BIOLOGY 233/3

MARKING SCHEME

1. (a) (i) Seed; (1mk)

(ii) It has one scar / point of attachment to placenta (1mk)

(b) (i) Germination; (1mk)

(ii) Water moves into the seed through the micropyle by imbitions; the seed swells; stored food become hydralised / enzyme break down the stored food into soluble products; the embryo uses the soluble nutrients leading to radical coming out through the micropyle; (3mks)

(c) (i) – immature embryo

-Absence of growth inhibitors

Presence growth hormones;

Hard / impermeable testa; (1^{st} 2 point , 2mks)

(ii) – Absence of light;

- Low / freezing / chilling temperature
- Lack of moisture (1^{st} 2 point, 2mks)

(d) (i) The indicator D turned yellow;

(ii) The soaked seeds carry out respiration; which produces CO_2 which in turn changes the indicator from blue to yellow; (3mks)

(iii) Use boiled seeds / dry seed; (1mk)

2. (a) Animal with cephalothorax …….Loxosceles (1mk)

4(b) Animal with both simple eyes ……..Musca (1mk)

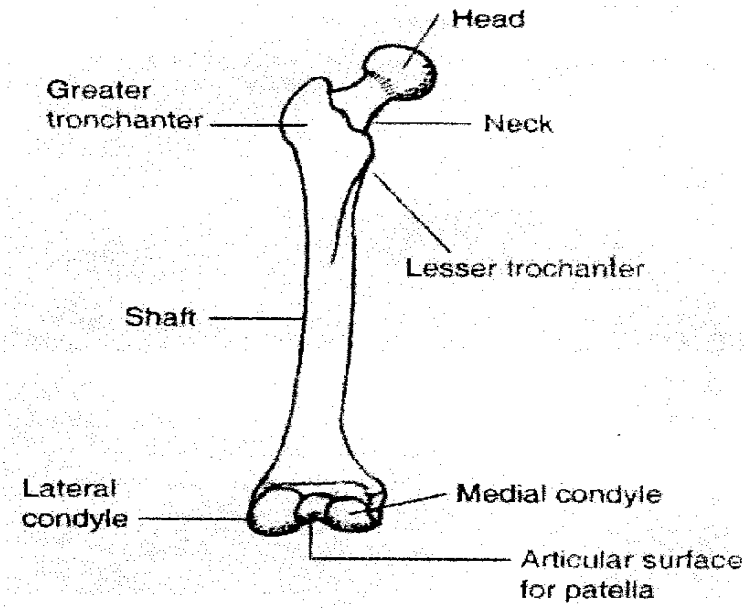
(b)

Specimen	Steps followed	Identity
M_1	1(a), 3(b), 4(a)	Diplopoda
M_4	1(a), 3(b), 4(b)	Musca

(c) Difference between M_2 and M_4

M_2	M_4
1. Wingless	Winged
Has 4 pairs of limbs	Has 3 pair of limbs
Has only simple eye	Has both simple and compound eyes
Body divided into two parts, head and cephalothorax	Body divided into 3 parts, head, thorax and abdomen.

(d) (i) Drawing of P



Magnification: X0.5 – 1.0 (3mks)

(ii) **Adaptations of Part R**
It has a head which fits into the glenoid cavity to form ball and socket joint.
It has greater and lesser tuberosities to provide a large surface area for muscle attachment.
It has bicipital groove for passage of tendons of biceps muscles
The lower end has trochlea for articulation with fore arm to form hinge joint (1st 2 point, 2mks)

(iii) Ball and socket joint (1mk)
(iv) Osteoblast (1mk)

(3) (a) An analysis of food substance present in S (6mks)

Food Substance	Procedure	Observation	Conclusion
Starch	To 2ml of solution S, add 2 drops of iodine solution;	No observable colour change	Starch absent
Reducing sugar	To 2ml of solution S, add 2ml of Benedicts solution and boil.	Mixture turns . Green / yellow	Little / reducing sugar present
Ascorbic acid (Vitamin C)	To 2ml of DCPIP add solution R drop by drop , shaking after each addition.	No observable colour change	Vitamin C / ascorbic acid absent
Lipids	Rub a small amount of S onto the filter paper. Pass the spot over a hot flame to dry. Or observe against light	A faint permanent translucent mark remains	Lipids present;

(b) Drupe; (1mk)
(c) Adaptation of specimen S to its mode of dispersal (2mks)

- Fruit wall is thick and fleshy/ succulent pericarp to attract animals for food;
- Fruit when ripe becomes dark in colour, contrasting with the green leaves to attract animals for dispersal;
- The seed is hard and bitter to discourage herbivores

(d) (i) 1- Mitochondrion (1mk)

2.- Rough endoplasmic reticulum (1mk)

(ii) – Synthesis of protein / enzymes / hormones

- Production of energy / Respiration (2mks)