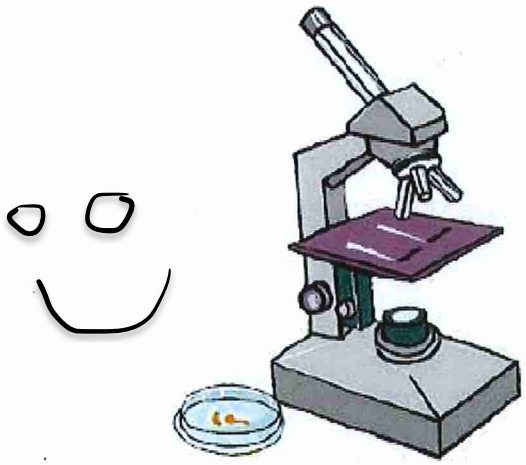
2021

Year 8 Science ~~2020~~
Cell Biology and Microscope Test

Name: _____

Class: _____



Please answer all questions in the spaces provided. You will have 40 minutes to complete the test.

You will need:

- Pencil
- Ruler
- Pen
- Eraser
- Calculator

Final mark: ~~/50~~

Part 1: Please circle the most correct answer: **(8 marks)**

1. Living things that are made from only one cell are called

a. multicellular
b. microcellular
c. unicellular
d. intracellular

2 The job of the mitochondria in cells is to

a. repair cell damage
b. store cell waste
c. control the cell's activities
d. release energy

3 On the microscope, the objective lens is found on the

a. eyepiece
b. nosepiece
c. mouthpiece
d. chin piece

4 If the eyepiece lens has a magnification of 10 times, and the objective lens has a magnification of 4 times, the total magnification is

