# Year 8 Science

## 2022

## Topic Test: Cells and Microscopes (M)
## (Weighting 25%)

**Name: _____** **Marks: 50**

**Materials Required:**

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

| Section 1 (10) | Section 2 (40) | Total (50) | Percentage |
|---|---|---|---|
| | | | |

## Section One: Multiple Choice [10 Marks]

**Circle the letter of the answer that best matches each of the statements/questions below.**

1. Which of the following statements about cell theory is **incorrect**?

    a. Cells are the basic units of life
    b. A virus is a type of cell
    c. New cells are created from cells that already exist
    d. All living things are composed of cells

2. A living organism that is made up of a single cell is called

    a. a bacterium
    b. a multicellular organism
    c. a unicellular organism
    d. a specimen

3. Which of the following cell components may be found in both plant and animal cells?

    a. Chloroplasts
    b. Mitochondria
    c. A large, central vacuole
    d. Cell wall

4. Which of the cell organelles is responsible for making proteins in a cell?

    a. Ribosomes
    b. Golgi body
    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. Nucleus
    b. Cell wall
    c. Lysosome
    d. Cell membrane

6. The part of the microscope on which the slide is placed is called the

   a. base
   b. arm
   c. objective lens
   d. stage

7. When using the light microscope, the object that is being studied is called the

   a. sample
   b. specimen
   c. cell
   d. image

8. Turning this knob on the microscope moves the stage up or down quickly.

   a. Eyepiece lens
   b. Objective lens
   c. Coarse focus
   d. Fine focus

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 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.

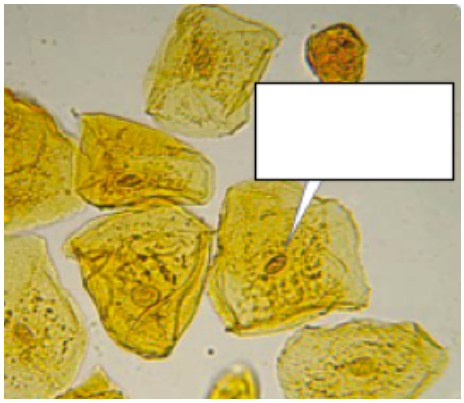
**End of Section One**

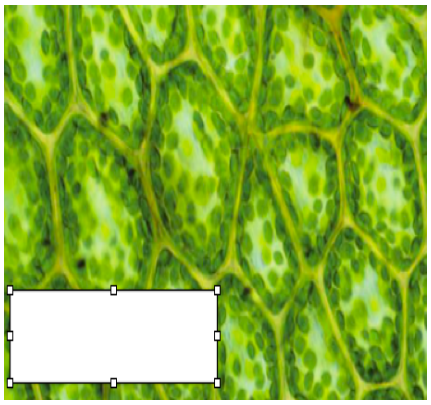
## Section Two: Short Answers [40 Marks]

**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 [4 Marks]

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





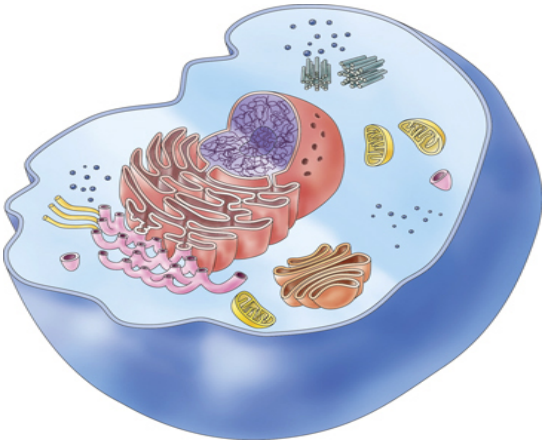
a. In the box on each diagram above, state whether the picture represents a plant cell or an animal cell. (2)

b. Complete the table below by stating two **differences** between plant and animal cells. (2)

| Plant Cells | Animal Cells |
|---|---|
| | |
| | |

**Question 2** **[13 Marks]**

a. Refer to the diagrams of plant and animal cells shown below. Draw lines from the names of the parts in the centre to each of the structures in the diagrams. Make sure your lines are **directly touching** the part of the cell you label. (8)



