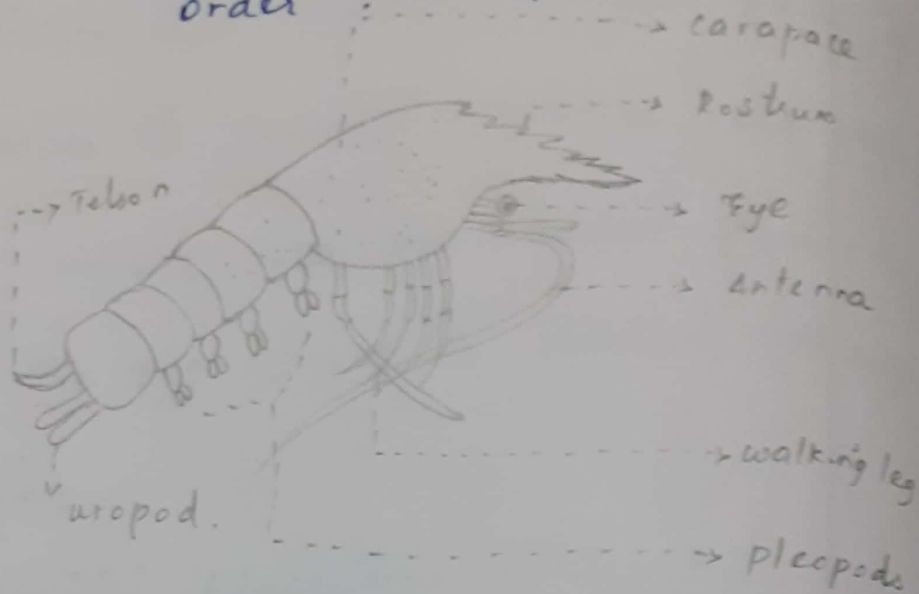


Prawn

phylum : Arthropoda

class : crustacea

order : Decapoda



General characters:

* It is aquatic segmented, Gill breathing animal with joint appendages. Penaeus is a common marine prawn. Palaemon is a common freshwater prawn. It is omnivorous in habit. Its form 19 segment. It has two main regions. Anterior and posterior region. Anterior region is cephalo thorax. posterior is stomach. 19 segment and 19 pairs of Appendages. The last segment of conical projection that

is called telson. The body and appendages are covered by chitin. chitin is very hard and well developed Exoskeleton.

Exoskeleton has dorsal piece called Tergum. ventral piece called sternum. The abdominal segments are connected by a thin flexible membrane that is called Artrodial membrane.

Two stalked compound Eyes is present.

ventrally tergum extends downward as a membrane called Pleuron. The appendages of each segmented connected by Pleuron that is called Epimeron. Praon has jointed biramous appendages. Gill chamber or branchial chamber is present.

Appendages

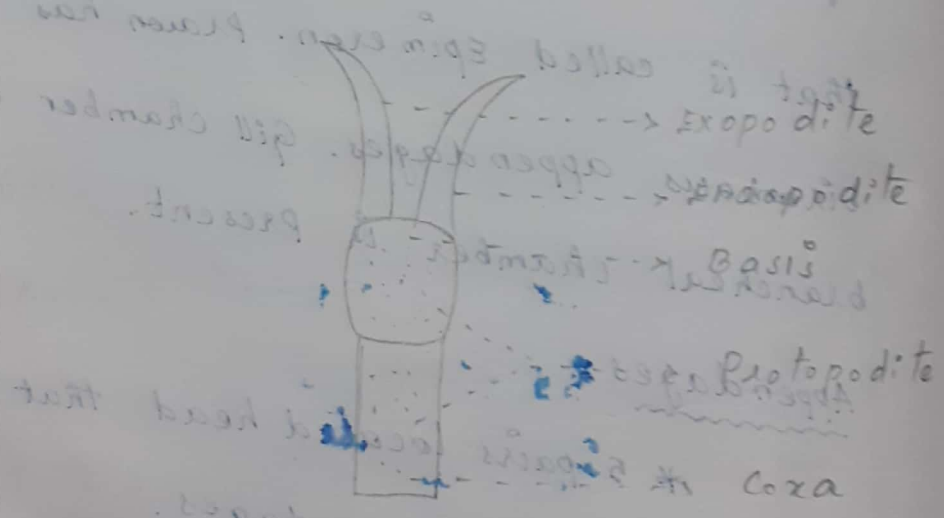
* 5 pairs located head that is called cephalic appendages.

* 8 pairs of appendages located thorax called thorax appendages.

* 6 pairs located abdomen that is called abdominal appendages.

