KERUGOYA BOYS HIGH SCHOOL

END OF TERM THREE EXAMS YEAR 2015

FORM THREE BIOLOGY PAPER TWO

NAME………………………………………………………. CLASS………………. ADM NO……………..

**INSTRUCTIONS TO CANDIDATES**

a) Write your name and admission number in the spaces provided above

b) This paper consists of two sections; A and B

c) Answer all the questions in section A.

d) In section B answer question 6 (compulsory) and either question 7 and 8 in the spaces provided after question 8

**SECTION A**

1. a) In the table below, state three differences between the structure of the plant cells and the animal cells.

|  |  |
| --- | --- |
| Plant cells | Animal cells |
|  |  |
|  |  |
|  |  |

b) Suppose that each group of cells was placed in a highly concentrated sucrose solution. Describe briefly what would happen in each case. (4 marks)

i) Animal cells

ii) Plant cells

c) Name the carbohydrate in high composition in the chloroplast of a plant cell. (1 mark)

2. a)

i) Name the type of germination exhibited in a monocot seedling. (1 mark)

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

b) State the role of the following during the process of germination. (4 marks)

i) Coleoptile

ii) Coleorhiza

c) Explain the role of oxygen during the germination process. (2 marks)

3. a) Name the class of organism that uses gills for gaseous exchange. (1 mark)

b) State the function of gill rakers in the organism in 3(a) above. (1 mark)

c) Outline two ways in which gill filaments are modified to perform their functions. (4 marks)

d) State the physiological process involved in the movement of oxygen from water into gills. (1 mark)

4. a) Briefly explain how the features of the red blood cell adapt to its function. (3 marks)

i) Small size

ii) Haemoglobin

Lack of nucleus

b) State two factors that determine the number of the red blood cells in humans. (2 marks)

c) Briefly explain how oxygen is transported from the lungs to the body tissues in humans. (3 marks)

5. The equation below represents a process that takes place in plants

6CO2 + 6H2O🡪 C6H12O6  +6O2

a) Name the process (1 mark)

b) State two conditions necessary for the process to take place (2 marks)

c) State what happens to the end products of the process. (5 marks)

**SECTION B**

**Answer questions 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.**

6. The table below shows the population of a housefly (Musca domestica) which is parasiticed by wasps of species Nasonia spp. The investigation of their population growth pattern was carried out for 70 weeks. In these experimental space and physical factors were assumed not to be limiting.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time in weeks | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 |
| Musca domestica | 40 | 70 | 110 | 260 | 350 | 480 | 400 | 395 | 350 | 40 | 60 | 140 | 250 | 240 | 230 |
| Nasonia spp | 10 | 20 | 30 | 45 | 100 | 200 | 300 | 380 | 410 | 250 | 60 | 20 | 40 | 200 | 280 |

a) Using the same axes, plot graphs of population growth of organisms against time. (8 marks)

b) Account for the growth of:

i) Musca domestica between 10th week-25th week. (2 marks)

ii) Nasonia spp between 40th week-50th week. (2 marks)

c) What is the population of:

i) Nasonia spp on the 62nd week. (1 mark)

ii) Musca domestica on the 4th week (1 mark)

d) Bomex , another parasite of housefly was introduced into the ecosystem, what will be the effect on the population of:

i) Musca domestica (1 mark)

ii) Nasonia spp (1 mark)

e) In estimating the population of Musca domestica in the experiment above, capture-recapture method was used. Describe the procedure followed. (4 marks)

7. Describe how fruits and seeds are suited to their modes of dispersal. (20 marks)

8. Describe the role of the liver in homeostasis in the human body. (20 marks)