

Year 8 Science

2022

Topic Test: Cells and Microscopes

(Weighting 25%)



Name: MARKING KEY

Marks: 55



Materials Required:

- Blue/black ballpoint pen
- Pencil
- Ruler
- Eraser
- Calculator

Section 1 (10)	Section 2 (45)	Total (55)	Percentage

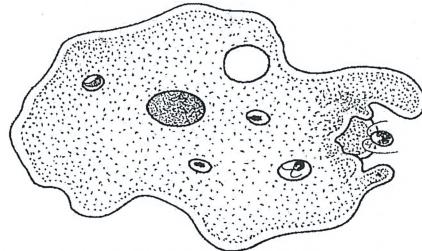
Section One: Multiple Choice

[10 Marks]

Circle the letter of the most correct answer for each of the statements or questions below.

1. Which of the following statements about cell theory is **false**?
 - a. Cells are the basic units of life
 - b. A virus is a type of cell
 - c. New cells are created from existing cells
 - d. All living things are composed of cells

2. A student looking at a droplet of pond water through her microscope, saw the following object moving around on her slide.



- The object is most probably
- a. a cell from a multicellular animal
 - b. a cell from a multicellular plant
 - c. a unicellular plant
 - d. a unicellular animal
-
3. Which of the following cell components may be found in both plant and animal cells?
 - a. Chloroplasts
 - b. Mitochondria
 - c. Several small vacuoles
 - d. Cell wall

 4. Which of the cell organelles below serves as a transport system for proteins and other important materials between the nucleus and the rest of the cell?
 - a. Ribosomes
 - b. Golgi apparatus
 - c. Cytoplasm
 - d. Endoplasmic reticulum

5. Which of the following structures in a cell controls the passage of water and other materials into and out of the cell?

- a. Cell membrane
- b. Cell wall
- c. Lysosome
- d. Nucleus

6. The cell wall of plants cells

- a. provides support for the plant cell
- b. gives the cell its shape
- c. is made up of cellulose
- d. all of the above

7. When you use a microscope to observe cells, light passes through the specimen then

- a. is reflected off mirrors to make the image bigger
- b. to our eye where its image is magnified
- c. through two lenses which magnify the image of the specimen
- d. through the diaphragm to our eye

8. Turning this knob provides the **initial** focus when using a microscope.

- a. Fine focus
- b. Coarse focus
- c. Eye Piece
- d. Objective lens

9. Always **begin** observing a specimen under the microscope using the _____ objective lens.

- a. 100X
- b. 40X
- c. 10X
- d. 4X

10. Which of the following statements regarding microscope use and technique is correct?
- a. When carrying the microscope, it should be supported by placing both hands under the base.
 - b. The slide may be placed anywhere on the stage, as long as there is light shining on it.
 - c. When using the coarse focus dial on the microscope, you should be looking at the side of the microscope.
 - d. If you want to see as much of the specimen as possible, you should be on high power.

End of Section One

Section Two: Short Answers

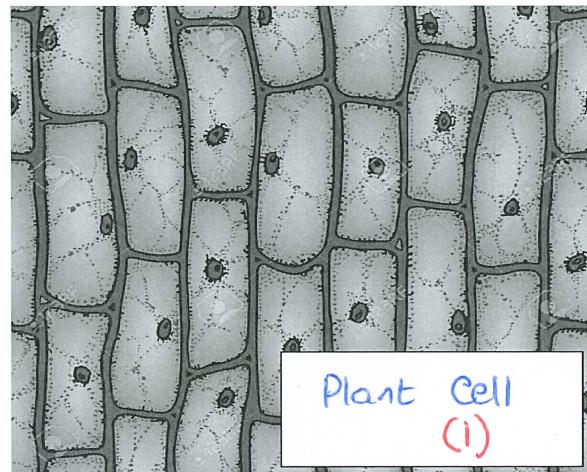
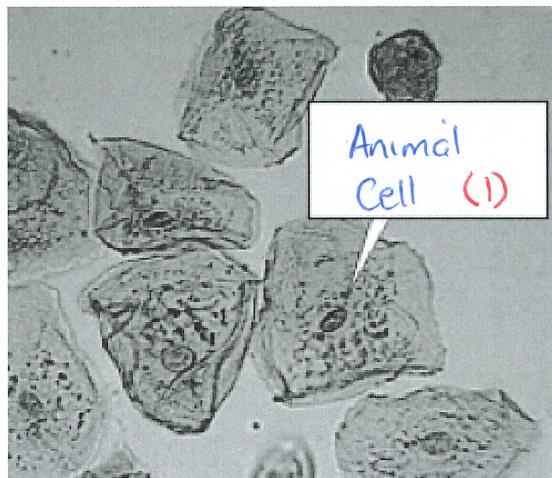
[45 Marks]

Answer ALL questions in the spaces provided below. Use a blue or black pen unless you have been asked to draw a diagram.

