments

(2) altitude

イ complexity

ロ height

ハ dryness

ニ distance

(3) fit

イ tight

ロ incompetent

ハ modest

ニ healthy

(4) blue

イ refreshed

ロ unhappy

ハ cold

ニ young

(5) close

イ tight

ロ near

ハ locked

ニ careful

問4 波線部(x) “the sun neither rises nor sets” は比喩的な表現である。これはどのような状態を指しているか、本文の内容に最も近い英文をイ~ニから一つ選び、その記号を解答用紙にマークせよ。

イ The Amundsen-Scott Station is built underground and has no outside view.

ロ In Antarctica the sun seems to stay motionless in a certain spot in the sky.

ハ In Antarctica heavy snowstorms often last for days, resulting in poor visibility.

ニ The interval between a sunrise and a sunset is much longer in Antarctica than in most places on the earth.

問5 波線部(∨)“significant health concerns”について、本文で最も問題視されているものはなにか、イ～ニから一つ選び、その記号を解答用紙にマークせよ。

- イ psychological problems
- ロ frost injuries
- ハ breathing difficulties
- ニ physical exhaustion

問6 本文中で名前が挙げられている人物、(a) Peter West, (b) Peter Rejcek, (c) Katy Jensen がそれぞれ述べていることについて、一致する英文をイ～ニから一つ選び、その記号を解答用紙にマークせよ。

- イ Contrary to expectations, loneliness was a less serious issue in winters in Antarctica.
- ロ Once people fall into depression, unfortunately there is no effective way to treat it.
- ハ The best way to avoid depression is to go outside and enjoy nature.
- ニ Appropriate precautionary measures can lessen the possibility that people have depression during winter.

問7 The Amundsen-Scott South Pole Station での生活について、本文から読み取れることとして正しくない英文をイ～ニから一つ選び、その記号を解答用紙にマークせよ。

- イ While people enjoy good community lives, protecting privacy is an important issue.
- ロ Due to low temperatures, the access to and from the station is limited to a certain period of months.
- ハ Because people in the station have little to do in winter, they suffer from a sense of uselessness.
- ニ There is an atmosphere of mutual help although people are assigned to different jobs in the station.