

英 語

注 意

1. 問題は全部で19ページである。
2. 解答用紙に氏名・受験番号を忘れずに記入すること。(ただし、マーク・シートにはあらかじめ受験番号がプリントされている。)
3. 解答はすべて解答用紙に記入すること。
4. 問題冊子の余白等は適宜利用してよいが、どのページも切り離してはいけない。
5. 解答用紙は必ず提出のこと。この問題冊子は提出する必要はない。

マーク・シート記入上の注意

1. 解答用紙(その1)はマーク・シートになっている。HBの黒鉛筆またはシャープペンシルを用いて記入すること。
2. 解答用紙にあらかじめプリントされた受験番号を確認すること。
3. 解答する記号・番号の○を塗りつぶしなさい。○で囲んだり×をつけたりしてはいけない。

解答記入例(解答が1のとき)

1	<input checked="" type="radio"/>	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5	<input type="radio"/> 6	<input type="radio"/> 7	<input type="radio"/> 8	<input type="radio"/> 9	<input type="radio"/> 0
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4. 一度記入したマークを消す場合は、消しゴムでよく消すこと。×をつけても消したことになる。
5. 解答用紙をよごしたり、折り曲げたりしないこと。

1 次の英文を読み、以下の問いに答えなさい。

The sun is the closest star to Earth. Even at a distance of 150 million kilometers (93 million miles), its gravitational pull holds the planet in orbit. It radiates light and heat, or solar energy, which makes it possible for life to exist on Earth. Plants need sunlight to grow. Animals, including humans, need plants for food and the oxygen they produce. Without heat from the sun, Earth would freeze. There would be no winds, ocean currents, or clouds to transport water.

Solar energy has existed as long as the sun — about 5 billion years. While people have not been around that long, they have been using solar energy in a variety of ways for thousands of years. Solar energy is essential to agriculture — cultivating land, producing crops, and raising livestock. Developed about 10,000 years ago, agriculture had a key role in the rise of civilization. Solar techniques, such as crop rotation, increased harvests. Drying food using sun and wind prevented crops from spoiling. This surplus of food allowed for denser populations and structured societies.

Early civilizations around the world positioned buildings to face south to gather heat and light. They used windows and skylights for the same reason, as well as to allow for air circulation. These are elements of solar architecture. Other aspects

Notes:

gravitational pull 引力

radiate(s) 放射する

crop rotation 輪作

include using selective shading and choosing building materials with thermal mass, meaning they store heat, such as stone and concrete. Today, computer programs make applications easier and more precise.

The greenhouse is another early solar development. By converting sunlight to heat, greenhouses make it possible to grow plants out of season and in climates that may not be suited for them. One of the earliest greenhouses dates to 30 CE, before glass was even invented. Constructed from translucent sheets of mica, a thin mineral, it was built for the Roman emperor Tiberius, who wanted to be able to eat cucumbers all year. The general technique is the same today, although there have been many improvements to increase the variety and amount of crops grown.

Once food is harvested, solar energy can be used to cook it. The first solar box cooker was built in 1767 by Horace de Saussure, a Swiss physicist. It reached temperatures of 87.8 degrees Celsius (190 degrees Fahrenheit) and was used to cook fruit. Today, there are many different types of solar cookers being used for cooking, drying and pasteurization, which slows the growth of microbes in food. Because they do not use fossil fuels, they are safe, do not produce pollution or cause deforestation.

Solar cookers are used in many parts of the world in growing numbers. It is estimated that

shading 日よけ
thermal mass サーマ
ルマス(熱質量)

CE 西暦
translucent 半透明の
mica 雲母

physicist 物理学者
Celsius 摂氏
Fahrenheit 華氏

pasteurization 低温
殺菌
microbe(s) 微生物
deforestation 森林破
壊

there are half a million installed in India alone. India has the world's two largest solar cooking systems, which can prepare food for 25,000 people daily. According to Indian Prime Minister Manmohan Singh, "Since exhaustible energy sources in the country are limited, there is an urgent need to focus attention on development of renewable energy sources and use of energy efficient technologies." In Nicaragua, a modified solar cooker is being used to sterilize medical equipment at clinics.

