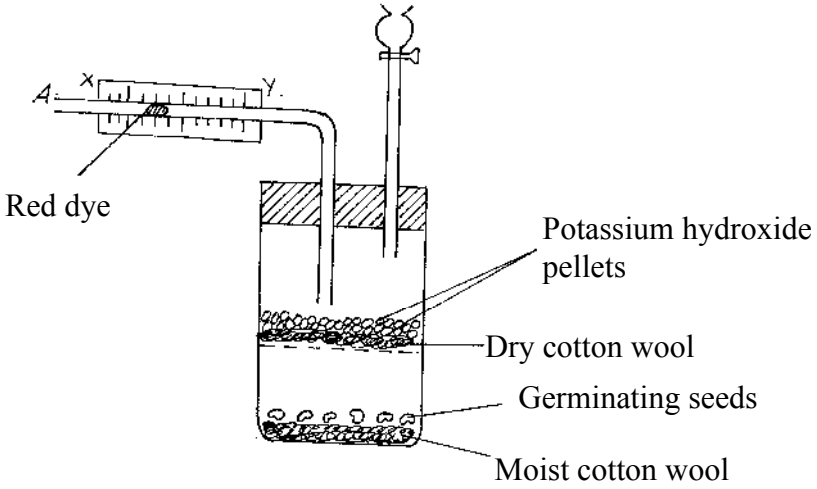
231/2

BIOLOGY

1. The diagram below shows an experimental set up to investigate an aspect of germination. *TRZ*



a) Why are the following used in this experiment? *TRZ*

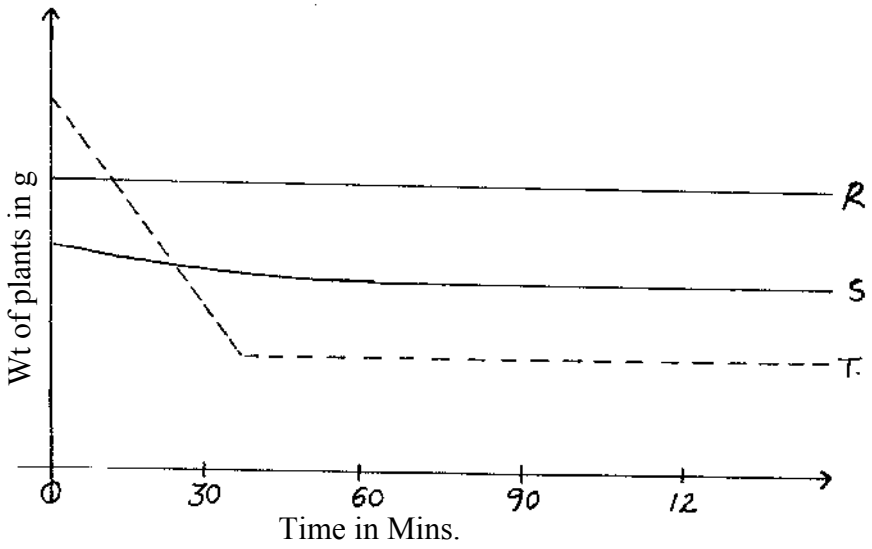
(i) Potassium hydroxide pellets?

(ii) Moist cotton wool?

b) (i) With reference to points x and y state the direction the dye would move towards during the experiment. 1mk *TRZ*

(ii) Give reasons for your answer in (b) (i) 3mks *TRZ*

2. An experiment was carried out to determine the rate of transpiration in three plants R, S and T. Plant S and T belong to different species while plants R and T belong to the same species. Plant R had all its leaves removed. The three plants were of similar size and were exposed to the same environmental conditions. The results are represented by the graphs below. *TRZ*



a) Suggest possible environmental conditions under which the experiment was carried between O and 40 minutes. 2mks *TRZ*

