



शिवाजी कॉलेज, राजा गार्डन, रिंग रोड, नई दिल्ली - 110027
SHIVAJI COLLEGE, RAJA GARDEN, RING ROAD, NEW DELHI-110027

8 Pages



नाम NAME Ashadhana Jha कक्षा CLASS BSc (H) Zoology सेमेस्टर SEMESTER II
रोल नं. ROLL NO. 23/22005 विषय SUBJECT Non-Chordates पेपर नं. PAPER NO. 16
*अतिरिक्त प्रयुक्त उत्तर पुस्तिकाओं की संख्या No. of continuation books used 16

- Ques-1) Write down the general characteristics of Phylum Annelids? (3)
- Ques-2) Write an explanatory note on following: - 3x2 = (10)
i) Coelom in Annelids
ii) Metamerism in Annelids
- Ques-3) Briefly describe the relation of nephridia and coelomoduct in Annelids with diagram. (3)
- Ques-4) Phylum : Annelida
→ Term Annelida is derived from latin word "Annulus" - means - "Ring" and greek word "eidos" means forms.
→ It is also known as Ringworms and Segmented worms
- * General Characteristics:-
1) There are around 17,388 species of Annelida.
2) Habitat: They are mostly aquatic (mostly marine some are ~~freshwater~~) and some are terrestrial.
3) They are triploblastic having all three layers - Ectoderm, Mesoderm and endoderm.

- 4) They are bilaterally symmetrical.
- 5) They have complete digestive system - Mouth to anus.
- 6) They have closed circulatory system.
- 7) Mostly shows direct development but some have indirect development through trochophore larva.
- 8) They have organ system grade of organisation.
- 9) They are metamerically segmented and each segment is known as metamer. First segment is peristomium and last segment is pygidium.
- 10) Excretion is through Nephridia.
- 11) Schizocoelomate. (3)
- 12) Ex: Earthworm, leeches etc.

ns-3) * Nephridia

- They have ectodermal origin.
- They are used by Annelida for excretory purpose i.e. removal of wastes.
- secondarily it serves as source for gonads transportation.

* Coelomoduct:-

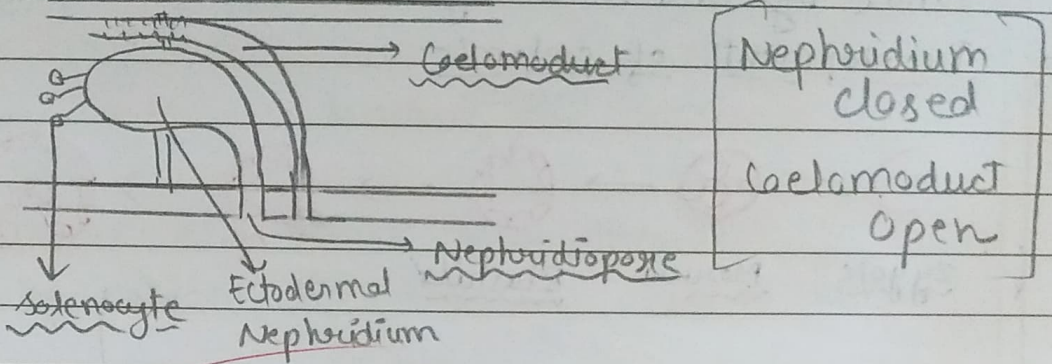
- They are tube-like structures present in each segment.
- They have mesodermal origin.

Nephridia

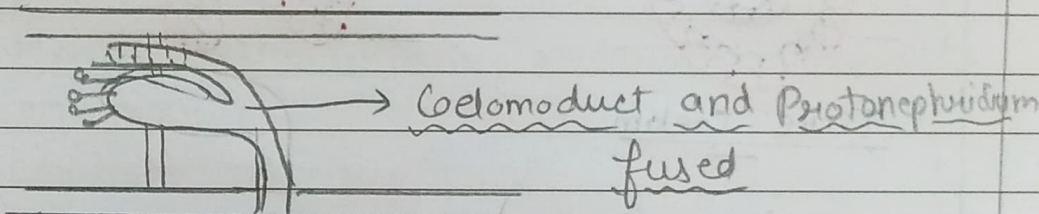
- Protonephridia
- Metanephridia (Micro or Mega / Ecto or Entero)
- Nephromixia (Protonephromixia)
(Metanephromixia)
(Nixonephromixia)

