令和 6 年度入学試験問題

（一般選抜　一期）

英　語　・　数　学

1 教科を選択

（10：00 ～ 11：00）

注 意 事 項

1. 指示があるまで、問題冊子を開いてはいけません。
2. 問題は英語がA～Dまで、数学がⅠ～Ⅴまであります。
3. 解答用紙は各教科について 1 枚ずつです。
4. 解答用紙の受験番号欄に受験番号を、氏名欄に氏名を記入しなさい。
5. 答はすべて解答用紙の所定の欄に記入しなさい。
6. 落丁、乱丁、印刷の不鮮明な箇所があれば申し出なさい。
7. 試験終了後、問題冊子は持ち帰りなさい。

英　語

A 次の英文を読み、以下の問いに答えなさい。*の付いた語句には注がある。

Many people use their smartphone in the toilet. They feel it is a good chance to send a text message or (1)check out the latest videos on social media. However, doctors say scrolling through your phone while on the toilet could damage your body. Dr Saurabh Sethi is a gastroenterologist*. He has warned that bacteria in the bathroom create many health risks. Dr Sethi said too many people were taking their phones to the toilet without knowing about the dangers. He urged us to stop this habit. He said being unable to stop using smartphones could actually have some (2)serious consequences, especially while we were doing a "number two"*.

Dr Sethi said many people wrongly believe using their smartphone in the toilet is (3)harmless. He listed several issues that could arise while checking your emails in the toilet. One is that it can damage the "toilet areas" of your stomach. Using a smartphone results in sitting on the toilet for longer periods of time. This puts extra pressure on our rectum* and anus*.

Another (4)potential risk comes from bacteria and germs. Dr Sethi warned that using your phone in the toilet can make your device a good place for bacteria to increase in number, so try avoiding scrolling while using the toilet. And you should also remember that the average smartphone is dirtier than a public toilet seat. However, Dr Sethi notes, if your phone addiction* is so strong you can't manage to leave it outside the bathroom, you should "at least have a disinfectant* around to clean the phone after (5)you're done with the business."

注　gastroenterologist　胃腸科の医師

number two　大便　　　　　　rectum　直腸

anus　肛門　　　　　　　　　addiction　依存(症)

disinfectant　消毒薬

本文中の下線部 (1) 〜 (5) を言い換えるのに最も適切な表現を①〜④から１つ選び、その番号を記入しなさい。

(1)　check out

①　watch　　　　　　　　②　rent

③　show　　　　　　　　　④　make

(2)　serious consequences

①　direct results　　　　　②　interesting results

③　bad results　　　　　　④　final results

(3)　harmless

①　boring　　　　　　　　②　useless

③　attractive　　　　　　　④　safe

(4)　potential

①　personal　　　　　　　②　additional

③　major　　　　　　　　　④　possible

(5)　you're done with the business

①　you have quitted your job

②　you have used the toilet

③　you have talked on the phone

④　you have stopped using a smartphone

次の各文が本文の内容と一致する場合には **T** を、一致しない、または本文には述べられていない場合には **F** を記入しなさい。

(6)   Dr Sethi thinks using a phone in the toilet is worse than using it in the bath.

(7)   You should avoid checking emails on the phone because it can cause damage to the toilet.

(8)   Sitting on the toilet for a long period of time is not good for your health.

(9)   If you do not use a smartphone in the toilet, the phone will not become dirtier than a public toilet seat.

(10)   Dr Sethi thinks there are some people who cannot give up using a smartphone in the toilet.

$\boxed{\text{B}}$ 次の各文の空所に入る最も適切な語句をそれぞれ下の①〜④の中から１つ選び、その番号を記入しなさい。

(11)   When John got back home, he (   ) all the windows to let in some air.

 ① opens   ② opened

 ③ has opened   ④ had opened

(12)   Last year, my parents (   ) to New Zealand for a vacation.

