

2024-2025 S3
2nd TERM EXAM
BIO



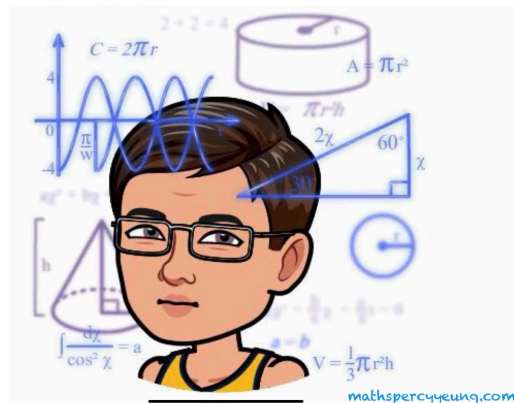
2024-2025
S3 Second Term Examination

BIOLOGY

18th June, 2025
8:15 am – 9:15 am (1 hour)

This paper must be answered in English

Total marks: 90



Name		Class (Class No.)	S3 _____ ()
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GENERAL INSTRUCTIONS

- (1) There are **SEVEN** sections, **A to G**, in this Paper.
- (2) The total marks of this exam are 80. The marks distribution of Section A to G is shown as below:

Section A: Multiple Choice	(15 marks)	Section E: Fill in the Blanks	(8 marks)
Section B: Matching	(11 marks)	Section F: Short Questions	(19 marks)
Section C: True or False	(10 marks)	Section G: Structured Questions	(20 marks)
Section D: Labelling	(7 marks)		
- (3) Answer to Section A to C should be marked on the Multiple-choice Answer Sheet while answers to Section D to G should be written in the spaces provided in the answer sheet. **The Multiple-choice Answer Sheet for Section A to C and the Answer Sheet for Section D to G will be collected separately at the end of the examination.**

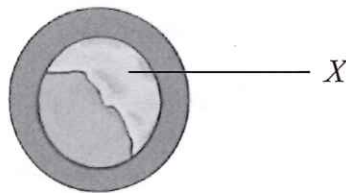
INSTRUCTIONS FOR SECTION A TO C

- (1) Read carefully the instructions on the Answer Sheet. After the announcement of the start of the examination, you should first insert the information required in the spaces provided. No extra time will be given for filling information after the 'Time is up' announcement.
- (2) **ANSWER ALL QUESTIONS.** You are advised to use an HB pencil to mark all the answers on the Multiple-choice Answer sheet, so that wrong marks can be completely erased with a clean rubber. You must mark the answers clearly, otherwise you will lose marks if the answers cannot be captured.

*****Sections A to C should be completed on the MC answer sheet.*****

Section A: Multiple Choices (15 marks)

- Which of the following statements about cancer is *incorrect*?
 - Cancer can be caused by unhealthy lifestyles.
 - Cancer may be caused by viruses.
 - Cancer is found in adults only.
 - Cancer should be developed for at least several years.
- Which of the followings is involved in mechanical digestion?
 - enzyme
 - digestive gland
 - large intestine
 - teeth
- Which of the following is the direct consequence of over-eating?
 - increasing in body energy input
 - increasing in body fat content
 - increasing in body mass
 - (1) only
 - (1) and (3) only
 - (2) and (3) only
 - (1), (2) and (3)
- The diagram below shows the cross-section of a blood vessel found in the heart of a patient with cardiovascular disease.

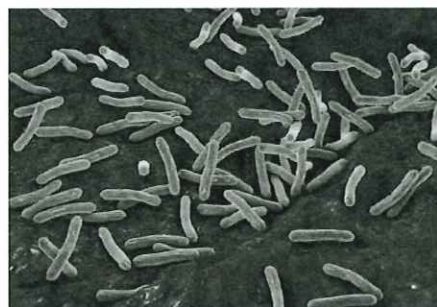


- Which of the following statements about the patient are correct?
- He/she has an unbalanced diet with a content rich in *X*.
 - He/she is suffering from stroke due to the *X* in blood vessel.
 - His/her rate of blood flow decreases due to the build-up of *X*.
- (1) and (2) only
 - (1) and (3) only
 - (2) and (3) only
 - (1), (2) and (3)
- Vaccines usually contain
 - weakened pathogens.
 - dead pathogens
 - DNA of pathogens.
 - (1) only
 - (3) only
 - (1) and (2) only
 - (2) and (3) only
 - Which of following statement about practicing exercise regularly is *incorrect*?
 - It helps us to prevent from body injuries or damages.
 - It helps us to prevent from non-infectious diseases.
 - It helps us to prevent infectious diseases.
 - It helps us to prevent obese.

