

FORM FOUR TERM ONE EXAM 2017

BIOLOGY

PAPER 2

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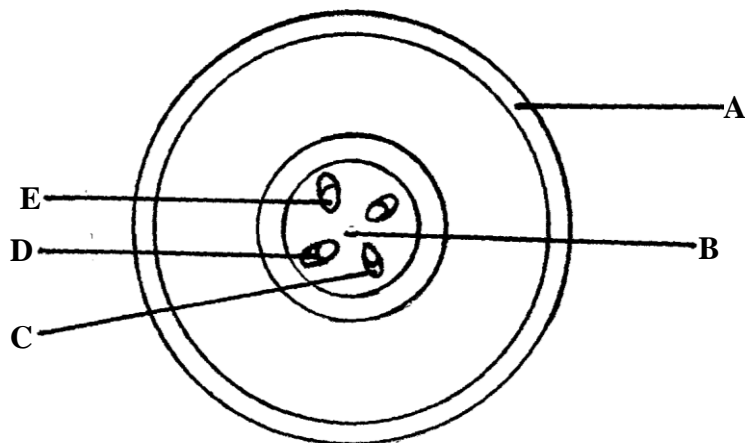
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This paper consists of 8 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A (40MARKS)

1. The figure below represents a transverse section of a young stem.

(a) Name the parts labelled **A** and **B** on the diagram. (2mrks)



A.....

B.....

(b) State the functions of the labelled **C**, **D** and **E**. (3mrks)

C.....

.....

D.....

.....

E.....

.....

(c) List **three** differences between the section shown above and one that would be obtained from the root of the same plant. (3mrks)

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2. A pure breeding black male mouse was mated with a pure breeding brown female mouse. all the offspring had black coat colour.

(i) Explain the appearance of black coat colour in the offspring. (1mrk)

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(ii) If the black parental mouse was mated with a mouse that is heterozygous for coat colour, work out the genotype ratio of offspring. Show your working. (5mrks)

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(iii) State **two** disorders in human being that are as a result of chromosomal mutations. (2mrks)

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3. In an experiment to compare the basal metabolic rate of some animals, the amount of oxygen consumed per unit body weight in a given period of time was determined. The table below shows results of the investigation.

Animal	Body weight(kg)	Oxygen consumed g/hr
Buffalo	546	47
Man	58	203
Rabbit	3	318
Rat	0.1	700
Mouse	0.02	1510

(a) Comment on the volume of oxygen consumed by the buffalo and the mouse. (1mrk)

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(b) Account for the above comparison for:

(i) Buffalo. (2mrks)

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(ii) Mouse. (2mrks)

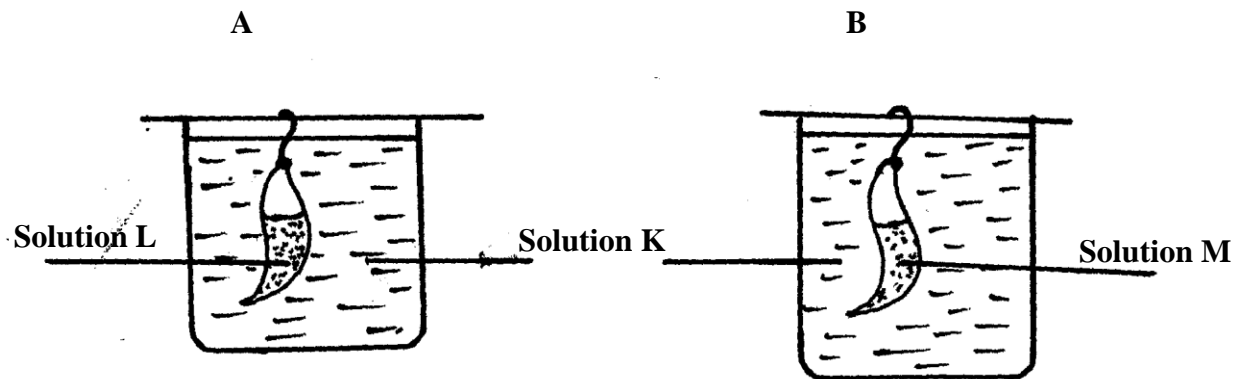
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(c) What is Basal Metabolic Rate (BMR)?

