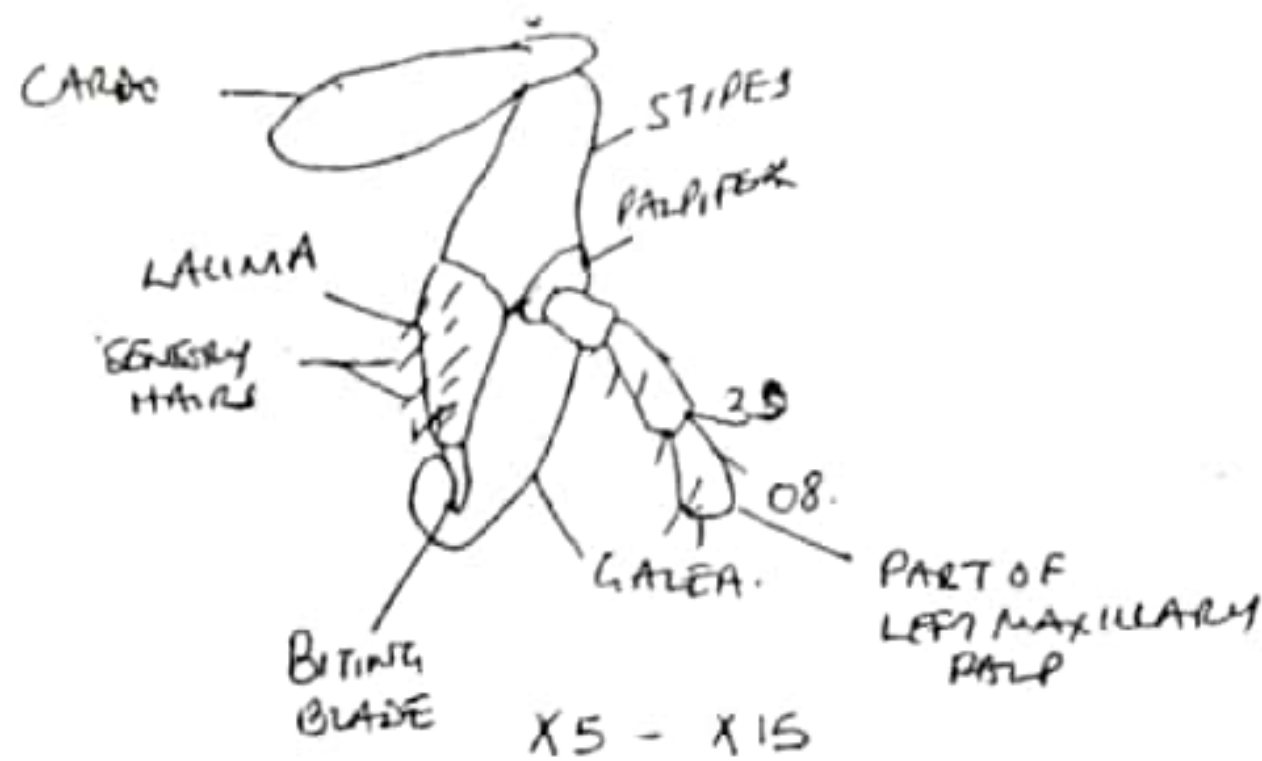
