SESSION 11: ANIMAL DIVERSITY

Key Concepts

In this session we will focus on summarising what you need to know about:

- Phylum Porifera
- Phylum Cnidaria
- Phylum Platyhelminthes
- Phylum Annelida
- Phylum Arthropoda
- Phylum Chordata

Terminology & Definitions

Vertebrate: Animals that have a backbone.

Invertebrates: Animals that do not have a backbone.

Asymmetry: Body CANNOT be divided into 2 identical halves.

Radial symmetry: Body can be divided into 2 identical halves along any 2-D plane along the central axis.

Bilateral symmetry: Body can be divided into 2 identical halves only one 2-D plane.

Ectoderm: Outer layer of organism

Mesoderm: Middle layer of organism**.**

Endoderm: Inner layer of organism.

Coelom: Body cavity completely lined with mesoderm.

Acoelomates: Organism with no coelom.

Pseudocoelomates: Organisms with a body cavity, partially lined with mesoderm.

Coelomates: Organisms with a coelom.

Through gut: Gut that runs through organism with two openings, the mouth and the anus.

Key Concepts / Diagram

Phylum Porifera

The organisms in this phylum are filter feeders with a simple, porous body. The body contains specialised cells called choanocytes and amoebocytes. A small place of sponge can regenerate into an entire new organism. These organisms are asymmetrical, have no tissue, no coelom and no through-gut.

Phylum Cnidaria

The organisms of this phylum are the simplest animals with tissues. It takes on two forms: polyps, e.g. hydra, corals, and sea anemones and medusas, e.g. blue bottles, jelly fish. These organisms have a radial symmetry, have 2 tissue layers, no coelom and no through-gut.

Phylum Platyhelminthes

The organisms of this phylum are called flat worms. They have a muscular feeding tube. The complete gut is branching, sac-like and surrounded by tissues, not a body cavity. These organisms have a bilateral symmetry, have 3 tissue layers, no coelom and no through-gut.

Phylum Annelida

The organisms of this phylum are called round worms. They have a closed circulatory system and a complete digestive system and thus a through gut. The nervous and fluid-balance systems are well-developed. They have a coelom which serves as a hydrostatic skeleton against which muscles operate. These worms have a bilateral symmetry and three tissue layers.

Phylum Arthropoda

This is the largest phylum of animals. The nervous system is well developed. They have a complete digestive system and thus a through gut. They have an open circulatory system and a reduced coelom which is a blood-filled space called haemocoel. These organisms have a bilateral symmetry and three tissue layers. The protective exoskeleton is made of chitin.

Phylum Chordata

This phylum has a notochord that becomes a vertebral column which is part of the endoskeleton. A hollow, dorsal nerve cord is present. Pharyngeal (gill) slits are present in all during embryonic development and they have a post-anal tail. They have a closed circulatory system and a complete digestive system and thus a through gut. The nervous and fluid-balance systems are well developed. They have a coelom present. All chordata have a bilateral symmetry and three tissue layers.

X-planation

The table below provides a summary of the most important content required for examination purposes.

Animal Group	Adaptations				
	Symmetry	Number of tissue layers	Coelom	Through gut	Skeleton
Porifera	Asymmetry	One	Acoelomate	No	None
Cnidaria	Radial	Two	Acoelomate	One opening	None
Platyhelminthes	Bilateral	Three	Acoelomate	One opening	None
Annelida	Bilateral	Three	Coelomate	Present	Hydroskeleton
Arthropoda	Bilateral	Three	Coelomate	Present	Exoskeleton
Chordata	Bilateral	Three	Coelomate	Present	Endoskeleton

X-ample Questions

Question 1

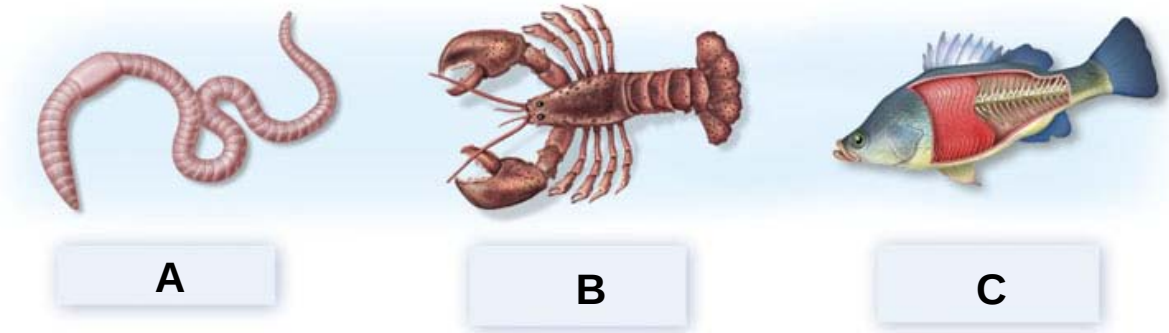
1.1 Choose an item/word from COLUMN B that matches a description in COLUMN A. Write only the LETTER (A – J) next to the question number (1.3.1. – 1.3.6.) For example 1.3.8. N.

COLUMN A		COLUMN B	
1.1.	Phylum of the fish.	A	Molluscs
1.2.	Animals that have amoebocytes.	B	Annelida
1.3.	Segmented worms.	C	Placentals
1.4.	A group of animals with a definite vertebral column and an internal skeleton	D	Notochord
1.5.	Animals with an exoskeleton.	E	Vertebrates
1.6.	Bilateral worms with coelom.	F	Chondrichthyes
		G	Osteichthyes
		H	Chordata
		I	Arthropoda
		J	Porifera

(6)

Question 2

Study the diagrams below and answer the questions that follow.



2.1 To which kingdom do all the organisms above belong? (2)
2.2 List 3 characteristics of the kingdom mentioned in 2.1. (6)
2.3 Identify the organism labelled A. (1)
2.4 Identify the phylum of organism A. (1)
2.5 List 5 characteristics of the phylum of organism A. (5)
2.6 Identify the organism labelled B. (1)
2.7 Identify the phylum of organism B. (1)
2.8 List 5 characteristics of the phylum of organism B. (5)
2.9 Identify the organism labelled C. (1)
2.10 Identify the phylum of organism C. (1)
2.11 List 5 characteristics of the phylum of organism C. (5)