Question 1

[11 Marks]

The two pictures below show illustrations of plant cells animal cells.



- a. Identify which illustration represents a typical plant cell and which is an animal cell. Write your answer in the box provided on each illustration. (2)

- b. Other than the colour of these two cells, state one reason for your answer at (a). Your reason must refer to something that is **clearly visible in the illustrations** above. (1)

(i) Plant cell has a rigid shape (due to its cell wall) while the animal cell has an irregular shape (due to the lack of a cell wall).

- c. Name **two** components that these cell types have in common. The two components must be **clearly visible in the illustrations** above. (2)

(i) Nucleus (i) Cytoplasm (i) Cell membrane } Any 2.

Plant cells contain a chemical called chlorophyll that enables them to use the light energy from the sun to make their own food (glucose). Answer the following questions about this process in plants:

- d. What is the name of this process by which plants make food? (1)

Photosynthesis (1)

- e. In which organelle in the plant cell does this process occur? (1)

Chloroplasts (1)

- f. The equation shown below represents this process. Complete the word equation by writing the names of the substances represented by each of the letters in the boxes. (4)



W: Carbon dioxide (1)

{ Any order

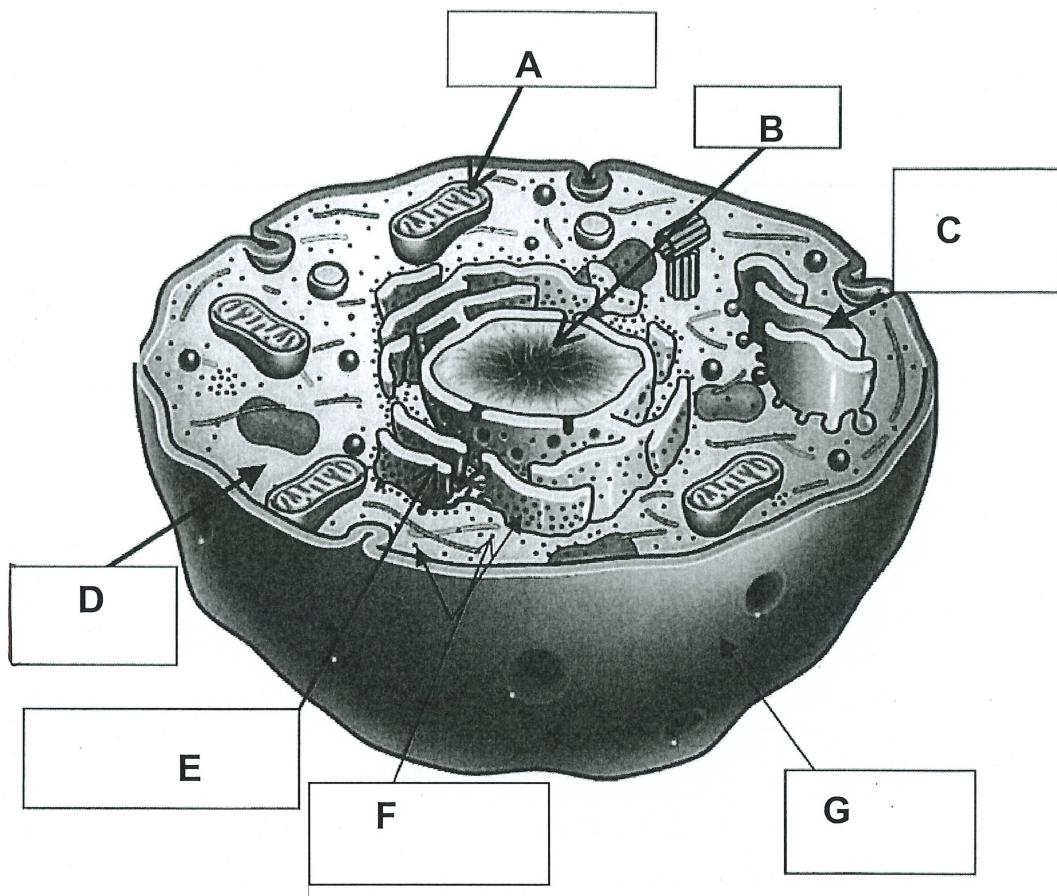
X: Water (1)

