

**BIOLOGY 3A
MARKING GUIDES**

01. (a) Sex of the specimen
Note required external features.

Male

- Long and thin abdomen
- Present and styles
- Absence of pedicel plate

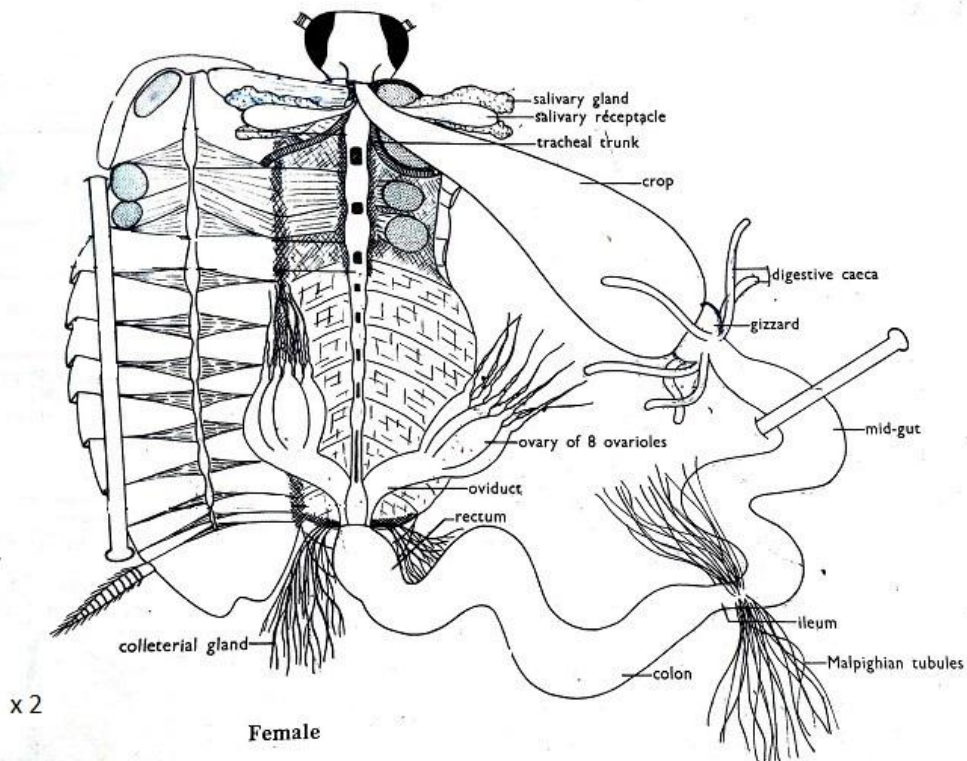
Female

- short broad abdomen
- Lack anal styles
- Presence of podicel plate

Any 3 @ ½ marks = 1½

(II) On the sport assessment (5 – mark). **Total 05 marks.**

(b) Diagram.



