

FUKIEN SECONDARY SCHOOL
S5 Final Examination (2020-2021)
Biology
Paper 2
(1 hour)

Date : 8th June 2021

Time : 11:30a.m. - 12:30p.m.

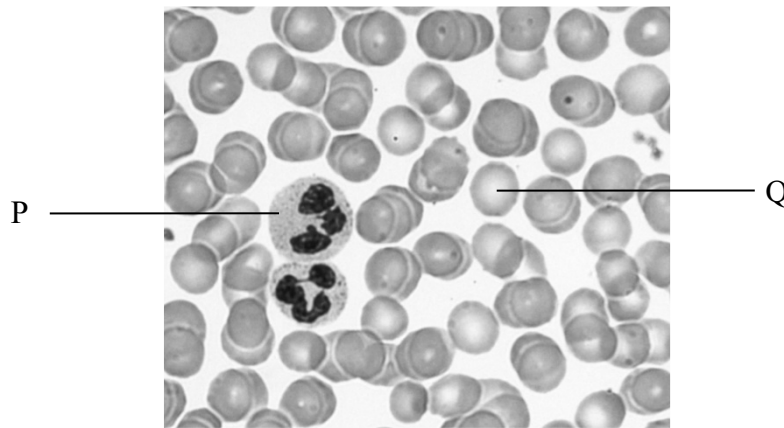
Name: _____

Class: _____ No.: _____

INSTRUCTIONS

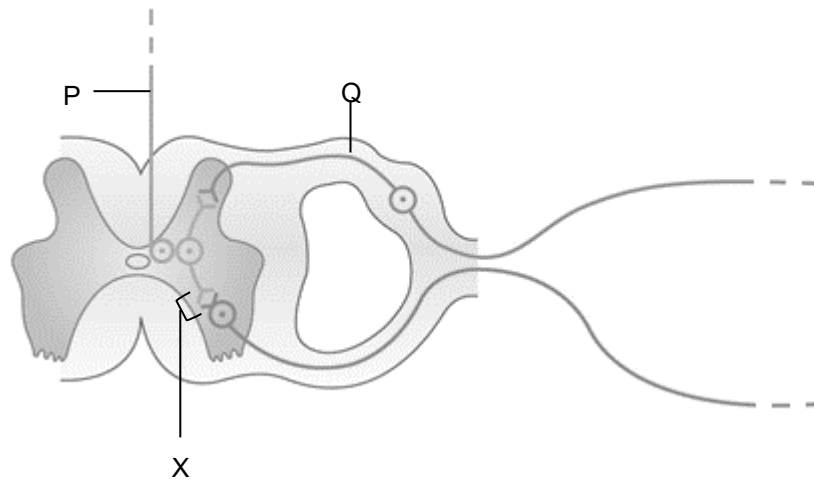
1. Attempt ALL questions.
2. Write your answers in the Answer Book provided. Start each question (not part of a question) on a new page.
3. Present your answers in paragraphs whenever appropriate.
4. Illustrate your answers with diagrams whenever appropriate.
5. The diagrams in this paper are NOT necessarily drawn to scale.

1. The photomicrograph below shows some cells of a human blood smear.



- (a) Name cell types P and Q. (1 mark)
- (b) Explain why the central part of cell type Q looks lighter in colour. How is this characteristic related to its function? (4 marks)
- (c) With reference to the role of cell type P in human body, account for the change in the amount of cell type P at a wound. (2 marks)

2. The diagram below shows part of the spinal cord and the neurones involved in the withdrawal reflex when a person touches a hot object with his hand.



- (a) Sketch only the related neurones from the above diagram into your answer book and draw arrows to show the direction in which nerve impulses travel to bring about the withdrawal reflex. (1 mark)
- (b) Describe how structure X helps ensure that nerve impulses travel in one direction only. (2 marks)
- (c) What would be the effects on the response of the withdrawal reflex and the sensation of pain if the nerve fibre had been cut
- (i) at position P? (2 marks)
- (ii) at position Q? (2 marks)
- (d) After the reflex action, the person decides to straighten his arm. Describe the series of events that lead to the straightening of the arm. (4 marks)

3. Figure 1 shows the testis and its associated structures. Figure 2 shows the photomicrograph of a section of a certain structure shown in Figure 1.

