

2023 年度学校推薦型選抜試験問題

数 学

【注意事項】

- 1 係員の指示があるまで、問題冊子を開いてはいけません。
- 2 この問題冊子は、表紙を除いて8ページ、解答用紙は2枚あります。
- 3 落丁、乱丁、印刷の不鮮明な箇所などがあったときは、手を挙げて係員に申し出てください。
- 4 解答用紙には、解答欄以外に受験番号記入欄がありますので、係員の指示に従って2枚とも正しく記入してください。
- 5 解答は、解答欄にのみ記入してください。
- 6 問題冊子の余白等は適宜利用してかまいませんが、どのページも切り離してはいけません。
- 7 試験終了時刻まで退室してはいけません。
- 8 解答用紙は持ち帰ってはいけません。その他は持ち帰ってください。

1 以下の空欄をうめよ.

(1) 次の等式

$$\int_3^x f(t)dt = x^2 + ax - 3$$

を満たす関数 $f(t)$ と定数 a の値を求めると, $f(t) =$,

$a =$ である.

(2) $0 \leq \theta < 2\pi$ のとき, 不等式 $\cos 2\theta - \sin \theta < 0$ を解くと である.

(3) 3点 $(7, 10)$, $(9, 8)$, $(-1, 8)$ を通る円の方程式を求めると である.

(4) 1時間ごとに1回分裂して2倍の個数に増えていく細菌がある. この細菌2個が分裂を開始して1億個を超えるのは 時間後である. ただし, 1回目の分裂は1時間後と数え, $\log_{10} 2 = 0.3010$ とし, 答えは整数で求めよ.

(5) 方程式 $8^x + 16 \cdot 2^x = 7 \cdot 4^x + 12$ の解は $x =$ である.

(6) $a_1 = 2$, $a_{n+1} = 2a_n - 1$ ($n = 1, 2, 3, \dots$) で定められる数列 $\{a_n\}$ の一般項を求めると $a_n =$ である.

(計算用紙)

2 3個のサイコロを順に一回ずつ投げ、出た目によって次のように得点を決める。

- 3個のサイコロがすべて同じ目 a を出したとき、 a を得点とする。
- 2個のサイコロが同じ目 a を出し、もう1個のサイコロがそれとは異なる目 b を出したとき、 a を得点とする。
- 3個のサイコロがすべて異なる目を出したとき、2番目に大きい目を得点とする。

以下の空欄をうめよ。

(1) 得点が6になる確率を求めると である。

(2) 得点が3になる確率を求めると である。

(3) 得点が2だったとき、サイコロの目がすべて異なる確率を求めると である。

(計算用紙)

3 a を正の定数とする. 関数 $y = x(x - a)^2$ のグラフを C とする. このとき, 以下の空欄をうめよ.

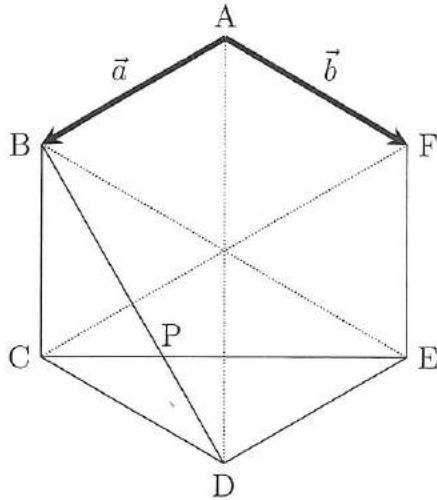
(1) 原点における C の接線 l の方程式を求めると である.

(2) C と l の原点以外の共有点 P の座標を求めると である.

(3) 線分 OP と C で囲まれた部分の面積を求めると である.

