

NAME ..... ADM NUMBER .....

SCHOOL ..... SIGNATURE .....

DATE .....

231  
**BIOLOGY**  
**TIME: 2½ HRS**  
**OCTOBER 2016**

## FORM ONE EXAMINATION

**BIOLOGY**  
**OCTOBER 2016**  
**Time: 2½ hours**

### INSTRUCTIONS TO CANDIDATES

- a) Write your name, school and admission number in the spaces provided.
- b) Sign and write the date of examination in the spaces provided.
- c) Answer all questions.
- d) Answers must be written in the spaces provided in the question paper.
- e) Additional pages must not be inserted.
- f) Candidates should check the question paper to ascertain that all pages are printed and no question is missing.
- g) Candidates should answer the question in English.

### FOR EXAMINER'S USE ONLY

| Question | Maximum Score | Candidates Score |
|----------|---------------|------------------|
| 1-24     | 100           |                  |

*This paper consists of 10 printed pages.*

*Candidates should check the question paper to ensure that all pages are printed as indicated and*

1. State the name given to the study of;
  - a) The cell ..... (1 mark)
  - b) Micro-organism ..... (1 mark)
  - c) Inheritance and variation..... (1 mark)
  
2. State one use for each of the following apparatus in the study of living organism. (2 marks)
  - a) Pooter  
.....
  - b) Pit fall trap  
.....
  
3. How does nutrition as a characteristic of living organism differ in plants and animals? (2 marks)  
.....  
.....
  
4. Name two careers that require biology knowledge. (2 marks)  
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.....
  
5. Give three reasons why it is important to study Biology in schools. (3 marks)  
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.....
  
6. State and explain two main branches of Biology. (2 marks)  
.....  
.....  
.....
  
7. Name the branch of Biology that deals with the study of fungi. (1 mark)  
.....
  
8. Name the organelle that performs each of the following functions in a cell;
  - i) Protein synthesis ..... (1 mark)
  - ii) Transport of secretions ..... (1 mark)

iii) Destroys worn out organelles ..... (1 mark)

iv) Site for respiration ..... (1 mark)

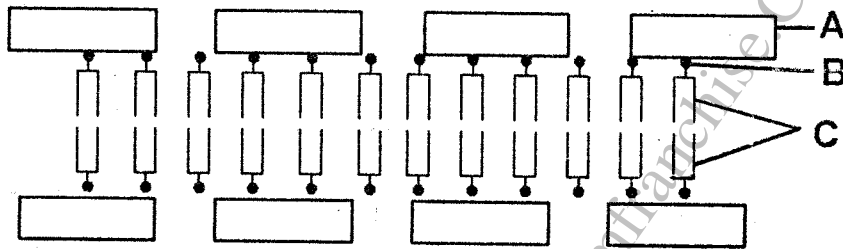
9. Name two structures found in plant cells but not in animal cells. (3 marks)

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10. Write down two functional advantages of an electron microscope over a light microscope. (2 marks)

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.....

11. The diagram below is of a structure found in living organisms.



i) Name parts labelled A, B and C. (3 marks)

A .....

B .....

C .....

ii) Identify the structure ..... (1 mark)

iii) Give two properties of the structure above. (2 marks)

.....  
.....

iv) State one function of the structure above. (1 mark)

.....

12. i) Distinguish between resolving power and magnifying power of a microscope. (2 marks)

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ii) Two students were observing bacteria from a similar slide preparation. One saw 10 bacteria while the other saw 20 bacteria. Suggest a reason why they observed different number of bacteria. (2 marks)

.....

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iii) Complete the table below. (3 marks)

| Eye lens magnification | Objective lens magnification | Total magnification |
|------------------------|------------------------------|---------------------|
| X5                     |                              | X1000               |
|                        | X40                          | X480                |
| X15                    | X40                          |                     |

iv) State two functions of the following parts of a light microscope.

a) Fine adjustment knob (1 mark)

.....

b) Stage (1 mark)

.....

