**Mount Lawley Senior High School**

**Year 8 Biological Sciences**

***Cells & Microscopes Test 20******22***

**Section 1: Multiple Choice Answers 1 mark each**

*Read all answers and choose the* ***BEST*** *one.*

1. Name the part of the animal cell that controls the functioning of the cell.
2. Ribosomes
3. Mitochondria
4. Cell membrane
5. Nucleus

A picture containing text

Description automatically generatedThe following diagram is required to answer questions 2 and 3.

**Red blood cell Muscle cell Nerve cell Fat cell**

1. Propose which of the specialized cells in the above figure is the most likely to be involved in communication between different parts of the body.
2. 1
3. 2
4. 3
5. 4
6. Which of the specialized cells is most likely to be involved in storing substances in the body?
7. 1
8. 2
9. 3
10. 4
11. Name the part of the cell where a plant manufactures its food.
12. Chloroplast
13. Mitochondrion
14. Endoplasmic reticulum
15. Cell wall
16. We can study organisms in many ways. Which of the following structures would you expect to find the greatest number of different kind of cells?
17. A tissue
18. An organ
19. A body system
20. An organism
21. Identify the type of cell being described in the following statement.

It is rigid. When studied using a powerful microscope, a nucleus and large vacuole were clearly seen. The cell was almost colourless until a stain was used.

1. Plant
2. Animal
3. Bacterial
4. Fungus

**Use the following information to answer questions 7, 8 & 9.**

When a sample of pond water was viewed under the microscope the following image was seen.

A close-up of a bug

Description automatically generated with medium confidence

1. A compound microscope with an eyepiece lens with a magnification of x10 and an objective lens magnification of x10 was used to view the image above, the total magnification was
2. x10
3. x20
4. x100
5. x200
6. The objective lens was then changed to a magnification of x40. What will appear to happen to the size of the micro-organism (A) under this new magnification?
7. The micro-organism will appear four times larger.
8. The micro-organism will appear forty times larger.
9. The micro-organism will appear four times smaller.
10. The micro-organism will appear forty times smaller.
11. In question 8, it was stated that the objective lens was changed to a magnification of x40. Which part of the microscope was used to change the objective lens to a higher magnification?
12. Base
13. Ocular lens
14. Turret/nose piece
15. Stage
16. When comparing a cell to a whole multicellular organism, the nucleus and cell membrane of the cell are most like
17. The brain and skin of an organism.
18. The heart and skin of an organism.
19. The eyes and digestive system of an organism.
20. The lungs and brain of an organism.
21. Calculate the length of the cell in the image below.
22. 2.5 cm
23. 2.5 um

Icon

Description automatically generated

1. 25um
2. 250um

**- End of Multi-Choice Section –**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Year 8 Biological Sciences** - ***Cells & Microscopes Test 2022***

**Section 2: Short Answers 25 marks**

1. Match the term to the correct definition. (4 marks)

|  |  |  |
| --- | --- | --- |
| Body system | **b.** | 1. A structure that contains at least two different types of tissues that work together to perform a task. |
| Tissue | **c.** | 1. Two or more different organs working together. |
| Cell | **d.** | 1. A group of cells that performs the same function in the body. |
| Organ | **a.** | 1. The building blocks of all living things. |

1. Explain the benefits of multicellular organisms having specialized cells.

(2 marks)

Different parts of the body can become **specialized to perform different tasks** (1 mark)

This is **more efficient** use of the body’s resources than all cells carrying out all/every functions. (1 mark)

An example 1 mark

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. In the space provided below, correctly draw and label a fungal cell with 6 organelles. (6 marks)

½ a mark for a **correctly drawn** organelle

( eg vacuole needs to large not small like an animal)

½ a mark for **correct labeling**

1. Use the following terms to complete the Venn diagram between Plant and Animal cells.

***Lysosomes, nucleus, ribosomes, small vacuole, endoplasmic reticulum, chloroplast, cell membrane, golgi apparatus, mitochondria, cell wall.***

(5 marks)

Lysosomes

Nucleus

Ribosomes

Endo Retic

Cell membrane

Golgi apparatus

Mitochondria

Small vacuole

Chloroplast

Cell wall

***Plant cell Animal cell***

1. Complete the following equation for photosynthesis. (2 marks)

Sugar/Glucose

(C6H12O6)

Oxygen

(O2)

Water

(H2O)

Carbon Dioxide (CO2)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(sunlight &

chloroplast)

½ mark deducted if numbers were on top.

1. Describe how the feature of the following cells help the cells to do its job.
2. Cells in the top layer of leaves have large numbers of chloroplast. (2 marks)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Top layer of leaf is more **exposed to sunlight**. (1 mark)

Chloroplast is required for plants photosynthetic use (which only works in the presence of sunlight.) (1 mark)

1. Muscle cells in the human legs have large numbers of mitochondria.

(2 marks)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mitochondria **release energy** into the cell. (1 mark)

**Muscles require a lot of energy** **for movement**, hence more mitochondria. (1 mark)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The diagram below are of two organisms that are unicellular.

A picture containing text, insect

Description automatically generated

Euglena (A) Amoeba (B)

Which one of these organisms is photosynthetic?

Justify your answer using evidence from the diagram. (2 marks)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Euglena (1 mark)

Presence of **chloroplast** **for photosynthetic** processing. (1 mark)

Euglena ½ mark because it has chloroplasts ½ mark

Chloroplasts needed for photosynthesis to occur 1 mark.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**- End of Section 2 -**

**Section 3: Microscope 9 marks**

**Use the microscope and associated equipment to answer and perform the following tasks.**

1 mark focused.

½ use of microscope correctly.

½ mark in letter ‘a’ in center.

**TASK 1**

Place the ‘letter’ slide on the microscope stage.

Using the x4 objective lens, focus the letter. The letter should be in the center of field of view. Once focused, raise your hand for teacher to view.

Student can focus letter in the center of field of view. (2 marks)

Rotate the nosepiece to view letter with a total magnification of x100.

Draw the letter as viewed in the space below.

1 mark

Letter a should take up the whole field of view when drawn.

No mark for a small diagram just because they know it’s the letter ‘a’

(3 marks)

½ mark each

a

Specimen: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10x

Ocular magnification: \_\_\_\_\_\_\_\_\_\_\_\_\_

10x

Objective magnification: \_\_\_\_\_\_\_\_\_\_\_

100x

Total magnification: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

While looking through the microscope, slowly move the slide to the left. (1 mark)

Move to the **right**

When moving the slide to the left, the slide appears to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**TASK 2**

Place slide two on to the stage.

The second slide has a small 5 by 5 grid imprinted on it with the total dimensions being 1 cm by 1 cm.

Using the x4 objective lens, focus the microscope so the left side of the grid is on the edge of the field of view.

(3 marks)

How many grid squares can be seen from one side to the other side of the field of view? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Estimate the diameter of the field of view: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Move the objective lens to x10.

Now estimate the length of the field of view: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Eg.

around 2

4mm

2mm

**- End of Test -**

**M.C.: \_\_\_\_\_\_\_\_\_ / 11**

**S.A. & Microscopes: \_\_\_\_\_\_\_\_\_ / 34**

**TOTAL: \_\_\_\_\_\_\_\_\_\_\_\_\_\_/45**