(計算用紙)

- 4 以下のような一辺の長さ1の正六角形 ABCDEF がある。線分 BD と線分 CE の交点を P とする。 $\overrightarrow{AB} = \vec{a}$, $\overrightarrow{AF} = \vec{b}$ とするとき、以下の空欄をうめよ。



(1) $BP:PD = t:1-t$ において、 \overrightarrow{AP} を \vec{a}, \vec{b}, t を用いて表すと

イ

(2) $CP:PE = s:1-s$ において、 \overrightarrow{AP} を \vec{a}, \vec{b}, s を用いて表すと

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(3) \overrightarrow{AP} を \vec{a}, \vec{b} を用いて表すと

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である。

(4) $\triangle PCD$ の面積を求めると

ニ

である。

(計算用紙)

(計算用紙)



2023 年度学校推薦型選抜試験問題

英 語

【注意事項】

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- 3 落丁、乱丁、印刷の不鮮明な箇所などがあったときは、手を挙げて係員に申し出てください。
- 4 この試験問題の解答はマーク方式になっていますので、記入の際には次のことに十分注意してください。

① HBの黒鉛筆を使用し、右のマーク例を（マーク例）
参考にしていねいに記入してください。

良い例	悪い例
	

- ② 訂正は、消しゴムできれいに消し、消しくずを残してはいけません。
 - ③ 所定の欄以外にはマークしたり、記入したりしてはいけません。
 - ④ 解答用紙を汚したり、折り曲げたりしてはいけません。
- 5 解答用紙には、解答欄以外に次の記入欄がありますので、係員の指示に従って、それぞれ正しく記入し、マークしてください。

① 氏名欄

氏名及びフリガナを記入してください。

② 受験番号欄・受験番号マーク欄

受験番号を左詰めで記入し、さらにその下のマーク欄にマークしてください。

③ 年月日欄

記入しないでください。

- 6 解答は、解答用紙の解答欄にマークしてください。例えば(20)と表示のある問いに対して(C)と解答する場合は、次の(例)のように問20の解答欄のCにマークしてください。正しくマークされていない場合には、採点できないことがありますので注意してください。

(例)

解答番号	解 答 欄
(20)	(A) (B) ● (D)

- 7 問題冊子の余白等は適宜利用してかまいませんが、どのページも切り離してはいけません。
- 8 試験終了時刻まで退室してはいけません。
- 9 解答用紙は持ち帰ってはいけません。その他は持ち帰ってください。

第 1 問: 次の会話(1)~(5)のそれぞれの空欄に入る最も適切なものを、(A)~(D)の中から一つずつ選びなさい。

(1) Person A: Excuse me, I can't find the presentation room.

Person B: _____

- (A) It's down the hall, on the right.
- (B) That's a good excuse.
- (C) The presentation room is too small.
- (D) You're not presenting?

(2) Friend A: How's things?

Friend B: _____

- (A) I just put them in here.
- (B) Pretty good, thanks.
- (C) Two or three.
- (D) What things do you mean?

(3) Person A: _____

Person B: It's just after six.

- (A) How many do you have?
- (B) It's great, isn't it?
- (C) Sorry, do you have the time, please?
- (D) Sorry, do you have the number?

(4) Person A: _____

Person B: Yeah, a couple of times.

- (A) Have you been abroad?
- (B) Have you eaten?
- (C) Was it a lot?
- (D) What time is it?

(5) Friend A: I saw the new movie the other day.

Friend B: _____

- (A) Not yet, no.
- (B) Really, how was it?
- (C) There's a new movie out now.
- (D) Yeah, it wasn't doing good.

第 2 問: 次の英文 (6)~(15)の下線部の本文中の意味に最も近いものを、それぞれ(A)~(D)の中から一つずつ選びなさい。

- (6) Cartoon characters can have a strong impact.
- (A) feeling
 - (B) influence
 - (C) memory
 - (D) message
- (7) The travel agency gave me free tickets.
- (A) company
 - (B) industry
 - (C) representative
 - (D) worker
- (8) He usually teaches the first grade.
- (A) group
 - (B) level
 - (C) person
 - (D) students
- (9) Regarding my friends, I am losing confidence.
- (A) happiness
 - (B) money
 - (C) trust
 - (D) work
- (10) The man's scream shifted people's attention.
- (A) helped
 - (B) stopped
 - (C) switched
 - (D) took
- (11) The survey indicates how many people visited this month.
- (A) denies
 - (B) hides
 - (C) promotes
 - (D) shows

(12) The prime concern for customers should be the price.