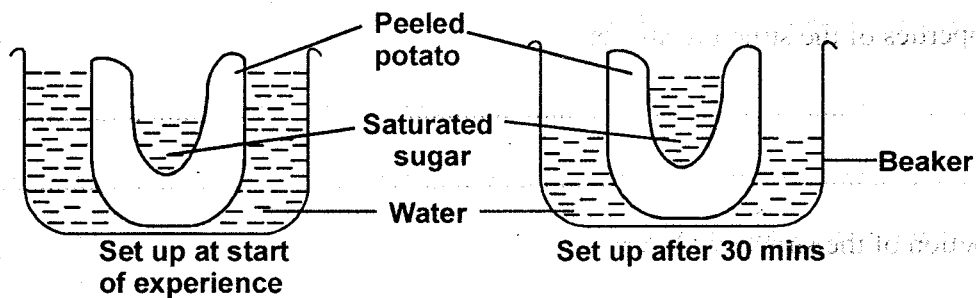
13. Why is osmosis said to be special type of diffusion? (2 marks)

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14. The diagrams below shows an experiment set up to investigate a certain process in plant tissues.



Explain the results observed after 30 minutes. (4 marks)

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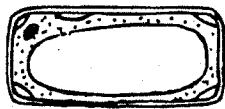
15. Explain what would happen to red blood cells;  
i) If they were placed in a concentrated salt solution. (2 marks)

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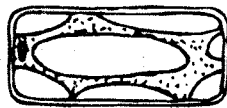
ii) If they were placed in distilled water. (2 marks)

.....  
.....

16. A strip of epidermis was taken from a leaf and cut into three parts. Each piece was placed for 5 minutes in one of the three beakers containing either distilled water, or 0.5 molar sugar solution or 1.0 molar sugar solution. After five minutes a representative cell from each piece of epidermis was drawn as shown in the diagram.



A



B



C

i) Which cell had been in the distilled water? (1 mark)

.....

ii) Had been in the 1.0m sugar solution? (1 mark)

.....

iii) Had a high wall pressure? (1 mark)

.....

iv) which cell was plasmolysed? (1 mark)

.....

v) Which cell became turgid? (1 mark)

.....

17. a) What is diffusion? (1 mark)

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b) Name three factors that affect the rate of diffusion? (3 marks)

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.....  
.....

c) Outline three roles of active transport in human body.

(3 marks)

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18. The table below shows the concentration of some ions in pond water and in the cell sap of an aquatic plant growing in a pond.

| Ions      | Concentration in pond water (p.p.m) | Concentration in cell sap (p.p.m) |
|-----------|-------------------------------------|-----------------------------------|
| Sodium    | 50                                  | 30                                |
| Potassium | 2                                   | 150                               |
| Calcium   | 1.5                                 | 1                                 |
| Chloride  | 180                                 | 200                               |

a) With reasons name the process by which each of the following ions could have been taken up by the plant.

i) Sodium

(2 marks)

.....

.....

ii) Potassium

(2 marks)

.....

.....

b) For each process named in a(i) and (ii) above. State one condition necessary for the process to take place.

(1 mark)

.....

c) i) Which ion would cease to be taken up if the plant was treated with a metabolic poison? (1 mark)

.....

ii) Give a reason for your answer.

(2 marks)

.....

.....

19. a) Define classification.

(2 marks)

.....

.....

b) The scientific name of a dog (Canis familiaris)

i) State the species to which the dog belongs.

(1 mark)

.....

ii) State the Genus to which the dog belongs.

(1 mark)

.....

c) Living organisms are divided into five kingdoms. Name any four kingdoms.

(4 marks)

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20. a) Distinguish between heterotrophism and autotrophism.

(2 marks)

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b) i) Define photosynthesis.

(2 marks)

.....

.....

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ii) Name the organ in a plant where photosynthesis occurs and the cell organelle where photosynthesis takes place. (2 marks)

a) Organ .....

b) Cell organelle .....

21. Name two stages of photosynthesis and state where each stage occurs.

(4 marks)

i) Stage 1 .....

Where it occurs .....

ii) Stage 2 .....

Where it occurs .....

22. Name the building blocks of:

a) Lipids .....

(1 mark)

b) Proteins .....

(1 mark)

23. State the raw materials of photosynthesis.

(2 marks)

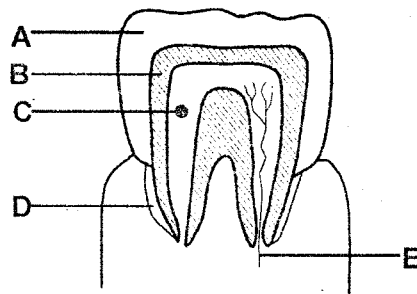
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24. i) Distinguish between homodont and heterodont dentition.

(2 marks)

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.....

ii) Study the diagram below and answer the questions that follow.



Name the parts labelled A-C and their functions.

(6 marks)

|   | PARTS | FUNCTION |
|---|-------|----------|
| A |       |          |
| B |       |          |
| C |       |          |