PHYLUM : : MOLLUSCA
GENERAL CHARACTERS :

- Soft bodied triploblastic, bilaterally symmetrical, unsegmented schizocoelomates are - **Molluscs**
- True coelomate unsegmented soft bodied animals- **Mollusca**
- Study of mollusca - **Malacology**
- Second largest phylum - **Mollusca**
- Study of Molluscan shells - **Choncology**
- Jhonson created the name Mollusca for **- Cephalopods and barnacles**
- The classification which was revised and first to include modem views was published by **Cuvier**
- Molluscan shells show variation in - **Size, shape, colour and architecture**
- Mollusca are - **mostly marine**.
- Some gastropods and bivalves live in - **fresh-water**.
- Some gastropods are terrestrial
- Cultured pearls are produced by Pinctada vulgaris (source of foreign exchange earning)
- Molluscs are - **Triploblastic animals**
- Normal divisions of body in Mollusca - anterior **head, dorsal visceral mass & ventral foot**
- Fold of skin enclosing the soft body - **Mantle or pallium**
- Space between mantle and visceral mass is called - **mantle cavity or pallial cavity**
- Mantle cavity contains **gills, ospharidium, anus, nephridiopores, and gonopores**.
- Coelom is reduced and the primary body cavity is **haemocoel,** composed of several large sinuses of the **open blood vascular system**.
- True coelom in mollusca is restricted organs - **Pericardial cavity, gonads and kidney**
- A secretory product of Mantle is - **Shell**
- Outer most layer of the shell is composed of a protein called - **Conchiolin**
- The inner two layers ofd the shell are composed of **calcium carbonate**.
- Chief organ of Locomotion in Mollusca is - **Muscular foot**
- Foot less mollousca - **Aplacophora, oysters**
- Symmetry in Mollusca - **Bilateral**
- Asymmetry in Gastropoda is due to - **Torsion**
- Shell less molluscs - **Aplacophora, Octopus, slugs**
- Molluscs with internal shell - **Sepia, Loligo, Aplysia**
- Rasping organ (or) Masticatory organs - **Radula**
- Molluscs without Radula - **Pelecypoda or Bivalvia**
- Molluscs with a crystalline style secreting amylase in the stomach - **Pelecypoda or Bivalvia and some gastropods**
- The cavity into which digestive, excretory and reproductive systems open in Mollusca - **Mantle cavity**
- Respiratory organ in aquatic molluscs - **Ctenidia**
- Respiration in Terrestrial forms - **Pulmonary sac formed by mantle**
- Circulatory system in molluscs - **Open type except Caphalopoda**
- Chambers in the Heart - **One pair of atria and one ventricle**
- Heart is **systematic heart** - atria receive oxygenated blood from the gills and ventricle pumps blood to haemocoelomic sinuses through blood vessels.
- Blood pigment in molluscs - **Copper containing bluish Haemocyanin**
- Excretory organs - **Metanephridia or Kidneys**

- Kidneys of Mollusca open into pericardial cavity through - **nephrostome**
- They open into exhalent chamber of mantle cavity through - **nephridiopores**
- Peculiarity of nervous system in mollusca - **several pairs of ganglia connected by commisures and connectives**
- A nerve joining similar ganglia - **commisure**
- A nerve joining dissimilar ganglia **connective**
- Receptors in mollusca -
- eyes (photoreceptors)
- tentacles (tangoreceptors)
- osphradium helps in testing quality of water and amount of sediment in water.
- statocyst (balancing organ)
- Sexuality in mollusca - **majority are unisexual**
- Most common larva - **trochophore**
- In most species, it develops into - **veliger larva** Veliger larva is with a velum, useful in swimming
- Development is indirect in some
- Phylum Mollusca is classified into **seven classes**

CLASS : : APLACOPHORA

- The class of mollusks which are worm like primitive forms without shell and nephridia - **Aplacophora**
- Foot if present is a fold that lies in - **pedal groove**
- Class with calcarious spicules in the cuticle is - **Aplacophora**
- Respiratory organs are one pair of gills in ***Chaetoderma*** and secondary gills in ***Neomenia***.
- Ladder like nervous system is present in - **Aplacophora**
- **Podocytes** occuring on the **pericardial wall** help in **excretion** in the absence of nephridia
- Development is direct or indirect
- Eg : ***Neomenia, Chaetoderma***

CLASS : POLYPLACOPHORA

- This class includes - **Chitons**
- The class of mollusca with a dorsal shell formed by eight transvers plates - **Polyplacophora** Gills in Polyplacophora - **six to eighty eight pairs**
- Nervous system is **ladder like but without ganglia**
- Development is **indirect** with **trochophore larva**
- Eg : ***Chiton, Lepidopleurus***

