Animal Physiology

Question Paper

Level	Pre U
Subject	Biology
Exam Board	Cambridge International Examinations
Topic	Animal Physiology
Booklet	Question Paper

Time Allowed: **62 minutes**

Score: **/51**

Percentage: **/100**

1 You are reminded that you should allow **35 minutes** for question 2.
You should read through the whole of this question carefully and then plan your use of the time to make sure that you finish all the work that you would like to do.

P1 is a section of a region of the alimentary canal of a small mammal.

(a) (i) Draw a low power plan drawing of **P1**.

Label your plan drawing.

[2]

(ii) Use a ruler to measure your plan drawing and draw a line to show where you took the measurement. Now measure the actual size of **P1**. Calculate the magnification of your drawing.

Show your working.

magnification ..... [2]

(b) Use the high power lens of your microscope to search for **two** different cell types from the lining of the region of the alimentary canal in **P1**.

Make a drawing to show each of the two cell types you have chosen.

Do **not** draw more than three cells of each type.

Annotate your drawing to indicate the differences between the two cell types.

[6]

(c) **P2** is a section of another region of the alimentary canal of the small mammal.

Compare, using a hand lens and microscope, the structures of **P1** and **P2**.

Present your comparison as a table in the space below.

[4]

(d) Fig. 2.1 shows an electronmicrograph of part of a cell from the alimentary canal of a small mammal.

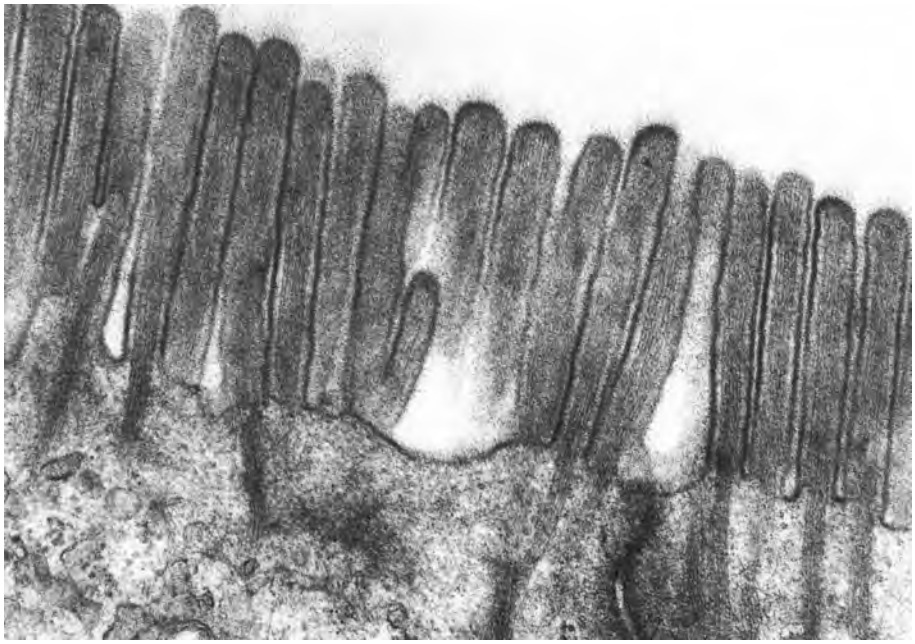

Fig. 2.1

Explain how the cell shown in Fig. 2.1 is adapted for its function.

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..... [2]

[Total: 16]

2 You should read through the whole of this question carefully and then plan your use of the time to make sure that you finish all the work that you would like to do.

R1 is a transverse section of the spinal cord of a small mammal.

(a) (i) Make a low-power plan drawing of **R1**.

Label your plan drawing.

[6]

(ii) Use a ruler to measure the actual size of the specimen on slide **R1** and the size of your drawing between the same points. Put a line on your drawing to show the size that you have measured. Calculate the magnification of your drawing.