(1mrk)

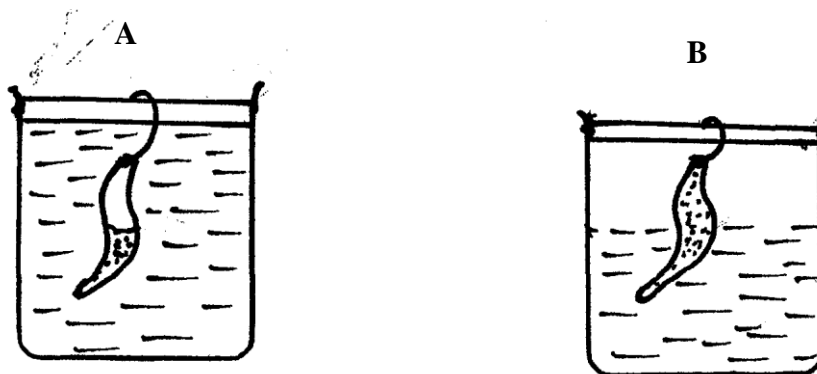
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(d) Explain how high temperature increases the rate of diffusion.

(2mrks)

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4. In an experiment two equal volumes of solution **L** and **M** were placed into visking tubing. The visking tubing was suspended into beakers containing equal volumes of solutions **K**. The set-up is as shown in the diagram **A** and **B**. The set-up was allowed to stand for 45 minutes and results are as shown in the diagrams.



At the end of experiment



(a) Name the process that was being demonstrated.

(1mrk)

(b) Explain the results that were obtained at the end of the experiment in

(i) Set-up **A**. (2mrks)

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.....

(ii) Set up **B**. (2mrks)

(c) What is the biological importance of the process demonstrated in this experiment to plants.

(2mrks)

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(d) What happens to a marine Amoeba when it is transferred from sea water to freshwater?

(1mrk)

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5. (a) Explain the term Eutrophication. (3mrks)

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(b) How does Eutrophication lead to death of fish in a water body. (3mrks)

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(c) Persistent use of a agricultural Inorganic fertilizers leads to loss of soil fertility Account for this observations. (2mrks)

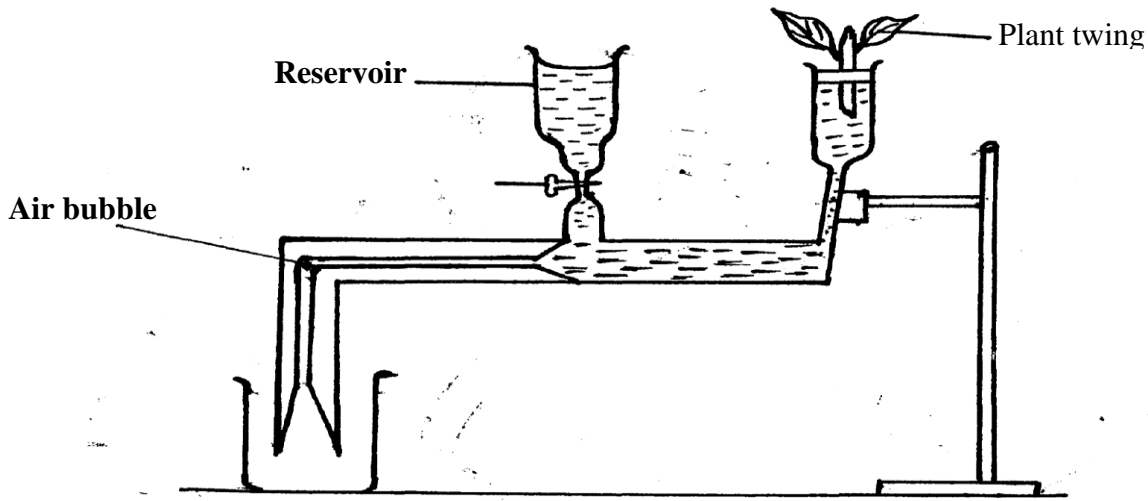
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SECTION B(40 MARKS)

