

2020 年度（令和 2 年度）推薦入学試験問題

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) 1 から 120 までの自然数のうち, 6 の倍数でも 15 の倍数でもないものは 個ある.

(2) 数列 $\{a_n\}$ の初項 a_1 から第 n 項までの和 S_n が $S_n = n^2 + 4n$ であるとき, 数列 $\{a_n\}$ の一般項を求めると, $a_n =$ である.

(3) 3 点 $A(1, 2, 0)$, $B(0, 0, 1)$, $C(3, 4, 0)$ を頂点とする $\triangle ABC$ について, $\angle BAC$ の大きさは であり, $\triangle ABC$ の面積は である.

(4) 方程式 $\log_2 x + \log_2(x + 6) = 4$ の解は $x =$ である.

(5) 方程式 $9^x - 4 \cdot 3^x + 4 = 0$ の解は $x =$ である.

(計算用紙)

(計算用紙)

2 A さんを含む男子 7 人と B さんを含む女子 5 人がいる．この中から 5 人の委員を選ぶ．以下の空欄をうめよ．

(1) 男子の委員が 3 人，女子の委員が 2 人となる選び方は 通りある．

(2) 委員の中に少なくとも 1 人は女子が含まれる選び方は 通りある．

(3) 男子の委員が女子の委員よりも多くなる選び方は 通りある．

(4) A さんと B さんがともに委員となる選び方は 通りある．

(計算用紙)

(計算用紙)

3 平面上に平行四辺形 OABC がある. 辺 OA を 3 : 2 に内分する点を P, 辺 OC を 2 : 3 に内分する点を Q とし, 辺 AB の中点を M とする. 線分 CP と線分 QM の交点を R とする. $\overrightarrow{OA} = \vec{a}$, $\overrightarrow{OC} = \vec{c}$ とするとき, 以下の空欄をうめよ.

(1) $CR : RP = t : 1 - t$ において \overrightarrow{OR} を \vec{a}, \vec{c}, t を用いて表すと,

$$\overrightarrow{OR} = \boxed{\text{イ}} \vec{a} + \boxed{\text{ロ}} \vec{c} \text{ である.}$$

(2) $QR : RM = s : 1 - s$ において \overrightarrow{OR} を \vec{a}, \vec{c}, s を用いて表すと,

$$\overrightarrow{OR} = \boxed{\text{ハ}} \vec{a} + \boxed{\text{ニ}} \vec{c} \text{ である.}$$

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

$$\overrightarrow{OR} = \boxed{\text{ホ}} \vec{a} + \boxed{\text{ヘ}} \vec{c} \text{ である.}$$

(計算用紙)

(計算用紙)

4 曲線 $y = -x^3 + 4x$ を C とし、点 $(1, -1)$ から C に引いた接線を l とする。 C と l の接点を P とする。このとき、以下の空欄をうめよ。

(1) P の座標は であり、 l の方程式は $y =$ である。

(2) C と l の共有点のうち、 P でないものの座標は である。

(3) C と l で囲まれた部分の面積は である。

(計算用紙)

(計算用紙)

2020 年度（令和 2 年度）推薦入学試験問題

英

語

【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16ページ、解答用紙は1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 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）
参考にしていて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。

Section 1

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 1: _____

Person 2: Bring a warm jacket and hat – it's supposed to be cool and windy.

- (A) How do you like my jacket and hat?
- (B) How should I dress for the outing?
- (C) What are you bringing to your job interview?
- (D) Why are you wearing so much clothing?

(2) Person 1: Would you like to come to John's birthday party this Saturday?

Person 2: _____

- (A) I'm sorry, but I can't. It's not my birthday this Saturday.
- (B) I'm sorry, but he can't. John will be busy at work this Saturday.
- (C) Yeah. That'll be fun, thanks. What time will it be?
- (D) Yeah. That'll be fun, thanks. What's the occasion?

(3) Husband: I'm thinking about buying a cool sports car.

Wife: _____

- (A) Dear, you are not allowed to park here.
- (B) Honey, we need to start saving for our new baby.
- (C) Let's go for a run after dinner, honey.
- (D) Please step away from the car, dear.

(4) Bob: I'd like to have a word with you.

Steve: Sure! _____

(A) Did you check in a dictionary?

(B) What time is it?

(C) Can we meet in a minute?

(D) Which word do you want to have?

(5) Waiter: Would you like chopsticks?

Customer: _____

(A) Can I get three pairs?

(B) I would like to have a coffee.

