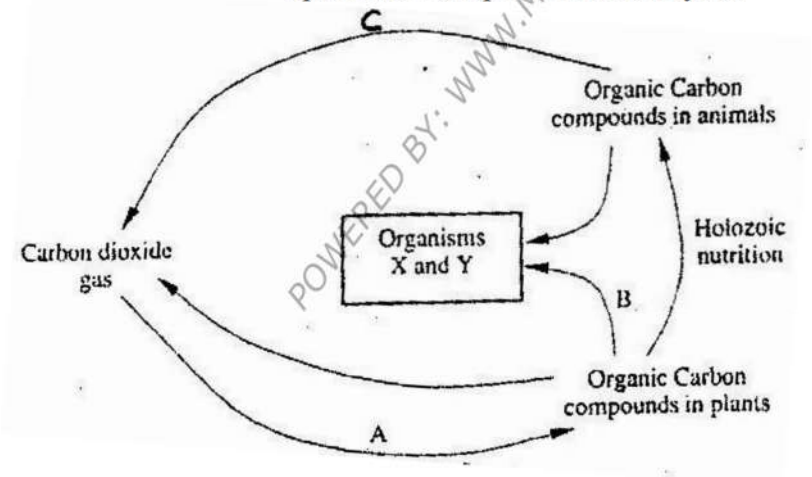
BIOLOGY PAPER 231/1 K.C.S.E 2002

1. Beside the abdomen, name the other body part of members of Arachnida,
2. a) Name the bacteria found in the root nodules of leguminous plant
   b) State the association of the bacteria named in (a) above with the leguminous plants.
3. a) State the function for co-factors in cell metabolism
   b) Give one example of a metallic co – factor
4. During germination and early growth, the day weight of the endosperm decreases while that of the embryo increases. Explain.
5. State two characters that researchers select in breeding programme.
6. In what form is oxygen transported from the lungs to the tissues?
7. Explain why the carrying of wild animals is higher than that for cattle in a given piece of land.
8. Which type of joint is found at the articulations of
   a) Pelvic girdle and femur
   b) Humerus and ulna?
9. Name two gaseous exchange structures in higher plants.
10. What happens to excess fatty acids and glycerol in the body?
11. Give an example of a sex – linked trait in humans on:
    Y CHROMOSOME.
    X CHROMOSOME.

12. The chart below represents a simplified carbon cycle.



(a)Name the process labeled A, B, and C

A

B

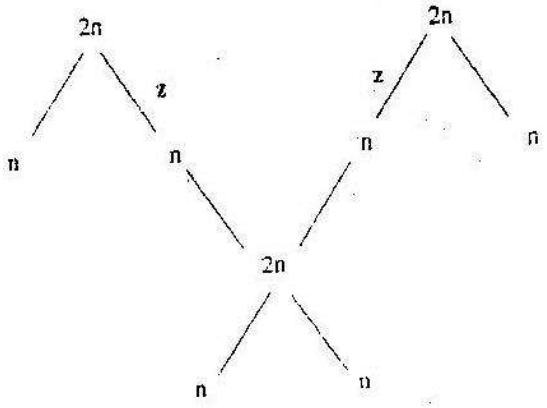
C

b) Name the organisms X and Y

X Y

c) State the importance of carbon cycle in nature

13. The chart below shows the number of chromosomes before and after cell division and fertilization in a mammal.

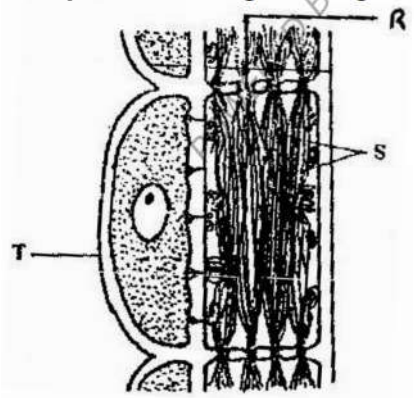


a) What type of cell division takes place at Z
b) Where in the body of a female does process Z occur
c) On the chart, indicate the position of parents and gametes
d) Name the process that leads to addition or loss of one or more chromosomes.
e) State three benefits of polyploidy in plants to a farmer

14. a) What is organic evolution
b) State two ways in which Home sapiens differs from Homo habilis
c) Distinguish between divergent and convergent evolution giving example in each case.

15. Ascaris lumbricoides in an example for an endo – parasite
a) The name Ascaris refers to
b) State the habitat of the organism
c) State three ways in which the organism is adapted to living in its habitat.

16. The diagram below represents part of phloem tissue.



a) Name the structures labeled R and S and the cell labeled T.
R-
S-
Cell labeled T
b) State the function of the structure labeled S
c) Explain why xylem is a mechanical tissue

17. a) What structures are produced by sisal for vegetative propagation?
    b) Give a reason for grafting in plants
    c) State four advantages of vegetation propagation.

Time (minutes)	Glucose level in blood (Mg / 100cm30	
	X	Y
0	87	84
15	112	123
30	139	170
45	116	188
60	100	208
90	95	202
120	92	144
150	88	123

18. Two person X and Y drunk volumes of concentrated solution of glucose. The amount of glucose in their food was determined at intervals. The results are shown in the table below:
    a) On the grid provided, plot graphs of glucose level in blood against time on the same axes.
    b) What was the concentration of glucose in the blood of X and Y at the 20th minute?
       X = 120 + -3)
       Y = 140 +-3)
    c) Suggest why the glucose level in person X stopped rising after 30 minutes while it continued rising in person Y.
    d) Account for the decrease in glucose level in person X after 30 minutes and person Y after 60 minutes (3 minutes)
    e) Name the compound that stores energy released during oxidation of glucose.
    f) Explain what happens to excess amino acids and development of plants.

19. Describe the role of hormones in the growth and development of plants.

20. a) Name three types of skeletons found in multicellular animals
    b) Describe how the cervical, lumbar and sacral vertebrae are suited to their functions.