Solar thermal energy can be used to heat water. First introduced in the late 1800s, the solar water heater was a big improvement over stoves that burned wood or coal because it was cleaner and cost less to operate. They were very popular for American homes in sunny places, including Arizona, Florida, and California. However, in the early 1900s, low-cost oil and natural gas became available and solar water systems began to be replaced. Today, they are not only popular again; they are becoming the norm in some countries, including China, Greece, and Japan. They are even required to be used in any new construction in Australia, Israel, and Spain.

Besides heating water, solar energy can be used to make it potable, or suitable for drinking. One method is solar disinfection (SODIS). Developed in the 1980s, SODIS involves filling plastic soda bottles with water then exposing them to sunlight for several hours. This process reduces

exhaustible やがて尽
きる

renewable 再生可能
な

sterilize …を殺菌す
る

norm 標準

disinfection 殺菌

the viruses, bacteria and protozoa in water. More than 2 million people in 28 developing nations use this method daily for their drinking water.

Solar power—the conversion of sunlight into electricity—is yet another application of solar technology. This can be done in a number of ways. The two most common are photovoltaic (solar cells) and concentrating solar power. Solar cells convert sunlight directly into electricity. The amount of power generated by each cell is very low. Therefore, large numbers of cells must be grouped together, like the panels mounted on the roof of a house, to generate enough power.

The first solar cell was constructed in the 1880s. The earliest major application was on the American satellite Vanguard I, launched in 1958. A radio transmitter powered by solar cells operated for about seven years; one using conventional batteries¹² lasted only 20 days. Since then, solar cells have become the established power source for satellites, including those used in the telecommunications industry.

On Earth, solar cells are used for everything
B
from calculators and watches to homes, commercial
buildings, and even stadiums. Kaohsiung World Stadium in Taiwan, completed in 2009 to host the World Games, has more than 8,800 solar panels on its roof. Charles Lin, director of Taiwan's Bureau of Public Works, said, "The stadium's solar energy

protozoa 原生動物

conversion 轉換

photovoltaic 光起電
性の

transmitter 送信器

telecommunication(s)
遠距離通信

calculator(s) 計算器

Bureau of Public
Works 公共事業促進
局

panels will make the venue self-sufficient in electricity needs.” When the stadium is not in use, it can power 80 percent of the surrounding neighborhood.

Unlike solar cells, which use sunlight to generate electricity, concentrating solar power technology uses the sun’s heat. Lenses or mirrors focus sunlight into a small beam that can be used to operate a boiler. That produces steam to run turbines to generate electricity. This method will be used at the Solana Generating Station, which is being built by the APS utility company outside of Phoenix, Arizona, in the United States. When completed in 2012, Solana will be one of the largest solar power stations in the world. Once operating at full capacity, it will serve 70,000 homes. “This is a major milestone for Arizona in our efforts to increase the amount of renewable energy available in the United States,” said former Arizona Gov. Janet Napolitano.

There are some challenges with solar power. First, it is intermittent, or not continuous. When there is no sun — at night, for example — power cannot be generated. In order to provide continuous power, either storage or other energy sources, such as wind power, must be used. Second, while both photovoltaic and concentrating solar power can be used virtually anywhere, the equipment they require takes up a lot of space. Installation, except for on

venue 会場
self-sufficient 自給自
足の

beam 光線

turbine(s) タービン
generate …を発生さ
せる

Gov. = governor 知事

existing structures, can have a negative impact on the ecosystem by displacing plants and wildlife. Lastly, the cost to collect, convert and store solar power is very high. However, as technological advancements are made and demand rises, the costs are dropping.

displace …に取って
代わる

Fossil fuels, such as coal, oil and natural gas, currently produce most of our electric and engine power. They also produce almost all of our pollution. ¹⁵ Plus, they are non-renewable, meaning there is a limited supply. The sun, on the other hand, offers free and clean energy in abundance. In fact, it gives much more energy than we can ever possibly use. The only questions are how and when we will take full advantage of it.

abundance 大量

〔1〕 下線部A, Bを日本語にきなさい。(解答用紙その2)

〔2〕 1～15の質問に対して英文の内容から判断し、最も適切だと思われるものをひとつ選び、その番号をマークきなさい。(解答用紙その1)

1. The author would most likely agree that the
 - (1) sun radiates light and oxygen.
 - (2) sun's gravitational pull creates heat and light.
 - (3) sun is necessary for life to exist on earth.
 - (4) sun's distance from earth reduces oxygen production.