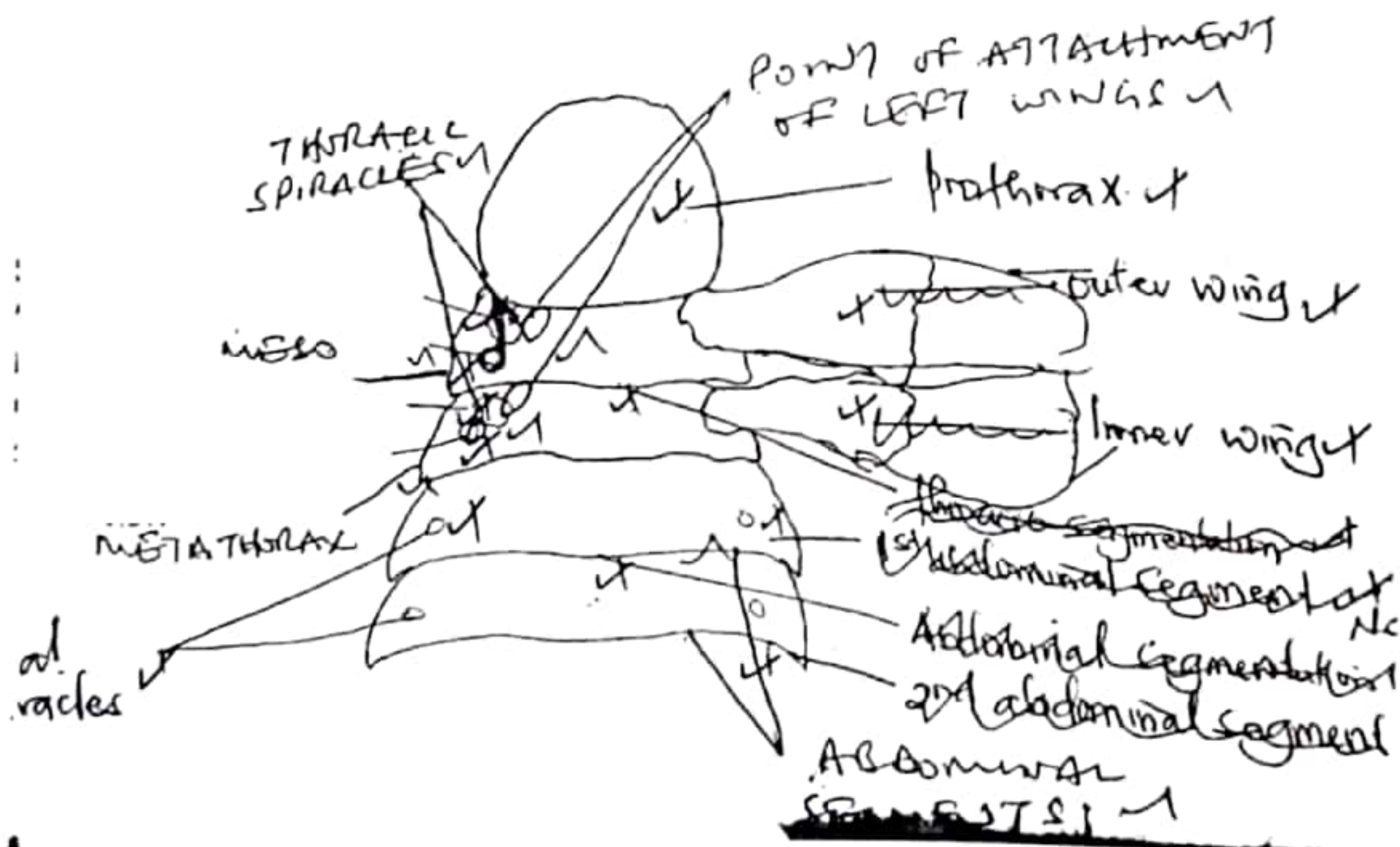


