PAPER 3

1   Below is a photograph of a fish. Examine it and answer the questions that follow.

K   L

P   N   M
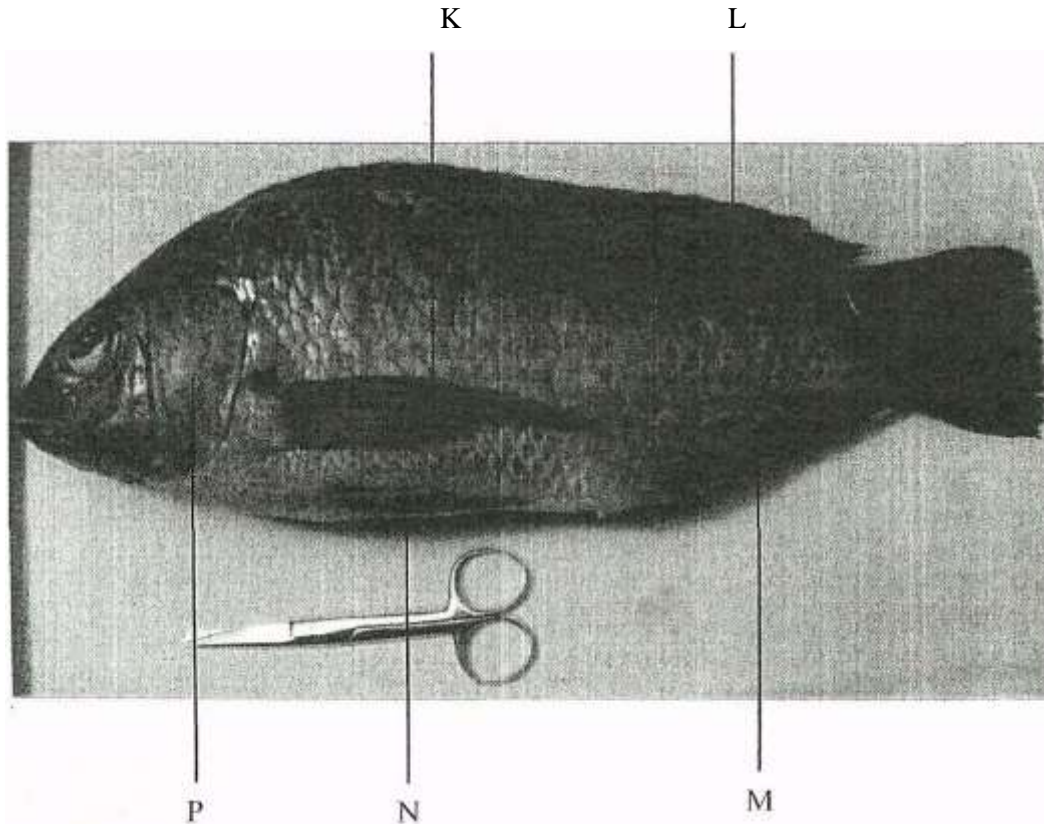
(a)   Name the parts labelled K, L, M and N   (4 marks)

(b)   The actual length of the pair of scissors next to the fish is 12.5cm. Using this information,
        calculate the actual length of the fish.   (3 marks)

(c)   Name the fins that prevent the following movements offish during swimming. (3 marks)

(i)   Yawing: ....