Show your working.

magnification ..... [2]

(b) Use the high-power lens of your microscope to locate a cell body of a motor neurone in **R1**.

Make a labelled drawing to show the cell body.
Annotate your drawing to indicate the functions of the structures you have drawn.

Use the eyepiece graticule and stage micrometer to measure the diameter of the cell body.
Indicate the actual diameter on your drawing and show how you have derived your answer.

[8]

(c) Slide **R2** is a transverse section of part of the brain of a small mammal.

Compare, using a hand lens and your microscope, the structure and appearance of **R1** and **R2**.

Present your comparison as a table in the space below.

[5]

(d) Fig. 2.1 is an electron micrograph that shows a cross section of a neurone.

Fig 2.1

(i) Describe the appearance of the section of the neurone. You may use drawings or diagrams to illustrate your answer.

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[5]

(ii) Explain how the structural features you describe in **(i)** are related to the function of the neurone.

[4]

(e) Fig. 2.2 is an electron micrograph that shows a junction between two neurones in the brain.

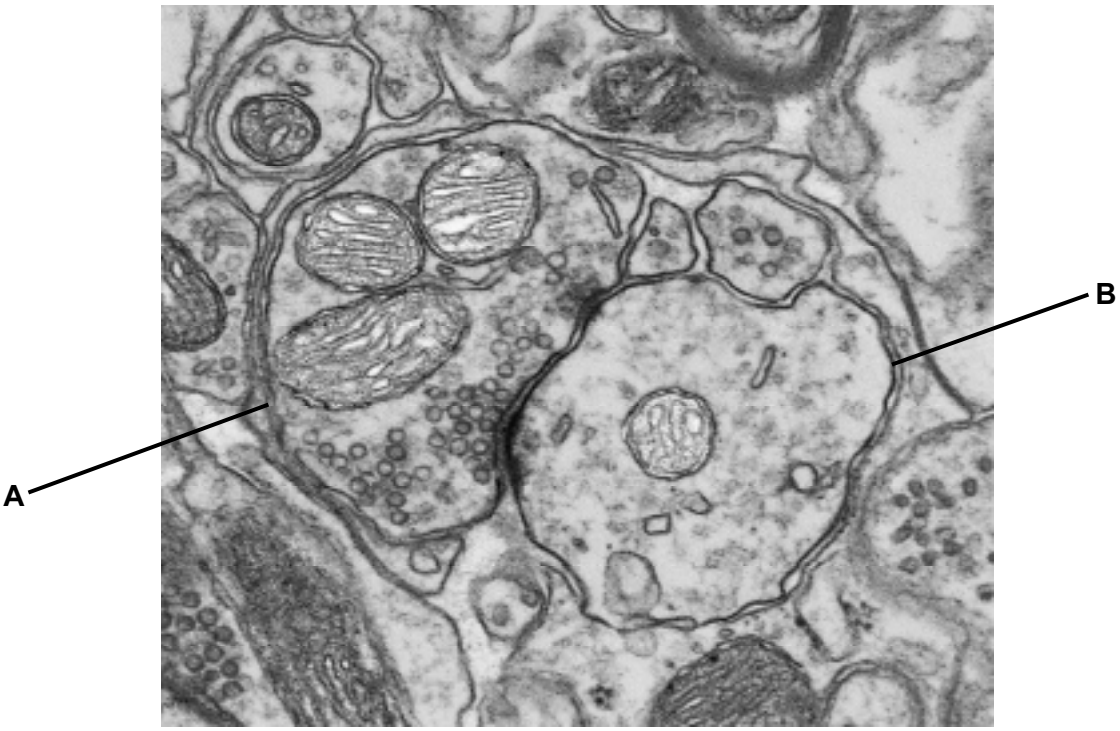

Fig 2.2

Identify neurones **A** and **B** and relate the appearance of these structures to their function. You may use the space opposite for any diagrams you may wish to draw to illustrate your answer.

[5]

[Total: 35]