Y: Sunlight / light energy (1)

Z: Oxygen (1)

Question 2**[11 Marks]**

Refer to the diagram below and answer the questions that follow.



a. Name the parts of the cell represented by the letters: (7)

(Half if abbreviated to ER)

- | | |
|------------------------------------|------------------------------------|
| A <u>Mitochondrion</u> (1) | E <u>Endoplasmic reticulum</u> (1) |
| B <u>Nucleus</u> (1) | F <u>Ribosomes</u> (1) |
| C <u>Golgi apparatus/ body</u> (1) | G <u>Cell membrane.</u> (1) |
| D <u>Cytoplasm/ cytosol</u> (1) | |

b. Which letter (A to G) on the above diagram: (2)

(i) is the control centre of the cell? B (1)

(ii) is the site where proteins are made? F (1)

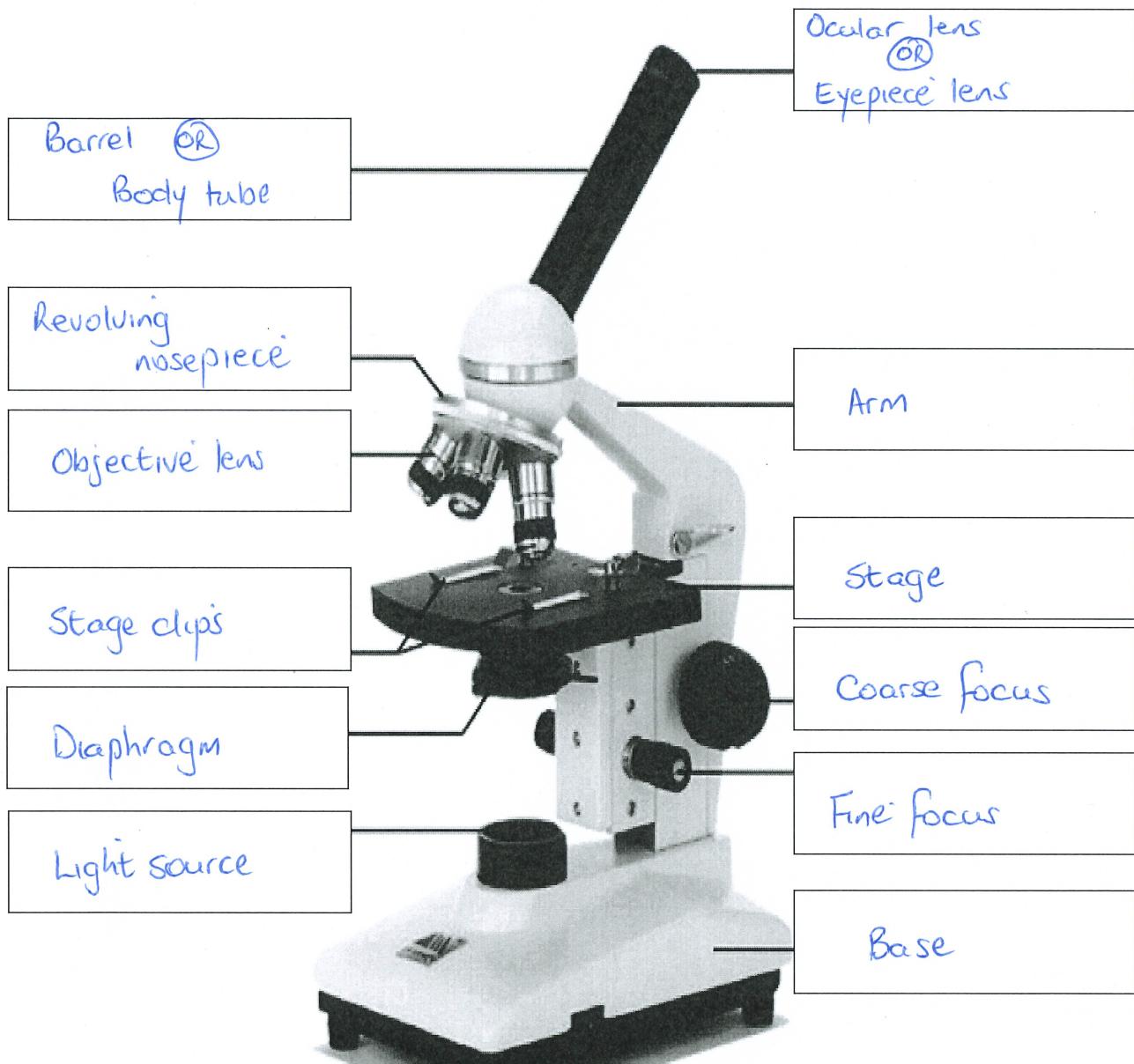
c. State the function of the following parts of the cell: (2)

Lysosome: Contains chemicals that break down waste materials in the cell (1)

Mitochondrion: Produces energy for the cell's activities during the process of respiration (1)

Question 3**[12 Marks]**

Label the parts of the microscope represented by each of the boxes on the diagram.

