1. Complete the retrieval practice quiz below:

i) Which organelle is responsible for controlling which substances enter and leave the cell?

- ☐ A cell membrane
- ☐ B cell wall
- ☐ C cytoplasm
- ☐ D nucleus

ii) Bacteria are examples of which type of cell?

- ☐ A eukaryotic
- ☐ B pathogen
- ☐ C prokaryotic
- ☐ D Protoctista

iii) Which organelle is found ONLY in a plant cell?

- ☐ A cell membrane
- ☐ B chloroplast
- ☐ C nucleus
- ☐ D ribosome

iv) What is the function of the large vacuole in a plant cell?

- ☐ A carry out respiration
- ☐ B produce chlorophyll
- ☐ C store cell sap
- ☐ D store oxygen and water

v) What is the name of the organelle that allows bacteria to move?

- ☐ A flagellum
- ☐ B pili
- ☐ C tail
- ☐ D transport protein

vi) What organic molecule is produced by the ribosomes in a cell?

- ☐ A chlorophyll
- ☐ B cellulose
- ☐ C starch
- ☐ D protein

vii) Microvilli are specialised cells found in which organ of the human body?

- ☐ A brain
- ☐ B large intestine
- ☐ C small intestine
- ☐ D stomach

viii) A scientist observes a cell through a microscope using an eyepiece lens with a x10 magnification and an objective lens with a x40 magnification.

What is the total magnification?

- ☐ A x0.25
- ☐ B x4
- ☐ C x50
- ☐ D x400

ix) A cell has a length of 5 micrometres. What is the length of the cell in metres?

- ☐ A 0.5m
- ☐ B 0.005m
- ☐ C 0.5cm
- ☐ D 0.000005m

x) Which organelle controls the bacteria cells activities?

- ☐ A chromosomal DNA
- ☐ B nucleus
- ☐ C plasmid DNA
- ☐ D ribonucleic acid

2. Draw a labelled diagram of a plant cell.

3. Complete the table by adding the functions of the different plant cell organelles.

Organelle	Function
Cell membrane	
Cell wall	
Chloroplast	
Cytoplasm	
Mitochondria	
Nucleus	
Ribosome	
Vacuole	

Exam Practice – Plant Cells and Microscopes

1. A plant leaf cell is 0.04 mm long.

Calculate the length of the image after this cell has been magnified 500 times. *(2)*

length of image = …… mm

2. (a) Describe the function of a meristem in the growth of a plant. *(2)*

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(b) A student took a sample of cells from a meristem to view under a light microscope.

Describe how the student would prepare a microscope slide using these cells. *(3)*

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(c) Explain one advantage of using an electron microscope to observe plant cells. *(2)*

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3. A student cut a piece of onion and placed it on a microscope slide. The student then placed this slide on the stage of a light microscope and looked through the eyepiece. No cells could be seen in the piece of onion.

Explain two ways this method could be improved to see details of the onion cells. *(4)*

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2:

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Exam Practice – Transport Processes

1. Some substances move into and out of cells by active transport.

Which is the correct description of the movement of a substance by active transport? *(1)*

- ☒ A against a concentration gradient using energy
- ☒ B down a concentration gradient using energy
- ☒ C against a concentration gradient without using energy
- ☒ D down a concentration gradient without using energy

2. Figure 1 shows two potato chips.

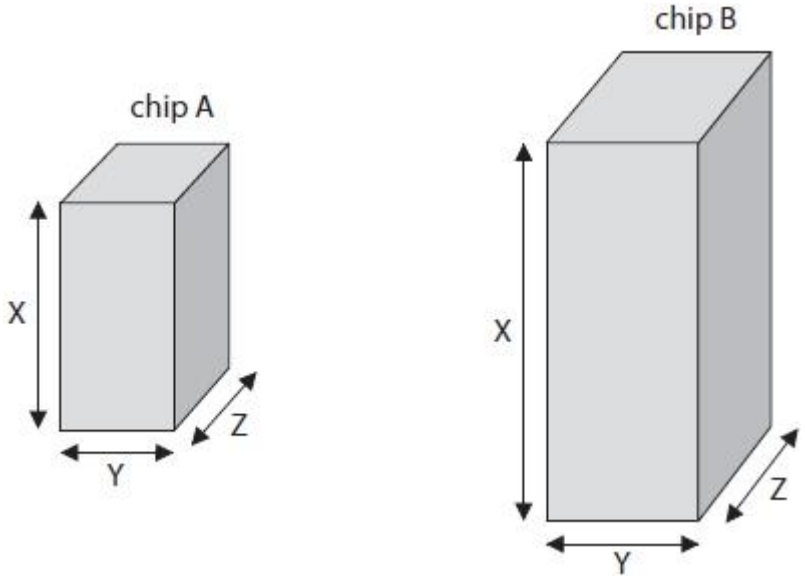

Figure 1

Figure 2 shows some information about each potato chip.

potato chip	length of X in cm	length of Y in cm	length of Z in cm	total surface area of four sides in cm^2	total surface area of top and bottom in cm^2	total surface area of chip in cm^2
A	3.0	1.5	1.5	18.0	4.5	22.5
B	5.0	2.0	2.0	?	?	?

Figure 2

(a) Calculate the total surface area of potato chip B using the formula: *(2)*

Total surface area = 2XY + 2XZ + 2YZ

total surface area = ... cm^2

(b) The potato chips were placed in distilled water for 20 minutes. Figure 3 shows the increase in mass of each potato chip.

potato chip	increase in mass in grams
A	0.1
B	0.3

Figure 3

Explain why potato chip B has a greater increase in mass than potato chip A. *(2)*

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(c) Potato chip A is transferred from the distilled water into a concentrated salt solution.

Explain what will happen to the cells in potato chip A. *(3)*

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3. A student chose three carrot sticks and weighed each one. The carrot sticks were placed in 50 cm^3 of distilled water. After two hours the student weighed each carrot stick again. Figure 4 shows the results for these carrot sticks P, Q and R.

carrot stick	mass at the start in grams	mass after two hours in grams	change in mass in grams
P	4.0	4.9	0.9
Q	4.2	5.0	0.8
R	4.1	5.0	0.9

Figure 4

(a) Give one reason why the student used three carrot sticks instead of just one carrot stick. *(1)*

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(b) Give two ways that this method could be improved. *(2)*

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2:

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(c) Calculate the percentage change in mass of carrot stick Q. *(3)*

Use the equation

$$\text{percentage change} = \frac{\text{change in mass}}{\text{mass at the start}} \times 100$$

Give your answer to 2 significant figures.

percentage change = ... %

(d) Explain the change in mass of the carrot sticks. *(2)*

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