MISSION M.B.BS

Date: 27/07/2022

Subject: ZOOLOGY

Topic : ANIMAL KINGDOM L5 Class: Standard XI

Instructions:

A

1. Choose the organism which has true coelom:

   ✗ **A.** Tapeworm

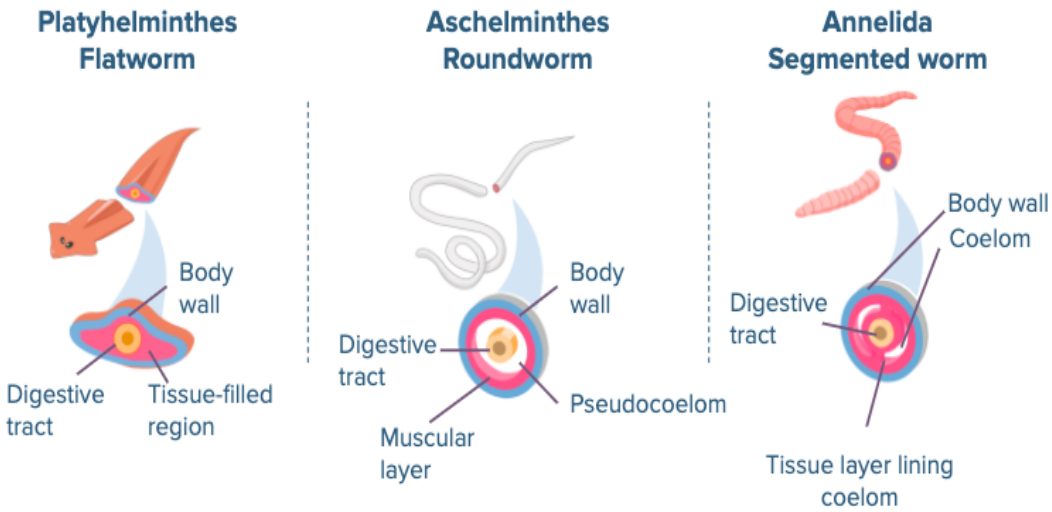
   ✗ **B.** *Wuchereria*

   ✗ **C.** *Planaria*

   ✓ **D.** *Nereis*

Coelom is a cavity lined by mesoderm and is present between the alimentary canal and body wall. The organisms that have true coelom are triploblastic, i.e., ectoderm, mesoderm, and endoderm. All the organisms in phylum Annelida and its following phyla have true coelom. Organisms in the phylum Annelida are the first coelomate animals. *Nereis* belongs to phylum Annelida.

Organisms in phylum Platyhelminthes and Aschelminthes are also triploblastic but they do not have a true coelom. Tapeworm and *Planaria* are flatworms and are a part of phylum Platyhelminthes. They are acoelomates, i.e., body cavity is absent. *Wuchereria* is a part of phylum Aschelminthes and is a pseudocoelomate, i.e., the body cavity is not lined by mesoderm, instead, the mesoderm is present as scattered pouches in between the ectoderm and endoderm.



2. Locomotion in *Pheretima* is carried out by

A. parapodia

B. gizzard and crop

C. longitudinal and circular muscles

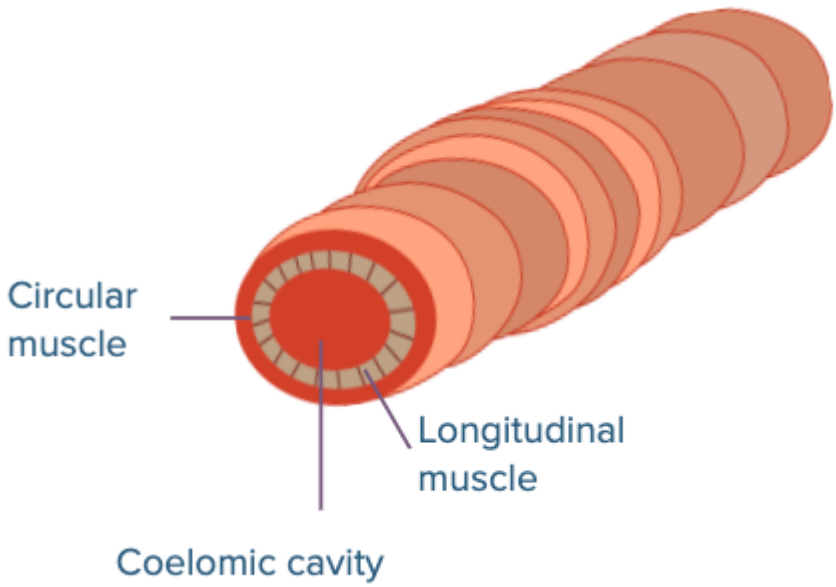
D. nephridia

Pheretima or earthworm belongs to the phylum Annelida. They have an organ system level of organisation.
Locomotion in *Pheretima* is carried out by longitudinal and circular muscles. Longitudinal muscles run lengthwise along the body. The circular muscles encircle the body and help in increasing or decreasing the width of the organism.

