

# FOCUS A365

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## FORM 4 TERM 1 BIOLOGY PP2 EXAMINATIONS 2018

NAME: \_\_\_\_\_ ADM NO: \_\_\_\_\_ CLASS: \_\_\_\_\_

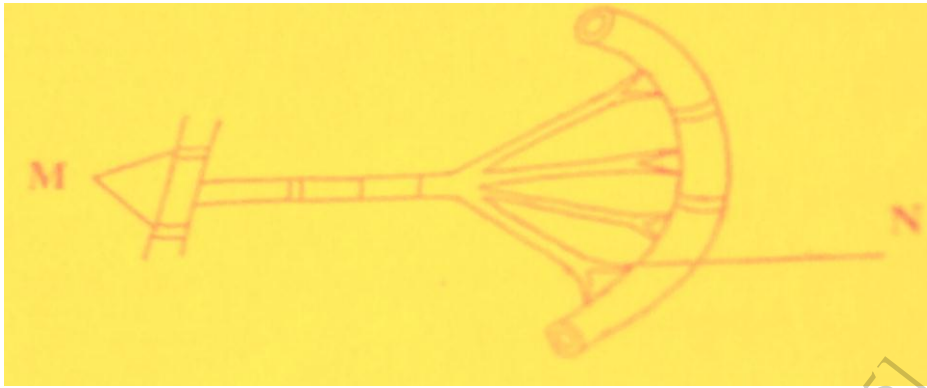
### INSTRUCTIONS TO CANDIDATES:

1. Write your Name and Admission Number in the spaces provided above.
2. Sign and write the date of this examination in the spaces provided above.
3. Answer all the questions in section A the spaces provided.
4. In section B answer question 6(compulsory) and either question 7 or 8 in the spaces provided after question 8.
5. Do not remove any pages from this booklet.

For teacher's use only

Section	Question	Maximum score	Student score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	Total score	80	

1. The diagram below represents part of a cockroach gaseous exchange system.

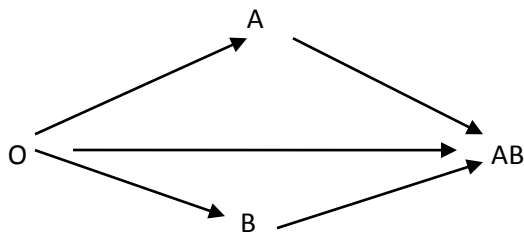


(a) State the function of the part labeled M (1mk)

(b) Suggest how the part m is adapted to the gaseous exchange function (3mks)

(c) How does the movement of oxygen in an insect and mammals from atmosphere to the tissues of its body differ (4MKS)

2. The following chart below shows blood transfusion pathway



(a). What five conclusions can you draw from the chart. (5mks)

(b) Why is the knowledge of blood groups necessary before blood transfusion? (1mk)

(c) Apart from knowledge of blood groups, state two precautions that must be observed during blood transfusion. (2mks)

3. The genetic disorder haemophilia is due to a recessive sex linked gene. a man who is haemophiliac married a woman who is a carrier for the condition.

(a) Using letter(H) to represent normal condition (h) to represent haemophiliac condition.

(i). What is the genotype of the man and the woman ? (2mks)

Man -----

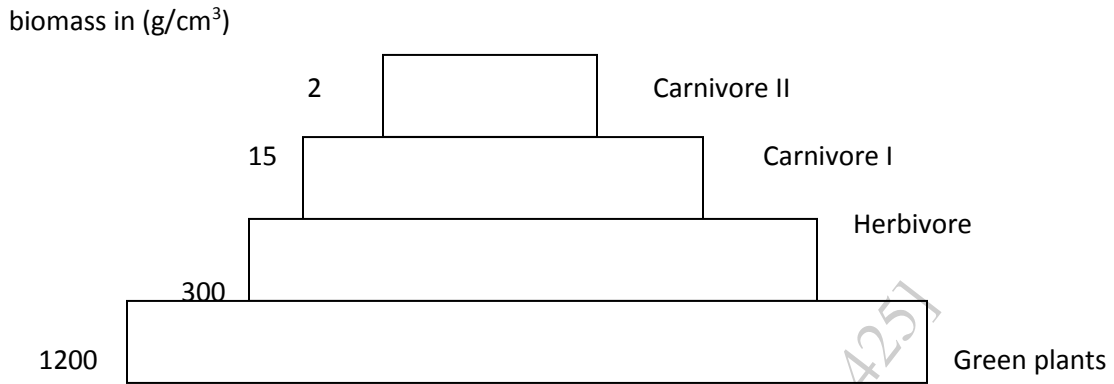
Woman -----

(ii) Work out across between the man and a woman (3mks)

