1 Cell Structure and Organisation

Structured Questions ▸▸

Level 1

1. Figure 1.1 shows an electron micrograph of a cell taken from a plant.

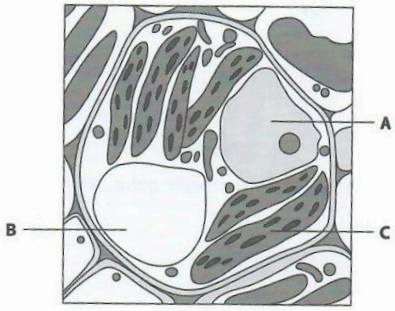


Figure 1.1

(a) Identify the structures labelled **A** and **B**. [2]

(b) Identify structure **C** and state its function. [2]

2. Figure 1.2 shows a cross-section of a typical animal cell.

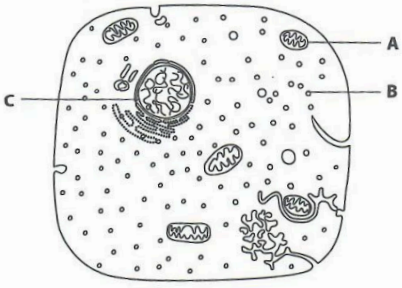


Figure 1.2

(a) Identify the organelles labelled **A**, **B** and **C**. [3]

(b) State the function of organelle **A**. [1]

Level 2

3. Figure 1.3 shows different types of specialised cells.

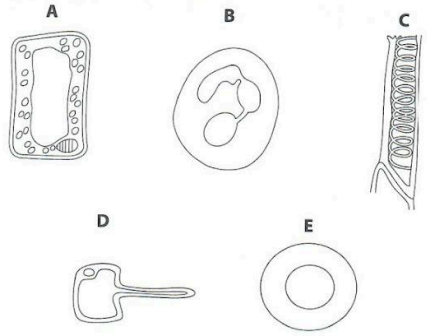


Figure 1.3

Complete Table 1.1 by writing the labels representing the cells that match the descriptions given. [4]

Table 1.1

Description	Cell
Plant cell	
Animal cell	
No nucleus	
Contains chloroplasts	

4. Figure 1.4 shows a type of muscle cell.

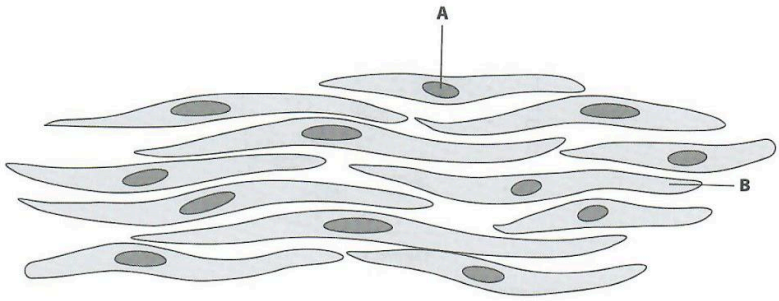


Figure 1.4

(a) State the names of structures **A** and **B**. [2]

(b) Explain why the cells shown in Figure 1.4 are **not** plant cells. [3]

5. Figure 1.5 shows a diagram of a typical animal cell.

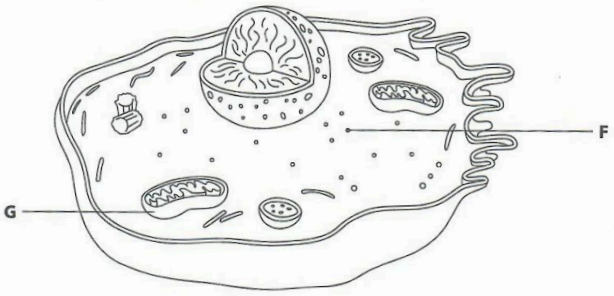


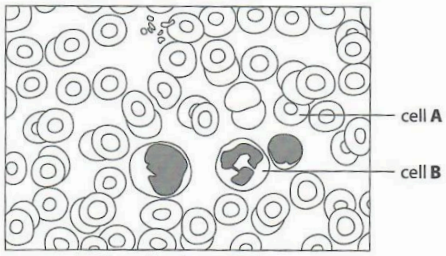
Figure 1.5

(a) Identify structure **F**. [2]

(b) State the function of structure **F**. [1]

(c) Numerous amounts of structure **G** can be found in root hair cells. Name an animal cell that also contains numerous amounts of structure **G**. [1]

