TEACHER.CO.KE

BIOLOGY PAPER 3

FORM 4 MARKING SCHEME.

1. a.

(i)

	Contents inside tubing	Iodine solution Outside tubing
Before the experiment	Grey/cream	Brown;
After the experiment	Blue-black	Brown;

(ii) Diffusion;

(iii) Iodine ions / particles are smaller in size and hence entered into the visking tubing by diffusion/ along concentration Gradient; through the pores; and reacted with starch solution/ solution Q; While extract molecules/ solution Q cannot come out since they are too large to diffuse out.

b.

i. **A** is the male√. **B** is the female; √ the male is larger and has gynecophoric canal√ in which it carries the female to ensure eggs are fertilized as soon as they are released.

ii. Primary host: human being/man. √
Intermediate host: water snail. √

iii. Proper disposal of urine and faeces in deep pit latrines or flush toilets; √ avoid wading/bathing/ walking in fresh water habitats infested with snails; √ water should be boiled or chemically treated before drinking; √ wear long gum boots and other protective gear when working in water infested with snails; √ destroy snails by applying molluscides in water infested with snails. √ ***Award 1mk for any 1 correct X 2 = max* 2mks**

2. (a) Complete metamorphosis.
(b) Reduces competition for food since they feed on different food substances. - Adapts the organism to escape adverse environmental conditions.
(c) Q – Eggs

R – Larvae

S – Pupae

(d) R – Eat a lot, grows rapidly and sheds its cuticle several times until it reaches full size to become a pupa.

S – Forms larval cuticle / inhibits moulting metamorphic effects of hormone in larval stage, inactive non-feeding stage, extensive breakdown and reorganization of body tissues.

(e) Ecdysone / Moulting hormone

Juvenile hormone

(f) (i) Class Insecta

(ii) Reasons: Body divided into 3 body parts.

One pair of antennae

Body covered by exoskeleton.

$$\text{Drawing magnification} = \frac{\text{Drawing length of Q}}{\text{Actual length}} \qquad \frac{\text{Drawing length OF T}}{\text{Actual length}}$$

$$= \frac{65\text{mm}}{85\text{ mm}} = \frac{40\text{ mm}}{\text{actual length of T}}$$

$$\text{actual length of T} = \frac{85 \times 40}{65}$$

$$= 52.3\text{ mm}$$

Has three pairs of legs.

3.

b) The abdomen has spiracles; and therefore gaseous exchange continued;

c)

1 (a) Animals with wings ..... go to 2

(a) Animals without wings ..... go to 3

2 (a) Animals with long limbs ..... Q

(b) Animals without long limbs ..... R

3 (a) Animals with four pairs of legs ..... S

(b) Animals with more than four pairs of legs ..... go to 4

4 (a) Animals with long Antenna ..... U

(b) Animals with short Antenna ..... T

d) Brown/ camouflaged to blend with environment;
Hind limbs have spines for protection;
Hind limbs are large enabling the organism to jump;