G.H.S. | BIOLOGY – E.O.T. Paper 2 | S.3 Nov. 2011

Time: 1½ HOURS

Instructions: **Answer ALL questions.**
Drawings should be made in the spaces provided.
Use sharp pencils for your drawings.

- Hygrophyllum leaf.

1. You are provided with specimen F; observe the specimen and answer the questions that follow.

(a)(i) What part of a plant is specimen F? *(2Mks)*

leaf ✓ Reject leaves

(ii) Give three reasons for your answer in (a)(i) above.

Has - lamina ✓
- petiole / leaf stalk. ✓ Reject stalk
- leaf base. ✓

Rej other leaf parts named.

(b) Using observable features state three functions specimen F performs on the plant it was obtained. *(6Mks)*

Function 1:
manufactures food / Photosynthesis ✓

Feature:
Its green indicating presence of Chlorophyll ✓

Function 2:
stores water ✓

Feature:
Accept: food / nutrients. ✓ It is Rej: Acts as storage organ.

Its fleshy / thick / succulent.

Function 3:
Vegetative propagation / Asexual ✓ Reproduction

Feature:
Has ~~roots~~ buds / young plants. ✓

(c) Draw and label specimen F. *(7Mks)*

Drawing of specimen F | Bryophyllum leaf.

T = 0½
D = 2
L = 3
M = 1
N = ½

M = 1X3

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2. You are provided with solution A (egg albumen) and B (orange juice) which each contain a food nutrient.

(a) Carry out the following tests to identify the food nutrients contained in A and B. *(10Mks*

Tests	Observation	Deduction
(i) To 1 cm^3 of A in a test tube add 2 drops of iodine solution	Turbid solution turns yellow or brown solution	Starch is absent Accept.
(ii) To 1 cm^3 of A in a test tube add 1 cm^3 of sodium hydroxide followed by 2 drops of copper sulphate.	Turbid solution turns into purple solution	Protein present

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(iii) To 1 cm^3 of B in a test tube add 1 cm^3 of Benedict's solution and boil	Yellow ✓t solution ✓t turns green solution to Yellow ppt and finally orange/ brown ✓t ppts. ✓t	Reducing sugars present. ✓t
(iv) To 1 cm^3 of DCPIP in a test tube add drop by drop of solution B until there is no further change.	Blue ✓t solution ✓t turns into colourless ✓t solution ✓t	Vitamin C present/Ascorbic acid ✓t Rjtr. Vitamin present

(b) State the function(s) of food nutrient in *(3Mks)*

(i) A

- Growth ✓
- Repair
- Manufacture of hormone/enzymes

(any one)

(ii) B

- Provides energy
- Prevents scurvy
- Promotes resistance to disease/wound healing/cockroach immunity

3. You are provided with specimens K and L. — Hlply

(a) State the Phylum and Class of the specimens giving three observable characteristic features for your classification in each case. *(5Mks)*

(i) Phylum: Arthropoda. ✓ Reject: Anthropda, Arthropod

Characteristic features

1. Segmented bodies ✓t
2. jointed limbs. ✓t
3. Exoskeleton. ✓t

(ii) Class: Insecta Reject Insect.

Characteristic features

1. 6 legs / 3 pairs of legs ✓
2. 3 main body parts / Head thorax abdomen ✓
3. Thorax divided into 3 / prothorax, meso, metathorax. ✓

(b) Using the features of the head region state three differences between K and L. – cockroach – Fly. (3Mks)

K	L
Mandible. ✓	proboscis
Non hairy / long antennae	Hairy / short antennae. ✓
+ labium & labrum present	+ labium & labrum present ✓
+ crescent / comma shaped eyes	– oval eyes.
– long maxillae / maxillary palp	short maxillary palp.
– Non hairy and	

(c)(i) State the habitat of specimen K. (1Mk)

Warm, Dark, narrow crevices / crack on land. ✓

(ii) How is specimen K adapted to its habitat mentioned in c(i) above. (3Mks)

- Dull / Dark coloured for camouflage
- long antennae for sensitivity in darkness.
- Cerci for extra sensitivity.
- Claws for clinging
- Arolium / grandular pads for walking on slippery or smooth surface.
- Dorsal ventrally flattened to fit in crevices.
- Tappering and long antennae for
- (Walking) legs for walking on land.

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15/13 12 mks

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