 ① gone   ② were going

 ③ goes   ④ went

(13) I prefer driving (   ) traveling by train.

① at   ② for

③ from   ④ to

(14) We finally succeeded in (   ) the problem.

① solve   ② being solved

③ solving   ④ to solve

(15) "Don't forget to lock the door." — "I've (   ) locked it."

① already   ② ever

③ yet   ④ still

(16) I (   ) at coming across my old friend by chance.

① was excitement   ② was excited

③ was exciting   ④ excited

(17) It (   ) me five hours to finish the work.

① took   ② played

③ had   ④ spent

(18) He took (   ) my name and address in his notebook.

① out   ② off

③ on   ④ down

(19) She lives in Fukushima, (   ) is about 50 kilometers from here.

① there   ② where

③ which   ④ how

(20) You (   ) do the dishes. I'll do them later.

① wouldn't   ② don't have to

③ must   ④ may

次の日本語の文の表す意味にもっとも近い英文になるように、〔　　〕内の語を並べ替えなさい。ただし、文頭にくる語も小文字で書いてある。

(21)　大都市ではマイカーを持つ必要はないと思います。

I don't 〔 in / to / big / need / cities / family cars / think / you / have 〕.

(22)　彼が登校して来たら、すぐに職員室へ来るように言ってください。

When 〔 teachers' room / the / to / comes / come / to / he / him / to / tell / school 〕 immediately.

(23)　ドアに親指をはさんでしまった。

〔 in / door / caught / the / I / my / got / thumb 〕.

D　次の英文を読み、以下の問いに答えなさい。*の付いた語句には注がある。

In January, 2023, an Arizona* desert community found itself in a nightmare situation: The water was cut off. Rio Verde Foothills is made up of about 2,000 homes. For years, many of them relied on water carried in by truck from the nearby city of Scottsdale. It gets water from the Colorado River. But the river is drying up. Scottsdale says it has to save water for its own residents.

The southwestern United States has experienced drought* for more than 20 years. Water supplies are shrinking. Arizona can pump water from underground. But (A)that can't provide half of what's needed. Meanwhile, thousands of new residents arrive every year, and more communities like

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Rio Verde Foothills are built. There isn't enough groundwater for all those homes.

Some experts say the solution is to import water from outside the state. One idea is to build a desalination* plant on Mexico's Sea of Cortez*. It would remove salt from the water and pump that water to Arizona through a pipeline. Supporters say this could provide water for decades. Critics see a different future: environmental destruction. Some experts (a) that big projects like this one could be used to justify more unsustainable development in the desert in the future.

Environmentalists* say the desalination project is bad for the planet. Some of the salt taken out of the Sea of Cortez might end up back in the ocean, harming wild animals and plants living in the natural environment. The pipeline would damage land where people and animals live. (b), the desalination process uses lots of energy. This would create greenhouse gases, which make the drought even worse.

Desalinating water would likely come at great cost to people in Arizona. Cities pay about $50 to $150 for 326,000 gallons*. That's enough for a family of three in Phoenix* for a year. (B)<u>Desalinated water could cost 20 times as much.</u>

Environmentalists say the government should try to cut water demand rather than increase supply. That would mean promoting water-saving measures and limiting how many homes are built. They hope people will (C)<u>understand</u> the risks of endless expansion into the desert.

People in Tucson, Arizona, have found a solution to the city's water shortage: rainwater. Thousands of households are collecting it. They're using

it for cooking, for drinking, and in their gardens. Government leaders have taken notice. The city now requires publicly built roads to capture rainwater. Tucson also helps residents pay for equipment that captures rainwater for home use.