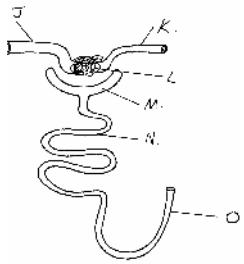
b) Account for the results obtained for plant R. 2mks *TRZ*

c) Giving reasons, suggest the habitats for plant. 4mks *TRZ*

(i) S .Reason

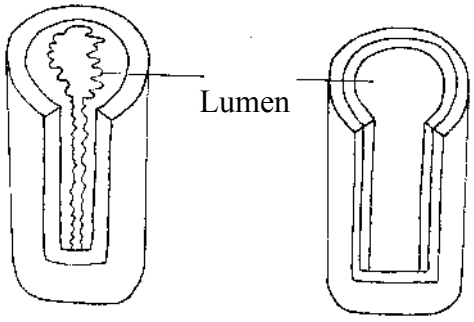
(ii) T Reason

3. The diagram below shows a section of the functional unit of a mammalian kidney. *TRZ*



a) Identify the structure drawn. 1mk*TRZ*
b) Name the parts labeled J and M.
(i) J
ii) M 2mks*TRZ*
c) What causes the process that occurs in structure L? 1mk*TRZ*
d) What is the difference in the composition of fluids in structure K and O? 1mk*TRZ*
e) State three adaptations of part N to its function. 2mks*TRZ*
f) State two adaptations that desert animals have to reduce water loss through urine.2mks*TRZ*

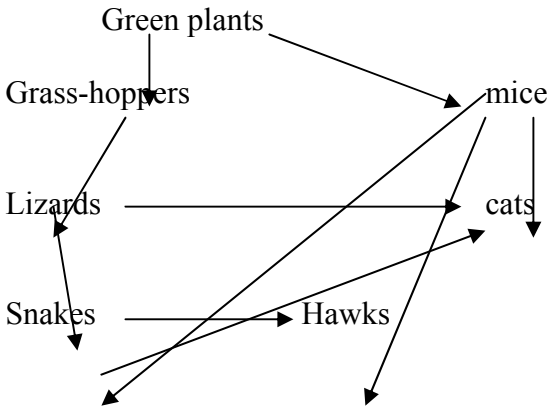
4. The diagram below show two internal sections of the human intestines



P Q

a) Name the part of the intestines represented by 2mks*TRZ*
(i) Fig P
(ii) Fig Q
b) What observable structural feature forms the basis of identifying the figures P and Q? 1mk*TRZ*
c) State two functions of the part represented by Fig.P 2mks*TRZ*
d) State four adaptations possessed by the part represented by Fig. P for its functions.4mks*TRZ*
e) State one function of the part represented by Fig. Q. 1mk*TRZ*

5. The chart below shows a feeding relationship in a certain ecosystem.



a) Construct a food chain ending with snakes as
(i) Secondary consumer 1mk*TRZ*
(ii) Tertiary consumer 1mk*TRZ*

b) Which organism in the food-web has
(i) the highest variety of predators 1mk *TRZ*
(ii) the highest variety of preys. 1mk *TRZ*
c) Name the organisms that will be directly affected if:
(i) there was prolonged drought. 1mk *TRZ*
(ii) the area was sprayed with insecticides 1mk *TRZ*

SECTION B (40 MARKS)

6. The following data represents the development in dry mass of seedlings for a period of 18 weeks.

Time in weeks	0	2	4	6	8	10	12	14	16	18
Dry mass in g	2.8	4.0	6.0	10	18	32	44	46	44	40

a) Using a suitable scale, plot a graph of dry mass against time. 6mks *TRZ*
b) With reference to growth explain the changes in dry mass between
(i) Week 0 and week 4. 2mks *TRZ*
(ii) Week 6 and week 12 2mks *TRZ*
(iii) Week 14 and week 18 2mks *TRZ*
c) With a reason state the difference in results that would be expected from the above if the experiment started with the seeds. 2mks *TRZ*
d) Describe how you would carry out the procedure to obtain dry mass in the respective weeks. 4mks *TRZ*
e) State one advantage and one disadvantage of using mass instead of fresh weight in estimating growth of an organism. 2mks *TRZ*

7. a) Explain how blood is involved in transport. Stating the constituents of blood involved. 14mks *TRZ*
b) Describe how blood protects the body. 4mks *TRZ*
c) Identify two sites in the mammalian body where blood is manufactured. 2mks *TRZ*

8. Explain how
(a) Fresh water fishes are adapted to overcome the problem of osmoregulation. 4mks *TRZ*
(b) Predators are adapted to apprehend their prey. 4mks *TRZ*
© Xerophytes are adapted to their habitat. 12mks *TRZ*