**Short Answer Questions.**

**Question 1.**

**a.** In the box provided, draw a diagram of a *Paramecium* that you observed and label five structures that were visible under the light microscope. Include in your drawing, a scale that indicates the approximate length of *Paramecium*. (4 marks)

**b.** For each of the five structures you have labelled in **part a**, briefly describe how each helps *Paramecium* survive. (5 marks)

Structure 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Structure 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Structure 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Structure 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Structure 5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Question 2.**

**a.** Name the organelle in the red onion cells opposite that contains the water-soluble (red) pigment. (1 mark)

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**b.** These cells are part of an epidermis. What does epidermis mean?

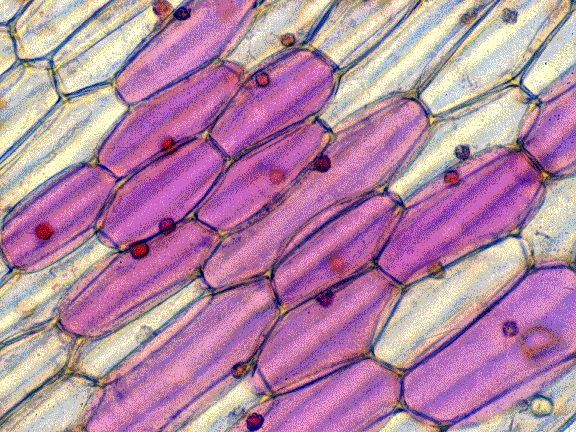
(1 mark)

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**c.** Name two other organelles visible in these cells. (1 mark)

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**Question 3.**

1. When using a light microscope, what is the diameter (in um) of the field of view at 40X total magnification?

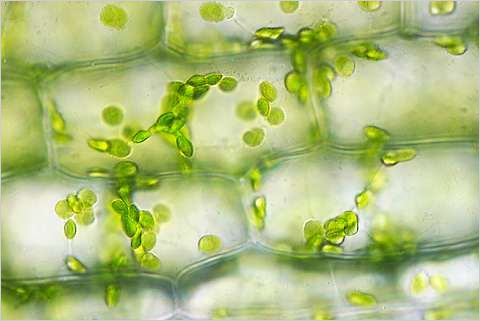
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(1 mark)

1. Convert the answer in **part a**.(above) to mm. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(1 mark)
2. If 10 cells (end to end) fitted across the diameter of the field of view at 40X total magnification, what is the approximate size (in um) of each cell?

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1. Name the two different lenses found in a light microscope.

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**b.** What specialised function do these cells perform? Give evidence to support your answer. (2 marks)

**c.** Name the process observed in these cells which indicates they are living cells. (1 mark)

**d.** Which organelle in these cells is responsible for ‘pushing’ the green organelles to the outside of the cell? (1 mark)

**e.** A nucleus is not visible in all above cells. Are these cells prokaryotic or eukaryotic? (1 mark)

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**Question 4.**

**a.** The cells opposite are from an *Anarcharis (Elodea)* leaf. Name the organelle responsible for their green colouration.

(1 mark)

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**Question 5.**

Staining is often used when observing cells as it can highlight particular structures in a cell.

a. Give the name of a stain that you used in this practical activity. Include in your answer the type of cell that you stained. (1 mark)

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b. Describe one disadvantage of using a stain. (1 mark)

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**Question 6.**

Explain what each of the following cells is specialised to do. In your answer, include information from your original drawings that supports your answers.

**a**. A human motor neurone. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**b.** A ciliated columnar epithelial cell. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**c.** A human red blood cell. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**d**. A red capsicum cell. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Question 7.**

**a**. In the box opposite, draw a single

prokaryotic cell and indicate its

approximate size using a scale.

Label appropriately. (4 marks)

**b.** Explain how the prokaryotic cell you

have drawn is able to move. (1 mark)

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**Question 8.**

1. In the space below, draw a cell from a green banana. Label the cell wall, cytoplasm and leucoplasts. Use a scale to indicate the approximate size of the cell. (4 marks)

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| --- |
|  |

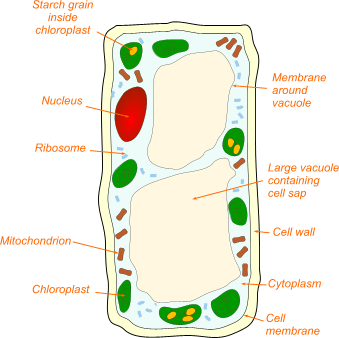
1. Why did we use cells from a green banana instead of a yellow banana?

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**Question 9.**

The diagram below shows a labeled drawing of a cell.



a. From this drawing, indicate whether it is a plant cell or an animal cell. (1 mark)

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b. State three pieces of evidence from the diagram that supports your answer. (3 marks)

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2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Question 10.**

Complete the following table by filling in the gaps. (4 marks)

|  |  |
| --- | --- |
| **Cell Organelle** | **Function** |
|  | Protein synthesis |
| Nucleolus |  |
| Mitochondrion |  |
|  | Removal of excess water from *Paramecium* |