[Drying Up, Time for Kids, April 5, 2023 (https://www.timeforkids.com/g34/drying-up-g3/?rl=en-770)より]

注　Arizona　アリゾナ《米国南西部の州、メキシコに隣接する》
　　drought　干ばつ
　　desalination　海水の淡水化
　　Mexico's Sea of Cortez　メキシコ領のカリフォルニア湾
　　environmentalists　環境保護論者
　　gallons　ガロン《液量の単位、1ガロンは約3.8リットル》
　　Phoenix　フェニックス《アリゾナ州の州都》

(24) 本文中の下線部 (A) が指すものとして最も適切なものを①〜④から１つ選び、その番号を記入しなさい。

　① the water taken from the Colorado River
　② the water pumped up from underground
　③ the water supply that has shrunk
　④ the water saved for the residents in Scottsdale

(25) 本文中の空所 (　 a 　) に入る最も適切な語を①〜④から１つ選び、その番号を記入しなさい。

　① hope　　　　　　　② doubt
　③ pretend　　　　　　④ warn

(26) 本文中の空所 (b) に入る最も適切な語を①～④から１つ選び、その番号を記入しなさい。

① Furthermore   ② Nevertheless

③ Otherwise   ④ Therefore

(27) 本文中の下線部 (B) を次のように書き換えた時、空所 (   )に入る適切な１語を記入しなさい。

Desalinated water could be 20 times more (   ) than normal water.

(28) 本文中の下線部 (C) を次のように書き換えた時、空所 (   )に入る適切な１語を①～④から１つ選び、その番号を記入しなさい。

realize how (   ) it is to know

① easy   ② dangerous

③ stupid   ④ important

次の各文が本文の内容と一致する場合には **T** を、一致しない、または本文には述べられていない場合には **F** を記入しなさい。

(29) Scottsdale decided not to provide water for the Rio Verde Foothills community because there was not enough water in the Colorado River.

(30) For more than 20 years, more and more people have been moving out of Arizona as groundwater in that area is running out.

(31) People who support the desalination project hope that the project will encourage environment-friendly development in the desert.

(32) Some people think the desalination project will make the water shortage even worse because of the greenhouse gases it will produce.

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(33) The government of Tucson made a law that requires the residents to collect rainwater to deal with the water shortage.

令和６年度薬学部一般選抜入学試験＜一期＞
解 答 用 紙

英語	フリガナ		受 験 番 号				
	氏 名						

<注意事項>
1. 受験番号、氏名は必ず記入してください。
2. 所定の記入欄以外には、記入しないで下さい。

A	(1)	1	(2)	3	(3)	4	(4)	4	(5)	2
	(6)	F	(7)	F	(8)	T	(9)	F	(10)	T

※

B	(11)	2	(12)	4	(13)	4	(14)	3	(15)	1
	(16)	2	(17)	1	(18)	4	(19)	3	(20)	2

※

C		
	(21)	I don't __think you need to have family cars in big cities__ _____ .
	(22)	When __he comes to school tell him to come to__ __the teachers' room__ immediately.
	(23)	__I got my thumb caught in the door__ _____ .

※

D	(24)	2	(25)	4	(26)	1
	(27)	expensive [または costly]				
	(28)	4				
	(29)	T	(30)	F	(31)	F	(32)	T	(33)	F