- (A) funniest
- (B) interesting
- (C) main
- (D) worst

(13) I will have plenty of food today.

- (A) a little
- (B) less
- (C) lots of
- (D) types of

(14) Which team will win the championship this year?

- (A) aid
- (B) game
- (C) gift
- (D) tournament

(15) You need to advance the project.

- (A) complete
- (B) help
- (C) progress
- (D) start

第3問: 次の英文(16)~(30)のそれぞれの空欄に入る最も適切なものを、(A)~(D)の中から一つずつ選びなさい。

(16) When we _____ our car last Saturday, we found a small dent.

- (A) have washed
- (B) wash
- (C) washing
- (D) were washing

(17) Late arrival _____ our schedule.

- (A) affect
- (B) effect
- (C) will affect
- (D) will effect

(18) He forgot to bring the photo ID _____ for voting.

- (A) is required
- (B) require
- (C) required
- (D) will require

(19) _____ an emergency, please call this number for help.

- (A) Due
- (B) If
- (C) In case of
- (D) When is

(20) Larry _____ his friend not to buy a used car.

- (A) advice
- (B) advised
- (C) advised
- (D) was advised

(21) Do you know a person _____ last name is Lee?

- (A) in which
- (B) which
- (C) who
- (D) whose

- (22) That is the park _____ I often played soccer.
- (A) there
 - (B) when
 - (C) where
 - (D) which
- (23) We enjoyed the food _____ prepared.
- (A) he
 - (B) him
 - (C) his
 - (D) that
- (24) _____ lack of experience negatively impacted the result.
- (A) Her
 - (B) Hers
 - (C) She
 - (D) Those
- (25) This story was created based on _____ I remember from my childhood days.
- (A) that
 - (B) what
 - (C) when
 - (D) which
- (26) Taking vitamin pills allows us _____ our immune system.
- (A) boost
 - (B) boosted
 - (C) boosting
 - (D) to boost
- (27) The higher you climb, _____ it gets.
- (A) colder
 - (B) coldest
 - (C) the colder
 - (D) the coldest

- (28) Ten years _____ since his grandfather died.
- (A) have been passing
 - (B) have passed
 - (C) passes
 - (D) passing
- (29) _____ the heavy rain, they arrived at the station on time.
- (A) Although
 - (B) Despite of
 - (C) Even though
 - (D) In spite of
- (30) Brian asked if _____ park his car near the gate.
- (A) can he
 - (B) does he
 - (C) he can
 - (D) he do

第 4 問: 次の英文を読んで、問い (31)~(40) について最も適切な答えを、(A)~(D)の中から一つずつ選びなさい。

With the high cost of electricity in Japan these days, some people are turning to woodburning stoves. There is also the sense of confidence you get knowing that if the power goes out, you'll be able to survive – even in the winter. Depending on where you get your wood, though, it can sometimes be as expensive as electricity, and because it is often not very eco-friendly, I don't usually recommend it.

- (31) How many reasons does the writer give for using woodburning stoves instead of electricity?
- (A) four
 - (B) one
 - (C) three
 - (D) two
- (32) Why does the writer include the words “even in the winter”?
- (A) because electricity costs more in the winter
 - (B) because it's harder to survive in the winter due to the cold
 - (C) because the power goes out more often in the winter
 - (D) because woodburning stoves make more sense in the winter
- (33) Which is more expensive, using electricity or woodburning stoves?
- (A) It is impossible to know from the writing.
 - (B) Using electricity is usually much more expensive.
 - (C) Using woodburning stoves is usually much more expensive.
 - (D) Woodburning stoves and electricity can be the same price.

While Canada is not usually noted for its food culture, it does have a few unique dishes. The most famous is poutine, which consists of gravy on French fries and cheese curds. It was originally a regional meal from the French-speaking province of Québec, but later spread throughout Canada and is now famous in the United States and several other countries as well. It is mostly eaten in less formal settings, such as in pubs, at sporting events, or as street food.

