

Answer three questions in all. One question from Section B.

Write your answers in **ink** in this booklet.

Large labelled diagrams should be used where they make an answer clearer. The names given for chosen species **must** be English or scientific and **not** vernacular.

Credit will be given for clarity of expression and orderly presentation of answers.

### SECTION A

Answer **two** questions **only** from this section.

1. (a) Explain **briefly** the reason why a cell is considered a functional unit of life.

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[3 marks]

- (b) Outline the process of endocytosis in a cell.

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[3 marks]

- (c) State **two** functions of endocytosis in organisms.

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[2 marks]

- (d) Explain **briefly** the role of pheromones in insects.

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[3 marks]

(e) State **two** applications of pheromones in biological pest control.

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[2 marks]

(f) (i) Name the **two** components of the stoma of a plant.

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[2 marks]

(ii) Explain **briefly** the mechanism of opening of the stomata in plants.

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[5 marks]

2. (a) (i) Explain the term *nutrition*.

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[2 marks]

(ii) Name the mode of nutrition in the following organisms:

Fern;

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*Plasmodium*;

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Tapeworm;

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Toad;

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*Rhizopus*;

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*Chlamydomonas*;

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*Hibiscus*.

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[7 marks]

(ii) different from that of humans.

[8 marks]

(c) Explain **briefly** how food swallowed by a patient lying flat on a hospital bed reaches the stomach of the patient.

[3 marks]

3. (a) (i) What is *humidity*?

[2 marks]

(ii) List **three** abiotic factors that are affected by humidity.

[3 marks]

(b) State **two** effects **each** of the following factors on *Spirogyra* in its habitat:

(i) temperature;

(ii) rainfall;

(iii) light intensity;

(iv) pH.

[8 marks]

(c) Explain **briefly** the process of natural selection in a population.

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[4 marks]

(d) Name the causative organism of **each** of the following diseases;

(i) cholera;

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(ii) measles;

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(iii) malaria.

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[3 marks]

4. (a) List **two** causes of diseases in humans.

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[2 marks]

(b) (i) Complete the table below by naming **two** blood components that protect the body against diseases and explain **one** function of **each**.

Blood components	One function
I.	
II.	

[4 marks]

(ii) Distinguish between *antibodies* and *antigens*.

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[4 marks]

(c) A man with homozygous Rhesus positive blood (**RR**) married a woman with homozygous Rhesus negative blood (**rr**) and had **four** offspring.

(i) With the aid of a genetic diagram, determine the Rhesus factors of their offspring.

[8 marks]

(ii) What is the phenotype of the offspring?

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[1 mark]

(iii) What is the genotypic ratio of the offspring?

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[1 mark]

#### SECTION B

*Answer all the questions in this section.*

5. (a) List **four** processes by which substances are transported into the cells of mammals.

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(b) List **four** mineral salts that could be found in a soil sample.

[4 marks]

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(c) Name **three** types of muscles found in mammals.

[4 marks]

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[3 marks]

Candidate's Name: .....

(d) Name **two** types of root modifications in plants found in swampy areas of Ghana.

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[2 marks]

(e) State **one** adaptation **each** of the root modifications named in 5(d).

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[4 marks]

(f) Explain **briefly** the involvement of the Forestry Commission in Integrated Water Resources Management.

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[3 marks]

(g) (i) State **four** ways in which additives are important in food industries.

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[4 marks]

(ii) State **two** harmful effects of food additives to humans.

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[2 marks]

(h) Outline **four** steps in the procedure of identifying iron in a soil sample.

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[4 marks]