**NAME…………………………………………………………ADM. NO.…………….............**

**SCHOOL ………………………………………………………FORM………SIGN …………**

**TERM 1 2021**

**BIOLOGY**

**TIME 2HOURS**

**FORM THREE.**

**CASPA AMUKURA PARISH EXAM**

**INSTRUCTIONS**

a) This exam consists of two sections **A** and **B**.

b) Answer all questions in section **A**

c) In section **B** question is compulsory.

d) Answer **ONE** question between question 13 and 14.

**For Examiners Use Only**

|  |  |  |
| --- | --- | --- |
| Question | Total Score | Candidates Score |
| 1 | 80 |  |

**SECTION A 40 MARKS**

1. (i) What biological knowledge or study is required in dealing with locusts that infest a maize crop. (1 mark)

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 (ii) State the functions of the following cell structures. (2 marks)

 (a) Sap vacuole.

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1. Nucleolus.

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2. Which **two** classes of phylum arthropoda that have their head fused with the thorax? (2 marks)

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3. The set up shows an experiment to investigate photosynthesis.

Aquatic plants

Gas collected

At the start

After the experiment

Water containing sodium hydrogen carbonate

 (a) What gas was collected in the test tube? (1 mark)

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1. What was the role of sodium hydrogen carbonate in the experiment? (2 marks)

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4. State **three** adaptations of the phloem tissue. (3 marks)

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5. Name **three** properties of the cell membrane. (3 marks)

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6. Name **two** enzymes and **one** metal ion that are needed in the blood clotting process.(3 marks)

 Enzymes.

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 Metal ion

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7. Study the diagrams below carefully and use them to answer questions that follow



**Y**

**X**

**Z**



(i) To which phylum does organisms x,y and z belong to. (1 mark)

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 (ii) Name the classes to which X, Y and Z belongs to. (3 marks)

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 (iii) Give two important economic roles of specimen Y. (2 marks)

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 (iv) Give two harmful effects of specimen X to animals. (2 marks)

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8. What happens when respiration exceeds photosynthesis in the guard cells of terrestrial plants? (3 marks)

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9. State three features that a grasshopper, a crab, a spider and a millipede have in common.

 (3 mark)

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10. The figure shown below represents a kidney nephron. Use it to answer the questions that follow.



 (a) (i) What structural difference exist between **W** and **Z**? (1 mark)

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 (ii) State the significance of the difference stated in (a) (ii) above. (1 mark)

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 (b) State **three** adaptations that enable **P** to perform its function. (3 marks)

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11. 5C51 H98 06 + 145 O2 Energy + 102 CO2 + 98 H2O

 The above equation shows an oxidation reaction of food substances.

1. What do you understand by the term respiratory quotient?

 (1 mark)

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1. Determine respiratory quotient of the oxidation of food substances. (2 marks)

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1. Identify the food substances. (1 mark)

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**SECTION B:(40 MARKS)**

 ANSWER QUESTION **12 (COMPULSORY)** AND **EITHER** QUESTION **13** OR **14** IN THE SPACES PROVIDED AFTER QUESTION **14**.

12. An experiment was carried out in which red blood cells were put in salt solutions of different concentrations. The table below shows the percentage of cells which were destroyed by haemolysis in different salt concentration.

|  |  |
| --- | --- |
| Salt concentration(g/dm³)  | % of RBC destroyed By haemolysis |
| 0 | 100 |
| 1 | 100 |
| 2 | 100 |
| 2.5 | 100 |
| 3.0 | 100 |
| 3.5 | 96 |
| 3.7 | 80 |
| 4.0 | 60 |
| 4.5 | 16 |
| 4.7 | 0 |
| 5.0 | 0 |
| 6.0 | 0 |

1. Draw a graph of percentage of red blood cells haemolysed against salt concentration. (6 marks)

 (b) Explain haemolysis of red blood cells. (3 marks)

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 (c) From the graph, state:

 (i) the salt concentration at which 50% red blood cells were haemolysed. (1 mark)

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1. the highest salt concentration when the largest number of red blood cells were haemolysed. (1 mark)

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(d) (i) Suggest the normal salt concentration in the blood of the mammal from which the red blood cells were obtained. (2 marks)

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 (ii) Give a reason for your answer in (d) (i) above. (1 mark)

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1. What term is used to describe the solution with equal solute concentration as that of the cells? (1 mark)

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(e) Name the process in the human body that ensures that haemolysis of red blood cells is prevented. (1 mark)

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(f) State the role of osmosis in organisms. (4 marks)

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13. Explain the adaptation of the small intestine to their functions. (20marks)

14. Describe the

 (i) Process of inhalation in mammals (10 marks)

 (ii) Mechanism of opening and closing of stomata (10 marks)

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