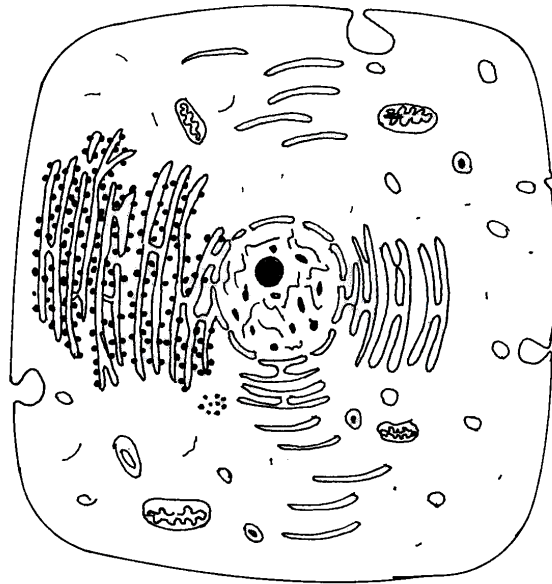


3.4 BIOLOGY (231)

3.4.1 Biology Paper 1 (231/1)

- 1 (a) What is meant by the term wilting? (1 mark)
- (b) Explain how an increase in temperature affects the rate of active transport. (2 marks)

- 2 The diagram below represents a cell as seen under an electron microscope.



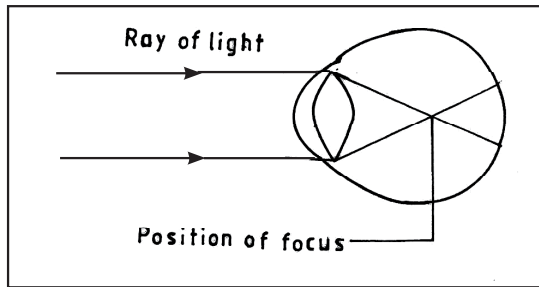
- (a) Based on the diagram, state whether it represents an animal cell or a plant cell. (1 mark)
- (b) Give **two** reasons for your answer in 2(a) above. (2 marks)
- (c) Why is the palisade layer a tissue? (1 mark)
- 3 (a) State **two** external features found in the class Mammalia only. (2 marks)
- (b) Name the taxonomic unit that comes immediately after a phylum in classification. (1 mark)
- 4 (a) State **two** roles of mucus in the stomach. (2 marks)
- (b) Explain how age determines a person's energy requirements. (2 marks)
- 5 Describe how turgor pressure builds up. (3 marks)
- 6 Using a microscope, a student counted 55 cells across a field of view whose diameter was $6000\mu\text{m}$. Calculate the average length of the cells. Show your working. (2 marks)
- 7 Explain how the following forces contribute to the movement of water up the xylem vessels: (2 marks)
- (a) cohesion;
- (b) adhesion.

- 8 Construct a step in a dichotomous key using two leaves one with a serrated and the other with a smooth margin. (2 marks)
- 9 State **one** way in which each of the following is structurally adapted to its function:
- (a) neurone; (2 marks)
 (b) mitochondrion. (2 marks)
- 10 How are lenticels adapted for gaseous exchange? (2 marks)
- 11 State the advantage of possessing blood group AB. (1 mark)
- 12 (a) A student collected an organism and observed the following features: simple eyes, four pairs of legs and two body parts.
- (i) State the class to which the organism belongs. (1 mark)
 (ii) Give an example of an organism in this class. (1 mark)
- (b) Name the kingdom to which plasmodium belongs. (1 mark)
- 13 State **two** characteristics of living organisms that are specific to plants. (2 marks)
- 14 Name the **three** end products of anaerobic respiration in plants. (3 marks)
- 15 State **two** reasons why accumulation of lactic acid leads to an increase in heart beat. (2 marks)
- 16 Name **three** mechanisms that ensure cross pollination takes place in flowering plants. (3 marks)
- 17 Name the flower part that produces gametes. (1 mark)
- 18 How is the human sperm cell structurally specialised? (2 marks)
- 19 State **three** factors in seeds that cause dormancy. (3 marks)
- 20 Explain the theory of evolution by natural selection. (2 marks)
- 21 (a) Explain the role of continental drift in evolution. (3 marks)
 (b) What is meant by the term organic evolution? (1 mark)
- 22 The diagram below illustrates a response by a certain plant.



- (a) Name the type of response. (1 mark)
- (b) Explain how the response illustrated above occurs. (3 marks)

23 The diagram below illustrates a defect in the eye.



Explain how the defect illustrated above can be corrected. (2 marks)

24 Explain **three** protective functions of mammalian blood. (3 marks)

25 State **one** adaptation of xylem vessels to their function. (2 marks)

26 (a) What is meant by the term sex linked genes? (1 mark)

(b) Name **two** sex linked traits in human beings. (2 marks)

27 (a) State **two** differences between complete and incomplete metamorphosis. (2 marks)

(b) State the importance of moulting to an insect. (1 mark)

28 (a) State **two** features of a ball and socket joint. (2 marks)

(b) Name the bone that allows the head to:

- (i) nod;
- (ii) turn side ways

(2 marks)

29 State **two** functions of pelvic girdle in mammals. (2 marks)

30 State **two** ways in which osmosis is significant to plants. (2 marks)