* Relation of Nephridia or Coelomoduct: -

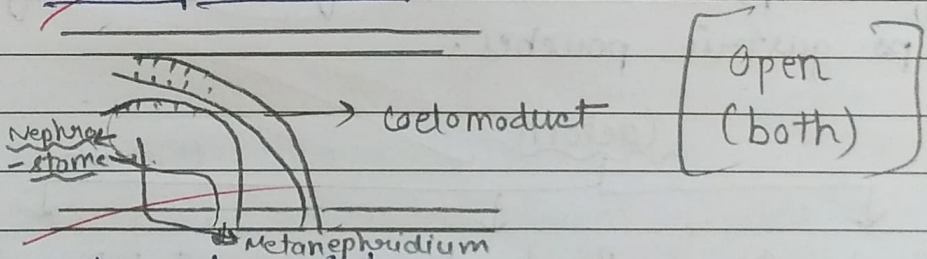
① Protonephridium



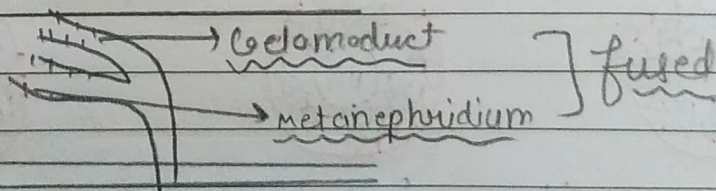
② Protonephriomixium



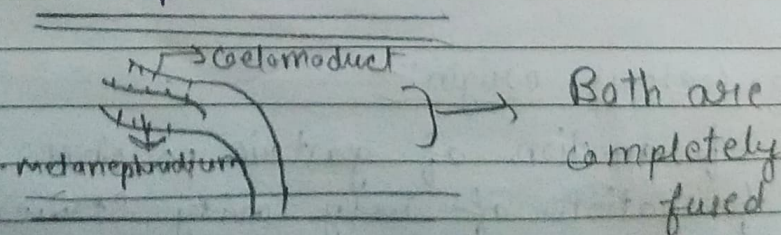
③ Metanephridium



④ Metanephriomixium



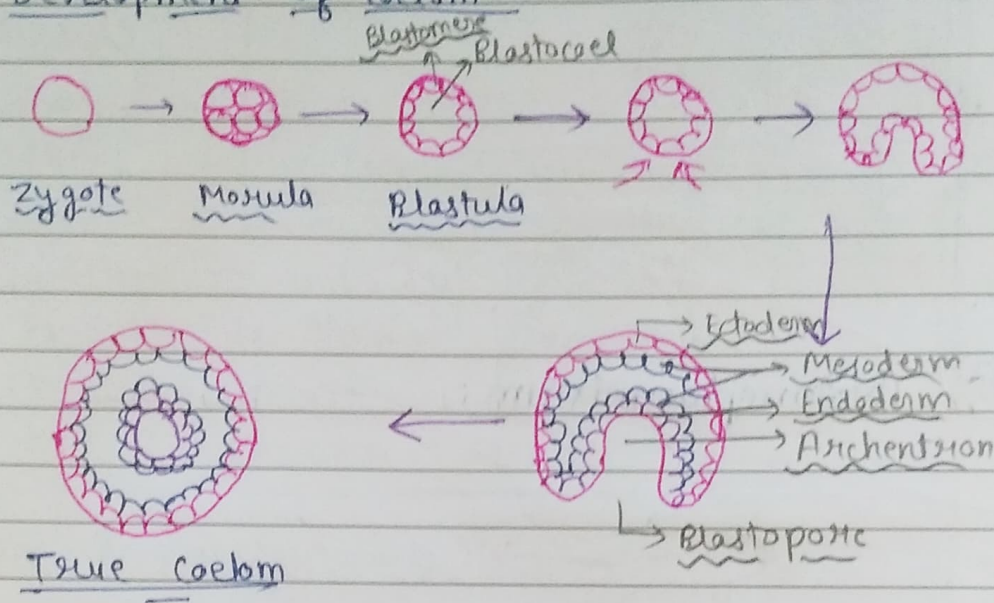
⑤ Mixonephriomixium



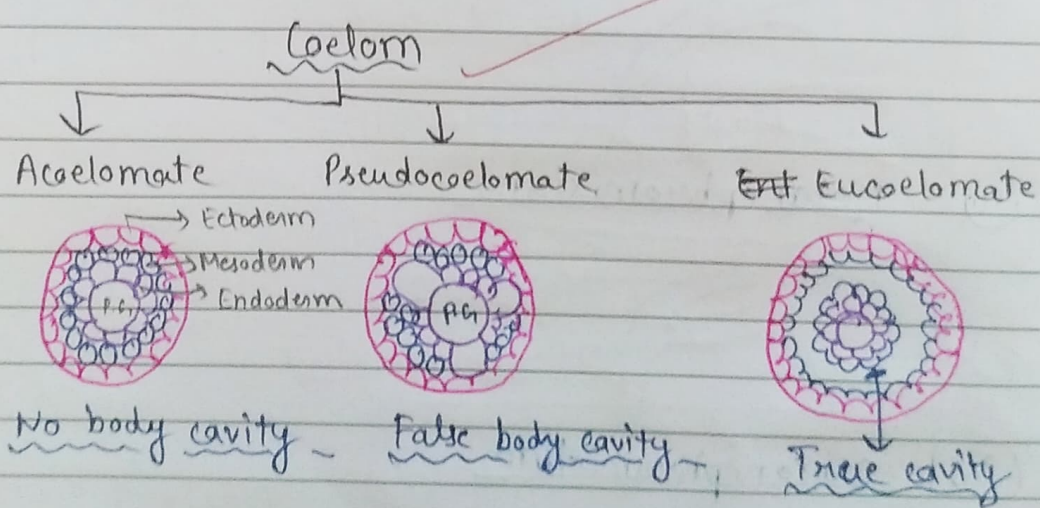
Ans-2) ① Coelom in Annelida:-

→ Coelom is defined as the body cavity present in between the body wall and alimentary canal ~~by~~ and lined by mesodermal cells.

→ Development of coelom:-



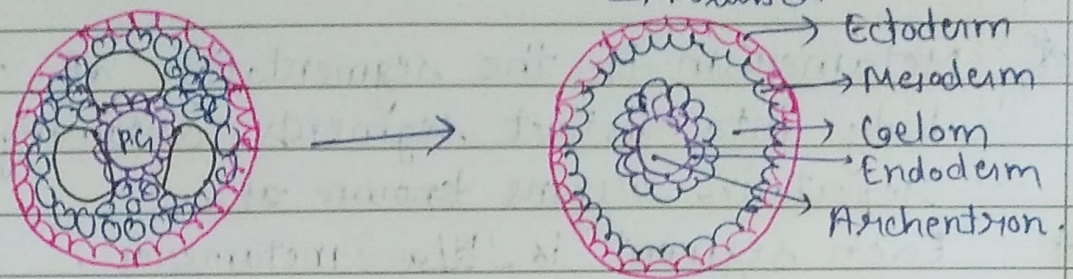
* Annelida have Schizocoelom which develops from pseudocoelom and formation of gastric pouches.



* Schizocoelous origin:-

→ When formation of gastric pouches leads to the formation of body cavity (true) is

known as Schizocoelom → Annelida
→ Arthropoda
→ Mollusca



* There are ~~three~~ four theories of origin of coelom discussed by ~~class~~ik

1) Enterocoel theory:

→ Develop from extensions of Archenteron / primitive gut.

→ Evidence: Echinodermata, Hemichordata, Chordata.

2) Schizocoel theory:

→ Coelom is developed from gastric pouches

→ Evidence: ~~Annelida, Arthropoda, Mollusca.~~

3) Cronocoel theory:

→ Coelom is developed from gonads.

→ No evidence

⑧ → ~~Refa~~ Rejected.