(b) What is the chances that both the first and the second sons will be haemophilic? (2mks)

(c). Haemophilia is most common in males than in females humans. explain.(1MK)

4. The diagram below shows different groups of organisms and their biomass.



(a). Define the term biomass. (2mks)

(b). Account for the decrease in biomass in the successive group of organisms. (3mks)

(c). Describe how energy from the sun is made available for carnivore II (3mks)

5. Cells of a certain herbaceous plant were found to have an average diameter of  $2.5\mu\text{m}$  the cells were put in varying concentrations of salt solutions. The average diameter of the cells in each solution was determined and the results were recorded as shown in the table below.

CONCENTRATION OF SALT SOLUTION IN %	DIAMETER OF THE CELLS IN UM
1	5.0
5	4.0
10	3.0
15	2.0

(a) From the results above, determine the cell sap concentration. (1mk)

(b). Give an explanation for the average diameter of the cells placed in the following salt concentrations compared to the normal diameter of the cells.

(i) 1% salt solution. (3mks)

(ii) 15% salt solution (3mks)

Give the term used to describe salt solution whose concentration is the same as the cell sap. (1mk)

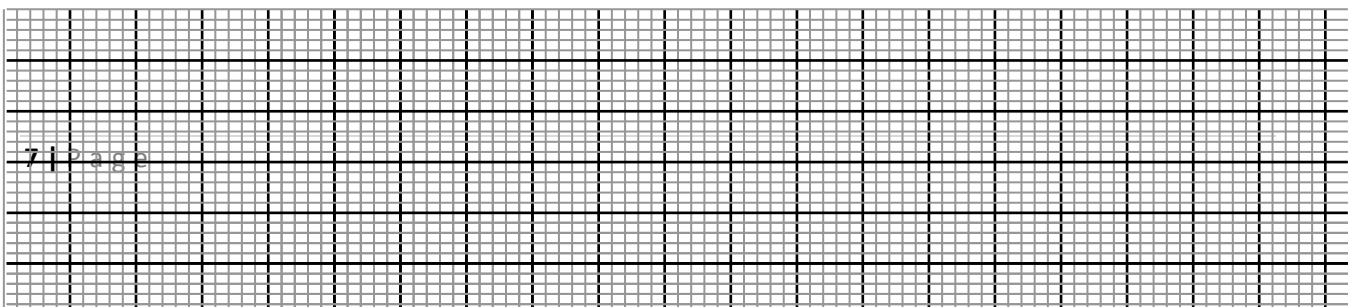
SECTION B (40 MARKS)

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

6. In an experiment, the population growth of yeast cells in a petri dish was determined over a period of 75 minutes. The results below were obtained.

<i>TIME IN MINUTES</i>	<i>NUMBER OF YEAST CELLS</i>
0	4
5	6
10	8
15	10
25	30
30	50
35	80
40	120
45	140
50	150
55	160
65	166
75	166

(a). Using a suitable scale , plot a graph of number of cells against time in minutes (6mks)



(b). Name the type of the curve you have drawn above. (1mk)

(c). Determine the number of yeast cells after 37 minutes. (1mk)

(d) After how long was the population of yeast cells 144? (1mk)

(e). Work out the rate of cell division between 32 minutes and 42 minutes. (2mks)



(f). Account for the shape of graph between 45<sup>th</sup> minute and 60<sup>th</sup> minute. (3mks)

(G). In a field study to estimate the population of grasshoppers in the school field of 4km<sup>2</sup>, 60 grasshoppers were caught using sweep nets, marked with red paint and released back to the field. The following day students went back with their sweep nets and caught 100 grasshoppers, in which 20 were found to be already marked.

(i). calculate the population size of grasshoppers in the field. (2mks)

(ii). Calculate the population density of the grasshoppers in the field. (2mks)

(iii). What factors would maintain the population of grasshoppers and yeast cells at the carrying capacity. (2mks)

7. Describe the various evidences to support organic evolution. (20mks)

8. (a) Describe how insect pollinated flowers are adapted to pollination.(10mks)

(b) Explain how seeds and fruits are adapted to wind and animal dispersal.(10mks)

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