- (34) Which of the following is implied by the text?
- (A) Canada doesn't have many famous foods.
 - (B) Most Canadian restaurants have poutine.
 - (C) Poutine is eaten mostly by French speakers.
 - (D) Poutine is now popular in most of the world.
- (35) Where can poutine be found nowadays?
- (A) in some countries
 - (B) in some French-speaking places
 - (C) only in Canada and the United States
 - (D) only in Québec
- (36) Which of the following locations is least likely to have poutine?
- (A) a cafeteria
 - (B) a soccer match
 - (C) a street vendor
 - (D) an expensive restaurant

Back in the 1980s Francesco Cirillo developed a time management technique called the Pomodoro technique. His system is effective as it helps your brain concentrate on the task and not get distracted. It does this by dividing half-hour periods into 25 minutes of focused work followed by a five-minute break.

(37) How is time allocated in the Pomodoro technique?

- (A) a 5-minute break after 25 minutes of work
- (B) a 5-minute break after 30 minutes of work
- (C) 25 minutes of work after a 25-minute break
- (D) 30 minutes of work after a 5-minute break

(38) What does this system help people to do?

- (A) to distract
- (B) to focus
- (C) to Pomodoro
- (D) to relax

An interesting debate is happening at universities worldwide about whether increasing use of Zoom, an online communication platform, has been beneficial. For students, there is a mixed reaction, with some preferring not to have to get out of bed for class, while others need classroom contact. For professors, it's a different story.

(39) Which of the following is true?

- (A) Everyone agrees that Zoom has been beneficial.
- (B) Not all students like the use of Zoom.
- (C) Professors prefer not to have to get out of bed for class.
- (D) Students and professors mostly agree about Zoom at universities.

(40) Which of the following would most likely follow this paragraph?

- (A) comparing professors' and students' methods of using Zoom
- (B) discussing professors' views of using Zoom at universities
- (C) listing the percentage of students who need classroom contact
- (D) talking about online communication platforms other than Zoom

第 5 問: 次の英文を読んで、(41)~(45)のそれぞれの空欄に入る最も適切なものを、(A)~(D)の中から一つずつ選びなさい。また、問い (46)~(50)について、英文の内容から最も適切な答えを、(A)~(D)の中から一つずつ選びなさい。

この部分に掲載されている文章については、著作権上の問題から公表することができません。

Adapted from "Noises sound totally different on Mars than on Earth. Here's why", Science News for Kids, July 1, 2022 URL: <https://www.sciencenewsforstudents.org/article/noises-sound-totally-different-on-mars-than-on-earth-heres-why/>

- (41) (A) carry
(B) create
(C) destroy
(D) report
- (42) (A) drastic
(B) expensive
(C) small
(D) technical
- (43) (A) controlling
(B) exploring
(C) patrolling
(D) reducing

- (44) (A) laser
(B) light
(C) liquid
(D) sound
- (45) (A) hear
(B) measure
(C) remember
(D) repeat
- (46) It is more difficult to hear sounds on Mars than on Earth because the atmosphere is too _____.
- (A) far
(B) heavy
(C) slow
(D) thin
- (47) How has NASA's Perseverance rover helped scientists learn about sound on Mars?
- (A) by making recordings from 60 meters away
(B) by providing data from sound waves created on Mars
(C) by reporting scientific findings in Nature
(D) by using microphones and a headset
- (48) Which of the following statements is correct?
- (A) Lasers sound like thunder.
(B) On Mars, the speed of sound depends on pitch.
(C) People can easily hear sounds that travel at 240 meters per second.
(D) Sound travels farther on Mars than on Earth.
- (49) What does the word dissipate mean in paragraph 4?
- (A) to become higher in pitch
(B) to hear from a short distance
(C) to spread out and disappear
(D) to travel a short distance
- (50) Which sentence best summarizes the text?
- (A) Lasers can break rocks to make thunder.
(B) People can hear high-pitched sounds on Mars.
(C) Sound travels poorly in the Martian atmosphere.
(D) Sound travels quickly in the Martian atmosphere.