1. (a) i) Order: Dictyoptera
- A pair of anal cerci.
 - Dorso – ventrally flattened abdomen
- ii) Drawing showing the anterior view of whole mouth part associated with three left maxillary palp segments observed under low power.



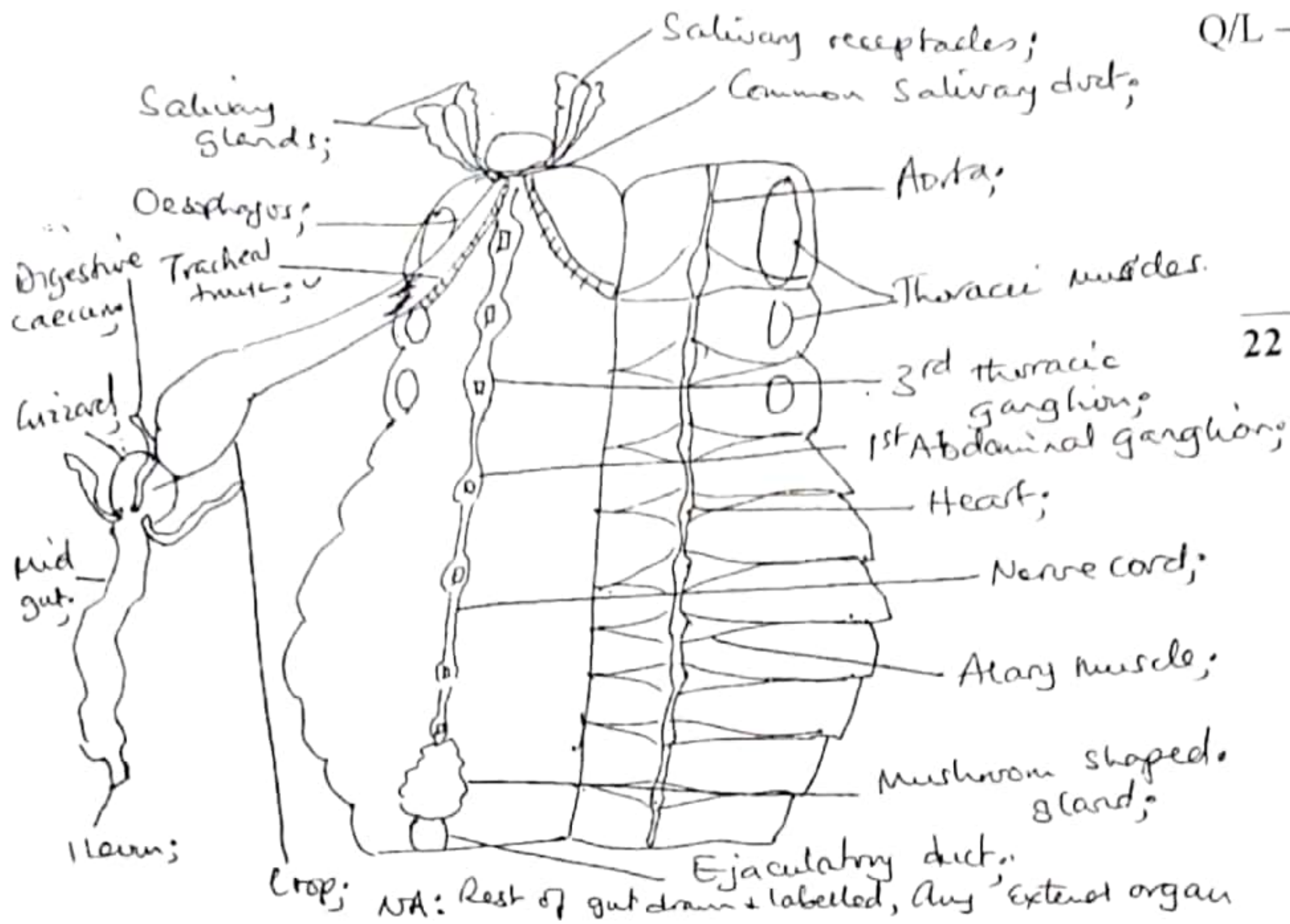
T - 0½
D/L - 5 MAX
M - 0½
N - 0½
L - 0½
S - 0½
08 MARKS

- (b) Drawing showing structure on the thorax of specimen O including two Abdominal segments.



T - 0½
D/C - 7 MAX
M - 0½
N - 0½
O - 0½
S - 0½
No head - 0½
2AS - 0½
10½ MARKS

- (c) Drawing of internal structures of specimen O with part of Gut not involved in Digestion removed.



T - 01

Q/L - 16MAX

M - 01

N - 01

O - 01

D/C - 01

A/C - 01

22 MARKS

(a) TABLE 1 RESULTS

	TIME	0	2	4	6	8	10
FLASK							
A		60 °C	58 °C	56 °C	52 °C	48 °C	45 °C
B		60 °C	56 °C	54 °C	50 °C	44 °C	40 °C
C		60 °C	52 °C	50 °C	48 °C	40 °C	38 °C

(Award trend of drop)

(06 marks)

2 (a)(i) Photocopy graph on graph paper and insert.

