



BIOLOGY

Specimen Paper 3

0572/03

October/November 20XX

1 hour 15 minutes

Additional Materials: None

CANDIDATE
NAME

CENTRE
NAME

INSTRUCTIONS

Shade using an HB pencil, do not use ink.

Erase unwanted marks completely.

Do not use correction fluid.

Do not make any stray marks on this form.

Mark answers by shading the oval heavily, like this: - ●

CENTRE NUMBER			
B	W		
●	●	0	0
		1	1
		2	2
		3	3
		4	4
		5	5
		6	6
		7	7
		8	8
		9	9

CANDIDATE NUMBER			
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

INSTRUCTIONS

- Answer **all** questions.
- Use black or dark blue pen.
- Write your candidate name, centre name, centre number and candidate number in the spaces provided at the top of this page.
- Do not use an erasable pen or correction fluid.
- **DO NOT WRITE ON BARCODES.**
- You may use an HB pencil for any diagrams, graphs or rough working.
- Electronic calculators may be used.

SECTION A

- Write your answer to each question in the spaces provided in the question paper.

SECTION B

- Answer both questions in the spaces provided in the question paper.

INFORMATION

- The total mark for this paper is **70**.
- The number of marks for each question or part question is shown in brackets [].
- You may lose marks if you do not show your working.



Section A

Answer **all** questions in this section in the spaces provided.

- 1 Fig. 1.1 shows plant cells obtained from a leaf of a well watered plant.

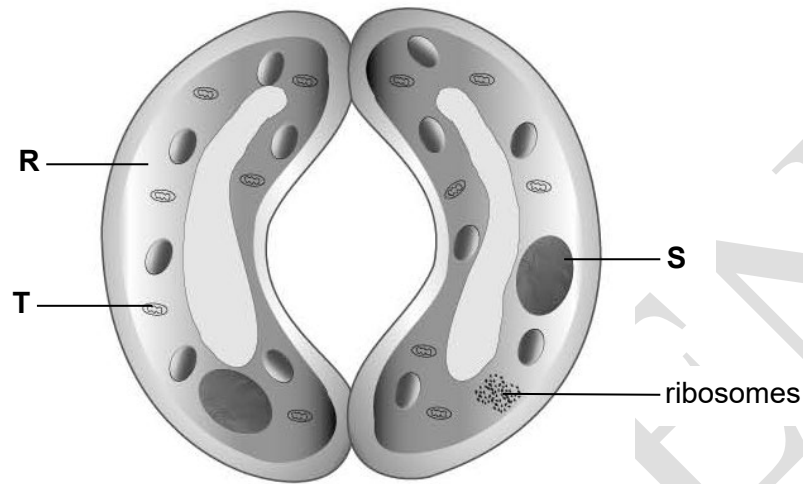


Fig. 1.1

- (a) Identify structures **R** and **S** in Fig. 1.1.

R

S [2]

- (b) Suggest the role played by structure **T** in the function of ribosomes.

.....

 [2]

- (c) Give any **three** structural differences between cells shown in Fig 1.1 and a root hair cell.

cells in Fig 1.1	root hair cell

[3]

(d) Explain the role of stomata in transpiration on a sunny day.

.....

.....

.....

.....

..... [4]

[Total: 11]

SPECIMEN

2 A man of blood group **B** lost a lot of blood in a car accident.

(a) Which blood groups should be avoided during blood transfusion?

.....

.....

..... [2]

(b) Explain your answer to **2(a)**.

.....

.....

.....

.....

..... [4]

[Total: 6]

3 Insulin is a protein which can be manufactured as a drug using biotechnology.

(a) Define biotechnology.

.....
.....
..... [2]

(b) (i) Name the type of organism that is used in biotechnology to produce insulin.

.....
..... [1]

(ii) Glucose is one of the nutrients provided to the organism stated in **(b)(i)**.

Explain why glucose is provided to the organism.

.....
.....
..... [2]

(c) Diabetes is a condition where a person's pancreas fails to produce enough insulin. A diabetic patient was given insulin orally in the form of a pill, but his blood glucose concentration remained high.

(i) Explain why the blood glucose concentration remained high.

.....
.....
..... [2]

(ii) Suggest the best way in which the insulin could have been administered.

.....
..... [1]

[Total: 8]

- 4 (a) Describe the non-cyclical nature of energy flow in an ecosystem.

.....

.....

..... [2]

- (b) Use the food chain below to draw a pyramid of numbers

mophane tree → mophane worms → hornbill (*korwe*) birds

[2]

- (c) Hornbill (*korwe*) birds had the highest concentration of a chemical that was sprayed to kill mophane worms.

Suggest a reason why the highest concentration of the chemical is in hornbill (*korwe*) birds.

.....

.....

..... [2]

[Total: 6]

5 Fig. 5.1 shows a flower.

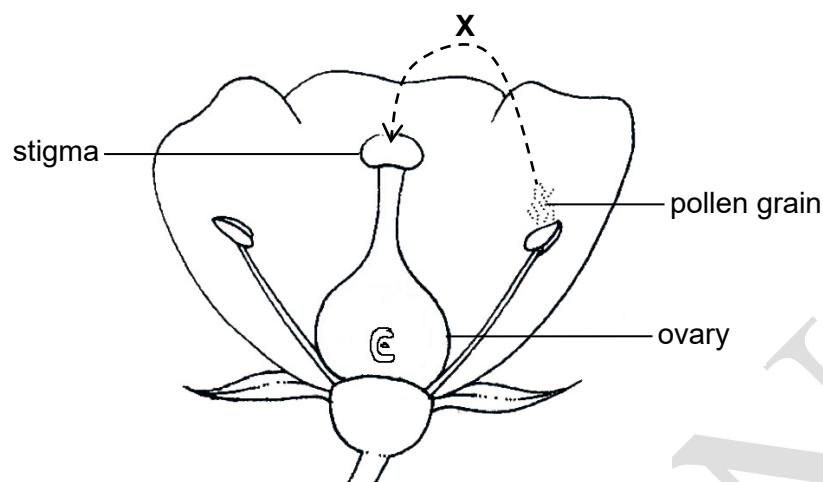


Fig. 5.1

(a) Identify the process represented by **X** in Fig. 5.1.

..... [1]

(b) (i) State the agent of pollination for the flower in Fig. 5.1.

..... [1]

(ii) Explain how the flower is adapted for pollination by the agent stated (b) (i).

..... [2]

(c) Describe the events that take place after process **X** in Fig. 5.1 until the zygote is formed.

..... [5]

[Total: 9]

[6]

(b) Suggest **three** ways in which the activity at town **P** shown in Fig. 6.1 can be reduced.

[3]

[Total: 15]

A karyotype of a male human cell. The chromosomes are arranged in four rows. The first three rows each contain three pairs of autosomes, numbered 1 through 15. The fourth row contains two pairs of autosomes, numbered 19 and 20, followed by the sex chromosomes, labeled X and Y. The sex chromosomes consist of one large X chromosome and one small Y chromosome.

(a) (i) Identify the sex of the individual in Fig. 7.1.

..... [1]

(ii) Justify your answer for 7 (a) (i).

..... [1]

(b) Describe the type of mutation shown in Fig. 7.1.

[3]

- [4]

- [6]

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SPECIMEN