(ii)   Pitching: .... and

(d)   The photograph below shows structures visible after removing the part labelled P. The inset is a
        magnified view of one of the structures.
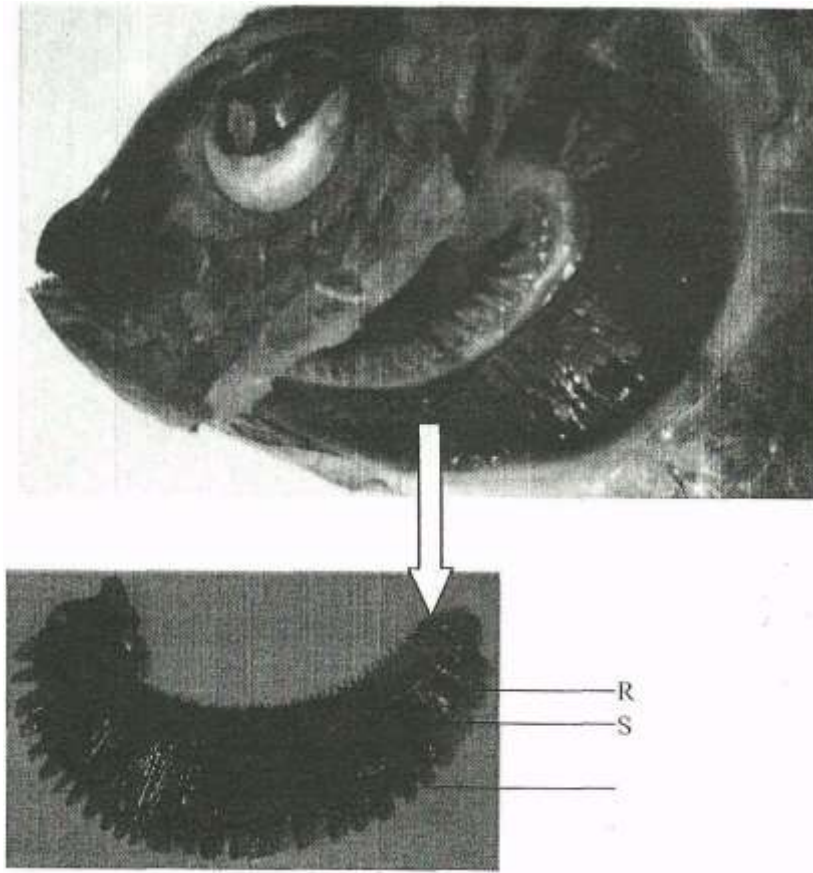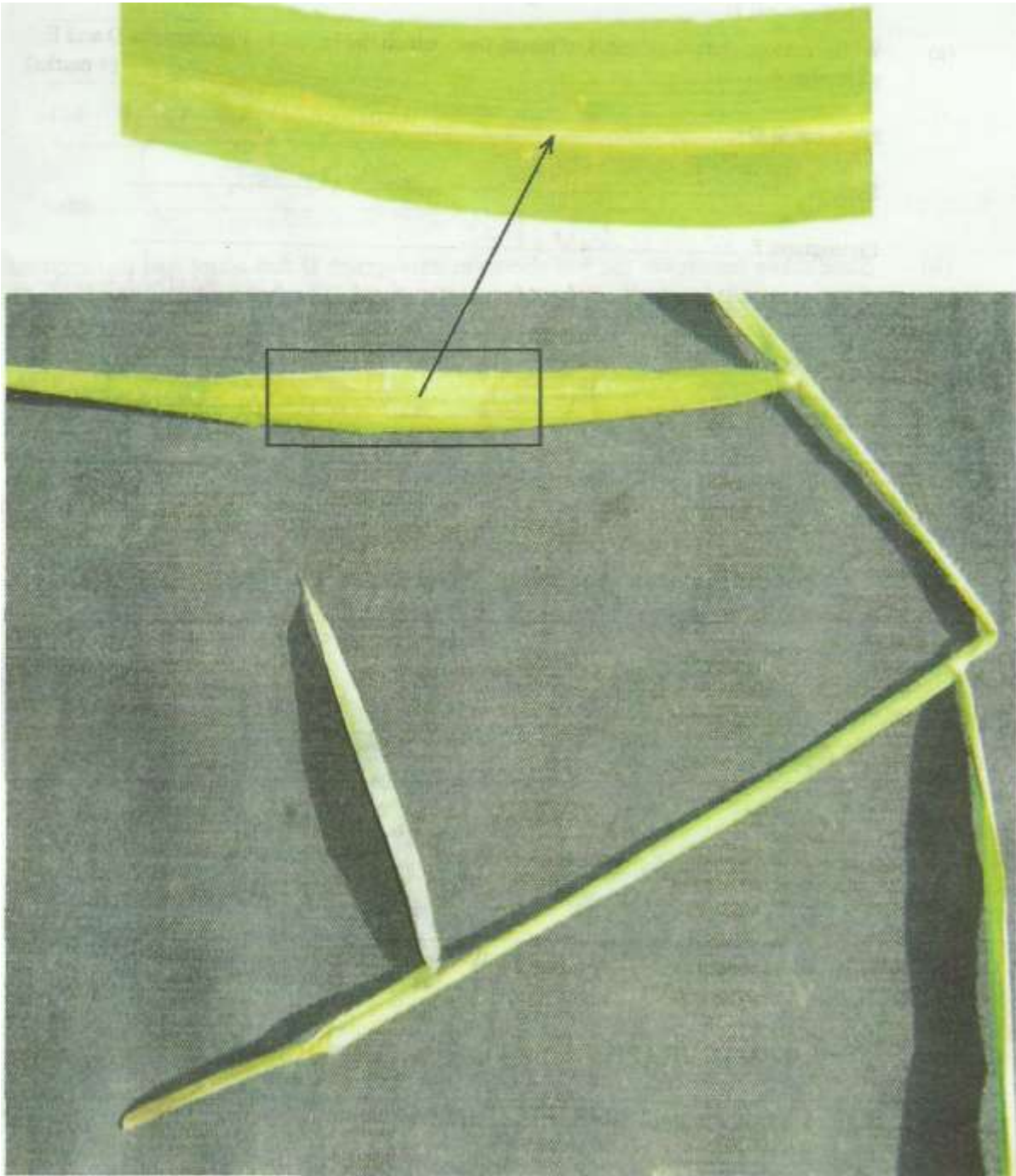
(i)   Name the parts labelled R, S and T.   (3 marks)