Ribosomes

Nucleus

Cell Membrane

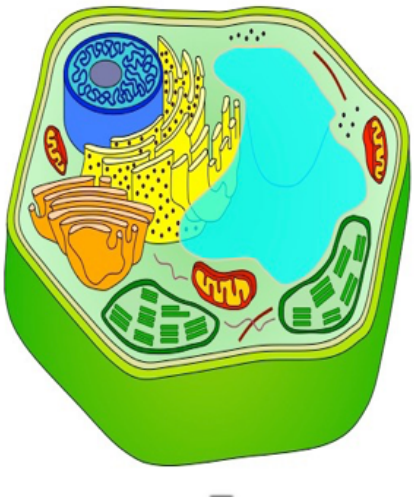
Mitochondrion

Cytoplasm

Vacuole

Cell Wall

Chloroplast



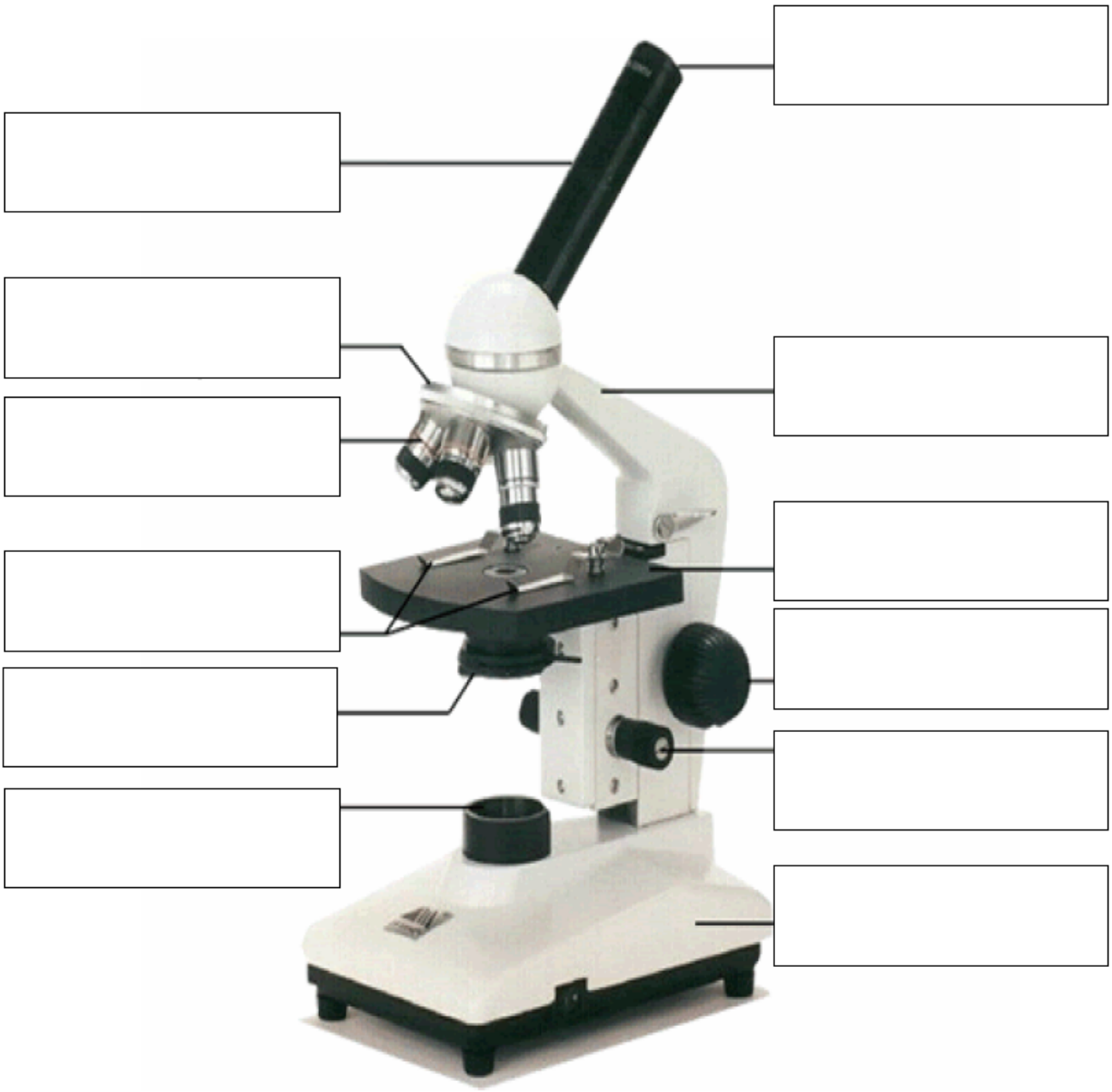
b. Fill in the table to include the names or functions of the cell parts mentioned below. (5)