7. Which of the following digestive juices does not contain digestive enzymes?
 A. bile B. gastric juice C. pancreatic juice D. saliva
8. Malignant tumours are able to
 (1) control cell division.
 (2) spread to other parts of body.
 (3) become benign tumours.
 A. (1) only B. (2) only C. (1) and (2) only D. (1), (2) and (3)
9. A student uses a light microscope to examine a specimen of cells. If he wants to observe more cells within the field of view, he should
 A. stain the cells with a suitable dye.
 B. turn the coarse knob to reduce the distance between the specimen and the objective.
 C. change to an objective with a lower magnification.
 D. adjust the iris diaphragm.
10. Which of the following structures are the organelles(s) having one layer of membrane?
 (1) cell membrane (2) vacuole (3) mitochondrion
 A. (1) only B. (2) only
 C. (1) and (2) only D. (1), (2) and (3)

Directions: Questions 11 to 13 refer to the following diagram.

The diagram below shows a kind of pathogen commonly found in raw food.



(X5000)

11. Which of the following diseases may be caused by this kind of pathogen?
 A. Influenza B. Athlete's foot C. Diabetes D. Cholera
12. Which of the following is/are the method(s) to prevent the transmission of this disease?
 (1) Wash hands after using toilet and before eating.
 (2) Wear a surgical mask when infected.
 (3) Kill the animals that carry pathogens.
 A. (1) only B. (2) only C. (1) and (3) only D. (2) and (3) only

13. Which of the following statement about the ‘X5000’ nearby the photograph is correct?
- There are 5000 pathogens shown in the photograph.
 - There are 5000 kinds of pathogens shown in the photograph.
 - The magnification of pathogens in the photograph is 5000 times.
 - The actual size of pathogens is 5000 times of the image in the photograph.
14. Which of the following comparisons between high power magnification and low power magnification is *incorrect*?

		<i>High power magnification</i>	<i>Low power magnification</i>
A.	Degree of magnification	larger	smaller
B.	Details of the image observed	more	fewer
C.	Area of specimen observed	smaller	larger
D.	Brightness of image	brighter	dimmer

15. Which of the following is/are the location(s) where ribosomes are found in a eukaryotic cell?
- in the cytoplasm
 - on rough endoplasmic reticulum
 - in mitochondria
- (1) only
 - (1) and (2) only
 - (1) and (3) only
 - (2) and (3) only

Section B: Matching (11 marks)

*****Put the answers in the items 16-26 on the MC answer sheet.*****

	Structures	Functions
16.	stomach	A. absorption of remaining water
17.	small intestine	B. opening for taking in different types of food
18.	large intestine	C. performing the chemical digestion of proteins
19.	mouth	D. digesting most types of food substances chemically
	Diets	Health and diseases
20.	High meat diet	A. diabetes
21.	High sugar diet	B. anorexia
22.	Low fibre diet	C. colorectal cancer
23.	Under-eating	D. constipation

	Types of teeth	Functions
24.	incisor	A. crushing food
25.	canine	B. mixing food
26.	molar	C. tearing food
		D. cutting food

Section C: True or False (10 marks)

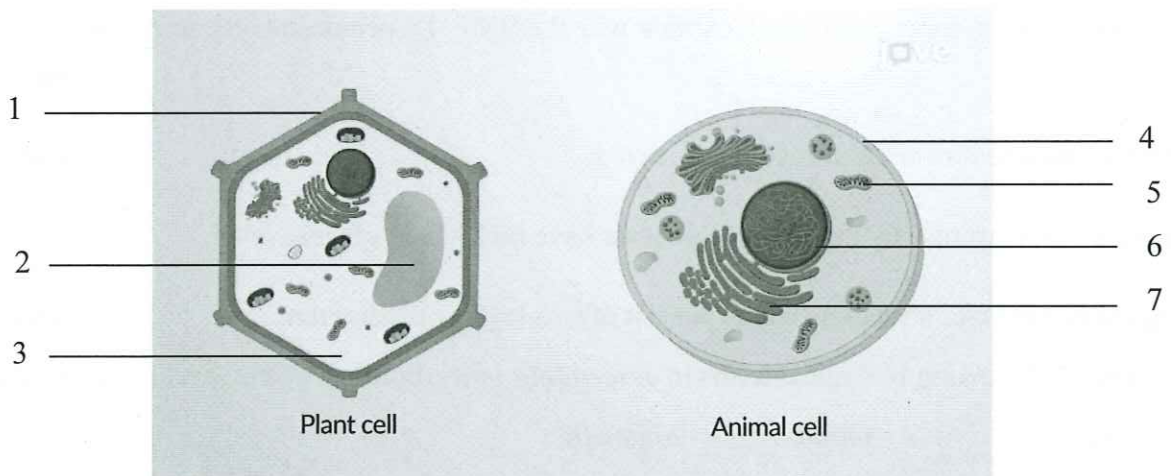
*** Choose "A" for True and "B" for False.

Mark the answers of Questions 27 to 36 on the Multiple-choice Answer Sheet provided. ***

27. Blood vessels may be narrowed because of deposition of proteins.
28. Mosquitoes are the pathogens of dengue fever.
29. A person does not get problem of toothache at the beginning of tooth decay.
30. All food should be cooked thoroughly before being eaten.
31. All unicellular organisms consist of one cell only.
32. All pathogens are unicellular organisms.
33. The tumor(s) found in small intestine may cause colorectal cancer.
34. AIDs is not an example of cardiovascular diseases.
35. Viruses can be observed under microscope.
36. Chloroplast is an organelle found in most plant cells.