- 1st appendage → Antennule
- 2nd " → Antenna
- 3rd " → Mandible
- 4th & 5th " → I & II Maxillae
- 9 to 13 " → I to V walking legs
- 14 to 18 " → Pleopods
- 19 " → uropod.

Each appendages form many segment that is called podomeres. sexes are separate. male prawn is called petasma & female prawn is called thelycum.



Basal region that is called protopodite made up of two segments that is coxa and basis. — bears to finger like process that is called Exopodite & Endopodite.

Cephalic Appendages:

* 5 pairs is present.

I antennae

II antennae

Mandible

I maxillae

II maxillae.

Ist antennae is the first pair of appendages.

Thoracic Appendages:

* 8 pairs is present. 3 pairs is taking part of feeding that is called Maxillipedes. Remaining 5 pairs used for walking. Walking legs are pereopods.

The endopodite divided into 5 segments

They are: * Ischium * carpus * dactylus.

* Merus * propodus.

The walking legs are 2 types. They are:

* chelate legs

* non-chelate legs.

Chelate legs:

* Ist three pairs of walking legs

are called chelate legs. They are present

in thoracic appendages.

They are used grasp the food and pass into the mouth. The last two segments Propodus and Dactylus of Endopodite. Arranged like forceps this is type articulation that is called chelate legs.

Non-chelate legs:

* The last two pair of walking leg are called non-chelate legs. The last two segments of endopodite are arranged in a linear order. They do not form chelate. Hence they are called non-chelate legs.

Abdominal Appendages:

* Six pair of appendages present in abdominal that is called pleopods or swimmerets. They are used swimming. It consists of protopodite, Exopodite and Endopodite pleopods differ in two sexes.

1. Petasma: The endopodites of two sides unite to form copulatory organ, that is called petasma.

Thelycum : The female outgrowth from sternum of last thoracic segment called thelycum.

Body cavity:

* Space between the body wall and the alimentary canal is not a true coelom.

The cavity is called Haemocoel. They filled with blood like fluid that is called Haemocoelic fluid.

Circulatory system:

* It is a open type, it consists

- of :
1. Blood
 2. Heart
 3. Pericardium
 4. Arteries
 5. Blood sinuses
 6. Blood channels.

Blood:

* Blue in colour. Consists of plasma and corpuscles. Plasma contain blue pigment that is called Haemocyanin.

Heart:

* It is a muscular pumping organ, located thorax, it is triangular in shape.

3. Pericardium:

* Heart is surrounded by a spacious cavity that is called pericardium or dorsal sinuses filled with blood.

4. Arteries:

* It carries the blood from heart to the various part of the body organ.

1. ophthalmic artery
2. Antennary arteries
3. Hepatic arteries
4. sterno intestinal artery
5. supra intestinal artery
6. sternal artery.

ophthalmic artery: It run forward towards head and joined with circum cephalic artery.

Antennary arteries: It arises from heart. Each antennary arteries gives 3 branches.

1. pericardial artery
2. gastric artery
3. Mandibular artery.

Hepatic arteries; pair of hepatic arteries arises from heart. Supply to hepato pancreas
Sterno intestinal; Originated from posterior End of Heart.

Supra intestinal; It runs backward surface dorsal surface of intestine. Supply to the blood of midgut.

Sternal arteries; Run downwards and forwards. Divided 2 branches: 1. ventral thoracic artery \Rightarrow It supply to the blood of thorax. 2. ventral abdominal artery \Rightarrow It supply to the blood of abdomen.

Blood sinuses;

* Arteries divided in a small branches open into a space that is called blood sinuses.

Blood channels;

* channels are lacunar tube with out proper wall carrying the blood.

Respiration

1. Branchiostegite
2. Epipodites
3. Gills.

Gills: Branchiostegite

* It is a gill cover present in cavity. This cavity is called gill chamber. Exchange of gas occurs between water and blood.

Epipodites

* Arises from coxa of the thoracic appendages. It has 6 pairs of epipodites. The first 6 pairs of epipodites are highly vascular. Exchange of gas occurs between water and blood.

Gills

* Gills are feather-like growths of thoracic appendages. Gills are located inside the gill chamber. It is covered by branchiostegite. The gills are classified into three types based on their attachment of place.

1. podobranchies
2. pleurobranchs
3. arthrobranchs.

Podobranchs:

* They are the gill attached to the coxa of the appendages.

Pleurobranch:

* This gill attached to the wall of the thorax. Six pair of pleurobranchs attached to the six pair of thoracic appendages.

Arthrobranchs:

* These are the gill attached to the junction of appendages to the body. 11 pairs of arthrobranch is present.