| Name of the cell structure | Function |
|---|---|
| | Part of a plant cell where photosynthesis takes place. |
| Nucleus | |
| | A jelly-like substance. Many of the cell's activities happen here. |
| Mitochondrion | |
| | Part of a plant cell that provides support and protection for the cell. |

**Question 3** **[12 Marks]**

Use the words in the box below to label the parts of the microscope.

| |
|---|
| **Base; Objective Lens ; Diaphragm ; Stage clips; Coarse focus; Light source; Arm; Body tube; Stage; Ocular lens; Fine focus; Revolving nosepiece.** |



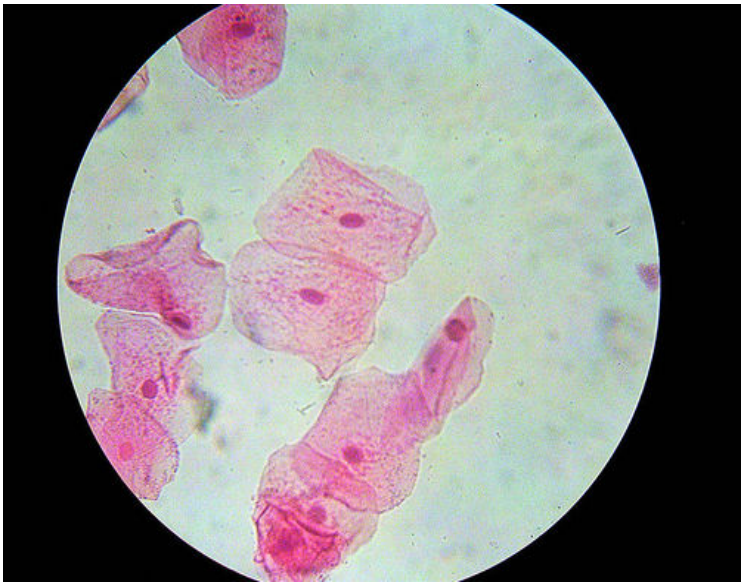
**Question 4** **[11 Marks]**

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 | 4X | |
| | 10X | 100X |
| 10X | | 400X |

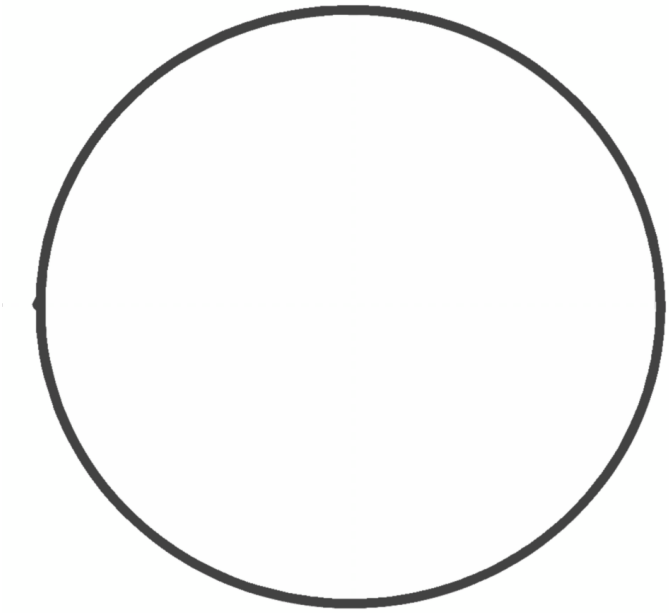
b. The picture below shows the image that was observed by a student viewing a specimen of human cheek cells. The student was using the 10X objective lens and a 5X ocular (eyepiece) lens.

In the circle 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)



**Title:** _____

**Total Magnification:** _____



**END OF TEST**