Chapter 4

ANIMAL KINGDOM

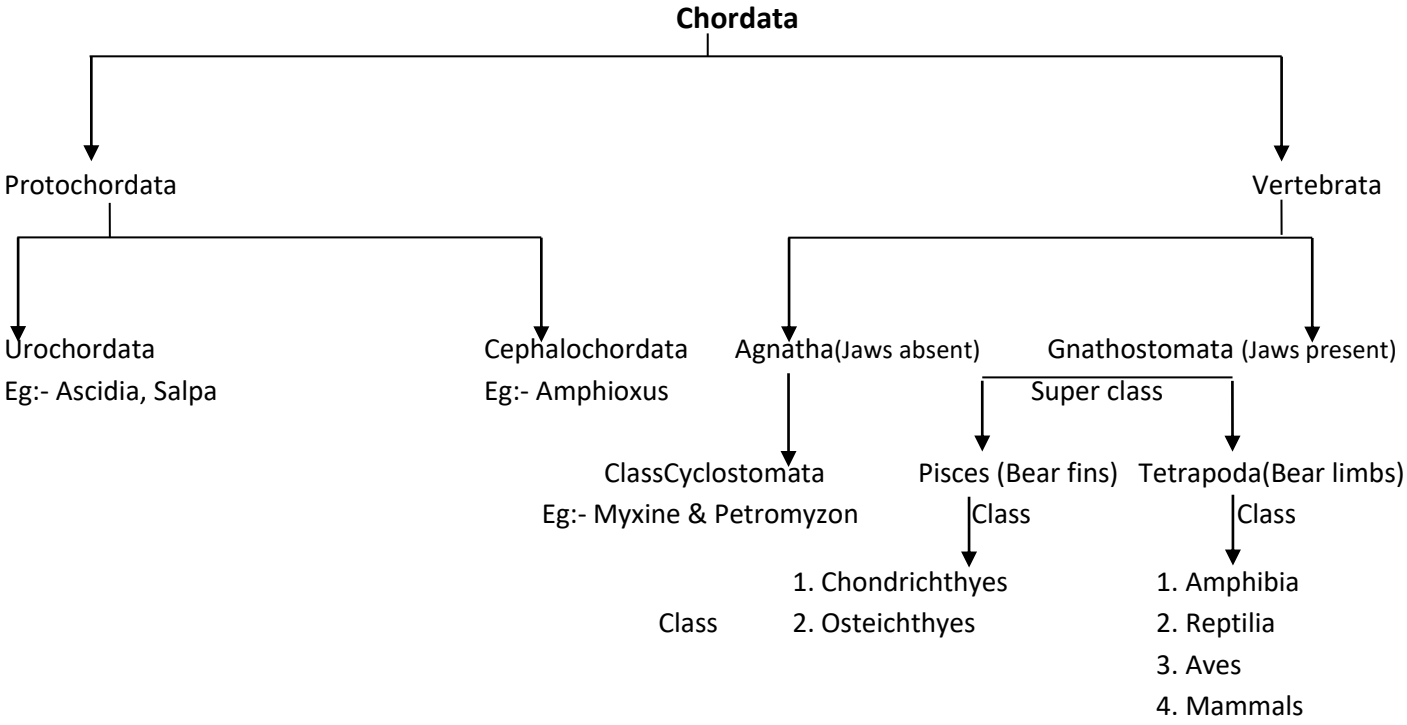
PHYLUM	SYMMETRY	LEVEL OF ORGANISATION	COELOM	IMPORTANT CHARACTER	EXAMPLES
PORIFERA (SPONGES)	Asymmetry	Cellular level	Acoelomate	1. Aquatic animals **2. Water canal system** (ostia → spongocoel → osculum 3. **Choanocytes** present	**Sycon, Spongilla & Euspongia**
COELENTERATA (CNIDARIA)	Radial symmetry	Tissue level		1. Cnidoblast present 2. **Metagenesis** present (**Polyp & Medusa form alternate in life cycle**) 3. Coelenteron (gastrovascular cavity) present.	**Hydra, Adamsia, Physalia, Pennatula & Gorgonia**
CTENOPHORA (COMB JELLIES)				1. **Comb plates present** 2. **Bioluminescence** present	**Pleurobrachia & Ctenoplana**
PLATYHELMINTHES (FLAT WORMS)	Bilateral symmetry	Organ & Organ system level		1. **Flame cells (Excretory organ**)present 2. Endoparasites 4. Hooks & suckers present	**Taenia – Tape worm** **Fasciola – Liver fluke**
ASCHELMINTHES (ROUND WORMS)		Organ system level	Pseudocoelomate	1. Alimentary canal complete 2. Sexual dimorphism present	**Ascaris – Round worm** **Wuchereria – Filarial worm** **Ancylostoma – Hook worm**
ANNELIDA (SEGMENTED WORM)			Coelomate	1. **Metamerism** present 2. Closed circulation present 3. Nephridia for excretion	**Nereis, Hirudinaria & Pheretima**
ARTHROPODA (JOINTED APPENDAGES)				1. Chitinous exoskeleton present 2. Open circulation present 3. **Malpighian tubule (Excretory organ**)present	**Honey bee, Silk worm, Laccifer,** **Locusta & Limulus**
MOLLUSCA (SHELLED ANIMALS)				1. Calcareous shell present 2. **Radula (rasping organ)** present	**Pila, Pinctada, Sepia, Loligo, Octopus, Aplysia & Dentalium**
ECHINODERMATA (SPINY BODIED)	**Larvae bilateral Adult radial**			1. Exclusively marine 2. **Water vascular system** present	**Asterias, Echinus, Antedon Cucumaria & Ophiura**
HEMICHORDATA	Bilateral symmetry			1. Worm like marine animals 2. **Proboscis gland (excretory organ)**	**Balanoglossus & Saccoglossus**
CHORDATA				1. Notochord present 2. Pharyngeal gill slits present 3. Nerve cord dorsal, hollow and single 4. Post anal tail present	

