## 9.3 Biology Paper 3 (231/3)

1 (a) K - Pectoral fin;
L - Dorsal fin;
M - Anal fin;
N - Pelvic fin;

(4 marks)

(b) The size of scissors on the photograph is 4.6 }
The length of fish on the photograph is 13.6 };

Mg = Image length / Actual length

Actual length of fish is $\frac{13.6 \times 12.5}{4.6}$ }; = 36.96 cm; (3 marks)

(c) (i) Yawing - Dorsal fin;

(ii) Pitching - Pectoral fin; Pelvic fin; (3 marks)

(d) (i) R - gill rakers;
S - gill bar;
T - gill filaments; (3 marks)

(ii) R - sharp/numerous/pointed/arranged closely in a row to trap solids that can damage the filaments;

S - rigid/firm to hold gill filaments in place;

T - numerous to increase surface area for gaseous exchange/thin to reduce the distance for gaseous exchange/vascularized to transport respiratory gases away from the respiratory surface/ moist to dissolve oxygen for diffusion;

(3 marks)
(Total = 16 marks)

2 (a) Leaf D - class dicotyledonae;
Reason - network of veins/presence of petiole;

Leaf E - class monocotyledonae;
Reason - parallel venation/presence of leaf sheath;

(4 marks)

(b) Broad and flat to offer a large surface area for photosynthesis;

Thin to reduce distance over which carbon IV oxide diffuses to reach the mesophyll cells;
Rich supply of veins to transport water to photosynthetic cells;
Presence of chlorophyll to absorb light for photosynthesis; (first 3 = 3 marks)

(c) (i) U - xylem;
V - phloem;
W - cambium;

(3 marks)

(ii)

| | Cross section of F | Cross section of G |
|---|---|---|
| i | No pith | pith present; |
| ii | Vascular bundles scattered | vascular bundles in a ring; |
| iii | Vascular bundles numerous | vascular bundles few; |
| iv | Cambium absent | cambium present; |
| v | Cortex absent | cortex present; |
| vi | Small vascular bundles | large vascular bundles; |
| | (First 5) | |

(5 marks)
(Total = 15 marks)

3

| PROCEDURE | OBSERVATION | CONCLUSION |
|---|---|---|
| Iodine solution/solution J (added to the food sample drop by drop while shaking;) | Blue black colour formed; | Starch present in food sample; |
| Benedict's solution/ solution K added to the food sample in test tube in equal amounts. The test tube is then placed in a hot water bath; | Solution changes colour to green, yellow and then orange/brown; | More reducing sugar present in food sample; |
| Biuret's reagent/solution L added to the food sample drop by drop while shaking; | Colour of reagent retained; | Protein absent in the food sample; |

Award marks for correct procedure, observation and conclusion only. (9 marks)