

KCSE 2011**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 = $\frac{\text{Image length}}{\text{Actual length}}$
- 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

- i No pith
- ii Vascular bundles scattered
- iii Vascular bundles numerous
- iv Cambium absent
- v Cortex absent
- vi Small vascular bundles

(First 5)

Cross section of G

- pith present;
- vascular bundles in a ring;
- vascular bundles few;
- cambium present;
- cortex present;
- large vascular bundles;

(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)