CLASS : : MONOPLACOPHORA

- The class of primitive molluscs which was thought to be extinct until 1952 but live forms were recovered by Galathea off the Pacific coast of Costa Rica - **Monoplacophora (Galathea is an oceanographic research vessel)**
- Shell in Monoplacophora is - **Single and plate like**
- Foot is broad and flat
- Excretion and respiration is by - **3 to 7 pairs of nephridia and 3 to 6 pairs of gills**
- **Internal segmentation** or **serial repitition** of internal organs in several system is one of the striking feature in Monoplacophorans
- Heart is unique with - **Two pairs of auricles which opens into two ventricles**
- Eg : ***Neopilina***

CLASS : GASTROPODA

- **Largest and most diverse molluscan class** Includes - **snails, slugs** and **limpets**
- Belly footed and soft bodies animals - **Gastropoda**
- Asymmetrical molluscs - **Gastropoda**
- Torsion in gastropoda occur in the visceral mass of - **Veliger**
- Head in gastropods bear - **Eyes, tactile and chaemoreceptor tentacles**
- Foot in gastrpods is - **Flat creeping sole**
- Shell in gastropods - **Spirally coiled, univalve and external**
- Shell less gastropod - **Slugs**
- Shell is internal in - **Aplysia**
- Chief organ of respiration - **Ctenidium**
- Only class of mollusca which includes marine, fresh water terrestrial and parasitic forms - **Gastropoda**;
- **Only left nephridium, atrium and gill** are present in most of the living gastropods
- Radula is - **Present**
- Asymmetry is due to asymmetrical development of - **Torsion**
- Torsion is due to asymmetrical developmkent of - **Shell muscles of veliger larva**

Eg :

Common name	**Generic name**
Apple snil	**Pila**
Limpet	**Patella**
Cowrie	**Cypraea**
Sea hare	**Aplysia**
Grey slug	**Limax**
Seal lemon	**Doris**
Land snail	**Helix**

CLASS : : SCAPHOPODA

- Elephant tooth shells or tusk shells belong to the class - **Scaphopoda**
- Molluscs with a tubular shell slightly curved and open at both end - **Scaphopoda**
- Foot in Scaphopoda - **long and conical digging organ**
- Atria and gills in Scaphopoda - **Absent**
- Two lobes on either side of the head bearing a large number of threadlike structures are - **Captaculae**
- Structure which help in capture of food - **Captaculae**

Larva - **Veliger**

Eg : ***Dentalium, Pulsellum***

CLASS :: PELECYPODA or BIVALVIA or LAMELLIBRANCHIATA

- Includes mussels, oysters, shipworms and scallops.
- A class of mollusca with a bivalved shell and axe like foot - **Pelecypoda**
- Shell in Pelecypoda is formed by - **Right and left valves**
- Head, eyes, tantacles, jaws and radula in Pelecypoda - **Absent**
- Foot is - **Wedge shaped**
- Organs of respiration in Pelecypoda - **one pair of Plate like ctenedia (Lamellibranchiae)**
- Type of feeding - **Suspension feeders or filter feeders**
- The structure present in stomach while help in digestion of starches - **Crystalline style**

- Sexuality - **Mostly unisexual**
- Most common larval form of marine Pelecy - pods - **Trochophore and Veliger**
- In Mytilus the thread like structure which help in help in attaching to the substratum - **Bysus threads**
- Larva of freshwater forms like unio which is an ecto parasite on the gills of fishes and is specialised veliger is called - **Glochidium**

Eg :

Common name	**Scientific name**
Fresh water mussel	***Unio***
Indian pearl oyster	***Pinctada***
Sea mussel	***Mytilus (attaches to substratum with byssus threads)***
Shipworm (or)	***Teredo***
Scallop	***Pecten***

CLASS :: CEPHALOPODA

(or) Siphonopoda

- Cephalopoda includes - **Nautilus, cuttle fishes, squids, octopuses**
- Most advanced or highly evolved class in Mollusca - **Cephalopoda**
- Highly predacious fast swimming carnivorous molluscs - **Cephalopoda**
- Foot in cephalopoda is modified into **- 8 - 10 arms with suckers and siphon**
- Shell less Caphalopod - **Octopus**
- Cephalopods with internal shell - **Liligo**
- A cephalopod with an external spirally coiled, multichambered shell - **Nautilus**
- Heart in Cephalopoda - **One ventricle and 2 to 4 auricles (myogenic)**
- Shell of sepia is commonly called - **Cuttle bone**
- Shell of Liligo is commonly called - **Pen**
- The gland which provide defensive adaptation - **Ink gland**
- In Cephalopoda ctenidia are - **Dibranchiate in Sepia, Tetrabranchiate in Nautilus**
- Development in Cephalopoda - **Direct**

Eg :

Common Name **Scientific name**

Cuttle fish **Sepia**

Sea squid (or) Sea arrow **Loligo**

Giant squid **Architeuthis**

(Largest invertebrate, largest eyes in the animal kingdom)

Monoplacophora, Gastropoda, Scaphopoda, Bivalvia and Cephalopoda constitute the taxon **Conchifera**