4) Nephrocoel theory:

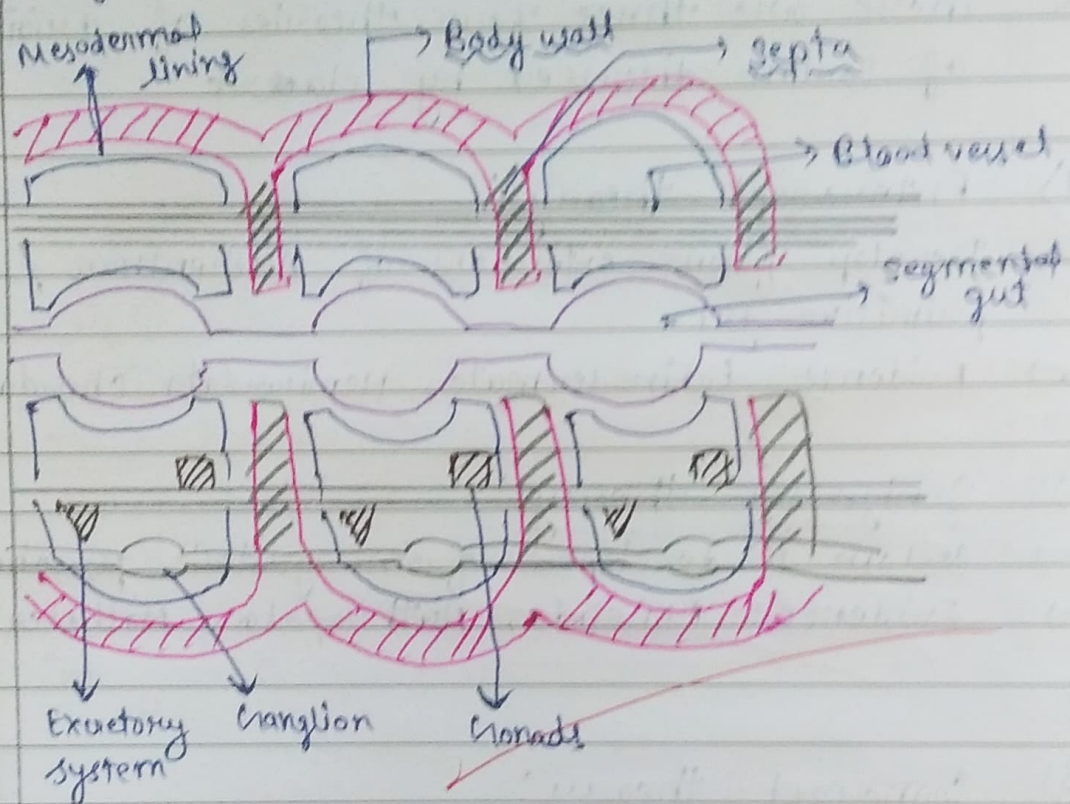
→ Developed from nephridia.

→ Not all have nephridia.

→ Rejected.

(ii) Metamerism in Annelids

- * Metamerism is the segmentation of the body into distinct segments containing repetitive organs known as
- * Each segment is b/a metamer.
- * organism is called metamerically segmented.



Segmentation in Annelids

Type of segmentation

- 1) Homonomous: Same organs in each ^{segment} ~~step~~
- 2) Heteronomous: Diff. organ in each segment ~~function collectively~~.
- 3) Internal: only internal segmentation (Human)
- 4) External: Only external segmentation.

5) Pseudometamerism: False segments: Ex) Tapeworm

6) True metamerism: Internal & external both
→ Annelids.

Origin theories

1) Pseudometamerism:

→ Metamerism resulted from repetitive organs formation in acelomates leading to the formation of segments which leads to metamerism.

2) Cyclometamerism:

→ It says that enterocoelom theory and it originated orally.

→ 4 gastric pouches formed which leads to 2 pouches and these three form 3 parts
→ Proto-coel → Mesocoel → Metacoel

3) Locomotion theory: ~~Proto-coel~~ Proto-coel (internal) and mesocoel last to form metacoel which causes metamerism

3) Locomotion theory:-

→ This is associated with locomotion in annelids and chordates.

→ We know that coelom provides hydrostatic skeleton and helps in locomotion.

→ Annelids move through peristaltic movement and metamerism provides them help in their locomotion by shortening & lengthening

of circular long muscles.

→ Thus both Coelom and metamerism originated with each other.

3