6. In Figure 1.6, a blood sample was seen under a light microscope.



Magnification: ×1100

Figure 1.6

(a) Name and state the function of cell **A**. [2]

(b) Cell **B** is a white blood cell. With reference to Figure 1.6, explain **one** structural difference between cell **A** and cell **B**. [2]

Free-response Questions▸▸

Level 2

7. Draw a typical plant cell viewed under a light microscope. Include and label the following structures: cell wall, cell membrane, nucleus, cytoplasm and chloroplast. [6]

Level 3

8. (a) Compare and contrast the structures of plant and animal cells as seen under a light microscope. [4]

   (b) Name **two** structures in a cell that are visible only under an electron microscope but not under light microscope. [2]

   (c) Describe **two** adaptations of a root hair cell. [2]

9. Figure 1.7 shows an electron micrograph of a human sperm cell.

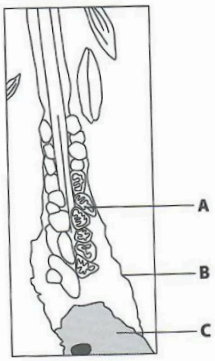


Figure 1.7

(a) Name the structures labelled **A**, **B** and **C** in Figure 1.7. [3]

(b) Explain why there is a large number of structure **A** present in the sperm cell. [2]

(c) A cross-section of the root of a plant is shown in Figure 1.8.

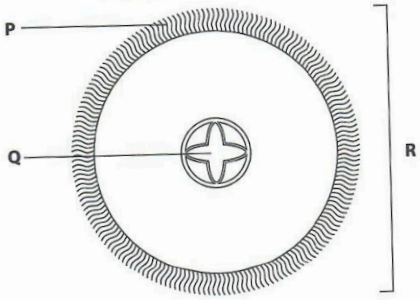


Figure 1.8

Complete Table 1.2 to indicate the level of organisation of each labelled structure shown in the figure. [3]

Table 1.2

Level of Organisation	Structure
Cell	
Tissue	
Organ	

10. In an experiment, a sample of animal cells was cultured in a Petri dish supplied with radioactive amino acids. Amino acids are biological molecules that join together to form proteins. Proteins are made by ribosomes. Ribosomes form a lining along membranes known as rough endoplasmic reticulum (RER). At different points of time, some of the cells were taken out of the Petri dish and their rough endoplasmic reticulum (RER) was extracted. The amount of radioactivity of the amino acids present in the RER was measured.

The data was recorded in Table 1.3.

Table 1.3

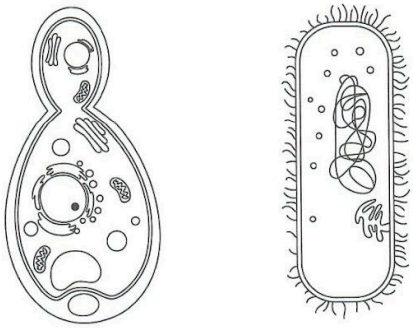
Time / min	Amount of Radioactivity in RER / arbitrary units
0	100
10	81
20	66
30	56
40	52
50	49

(a) Plot a graph to show the relationship between the amount of radioactivity in the rough endoplasmic reticulum against time. [4]

(b) Describe the trend observed in the graph that you plotted. [2]

(c) State the amount of radioactivity found in the RER after 25 minutes. [1]

11. (a) With reference to Figure 1.9, compare and contrast the fungal cell and the bacterial cell. [4]



Fungal cell Bacterial cell

Figure 1.9

(b) State **one** structure that has double membranes in an animal cell. [1]

(c) Describe **three** adaptations of a red blood cell. [3]

12. Figure 1.10 shows a diagram of an animal cell.

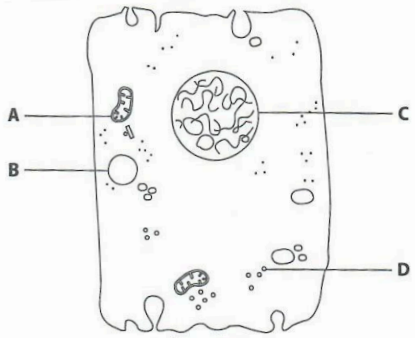


Figure 1.10

(a) Complete Table 1.4 by matching each structure to their respective functions. [4]

Table 1.4

Function	Structure
Synthesises proteins	
Releases energy	
Controls cell activities	
Stores substances within the cell	

(b) Draw an animal cell as seen under a light microscope and label its structures. [4]