that can be detected by the presence of fragments of different lengths after digestion of the DNA samples),

Polymerase Chain Reaction (PCR) sequencing (to amplify a specific gene, or portion of gene,) are used as taxonomical tools.

Neo taxonomical tools – This is based on Electron Microscopy images to study the molecular structures of cell organelles.

16. Explain the role of Latin and Greek names in Biology.

Greek or latin language is also referred to as the dead language, meaning that no changes can be done in the language,it remains constant and no new words are added.

So, to maintain the uniformity of scientific names all throughout the world, latin/greek is used in biology and other fields as well.

-Latin and Greek words commonly used in systematic names is intended to help those unfamiliar with classical languages to understand and remember the scientific names of organisms.

-The binomial nomenclature used for animals and plants is largely derived from Latin and Greek words, as are some of the names used for highertaxa, such as orders and above.

-At the time when biologist Carl Linnaeus (1707–1778) published the books that are now accepted as the starting point of binomial nomenclature, Latin was used in Western Europe as the common language of science, and scientific names were in Latin or Greek: Linnaeus continued this practice.

-Although Latin is now largely unused except by classical scholars, or for certain purposes in botany, medicine and the Roman Catholic Church, it can still be found in scientific names.

- It is helpful to be able to understand the source of scientific names. Although the Latin names do not always correspond to the current English common names, they are often related, and if their meanings are understood, they are easier to recall.

-The binomial name often reflects limited knowledge or hearsay about a species at the time it was named.

CHAPTER-2 -KINGDOM ANIMALIA

Evaluation

1.The symmetry exhibited in cnidarians is

(a) Radial (b) Bilateral (c) Pentamerous radial (d) Asymmetrical

2.Sea anemone belongs to phylum

(a) Protozoa (b) Porifera **(c) Coelenterata** (d) Echinodermata

3.The excretory cells that are found in platyhelminthes are

(a) Protonephridia **(b) Flame cells** (c) Solenocytes (d) All of these

4.In which of the following organisms, self fertilization is seen.

(a) Fish (b) Round worm (c) Earthworm **(d) Liver fluke**

5.Nephridia of Earthworms are performing the same functions as

(a) Gills of prawn **(b) Flame cells of Planaria**

(c) Trachea of insects (d) Nematoblasts of Hydra

6.Which of the following animals has a true coelom ?

(a) *Ascaris* **(b) *Pheretima*** (c) *Sycon* (d) *Taeniasolium*

7.Metameric segmentation is the main feature of

(a) Annelida (b) Echinodermata (c) Arthropoda (d) Coelenterata

8.In *Pheretima* locomotion occurs with help of

(a) circular muscles (b) longitudinal muscles and setae

(c) circular, longitudinal muscles and setae (d) parapodia

9.Which of the following have the highest number of species in nature?

(a) Insects (b) Birds (c) Angiosperms (d) Fungi

10.Which of the following is a crustacean?

(a) Prawn (b) Snail (c) Sea anemone (d) Hydra

11.The respiratory pigment in cockroach is

(a) Haemoglobin **(b) Haemocyanin** (c) Oxyhaemoglobin (d) Haemoerythrin

12.Exoskeleton of which phylum consists of chitinous cuticle?

(a) Annelida (b) Porifera **(c) Arthropoda** (d) Echinodermata

13.Lateral line sense organs occur in

(a) Salamander (b) Frog (c) Water snake **(d) Fish**

14.The limbless amphibian is

(a) Icthyophis (b) Hyla (c) Rana (d) Salamander

15.Four chambered heart is present in

(a) Lizard (b) Snake (c) Scorpion **(d) Crocodile**

16.Which of the following is not correctly paired?

(a) Humans – Ureotelic

(b) Birds – Uricotelic

(c) Lizards – Uricotelic

(d) Whale – Ammonotelic

17.Which of the following is an egg laying mammal?