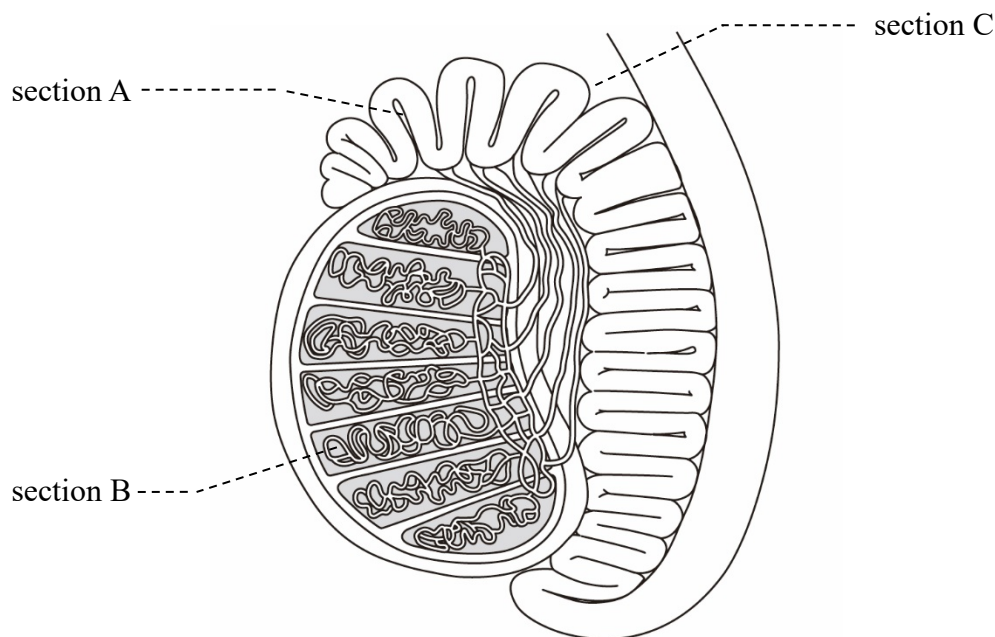


Figure 1

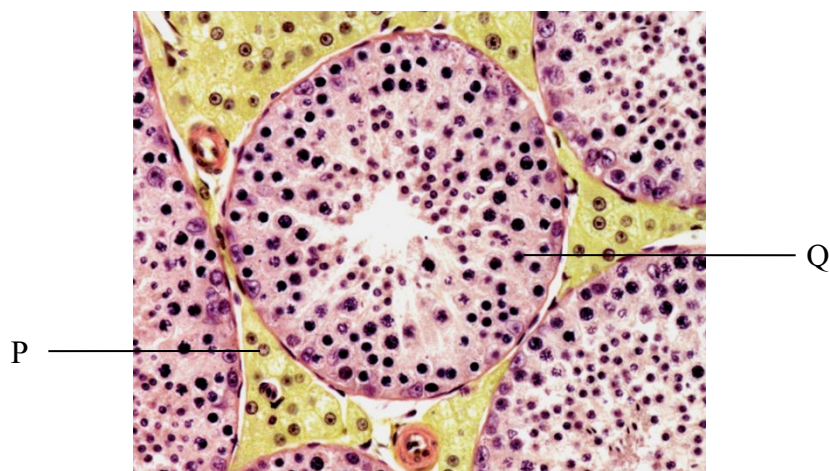
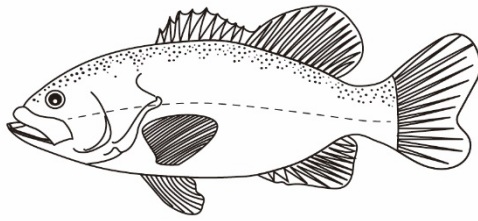


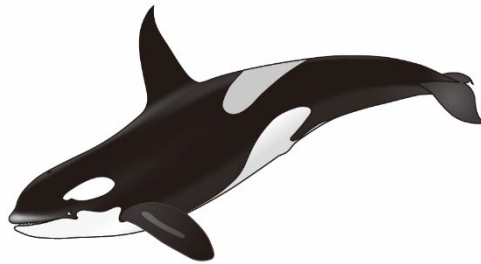
Figure 2

- (a) Which section (A, B or C) is shown in Figure 2? Name the structure. (2 marks)
- (b) (i) Sperms will mix with seminal fluid to form a mixture. Name the mixture. (1 mark)
- (ii) Describe how the mixture is transported from a man to a woman. (3 marks)
- (c) Using the letters provided, in which part in Figure 2 are sperms produced? (1 mark)
- (d) Suggest one cause that may make a male infertile. (1 mark)