(C) No, I wouldn't do it.

(D) Yes. I like Japanese food.

Section 2

第2問:次の英文(6)~(15)の下線部の表現と置き換えた時、元の英文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) The new building was designed to blend in with the older ones.
(A) contrast
(B) join
(C) match
(D) replace
- (7) Frank had a notion that he would get the job.
(A) a dream
(B) a fear
(C) a promise
(D) an idea
- (8) The existence of a mysterious animal was suggested by the results of this research.
(A) denied
(B) discussed
(C) indicated
(D) proved
- (9) The young girl was gradually approaching the man.
(A) happily
(B) quietly
(C) rapidly
(D) slowly

(10) People all over the world consume fish.

- (A) care about
- (B) catch
- (C) eat
- (D) look for

(11) At the University of Aizu, you can acquire English.

- (A) learn
- (B) speak
- (C) teach
- (D) try

(12) Social media has altered our lives in many ways.

- (A) changed
- (B) improved
- (C) prohibited
- (D) ruined

(13) The couple lived separately because of the husband's job.

- (A) apart
- (B) poorly
- (C) quietly
- (D) well

(14) Excessive computer use can affect your health.

- (A) A little bit of
- (B) Enjoyable
- (C) Too much
- (D) Uncomfortable

(15) It's raining cats and dogs.

(A) a little

(B) a lot

(C) in two places

(D) with high winds

Section 3

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) Voters were asked ____ arrive late to vote in the election.

- (A) do not
- (B) don't to
- (C) no to
- (D) not to

(17) Jill ____ to become a lawyer for the past three years.

- (A) has been studying
- (B) is studying
- (C) will be studying
- (D) will study

(18) ____ books were left behind last class?

- (A) Who
- (B) Whom
- (C) Whose
- (D) Who's

(19) I still need ____ my homework.

- (A) finish
- (B) finished
- (C) to finish
- (D) will finish

(20) I don't mind _____.

- (A) be laughed at
- (B) being laughed at
- (C) being laughing at
- (D) to be laughing at

(21) There is no time _____.

- (A) for a waste
- (B) for us to waste
- (C) of us for wasting
- (D) to us to waste

(22) You and I worked very hard and should be proud of _____.

- (A) our own
- (B) ourselves
- (C) us
- (D) you and me

(23) There is _____ for me. I will rent this apartment.

- (A) enough space
- (B) much spaces
- (C) so many spaces
- (D) too many space

(24) I will be back _____ 9 o'clock.

- (A) by
- (B) on
- (C) to
- (D) until

- (25) The company _____ I work is in that building.
- (A) of which
 - (B) where
 - (C) which
 - (D) whose
- (26) You should stop _____ if you want to stay healthy.
- (A) smoker
 - (B) smoking
 - (C) to smoke
 - (D) to smoking
- (27) I _____ to the lifestyle in Aizuwakamatsu.
- (A) am used
 - (B) am using
 - (C) use
 - (D) used
- (28) He lost but _____ if he had tried a different strategy.
- (A) can win
 - (B) could have won
 - (C) could win
 - (D) will win
- (29) I'm really _____ by this Tokyo subway map.
- (A) confuse
 - (B) confused
 - (C) confusing
 - (D) to confuse

(30) I heard he had his backpack_____.

- (A) steal
- (B) stealing
- (C) stole
- (D) stolen

Section 4

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。

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。

- (31) Which phrase best describes the most well-known feature of post-war Japan?
- (A) hard work
 - (B) job security
 - (C) lifelong employment
 - (D) World War II
- (32) Which of the following topics would most likely follow the text above?
- (A) Declining productivity in the services sector of Japanese industry
 - (B) Reasons for the declining productivity in Japanese manufacturing
 - (C) Rising production in the manufacturing sector of Japanese industry
 - (D) Rising loyalty and service in Japanese corporations

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。

- (33) Which phrase below best describes the exact location of Silicon Valley?
- (A) sits in the city of San Francisco
 - (B) sits in Santa Clara Valley and includes the city of San Jose
 - (C) sits next to corporations such as Apple, HP, Intel, and Oracle
 - (D) sits in the southern part of San Francisco Bay Area and is part of the city of San Jose
- (34) What is NOT an economically beneficial reason for living in Silicon Valley?
- (A) high number of big companies such as Apple, HP, Oracle, and Cisco
 - (B) high resale value of properties in Silicon Valley
 - (C) high cost of living and rising prices
 - (D) high salaries with lots of industry around