Aquatic annelids like *Nereis* have parapodia or leg appendages which are present in every segment. It helps in swimming in aquatic annelids. But parapodia are absent in *Pheretima*.

Gizzard and crop are part of the digestive system in annelids and they do not play any role in locomotion.

Nephridia are special excretory organs that help in osmoregulation, which is the maintenance of water content in the body as well as in getting rid of the wastes of the body.



3. Choose the correct combination of features of phylum Annelida:

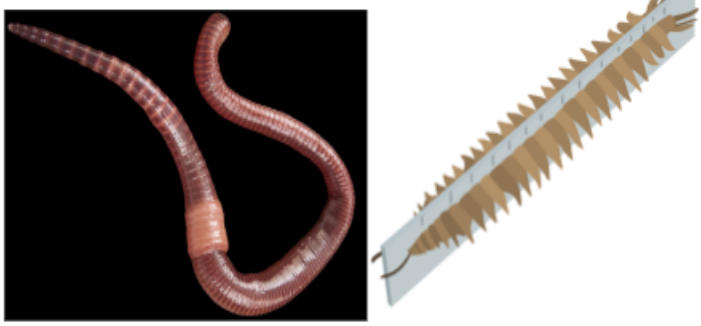
A. Radially symmetrical, tissue level of organisation, diploblastic

B. Bilaterally symmetrical, metameric segmentation, true coelom

C. Bilaterally symmetrical, round cross section, pseudocoelomates

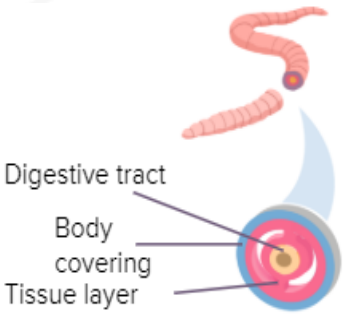
D. Bilaterally symmetrical, flatworms, acoelomates

Organisms in phylum Annelida have three germ layers, i.e., ectoderm, mesoderm, and endoderm and are hence triploblastic. They also have a true coelom as it is lined by the mesoderm. They have a unique feature known as metameric segmentation. Metamerism is the phenomenon of having a linear series of body segments fundamentally similar in structure. Annelids can be divided into two equal halves in only one plane and, hence, are bilaterally symmetrical.



Metamerism

Bilaterally symmetrical



True coelom

Organisms having radial symmetry, i.e., when any plane passing through the central axis of the body, divides the organism into two identical halves, tissue level of organisation and two germ layers (ectoderm and endoderm) are seen in phylum Cnidaria and Ctenophora.

Organisms in phylum Aschelminthes are bilaterally symmetrical with a round cross section. They are triploblastic but their body cavity is not lined by mesoderm completely and, hence, are called pseudocoelomates.

Organisms in phylum Platyhelminthes and onwards have bilateral symmetry. They are dorsoventrally flattened and, hence, are called flatworms. They are acoelomates as they don't have a body cavity at all.

4. Which of the following organs play a role in excretion in annelids?

- ✔ **A.** Nephridia
- ✘ **B.** Statocysts
- ✘ **C.** Malpighian tubules
- ✘ **D.** Parapodia

Nephridia and parapodia are found in organisms of phylum Annelida.

Nephridia are special excretory organs that help in osmoregulation, which is maintenance of water content in the body as well as in getting rid of the wastes from the body of annelids.

Parapodia are leg appendages found in every segment of aquatic annelids and they help in swimming.

Statocysts and Malpighian tubules are found in organisms of phylum Arthropoda. Malpighian tubules and statocysts are used in excretion and maintenance of balance, respectively, in arthropods.

5. Which among the following are incorrectly matched?

Animal	Characteristic	Taxon
A. Crabs	Nephridia	Arthropoda
B. Earthworm	Metamerism	Annelida
C. Spiders	Jointed appendages	Arthropoda
D. *Nereis*	Parapodia	Annelida

- ✔ **A.** A
- ✘ **B.** B
- ✘ **C.** C
- ✘ **D.** D

Crabs and spiders have jointed appendages and are a part of phylum Arthropoda. They have malpighian tubules for excretion.

Nephridia are found in annelids. They are special excretory organs that help in osmoregulation, which is maintenance of water content as well as in getting rid of the wastes of the body.