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

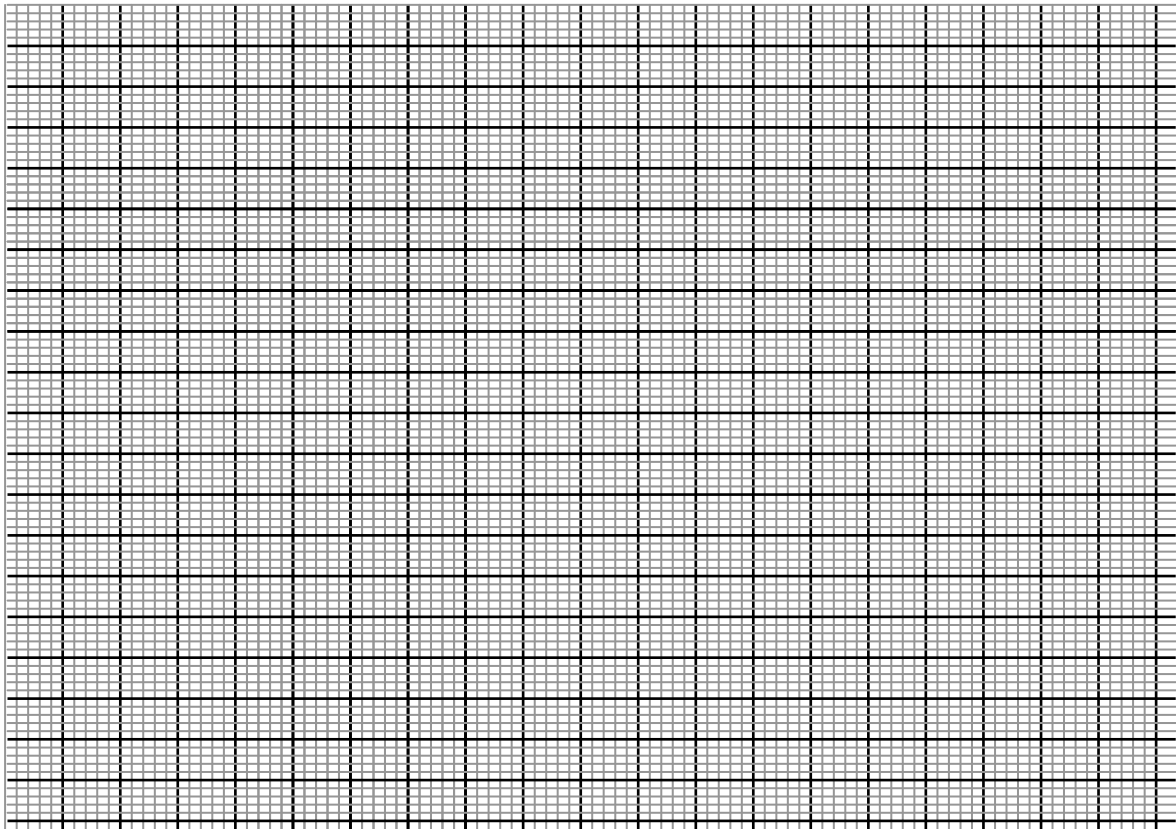
6. An investigation was conducted to compare loss from twigs of two species of plants **X** and **Y**. The apparatus shown below was used for this investigation. The twigs had equal leaf surface.



The results of the investigation were recorded in the table below.

Time of the day	6a m	8am	10am	12noon	1pm	2pm	3pm	4pm	6pm	8pm	12midnight
Water loss gh^{-1} species X	0	4	20	40	55	36	26	20	2	0	0
Water loss gh^{-1} species Y	8	20	39	131	198	182	130	81	45	12	12

(a) Plot a graph of water loss gh^{-1} against time for the plants. (7mrks)



(b) (i) Name the apparatus used in the above investigation. (1mrk)

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(ii) State **two** precautions that were taken in setting up this experiment. (2mrks)

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