(ii)   Explain how each of the parts named in (d) (i) above is adapted to its function. (3 marks)

2   The photographs labelled D and E show two types of leaves.

(a)   With a reason, state the classes of plants from which the leaves in Photographs D and E were obtained.
                                                                                                (4 marks)
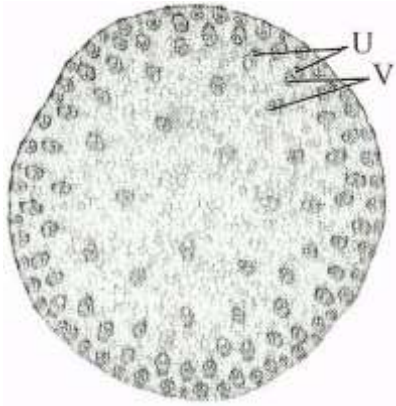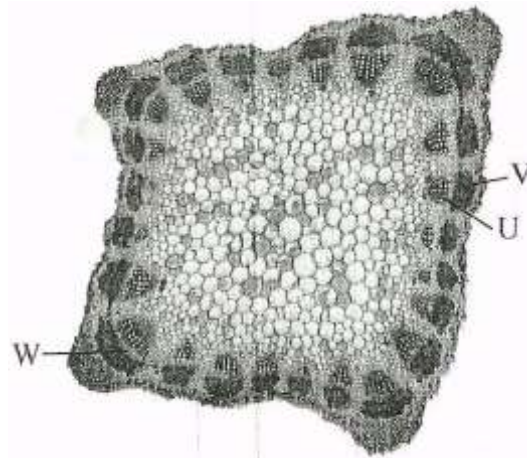
      Photograph D
      Reason

      Photograph E
       Reason

(b)   State **three** features in the leaf shown in photograph D that adapt it to its functions.   (3 marks)

(c)   The photographs below show the structures observed in cross sections of parts of two types of plants as seen under a light microscope.

PHOTOGRAPH F

PHOTOGRAPH G

(i)   Name the parts labelled U, V and W.

(ii)   Identify **five** differences between cross sections F and G and record them in the table below.

(5 marks)

Cross Section F   Cross Section

You are provided with a sample of food labelled X in solution form, solution J (Iodine solution), solution K (Benedict's solution) and solution L (Biuret's reagent). Carry out tests on the food sample to identify the type of food substances present. (9 marks)

Food being tested for	Procedure	Observations	Conclusion

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PAPER 3
MARKING SCHEME

1. (a) K – Pectoral fin
      L – Dorsal fin
      M – Ventral fin/arial fin
      N – Pelvic fin

   (b) Length of scissors = 4.6cm
       Length of fish = 12.6cm
       Actual fish length = actual length of scissors x actual length of fish
                                    Actual length of fish
                            = 13.5
                              0.36   = 37.5cm

   (c) (i) Yawing – Dorsal fin and ventral fin
       (ii) Pitching – Pelvic fin and pectoral fin

   (d) (i) R – Gill rakers
           S – Gill bar/gill arch
           T – Gill filament
       (ii)

2. (a) Photograph D – dicotyledonae
       Reason – network of vein/presence of petals/broad
       Photograph E – monocotyledonae
       Reason – parallel venation/presence of leaf sheath/narrow

   (b) Broad (flattened)/wide to offer large surface area for absorption of
       light/absorption of CO_2/transpiration
       Rich supply of veins to transport water to Ps cells/transport mineral
       salts/manufacture food.
       Presence of chlorophyll to absorb light (4ps) green colouring matter to absorb
       light

   (c) (i) U – Xylem/phloem
           V – Phloem/xylem
           W – Cambium
       (ii)

Cross section F	Cross section G
No pith	Pith present
V.B scattered	V.B in a ring/at the periphery
V.B numerous/root	V.B few
Cambium ring absent	Cambium ring present
Cortex absent	Cortex present
Small V.B	Large V.B

3.

Food being tested for	Procedure	Observation	Conclusion
Starch Iodine test	Add iodine solution/soln J	Black/blue black/ blue colour formed	Starch present
Reducing sugar Rej; Benedict test	Add benedict solution/sol K. put in a hot water bath/ heat/warm	Colour changes to green/yellow/orange/ brown/Redding brown	Reducing sugar present. Rej. traces/ little red sugar
Proteins Rej. Biaret test	Add biuret's reagent/ soil	No colour change/ colour change to brown colour of biaret reagent/black	Protein absent