2. What field of study developed about ten thousand years ago?
- (1) Agriculture.
 - (2) Philosophy.
 - (3) Mathematics.
 - (4) Astronomy.
3. The author states that early civilizations began to develop because of
- (1) an increase in wind speeds.
 - (2) the lack of land for growing food.
 - (3) crop failure.
 - (4) the abundance of food.
4. Which is NOT true about early solar architecture?
- (1) Positioned buildings.
 - (2) Computer programs.
 - (3) Windows and skylights.
 - (4) Selective shading.
5. Which statement is NOT true regarding greenhouses? They enable
- (1) a large amount of crops to be grown.
 - (2) a variety of crops to be grown.
 - (3) certain crops to be cooked.
 - (4) certain crops to be grown out of season.
6. Because solar cookers do not use fossil fuels, they are considered safe and
- (1) cause pollution.
 - (2) do not produce pollution or cause deforestation.
 - (3) increase the growth of microbes.
 - (4) do not produce high temperatures for pasteurization.

7. Indian Prime Minister Manmohan Singh's use of the word "urgent" suggests that he believes

- (1) India's sources of exhaustible energy are limited.
- (2) India's sources of exhaustible energy are unlimited.
- (3) India needs to develop more traditional coal-burning power plants.
- (4) India needs to develop new forms of agriculture.

8. Solar thermal energy is NOT used to

- (1) grow food.
- (2) cook food.
- (3) clean water.
- (4) replace water.

9. Once popular in American homes, solar water heaters began to disappear in the early 1900s as the result of

- (1) new solar panel construction techniques.
- (2) available firewood and cheap coal.
- (3) available natural gas and cheap oil.
- (4) newer solar water heaters.

10. What is the best possible title for this passage?

- (1) "The Problems with Solar Power"
- (2) "The Power of the Sun"
- (3) "Solar Power: the Future of Food Production"
- (4) "The Sun and Early Civilizations"

11. The word “they” means
- (1) energy efficient technologies.
 - (2) solar water systems.
 - (3) renewable energy sources.
 - (4) solar cooking systems.
12. The word “conventional” means
- (1) usual.
 - (2) fragile.
 - (3) special.
 - (4) expensive.
13. The word “milestone” means
- (1) continuing difficulty.
 - (2) turning point.
 - (3) major objection.
 - (4) significant disappointment.
14. The word “challenges” refers to the
- (1) negative impacts on the ecosystem.
 - (2) benefits of using solar power.
 - (3) future prospects of solar power.
 - (4) problems of using solar power.
15. The word “they” means
- (1) renewable energy sources.
 - (2) technological advancements.
 - (3) fossil fuels.
 - (4) wildlife and plants.

2

以下のそれぞれの定義に従って、指定された頭文字で始まる最も適切な単語を書きなさい。(ただし、解答は与えられた頭文字から書くこと)(解答用紙その2)

(解答例)

someone who is trained in science, especially someone whose job is to do scientific research

⇒(s)

正解 (scientist)

1. something you decide after considering all of the information you have

⇒(c)

2. to find out information and facts about a subject or problem by study or research

⇒(i)

3. involving or affecting all people or things in the world, applicable to all cases

⇒(u)

4. one of the large land masses of the earth such as Europe, Asia or Africa

⇒(c)

5. that from which a copy, reproduction, or translation is made

⇒(o)

6. a complete change in the ways of thinking or methods of working

⇒(r)

7. a group of businesses that provide a particular product or service

⇒(i)

8. something that happens or exists because of something that happened
before

⇒(r)

9. the top layer of the earth in which plants, trees, etc. grow

⇒(s)

10. something a person enjoys doing in his/her spare time and not for pay

⇒(h)

3

下線部に最も適切だと思われるものをひとつ選び, その番号をマークしなさい。

(解答用紙その1)

16. Our coach walked too fast _____ up with him.

- (1) of our keeping
- (2) to keep us
- (3) to us for keeping
- (4) for us to keep

17. You had better _____ up late.

- (1) stayed not
- (2) not to stay
- (3) to stay not
- (4) not stay

18. We had our house _____ into last night.

- (1) broken
- (2) to break
- (3) break
- (4) breaking

19. That cook was _____ that we didn't want to complain about the poor service.

- (1) so kindness a man
- (2) so kindness of a man
- (3) such nice a man
- (4) such a nice man