Section D: Labelling (7 marks)

The following diagram shows two types of cells. Write the names of structures 1 to 7 on the answer sheet.



Section E: Fill in the Blanks (8 marks)

Fill in the blanks with appropriate words.

In the scientific investigation, ___a___ experiments usually involve two set-ups, i.e. control set-up and ___b___ set-up, for a fair test. There is only one ___c___ between these two set-ups. The conclusion can be drawn by comparing the different results of the set-ups.

There are three types of variables involved in the investigation.

<i>types of variables</i>	<i>description</i>
___d___ variable	the only one factor which is ___e___ between two set-ups under investigation
dependent variable	the factor which is usually obtained at the end of experiment by ___f___ and recording the results of two set-ups
___g___ variable(s)	the factor(s) should be kept ___h___ during the investigation

Section F: Short Questions (19 marks)

1. Define the prokaryotic cell. Give an example of the prokaryotic organisms. (2 marks)
2. Briefly describe the *cell theory*. (3 marks)
3. List *two* cellular structures commonly found in plant cells but not in animal cells. (2 marks)
4. Why should a person, who is handling wounds of another person, wear a pair of gloves? (1 mark)
5. In terms of energy input and output, explain why the BMI of a person can become lower. (3 marks)
6. Simply describe how a tooth becomes decayed. (3 marks)
7. Suggest two reasons why the diabetes patients have high blood glucose level. (2 marks)
8. Suggest *two* cellular structures which consist of two layers of membrane. (2 marks)
9. Arrange the following biological terms in *descending* order, in terms of the level of organisation:
organism *organ* *organelle* (1 mark)

Section G: Structured Questions (20 marks)

1. a. (i) Body Mass Index (BMI) can be calculated by the following formula:

$$\text{BMI} = \frac{\text{Body mass}}{\text{Height}^2}$$

Teresa weighs 40 kg and is 160 cm tall. Calculate her BMI according to the above formula. **Show your calculation steps.** (2 marks)

- (ii) BMI classification is shown below:

BMI ranges	Classification
< 18.5	Underweight
18.5 – 22.9	Normal
23.0 – 24.9	Overweight
= or >25.0	Obese

According to the result in “a-(i)”, determine the body weight status of Teresa. (1 mark)

- (iii) Suggest two appropriate ways for Teresa to adjust her BMI becoming around 22. Explain your answer. (2 marks)

- b. The photographs below show the energy values of different kinds of salad meal.

Green salad
100 g, 150 kJ

Fruit salad
200 g, 400 kJ

Ham and cheese salad
150 g, 450 kJ



- (i) For **100 g** portion of salad, arrange the three types of salads in **descending** order of their energy values. (2 marks)
- (ii) In this study, *kind of salad meal* and the *energy value* are compared. Identify the independent variable and dependent variable respectively. (2 marks)
- (iii) Suggest how to change the weight of the salads to design a fair comparison. (1 mark)

2. The table below shows the relative number of different organelles in four types of cells.

Cell type	Relative number		
	Endoplasmic reticulum	Mitochondrion	Chloroplast
R	+	+++	+
S	+	+	-
T	++++	++++	-
U	+	+++	-

Key: Number of '+' indicates the relative number of the organelle;

'-' indicates the absence of the organelle

- If both cell type R and U are plant cells, guess which one is root cell. Explain your answer. (2 marks)
- If both cell type S and T are human cells, guess which one is pancreatic cell. Explain your answer. (3 marks)
- With reference to the table, if the cells are observed under light microscope, which two organelles cannot be observed? Explain your answer. (3 marks)
- Peter said that all the cell types shown in the table are collected from eukaryotic organisms. Do you agree with Peter? Explain your answer. (2 marks)

END OF PAPER

Section A. Multiple choice (15 marks)

Please mark the answer of Questions 1-15 in this section *on the MC answer sheet*.

Section B. Matching (11 marks)

Please mark the answer of Questions 16-26 in this section *on the MC answer sheet*.

Section C. True or False (10 marks)

Please mark the answer of Questions 27-36 in this section *on the MC answer sheet*.

Section D. Labelling (7 marks)

1	2	3	4
5	6	7	

Section E. Fill in the Blanks (8 marks)

a	b	c	d
e	f	g	h

Section F. Short Questions (19 marks)

1. _____

2. _____

3. _____
4. _____

5. _____

6. _____

7. _____

8. _____
9. _____

Section G. Structured Questions (20 marks)

1. a. (i) _____
(ii) _____
(iii) _____

- b. (i) _____
(ii) independent variable: _____ dependent variable: _____
(iii) _____
2. a. _____

- b. _____

- c. _____

- d. _____

END OF PAPER