Chordata	Nonchordata
Notochord Present	Notochord absent
Nervous system dorsal, hollow and single	Nervous system ventral, solid and double
Pharyngeal gill slit present	Pharyngeal gill slit absent
Post anal tail present	Post anal tail absent
Ventral heart	Dorsal heart

Chondrichthyes	Osteichthyes
All are marine fishes	It includes both marine and fresh water fishes
They have cartilaginous endoskeleton	They have bony endoskeleton
Mouth is ventral	Mouth is terminal
Gill slits separate without operculum	Four pair of gills covered by operculum
Skin contains placoid scales	Skin is covered with cycloid/ctenoid scales
Air bladder absent	Air bladder present
Eg:-Shark, Trygon	Eg:- Exocoetus, Clarius

Flight adaptations of Birds

1. Presence of feathers
2. The forelimbs are modified into wings
3. Pneumatic bone (hollow with air cavity) present
4. Air sacs present in lungs



"All vertebrates are chordates but all chordates are not vertebrates"

In vertebrata, notochord is present in the embryonic stage. It is replaced by bony vertebral column in adult stage.

Parapodia - Lateral appendages of Nereis which help in swimming.

Limbless amphibia - Ichthyophis.

Cloaca - A common chamber into which alimentary canal, urinary and reproductive tracts open is called cloaca. Present in amphibia, Reptilia and Aves.

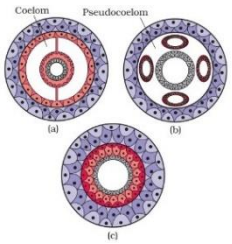
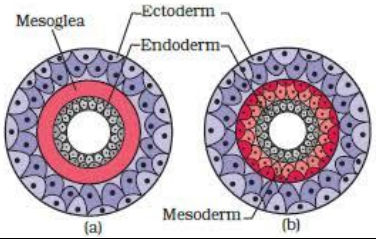
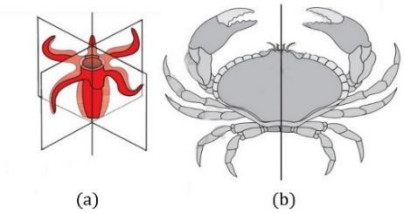
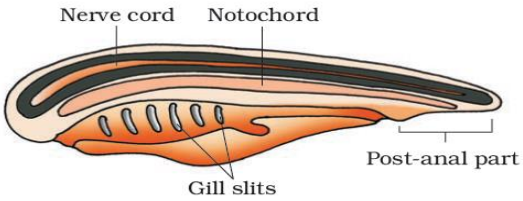
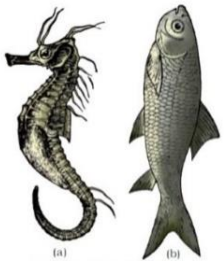
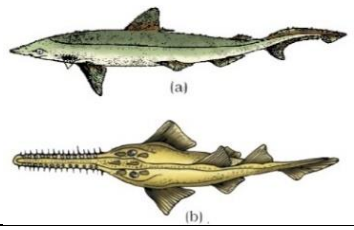
Oviparous mammal (Egg lying) - Ornithorhynchus (Platypus).

Warm-blooded or Homoiothermous – Animals that are able to maintain a constant body temperature.

Eg :- Aves (birds) and mammals

Cold-blooded or Poikilothermous :- Animals that lack the capacity to regulate their body temperature.

Eg :- Chondrichthyes, Osteichthyes, Amphibia and Reptilia.

Identify the figures and name the phylum/animals/its function	
	(a) - Coelomate Eg :- Annelids, Molluscs, Arthropods, Echinoderms, Hemichordates and Chordates (b) – Pseudocoelomate Eg :- Aschelminthes (c) - Acoelomate Eg :- Platyhelminthes
	(a) Diploblastic Eg :- Coelenterates (b) Triploblastic Eg :- Platyhelminthes to chordates
	(a) Radial symmetry Eg :- Coelenterates, Ctenophores and Echinoderms (b) Bilateral symmetry Eg :- Annelids to chordates
	Chordata
	Cnidoblast / Cnidocytes Function :- Cnidoblasts are used for anchorage, defense and for the capture of prey.
	Bony fishes (a) Hippocampus (b) Catla
	Cartilaginous fishes (a) Scoliodon (b) Pristis