4. The pictures below show five different organisms.



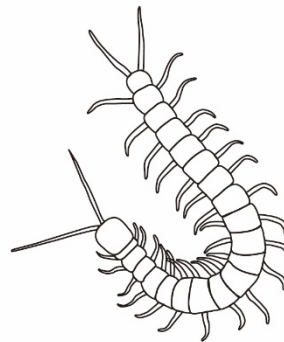
A



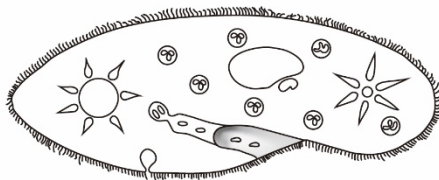
B



C



D



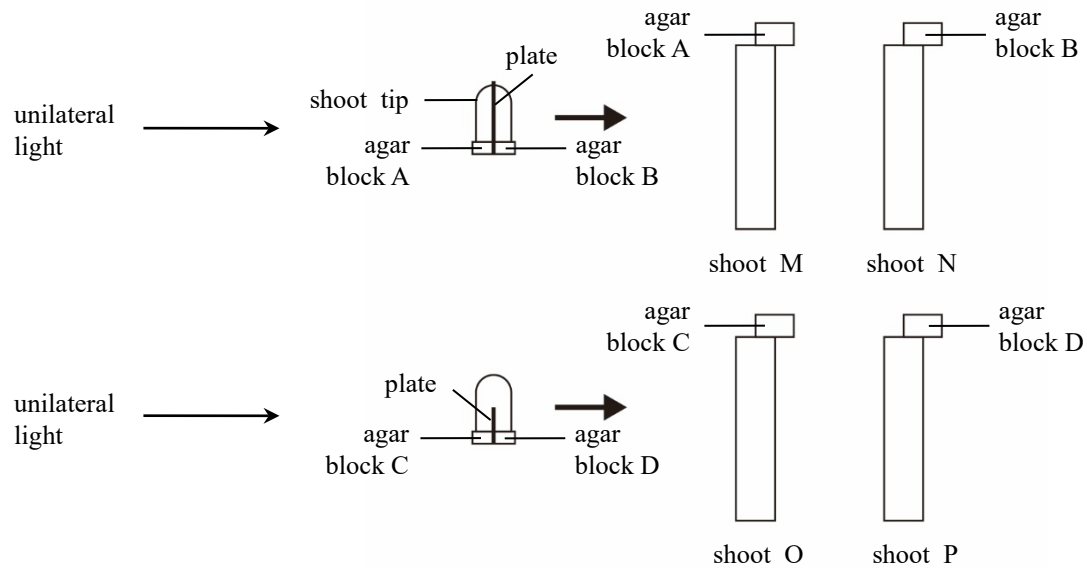
E

- (a) Explain the role of C in the cycling of materials in a forest. (2 marks)
- (b) B consumes more food per unit mass every day when compared with A. Suggest an explanation for this. (4 marks)

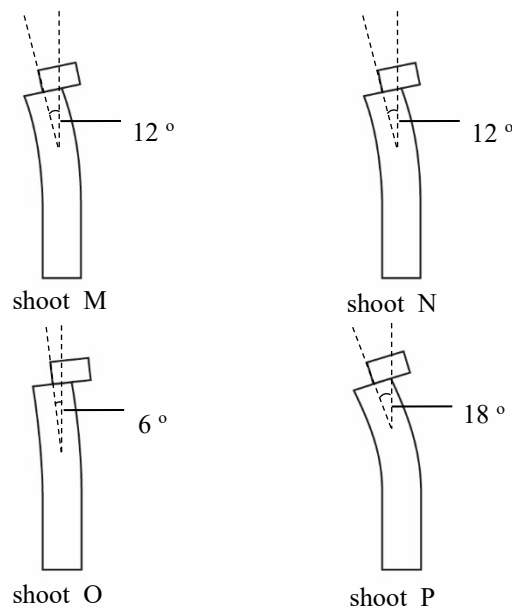
5. Scientist Frits Went (1926) carried out an investigation to find out whether the following notion is correct:

“Uneven distribution of auxin is caused by unilateral light causing auxin to move away from the illuminated side to the shaded side of the shoot tip.”

He carried out the following investigation:



Results:



- Describe the results. (3 marks)
- What conclusion can be drawn from the results? (1 mark)
- What assumption should be made before the investigation? (1 mark)

- (d) (i) What property should the plate possess in order for the investigation to be successfully carried out? (1 mark)
- (ii) Suggest a material that can be used to make a plate that has such property. (1 mark)
- (e) This investigation is done after the notion “uneven distribution of auxin at the shoot tip is caused by destroy of auxin by unilateral light” being ruled out by a previous investigation. What does this tell us about the nature of science? (1 mark)

END OF PAPER