a. 2.5 times
b. 6 times
c. 14 times
d. 40 times

5. The word cyto means:

a. cell
b. dark
c. jelly
d. small

6. Tiny structures that carry out cell functions are collectively called:

a. animalcules
b. organelles
c. tissues
d. ribosomes

7. Which technology was essential for the development of the cell theory?

a. telescopes
b. antiseptics
c. microwaves
d. microscopes

8. A human cheek cells is best described as

a. a prokaryotic cell
b. an organism
c. a plant cell
d. an animal cell

9. Which of the following statements is false
a.vacuoles store waste

b.plant cells have one large vacuole

c.all vacuoles have the exact same shape

d.animal cells have more than one vacuole

10. All cells extract energy from which process?
a.photosynthesis

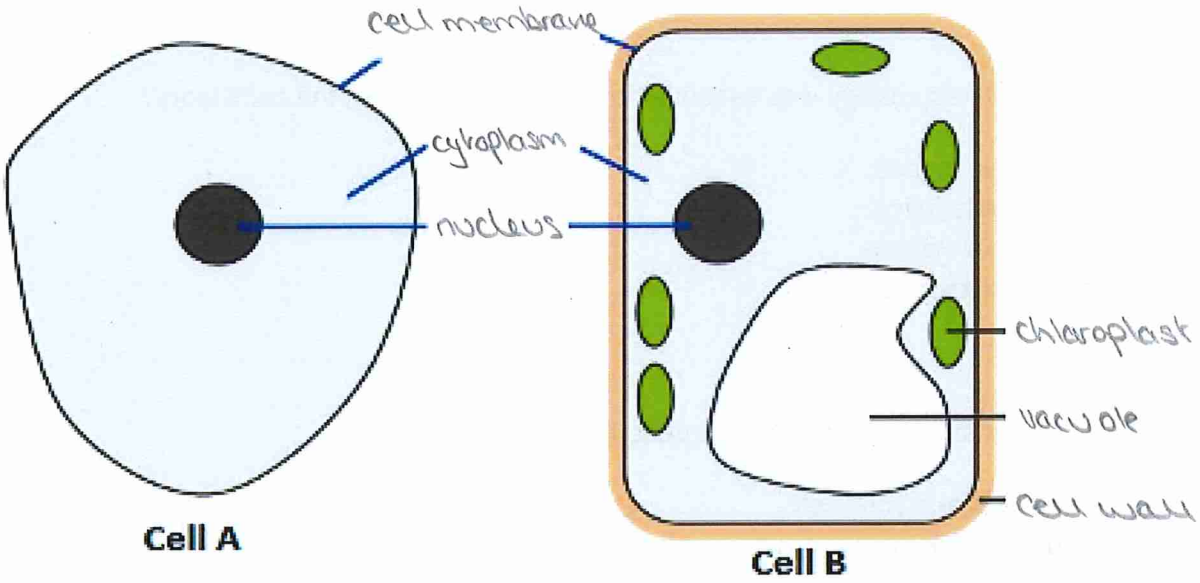
b.cellular respiration

c.osmosis

d.diffusion

Part 2:

9. Correctly label the diagram below with the terms – **vacuole, nucleus, cell wall, cell membrane, cytoplasm and chloroplast.**



(6 marks)

10. From the diagram in question 2, which cell, A or B, is a plant cell? Give one reason for your answer

B (1 mark) - has a cell wall/chloroplasts/large vacuole (1 mark)

(2 marks)

11. Using the following structures complete the table below matching the correct structure with the correct function:
vacuole, nucleus, cell wall, cell membrane, cytoplasm and chloroplast.

Structure	Function
Cell membrane	Controls what enters and leaves the cell
Chloroplast	Traps light energy by photosynthesis
Cell wall	Gives support
Vacuole	Storage of water, food and wastes
Nucleus	Controls all cell activities
Cytoplasm	Jelly like substance containing all cell organelles

(6 marks)

12. In **cellular respiration** glucose is chemically combined with oxygen producing:

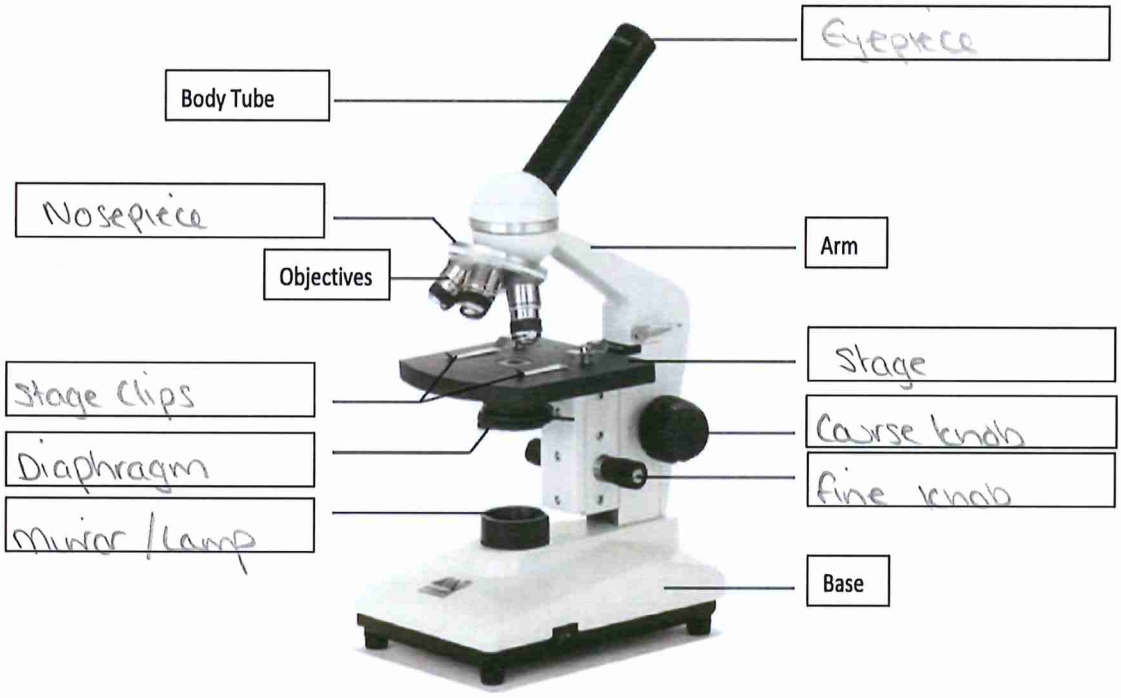
Glucose + oxygen → Carbon dioxide + water + energy