Digestive System:

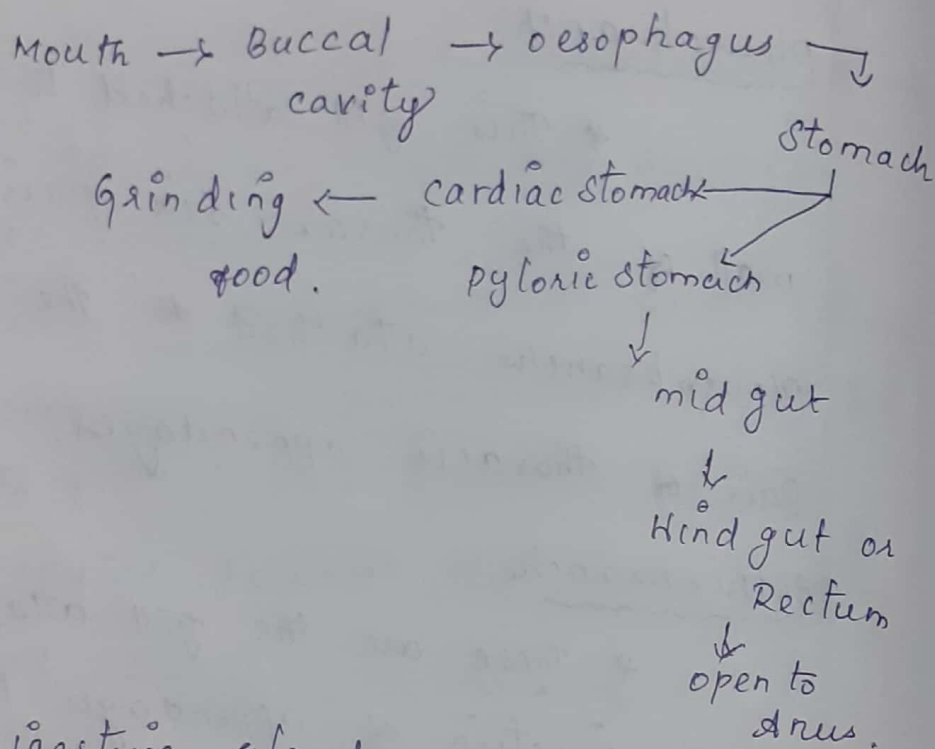
* It consists of alimentary canal and digestive glands.

Alimentary canal:

* It form 1 g

1. Foregut
2. midgut
3. Hindgut.

Foregut found mouth, buccal cavity, oesophagus and stomach.



Digestive glands:

* stomach is surrounded by a large gland, that is called Hepato Pancreas, it has three functions. They are:

1. secrete the digestive Enzyme,
2. It stored the glycogen, fat and calcium.
3. Intracellular digestion by absorbing the food from stomach.

Feeding : omnivorous .

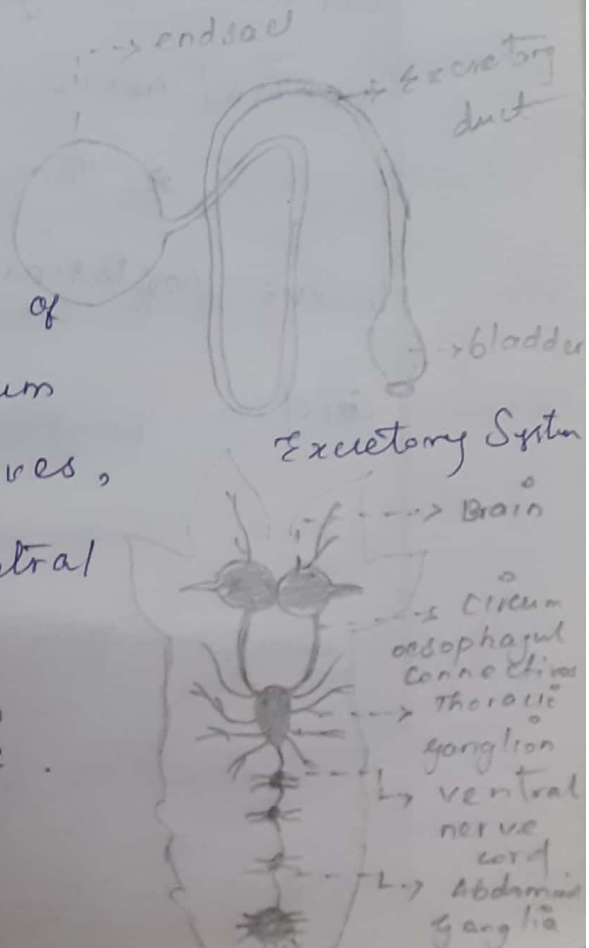
Excretory System :

* It is formed by pair of antennary glands or green glands. It is green in colour. Hence, it is called green glands. Each green gland has coiled excretory duct, End sac and bladder. Bladder open into a outside, that is called excretory pore. Nitrogenous waste collected by a end sac. The green glands also function of osmo regulation. Pumps out excess of water from the body.