12

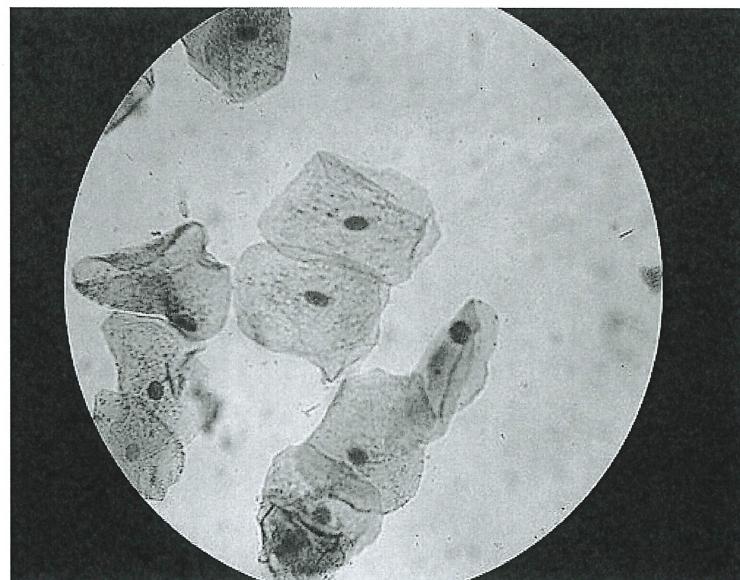
Question 4**[11 Marks]**

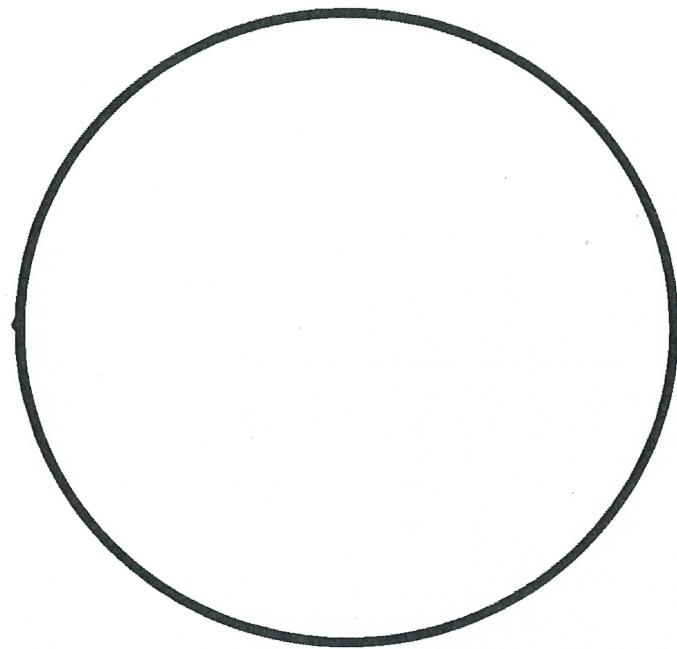
- a. Complete the table below by filling in the missing values used to determine the magnification of a light microscope. (3)

Ocular Lens	Objective Lens	Total Magnification
10X (i)	10X	100X
10X	4X	40X (i)
5X	40X (i)	200X

- b. The picture below shows the image that was observed by a student viewing a specimen of human cheek cells, while using the 10X objective lens and a 5X ocular lens.

In the circle provided on the next page, draw a **neat, labelled diagram** to show how you would represent this image. **Remember to follow all the rules for microscope drawings.** (8)





(1) Title! Human Cheek Cells

(1) Total Mag : 50X

(1) Pencil diagram

(1) No shading / only outline of cell & its structures

(1) Diagram representative of image (i.e. no. & location of cells)

(3)* Labels : Nucleus, cell membrane, cytoplasm (2)*
All out on one side with straight lines
(no crossing over). (1)

(* -1) if less than 3 labels

END OF TEST