※

※

数　学

注　意　事　項

1. 解答が分数の場合は既約分数にして答えなさい。

2. 定規、コンパス、計算機などは使用してはいけません。

3. 問題冊子の余白は計算などに利用して構いません。

I

以下の設問（１）から（１２）に答えよ。ただし、i は虚数単位とする。

（１）　$16 \times 3 - 78 \div 6 + 5$ を計算せよ。

（２）　$\dfrac{9 - \frac{3}{5}}{3 - 2.8}$ を計算せよ。

（３）　$(3x + 5)(x - 4)$ を展開せよ。

（４）　$x^2 - 2x - 35$ を因数分解せよ。

（５）　$\dfrac{7}{2 - \sqrt{3}}$ の分母を有理化せよ。

（６）　$|2x + 3| = 5$ の方程式を解け。

（７）　$a^9 \times a^{-3} \div a^4$ を計算せよ。

（８）　$(5 - 8i)(3 - 7i)$ を計算せよ。

（９）　$\sqrt{36} \times \sqrt[3]{27} \div \sqrt[4]{16}$ を計算せよ。

（１０）　$\log_3 72 + \log_3 45 - \log_3 40$ を計算せよ。

（１１）　$5^{\log_{10} x} = 0.04$ の方程式を解け。

（１２）　$\log_2(x - 2) + \log_2(x + 4) = 4$ の方程式を解け。

Ⅱ

1 〜 12 の数字が 1 つずつ書かれたカードが 12 枚ある。
このとき、以下の設問（1）から（4）に答えよ。

（1）2枚のカードを同時に取り出すとき、カードの番号
を足すと 11 になる取り出し方の総数を求めよ。

（2）3枚のカードを同時に取り出すとき、取り出し方の
総数を求めよ。

（3）1枚のカードを取り出したとき、カードの番号が 2
の倍数または 3 の倍数である確率を求めよ。

（4）2枚のカードを同時に取り出すとき、カードの番号
が両方とも偶数になる確率を求めよ。

Ⅲ

△ABCにおいて、AB $= \sqrt{48}$、CA $= 8$、$\cos \angle \mathrm{CAB} = \frac{\sqrt{3}}{2}$ とする。
このとき、以下の設問（1）から（4）に答えよ。

（1）$\sin \angle \mathrm{CAB}$ を求めよ。

（2）辺 BC の長さを求めよ。

（3）$\cos \angle \mathrm{ACB}$ を求めよ。

（4）△ABCの面積を求めよ。

$\boxed{\text{IV}}$

以下の設問（1）から（3）に答えよ。

（1）$f(x) = 7x^4 - 2x^3 + 5x^2 - x + 9$ の導関数 $f'(x)$ を求めよ。

（2）曲線 $y = x^2 + 4x - 8$ の最小値を求めよ。

（3）曲線 $y = x^2 + 6x - 4$ の接線のうち、傾きが 10 になる
　　　接線の方程式を求めよ。

$$\boxed{\text{V}}$$

以下の設問（１）から（３）に答えよ。

（１）次式の定積分を求めよ。
$$\int_1^2 (6x^2 - 12x + 1)dx$$

（２）次の２つの曲線で囲まれた部分の面積を求めよ。
$y = -4x^2 + 15x$ と $y = 2x^2 + 3x$

（３）関数 $f(x) = ax^2 + bx + c$ が以下の条件①〜③を満たすとき、定数 a、b、c の値を求めよ。

① $f'(-6) = 5$

② $f'(4) = 10$

③ $\displaystyle\int_0^1 x^2 f(x)\, dx = \frac{1}{20}$

令和6年度 薬学部一般選抜入学試験＜一期＞
解 答 用 紙

数学	フリガナ		受 験 番 号				
	氏　名						

<注意事項>

1. 受験番号、氏名は必ず記入して下さい。
2. 所定の記入欄以外には、記入しないで下さい。

Ⅰ

(1) 40	(2) 42	(3) $3x^2 - 7x - 20$
(4) $(x-7)(x+5)$	(5) $14 + 7\sqrt{3}$	(6) $x = 1,\ -4$
(7) a^2	(8) $-41 - 59i$	(9) 9
(10) 4	(11) $x = 0.01$	(12) $x = 4$

Ⅱ

(1) 5	(2) 220	(3) $\dfrac{2}{3}$	(4) $\dfrac{5}{22}$

Ⅲ

(1) $\dfrac{1}{2}$	(2) 4	(3) $\dfrac{1}{2}$	(4) $8\sqrt{3}$

Ⅳ

(1)	$f'(x) = 28x^3 - 6x^2 + 10x - 1$
(2)	-12
(3)	$y = 10x - 8$

Ⅴ

(1)	-3
(2)	8
(3)	$a = \dfrac{1}{4},\ b = 8,\ c = -6$