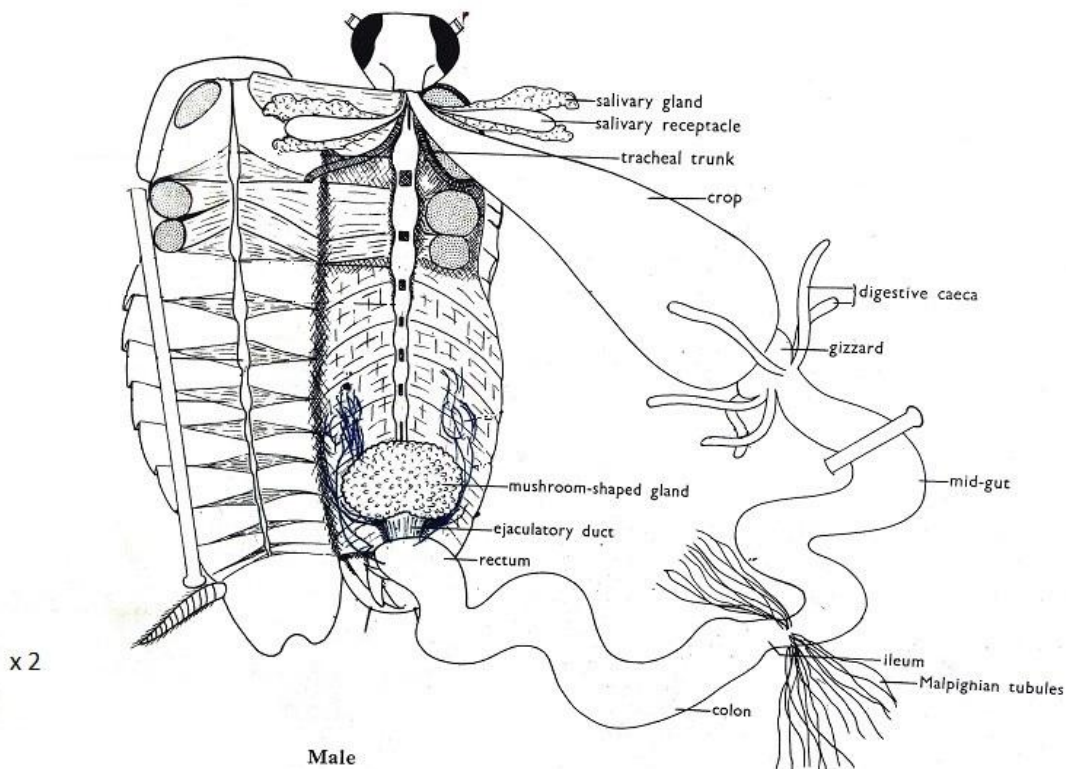


Diagram of cockroach showing visceral general

- Caption - **00 1/2 marks.**
- Correct diagram - **00 1/2 marks.**
- Mag = **00 1/2 marks.**
- Labels – **any 12 labels @ 1/2 mark = 06 marks.**

- (c) (i) Structure responsible for
- (a) Excretion – Malpighian tubules - **01 marks**
 - (b) Temporal food storage – crop - **01 mark**
 - (c) Temporal storage of fecal material – Rectum – **01 marks**

- (d) Malpighian tubules adaptions are: -
- i. Tubules are numerous to ensure max absorption of uric acid in the form of potassium urate.
 - ii. They are thin, long and slender penetrating among the visceral increasing surface area for collection of uric acid.
 - iii. The tubules inner wall is modified for – absorption of water osmotically
 - iv. There are mitochondria which provide energy for active transports of KHCO_3 out of the tubules. **Any 3 points @ 1 marks = 3 marks**

TOTAL = 20 MARKS

02. Table of results

Food tested	Procedures	Observation	Inference
Starch 00½ mark	- 2cm ³ of solution S ₂ , S ₂ and S ₄ were put into three separate tubes, then two drops of Iodine solution were added in each test. 01½ marks	Yellow colour was observed in solution S ₂ , S ₃ and S ₄ . 01 marks	Starch was absent in solution S ₂ , S ₃ and S ₄ . 001 mark
Reducing sugar 00½ mark	-2cm ³ of solution S ₂ , S ₃ and S ₄ were put into three separate test tubes, then 2cm ³ of Benedicts solution was added in each test tube and boiled. 01½ marks	Series of colour from blue, green, yellow and brick red was observed in solution S ₂ and S ₄ . But only the blue colour was observed in solution S ₃ . 01 marks	Reducing sugar was present in solution S ₂ and S ₄ but was absent in solution S ₃ . 001 mark
Non-Reducing Sugar 00½ mark	2cm ³ of solution S ₂ , S ₃ and S ₄ were put into three separate test tubes, then 2cm ³ of HCl was added. - The mixture was boiled and left to cool in each test tube. There after 2cm ³ of dilute NaOH was added followed by equal volume of Benedicts solution was added the mixture was boiled. 01½ marks	Series of colour change from blue, green, yellow and finally brick red was observed in S ₃ . But solution S ₂ and S ₄ appeared blue. 01 marks	Non-reducing sugar was present in S ₃ and in S ₂ but absent S ₄ . 001 mark