2 (a)(ii) **Similarities**

In A_{11} , temperatures begin at 60°C .

In all the gradual decrease in temperature with time.

Differences

- C recorded lowest temperature followed by B and lastly A.
- C temperature decreased rapidly, B moderately while A temperature decrease was gradual.

2 (a)(iii) Explaining the temperature differences in experiment 1; and relating to similar occurrence.

- Tube A; in animals occupying varied habitats which is covered fully; loses less heat/ conserves more heat; and occupy cold habitats;
- Partially covered tube B lost moderate amount of heat/ temperature; likely to inhabit warm/ tropical habitats;
- Open C; lost more heat; likely to inhabit hot/ arid habitats;

(b)

TABLE 2 – INITIAL READING

Tubes	A_1	B_1	C_1
Temperature immediately after boiling	30°C	40°C	50°C
Temperature recorded after 2 minutes	28°C	38°C	48°C

(03 marks)

NOTE: To maintain time interval, Heat/ boil and wait for 2 minutes to take the final temperature recording.

(i) Comparing the results: in table 1 and 2 for each tube

Similarity: Both show loss in heat /temperature.

Difference 1: More heat is, lost in the tubes in table 2 in a short time while in experiment 1, less is lost.

Difference 2: Fully plugged tube shows that less heat is lost compared to the open tube.

(ii) Heating for 2 minutes in tube A; less heat is acquired by water; leading to a low temperature;

Heating for longer time (4 minutes); leads to more heat; leading to moderate temperature/ heat gained.

Heating for longest time (6 minutes); leads to highest temperature

- (c) Relationship between results of this experiment and physiological processes in biotic/ living systems.
- More insulated body surfaces as in Flask A experiment 1; loose less heat to surrounding; example animals in cold regions.
 - Flask C shows that when left open; more heat is lost; comparable to animals whose body surfaces have less insulation; those whose surface area to volume ratio is large (baby).
 - In table 2; it shows that the source of temperature in living systems is from heat obtained from surrounding by conduction; convection; radiation; and from within the body via metabolic reactions and the more /longer the exposure, the more heat gain.
The more the heat gained; the larger/ higher the internal body temperature; which has to be regulated homeostatically.