Earthworm or *Pheretima* and *Nereis* belong to the phylum Annelida and they have metameric segmentation, i.e., the body is externally and internally divided into segments with a serial repetition of at least some organs.

Aquatic annelids such as *Nereis* possess leg appendages known as parapodia in every segment of their body for swimming.

6. Choose the features that represent phylum Arthropoda:

I. Metameric segmentation

II. Parapodia

III. Jointed appendages

IV. Bilateral symmetry

V. Triploblastic

A. I and II only

B. III, IV and V only

C. II and III only

D. IV and V only

Organisms such as crabs, insects, spiders have jointed appendages and are a part of phylum Arthropoda. They are bilaterally symmetrical as their bodies can be divided in two equal halves through a single plane. They have three germ layers i.e. ectoderm, mesoderm, endoderm and, hence, are called triploblastic. They also have a true coelom as the body cavity is lined by the mesoderm.

Metameric segmentation is a characteristic feature of all annelids and parapodia is a feature of aquatic annelids (*Nereis)*.

Organisms in phylum Platyhelminthes, Aschelminthes and Annelida are bilaterally symmetrical and triploblastic.

7. Which of the following is not a feature of organisms belonging to phylum Arthropoda?

✗ **A.** Pollinating agent

✗ **B.** Vector for diseases

✗ **C.** Pests

✓ **D.** Source of cotton

Cotton is produced from cotton plants, and not arthropods.

All the organisms with jointed appendages are a part of phylum Arthropoda. For example - butterflies, locusts, mosquitoes, etc. The organisms of this phylum have a lot of economical importance. For example - butterflies are pollinating agents. They collect nectar from the flower, which forms honey, and carry pollen grains from one flower to the other. Silk is produced from silkworm (*Bombyx mori*). This phylum also has a lot of vectors for a number of diseases. For example - dengue, malaria, elephantiasis, etc. The disease is caused due to the parasite carried by the vector which is transmitted to the host while the vector feeds on the host's blood. Also, locusts belong to phylum Arthropoda, which are pests and damage the crops.

8. Which group of animals belong to the same phylum?

✗ **A.** *Nereis, Ascaris, Pheretima*

✓ **B.** *Pheretima, Nereis*, Leech

✗ **C.** *Wuchereria, Planaria*, Leech

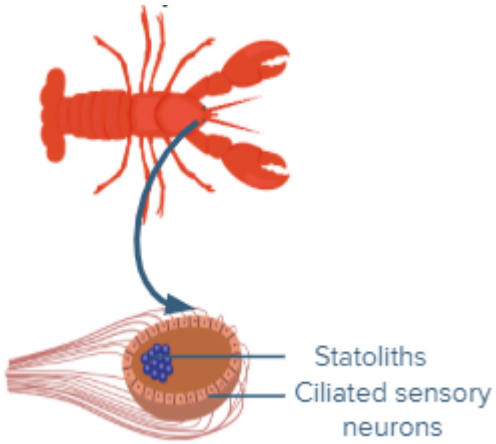
✗ **D.** Crabs, lobsters, *Pheretima*

Pheretima (earthworm), *Nereis* and leech belong to the phylum Annelida. *Planaria* belongs to phylum Platyhelminthes. *Ascaris* and *Wuchereria* belong to phylum Aschelminthes. Crabs and lobsters belong to phylum Arthropoda.

9. Statocysts are _____ and are found in _____.

- ✔ **A.** balancing organ, arthropods
- ✘ **B.** excretory organ, arthropods
- ✘ **C.** balancing organ, annelids
- ✘ **D.** excretory organ, arthropods

Statocysts are spherical balancing organs found in Arthropods. They don't play any role in excretion. Malpighian tubules are excretory organs in arthropods.
Annelids don't have balancing organs. Nephridia are excretory organs in annelids.



10. Bilateral symmetry is a common feature of phylum

- **A.** Platyhelminthes, Aschelminthes, Annelida and Arthropoda
- **B.** Porifera, Aschelminthes, Annelida and Arthropoda
- **C.** Porifera, Ctenophora, Platyhelminthes, Arthropoda
- **D.** Coelenterata, Ctenophora, Aschelminthes, Arthropoda

Symmetry refers to a correspondence of body parts, in relative position, size and shape, on opposite sides of a dividing line or distributed around a central point or axis. There are two types of symmetry: radial and bilateral. Radial symmetry means that the body can be divided into two identical halves in any plane passing through the centre. Bilateral symmetry means that the body can be divided into identical halves in only one plane.

Organisms in phylum Porifera are asymmetrical. Organisms in phylum Cnidaria and Ctenophora are radially symmetrical. Bilateral symmetry is seen in phylum Platyhelminthes and all the following phyla.