(c) Solution S₂ contains food substance similar to Onion Bulb. **001 mark**

(d) Basis for positive results

- Reducing sugar reduce soluble CuSO₄ which is blue. CuSO₄ is reduced to insoluble Copper Oxide which is brick red cation Cu⁺(aq) **02 mark**

TOTAL = 15 MARKS

03. (a) Common names

R1 – Centipede

R2 – Millipede

R3 – Mushroom

R4 – Sisal leaf @ **point 00½ mark = total 02 marks**

(b) R1 and R2 classification

R1 – centipede belong to, kingdom – Animalia

Phylum – Arthropoda

Class – Chilopoda @ **point 00½ mark = total 01½ marks**

R2 Millipede belong to,

Kingdom – Animalia

Phylum – Arthropoda

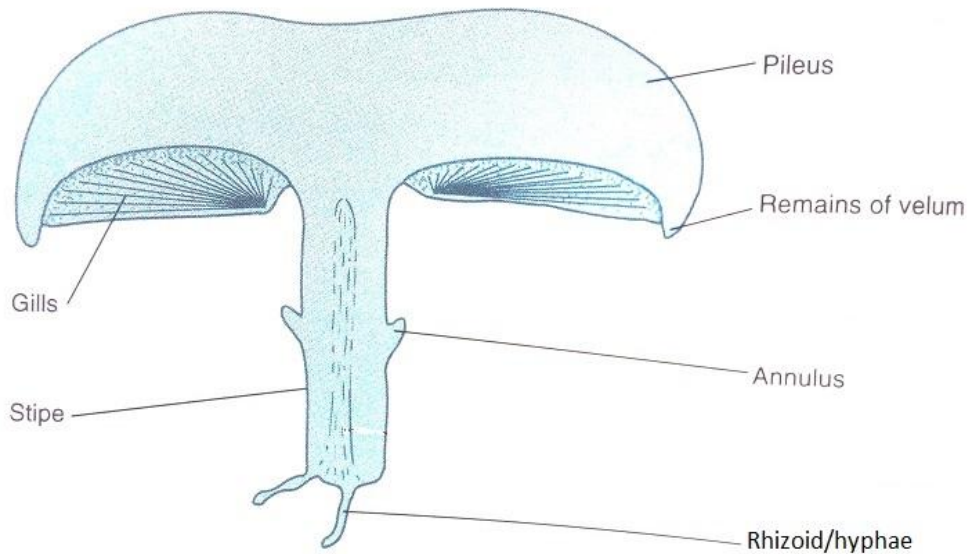
Class – Diplopoda @ **point 00½ mark = total 01½ marks**

Observable differences between R1 and R2

R1 (Centipede)	R2 (millipede)
<ul style="list-style-type: none">- Body dorsal – ventrally flat- One pair of legs per segment- Poison claw present- Few segments compare to R2	<ul style="list-style-type: none">- Body round- Two pairs of legs per segment- Poison claw absent- Numerous segments (many) then R1

Any 3 point @ 01 marks = total 03 marks

(d) Diagram of Mushroom (R3)



A diagram of Mushroom

- Diagram – **00½ mark**
- Caption - **00½ mark**
- Magnification - **00½ mark**
- Labels – any 5 points @ **00½ mark** = **02½ marks**

- (e) Function of specimen R4 are:
- Carry out photosynthesis
 - Transports of materials due to presence of vascular systems.
 - Enable loss of excess water by transpiration
 - Site for gaseous exchange

Any 3 – points @ ½ mark = 03 marks.

TOTAL = 15 MARKS