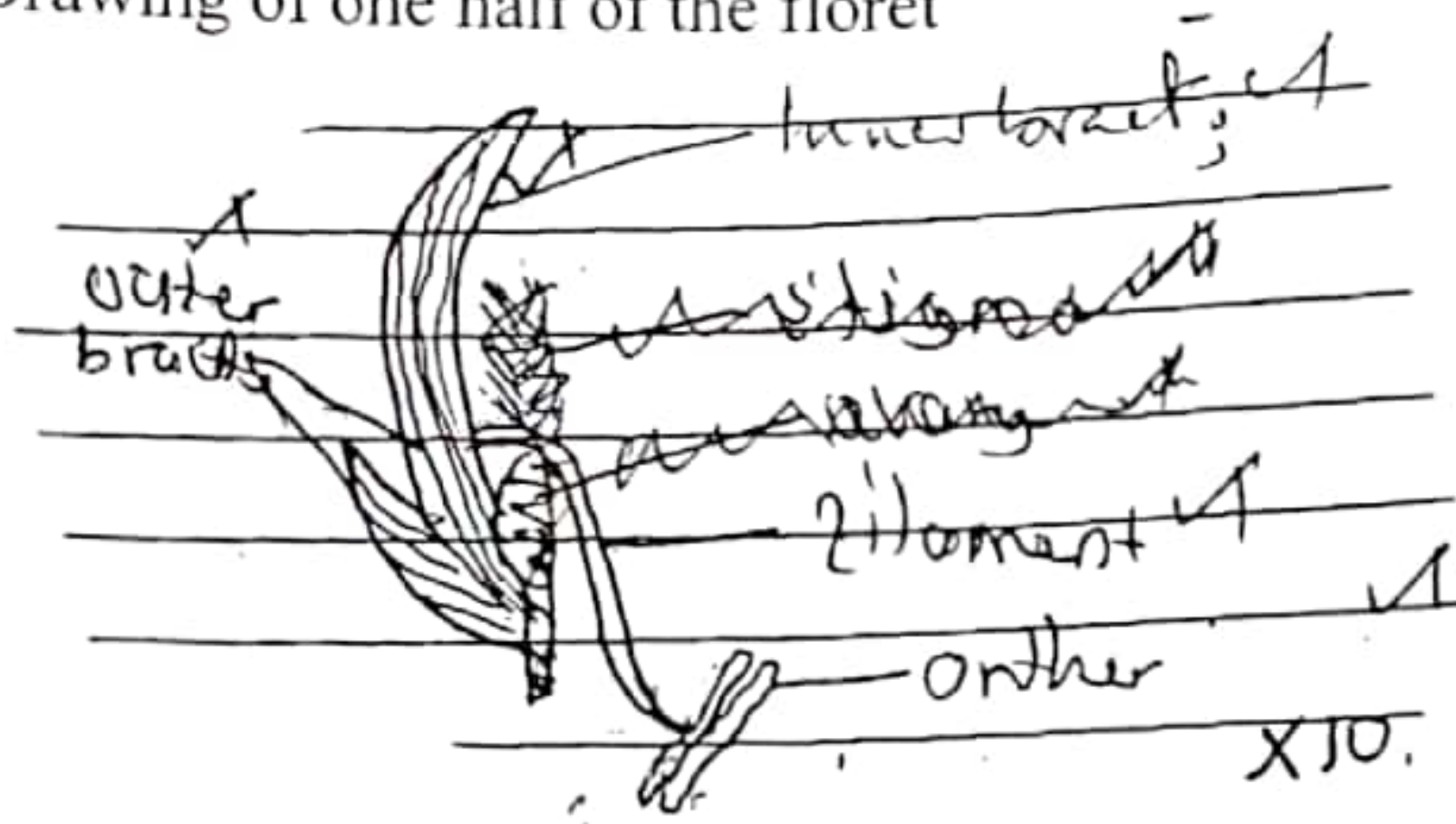
3. (a) An inflorescence;
Possess many florets/ flowers on the same peduncle/ main stalk/ axis
- (b) K – Peduncle expanded apex;
- Numerous florets of two types; (ray and tubular)
 - Florets crowded
 - Arranged in a circular patterns with tubular florets enclosed by ray florets
 - Florets sessile
 - Large involunre of bracts
 - Tubular florets at a higher level than ray ones
 - Florets closely packed

- M – Numerous spikelets/ florets;
- Peduncle has branches some ultimately arranged others whorl arrangement;
 - Branches shorten to the apex of the florescence
 - Each branch has a sessile and florets
 - Spikelets attached along the stalked main axis
 - Some florets/ spikelets are bisexual others unisexual;

(c)

Floret	K	L
Petals	<ul style="list-style-type: none"> - Brightly coloured - Fused anthers 	Lacks petals
Androecum	<ul style="list-style-type: none"> - Many anthers - Low filaments 	Bilobed anthers; slender filaments; long filaments; hairy outside; bilobed anthers; elongated anthers; enlarged anthers
Gynoecium	<ul style="list-style-type: none"> - Inferior ovary - Forked stigma - Long style 	Lack gynoecium

ii. Drawing of one half of the floret



T - $0\frac{1}{2}$
D - 02
L - 02
M - $0\frac{1}{2}$
N - $0\frac{1}{2}$
L - 01

$06\frac{1}{2}$ MARKS

- (d)
- 1 (a) Specimen possesses pistil 2
(b) Specimen lacks pistil L
 - 2 (a) Specimen possesses superior ovary 3
(b) Specimen possesses inferior ovary K
 - 3 (a) Specimen possesses long filament M
(b) Specimen possesses short filament N

Identification = 04 marks

Dichotomy = $0\frac{1}{2}$

Order (L-N) = $0\frac{1}{2}$

05 marks

END