Nervous System :

* It consists of brain, pair of circum oesophagal connectives, thoracic ganglia, ventral nerve cord and 6 abdominal ganglia.

Brain :



* It is formed fusion of two ganglia present above the oesophagus. Hence the brain is called supra oesophageal ganglia.

Thoracic ganglia:

* Cephalo thorax has large ganglia that is called thoracic ganglia formed by fusion of 11 pair of ganglia.

Circumoesophageal connectives;

* Brain connected to the thoracic ganglia by a pair of nerve called circumoesophageal connectives.

ventral nerve cord:

* Thoracic ganglia give large nerve posteriorly called ventral nerve cord.

Reproductive System:

* Sexes are separate.

Female reproductive system:

* Female has pair of long ovaries, extending the whole length of thorax and abdomen. ovaries produced a finger like outgrowth that is called diverticular. Each ovary arises from oviduct. oviduct open into a outside of third walking leg.

Male reproductive system:

* Male has pair of testes located thorax. Each testes has many finger like outgrowth called coxal diverticular. vas deferens, Ejaculatory bulb is present. The Ejaculatory bulb opens to a outside by a ^{last} large walking leg.

Life History of Peaon:

* Male deposits Spermatozoa (bundles of sperm) in thelycum of female. Egg passes out from female. Hence fertilization is external. Development is indirect. Fertilized Egg changes into a larva that is called Nauplius. The Nauplius followed by the larval form meta Nauplius, Protozoa, Zoea, Mysis. The Mysis larva transformed into prawn.

1. Nauplius:

* It is a free swimming larva. Minute, microscopic and oval shape. Body has three regions: Head, trunk and anal region and median eye is present. 3 pair of appendages is present. The 1st pair of appendages is uniramous that is called antenule. 2nd & 3rd pair of appendages is biramous that is antennae, mandible.

2. Meta Nauplius:

* Body has anterior cephalothorax and posterior abdomen. Three pair of appendages well developed. Next 4 appendages develop to bud.

4. Zoea :

* It is a free swimming larva.

Minute, microscopic. Cephalothorax

covered by a carapace. Compound eyes

is present. All the cephalic appendages

is present. Abdomen has 6 segments.

5. Mysis :

* It is developed from zoea larva. All the appendages are

developed.

5 pair of cephalic appendages

8 pair of thoracic appendages

6 pair of abdominal appendages

The prawn is developed from mysis

larva.

Coelom:

- * Acoelom
- * Pseudocoelom
- * Eucoelom
- * Haemocoelom.

The cavity b/w the body wall and alimentary canal is called coelom.

Four types of Coelom is present.

1. Acoelom:

* Some animals cavity b/w the body wall & alimentary canal is filled with parenchyma cells. Hence there is no coelom.

2. Pseudocoelom:

* Pseudocoelom or False Coelom cavity b/w the body wall & gut. It is filled with fluid is called pseudocoelomic fluid.

3. Eucoelom:

* True coelom b/w the body wall & gut. Coelom filled with the

fluid is called coelomic fluid.

4. Haemo coelom:

* Haemo coelie sinuses are narrow canals called Haemo coelie canals. It is filled with Resembling blood called Haemo coelie fluid. It contains plasma, amoebocytes & Haemoglobin.

1. Entero coelie origin:

2. Schizo coelie origin:

1. Entero coelie origin:

* Echinoderms & chordates coelom

developed from gut. This coelom arises

from gut is called entero coelom. (2) Annelids,

arthropods & mollusc. the coelom developed

from mesoderm cells called schizo coelie

origin.

body new segment formed posterior end

old segment.

2. Pseudo metamerism, segmentation of

Metamerism:

* Some animals body is divided into compartments are called segments or metameres. Each segment contains nephridia, blood vessels, reproductive organ, nerves, muscles, etc. 8 types of metamerism is

Present. They are:

1. True metamerism
2. Pseudometamerism
3. Homonomous metamerism
4. Heteronomous metamerism
5. External metamerism
6. Internal metamerism.
7. Complete
8. Incomplete

1. True metamerism: The segmentation of the body new segment formed posterior end and old segment.

2. Pseudometamerism: Segmentation of the body based on the pseudocoelom cells. The new