20. I realize that a doctor's job is considerably _____.
- (1) reward
 - (2) rewards
 - (3) rewarding
 - (4) rewarded
21. I would like to live in _____ quieter neighborhood.
- (1) a much
 - (2) so
 - (3) very
 - (4) a more
22. He _____ his job last month.
- (1) has quit
 - (2) quit
 - (3) has been quitting
 - (4) was quit
23. Last year an international conference for new technology _____ to have been held in Tokyo, but the conference location was suddenly changed to Osaka.
- (1) supposed
 - (2) was supposing
 - (3) was supposed
 - (4) has supposed

24. Does your husband _____ your baby while you are working?

- (1) name after
- (2) pick out
- (3) look after
- (4) make out

25. A : How _____ do you go to a sports gym?

B : Twice a week.

- (1) long
- (2) much
- (3) often
- (4) far

26. You should _____ smoking. It's not good for your health.

- (1) give up
- (2) take up
- (3) go on
- (4) keep on

27. We have no food at home, so let's eat _____.

- (1) away
- (2) off
- (3) in
- (4) out

28. The population of Tokyo is larger than _____ of London.
- (1) this
 - (2) that
 - (3) these
 - (4) those
29. The problem turned out _____ more serious than we had thought.
- (1) to be
 - (2) to being
 - (3) to
 - (4) being
30. Mary was very helpful to me. She was _____ show me the way to the station.
- (1) enough kind to
 - (2) kind enough to
 - (3) enough kind
 - (4) kind enough
31. I'm looking forward to _____ from you soon.
- (1) hear
 - (2) hearing
 - (3) have heard
 - (4) be heard

32. The manager is not going to hire _____ candidate since they both seem to be unqualified.

- (1) every
- (2) both
- (3) either
- (4) neither

33. The success _____ the new manufacturing process has allowed us to keep up with our orders.

- (1) to
- (2) of
- (3) by
- (4) for

34. I had no _____ how far it was from here to the store.

- (1) idea
- (2) thought
- (3) intelligence
- (4) willingness

35. If you don't have your driver's license _____ credit card, please show me your student ID card.

- (1) nor
- (2) neither
- (3) or
- (4) either

4

次の会話文を読んで、以下の問いに答えなさい。

Jim: Hey, Tom. Are you going to be free next Sunday?

Tom: I think so. What's up? Are you going to have another great beach barbeque party?

Jim: Well, not exactly. My neighborhood has (36) another beach cleanup day this year.

Tom: And it will take place next Sunday?

Jim: Yep. If you can make it, please join us.

Tom: Us? Have many people taken part in beach cleanups in the past?

Jim: Oh, yes. Last year the (37) was incredible.

Tom: How many folks showed up?

Jim: We had over sixty people picking up and separating garbage.

Tom: Well, it (38) since you live along the shore.

Jim: That's true, but I also think that more people are becoming aware of the serious problem of plastic garbage in the ocean.

Tom: But how can ordinary people (39)?

Jim: First, people need to (40) that this is a global problem, affecting both marine life and humans.

Tom: I want to discuss this issue more when I see you, next Sunday, at the beach cleanup.

〔1〕 下の選択肢 1～0の中から、上の空欄 36～40 に最も適切だと思われるものをひとつ選び、その番号をマークしなさい。(解答用紙その1)

1. make a difference	6. makes sense
2. cancelled	7. kind of
3. turnout	8. in terms of
4. back and forth	9. set up
5. keep in mind	0. ignore

〔2〕 次の文で、会話文の内容と一致するものは1を、一致しないものは2をマークしなさい。(解答用紙その1)

41. Jim has never invited Tom to a barbeque at the beach.
42. Jim would like Tom to help clean up the beach.
43. Neither Tom nor Jim has ever participated in a beach cleanup.
44. Tom would like to know more about the environmental issue that Jim mentioned.
45. The plastic garbage in the ocean is only a problem near Jim's house.

5 次の日本語の文を表す英文を，与えられた書き出しを使って完成させなさい。

(解答用紙その2)

大学卒業後，すぐにアメリカへ行った私の兄が，先月5年ぶりに帰国した。

My elder brother...