(3 marks)

13. Using the names provided in the table, label the microscope below with the correct names.

(8 marks)

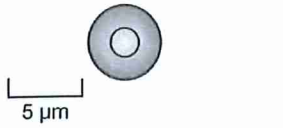
Diaphragm	Revolving Nosepiece	Stage Clips	Coarse objective knob
Fine Objective knob	Mirror/Lamp	Stage	Eyepiece/ Ocular Lens



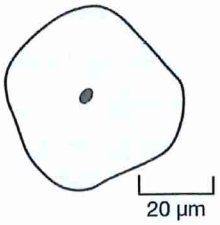
Taken out of test

14. Use these drawings to calculate how big these cells are, then complete the table below.

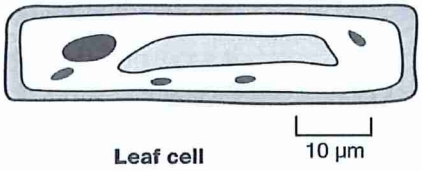
The first one had been done for you.



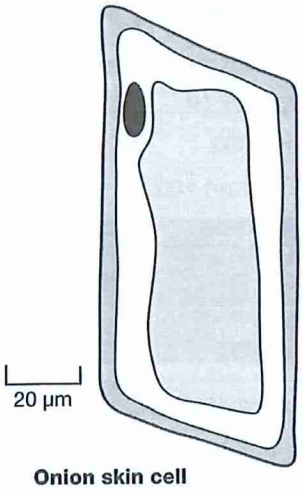
Red blood cell



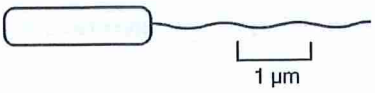
Human cheek cell



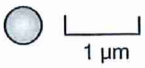
Leaf cell



Onion skin cell

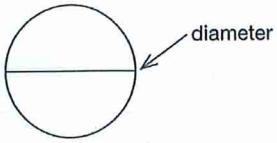


Vibrio bacterium cell



***Streptococcus* bacterium cell**

diameter (n) a straight line passing from one side of a figure to the other through the centre



Question	Measurement (cm)	Scale	Calculation	Actual size (µm)
What is the diameter of the red blood cell?	1 cm	1cm = 5µm	x5	5µm
What is the diameter of the human cheek cell?	2.5	1cm = 20	x20	50
What is the length of the cell from the leaf?	5.5	1 = 10	x10	55
What is the length of the onion skin cell?	5.5	1 = 20	x 20	110
What is the length of the body of the *Vibrio* bacterium?	2	1=1	x1	2
What is the diameter of the *Streptococcus* bacterium?	0.5	1=1	x1	0.5

(5 marks)

15. State the three principals of the cell theory (3 Marks)

- All living organisms are composed of one or more cells.
- The cell is the basic unit of structure and organisation in organisms
- Cells arise from pre-existing cells.

16. Explain at least one similarity and one difference between a mitochondrion & a chloroplast. (3 marks)

Similarities: energy source for cell, many of them in the cell (1 mark)
Differences: chloroplasts are only in plants and absorb the Sun's energy to convert it to usable energy (1 mark), whereas mitochondria are membrane-bound and use cellular respiration to convert energy (1 mark)

17. A cell membrane is 'partially permeable'. This means that only certain substances are able to cross the membrane. List some substances that would need to get into the cell and some that would need to get out. (3 marks)

1 mark per substance

Oxygen, nutrients and water need to get into a cell. Carbon dioxide and other waste products need to get out of a cell.