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。

- (35) Which phrase below best describes the purpose of IoT sensors in a smart city context?
- (A) for data collection towards effective asset and resource management
 - (B) for mobile communication and asset management
 - (C) to develop 5G networks for asset and resource management
 - (D) to network with people extensively and manage assets efficiently
- (36) Which statement below best describes the potential of 5G mobile communications?
- (A) 5G networks will radically change life in every country.
 - (B) 5G networks will broadly connect people and infrastructure.
 - (C) Smart cities will make mobile networks more efficient.
 - (D) Smart cities will adapt to 5G networks.
- (37) How will smart cities interact with their inhabitants?
- (A) by allowing citizens to adapt to the smart city environment
 - (B) by communicating with IoT sensors in the smart city environment
 - (C) by limiting 5G mobile communications in daily life
 - (D) by creating a situation where smart cities will adapt to their residents

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。

- (38) What is the major reason for improving infrastructure in different parts of Hawaii?
- (A) creating hardened physical barriers
 - (B) creating jobs in the short term
 - (C) protection against higher sea levels
 - (D) protection against global climate change
- (39) How could upgrading infrastructure in Hawaii develop the economy of the state?
- (A) by creating solid physical barriers
 - (B) by developing an economy dependent on beach tourism
 - (C) by protecting Hawaii against climate change
 - (D) by protecting tourism and increasing employment in the short term
- (40) Which of the following topics would most likely follow the text above?
- (A) designing physical barriers for environmental protection
 - (B) potential for rising employment in Waikiki
 - (C) protecting Waikiki from global climate change
 - (D) upgrading infrastructure around the Hawaii coastline

Section 5

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。

Young people nowadays can set up ____ (41) ____ and a general area to meet, such as in Shinjuku at 6:00 p.m. Then closer to that time, they can use an app to finalize the exact meeting point, such as at the East Exit in 10 minutes. If one person falls ill or is not able to meet, it is easy to get in touch with the other person.

It was very ____ (42) ____ when I was a boy. Back in the day, there were no mobile phones and no Internet. We had to set up a specific time, meeting point and often a wait time. The wait time is the period of time that one of us would wait for the other to arrive after the arranged meeting time. So, if the time of the meeting was at 6:00 p.m. and the wait time was thirty minutes, we would wait until 6:30 p.m. If the other person had not arrived by then, we assumed that they were not coming. To my mind, this advanced planning also helped make sure we did not ____ (43) ____ appointments. Making your friends wait is not a good way to keep friends.

As a child, I would often arrange to meet friends at a bus stop so that we could travel to our final destination on the bus together. On the bus, we would chat and have a fun time. There were no smartphones to distract us from enjoying life. I find it ____ (44) ____ to understand why young people waste so much of their time staring at the screen of a phone rather than noticing the places, people and things around them. I think that most irresponsible smartphone users have walked into lampposts or barriers more than one time.

Last year, I was driving my car late at night when a university student walked straight out in front of me. Luckily, I was paying attention to the road and I was traveling slower than the speed limit. I braked, sounded my horn and came to a stop. The student looked up briefly, then continued to walk across the road. I don't think he realized how lucky he was. Had I also been playing with my smartphone, he could have been in ____ (45) ____, and I could be in prison!

- (41) (A) a building
(B) a person
(C) a time
(D) an exit

- (42) (A) convenient
(B) different
(C) long time
(D) retro

- (43) (A) forgive
(B) get
(C) make
(D) miss

- (44) (A) comfortable
(B) difficult
(C) easy
(D) useful

- (45) (A) hospital
(B) luck
(C) school
(D) time

- (46) Which of the following best describes the writer?
- (A) a boy
 - (B) a girl
 - (C) a man
 - (D) a woman
- (47) What is the meaning of the underlined phrase “wait time” (in paragraph 2)?
- (A) the length of time to wait before setting a meeting
 - (B) the length of time to wait before leaving
 - (C) the length of time to travel to a meeting
 - (D) none of the above
- (48) What does the writer think about people who walk using smartphones?
- (A) They are lucky.
 - (B) They are very busy.
 - (C) They enjoy playing games.
 - (D) They may have accidents.
- (49) Why did the writer and a friend meet at the bus stop?
- (A) to enjoy food
 - (B) to see friends arriving
 - (C) to sit down
 - (D) to travel together
- (50) Did the student’s smartphone cause an accident (in paragraph 4)?
- (A) frequently
 - (B) maybe
 - (C) nearly
 - (D) yes