

Biology Paper 2 - 2022 K.C.SE Prediction Set 1

1. a. What is meant by the following terms?
 - i. Protandry (1mark)
 - ii. Self sterility (1mark)
- b. The diagram below shows a stage during fertilization in a plant.
 - i. Name the parts labelled Q,R and S (3 marks)
Q.....
R.....
S.....
 - ii. State two functions of the pollen tube (2 marks)
 - iii. On the diagram label the microphyle. (1mark)
2. a. Explain what happens to excess amino acids in the liver of humans. (3marks)
- b. Which portions of the human nephron are only found in the cortex? (3 marks)
- c. i. What would happen if a person produced less antidiuretic hormone? (1 mark)
- ii. What term is given to the condition described in C (i) above? (1mark)
3. a. i. What is meant by the term biological control? (1mark)
- ii. Give an example of biological control. (1mark)
- b. i. What is eutrophication? (3marks)
- ii. What are the effects of eutrophication? (3 marks)
- c. Name a substance that is responsible for acid rain. (1mark)

4. Leaves are the organs of photosynthesis. The following diagram shows what happens in a plant leaf during photosynthesis.

a. Give two ways in which leaves are adapted to absorb light. (2 marks)

b. Name the gases labelled X and Y. (2marks)

X.....

Y.....

c. Name the tissue which transport:

i. Water in to the leaf. (1 mark)

ii. Sugars out of the leaf. (1 mark)

d. Explain why it is an advantage for the plant to store carbohydrates as starch rather than as sugars. (2marks)

5. Some millet seeds were soaked in water for two days. They were then broken into small pieces and placed on the surface of agar containing starch. After two days it was found that the agar no longer contained starch. a. Suggest how the test for starch in the agar was carried out. (1 mark)

b. Explain why there was no starch in the agar after two days. (2marks)

c. Why was it necessary to soak the seeds? (1mark)

d. Why were the millet seeds broken into small pieces? (1mark)

e. State the observation that would be made if the seeds had been soaked in boiling water? (1mark) f. Suggest a control experiment that would have been suitable. (2marks)

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

6. A research was carried to determine the trend of growth of some boys and girls. Their average mass in kilograms was taken separately for a period of 20 years and tabulated as shown in the table below.

Age Average mass of boys (kg) Average mass of girls (kg)

0 2.5 2.5

2 11.5 11.5

4 15.0 16.0

6 18.5 19.3

8 22.1 27.1

10 25.1 27.1

12 27.5 30.5

14 37.0 35.5

16 44.0 44.0

18 46.9 52.0

20 48.5 55

a. On the same axis draw a graph of the average mass of the girls and boys against age. (7marks)

b. From the graph , determine the;-

i. Mass of boys at the age of 11 years. (1 mark)

ii. Growth rate of girls between ages 13 and 15. (3 marks)

c. Account for the change in the mass of girls during the age stated in (ii) above. (2 marks)

d. Explain the trend observed in the curves for both boys and girls. (2 marks)

e. Why do girls above 10 years require in take of food that is richer in iron than boys of the same age? (2 marks)

f. Apart from using average mass to estimate growth in human beings, name two other parameters that can be used. (2 marks)

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7. Describe how the various parts of the human digestive system are adapted to their functions. (20 marks)

8. a. State the causes of air pollution. (5 marks)

b. State how air pollutants affect organisms hence state how air pollution should be controlled. (15 marks)