(a) *Delphinus* (b) *Macropus* **(c) *Ornithorhynchus*** (d) *Equus*

18.Pneumatic bones are seen in

(a) Mammalia **(b) Aves** (c) Reptilia (d) Sponges

19.Match the following columns and select the correct option.

Column – I	**Column – II**
(p) Pila	(i) Devil fish
(q) Dentalium	(ii) Chiton
(r) Chaetopleura	(iii) Apple snail

Column – I	Column – II
(s) Octopus	(iv) Tusk shell

- (a) p – (ii), q – (i), r – (iii), s – (iv)
- **(b) p – (iii), q – (iv), r – (ii), s – (i)**
- (c) p – (ii), q – (iv), r – (i), s – (iii)
- (d) p – (i), q – (ii), r – (iii), s – (iv)

20.In which of the following phyla, the adult shows radial symmetry but the larva shows bilateral symmetry?

(a) Mollusca **(b) Echinodermata** (c) Arthropoda (d) Annelida

21.Which of the following is correctly matched?

(a) Physalia – Portugese man of war (b) Pennatula – Sea fan

(c) Adamsia – Sea pen (d) Gorgonia – Sea anemone

22.Why are spongin and spicules important to a sponge?

The body of sponges is supported by a skeleton made up of calcareous and siliceous spicules or spongin or both.

23.What are the four characteristics common to most animals?

1. On the basis of germ layers all animals will be diploblastic (ectoderm and endoderm) or triploblastic (outer ectoderm, middle mesoderm and inner endoderm).
2. Animals show symmetry. They may be radially symmetrical or bilaterally symmetrical. Few animals like sponges lack symmetry.
3. Most animals posses a body cavity between the body wall and alimentary canal and is lined with mesoderm. This is called **coelom**. Some animals lack coelom (acoelomate) or have false coelom (Pseudocoelomate).
4. Reproduction is a character seen in all animals. (asexual/sexual or both).

24.List the features that all vertebrates show at some point in their development.

Vertebrates posses notochord during embryonic stage only. The notochord is replaced by a cartilaginous or bony vertebral column in the adult.

25.Compare closed and open circulatory system.

The circulatory system is of two types,

1. **Open type:** The blood remains filled in tissue spaces due to the absence of blood capillaries. Eg: Arthropods, Molluscs, Echinoderms, and Urochordates
2. **Closed type:** The blood is circulated through blood vessels of varying diameters (arteries, veins, and capillaries) Eg: Annelids, Cephalochordates and Vertebrates.

26.Compare Schizocoelom with enterocoelom.

1. **Eucoelom** or **true coelom** is a fluid-filled cavity that develops within the mesoderm and is lined by mesodermal epithelium called **peritoneum**.
2. Such animals with a true body cavity are called **eucoelomates**.
3. Based on the mode of formation of coelom, the eucoelomates are classified into two types,

   i. **Schizocoelomate animals** – In these animals the body cavity is formed by splitting of mesoderm. Eg: Annelids, Arthropods, Molluscs.
   ii. **Enterocoelomate animals** – In these animals the body cavity is formed from the mesodermal pouches of archenteron. Eg: Echinoderms, hemichordates and chordates.

27.Identify the structure that the archenteron becomes in a developing animal.

1. In the developing embryo during the process of gastrulation, the primary gut that is formed is called the **archenteron**or digestive tube.
2. It develops into the endoderm and mesoderm of an animal.

28.Observe the animal below and answer the following questions.

a. Identify the animal

b. What type of symmetry does this animal exhibit?

c. Is this animal Cephalized?

d. How many germ layers does this animal have?

e. How many openings does this animal's digestive system have?

f. Does this animal have neurons?

Answer:

a. Sea Anemone(Adamsia)
b. Bilateral symmetry(or)Radial symmetry
c. No.
d. Diploblastic – Two germ layers with outer ectoderm, inner endoderm and Jelly like mesoglea in between the two layers.
e. The coelenteron or central vascular cavity which serves for digestion opens out by a single opening called mouth.
f. yes

29.Choose the term that does not belong in the following group and explain why it does not belong?

Notochord, cephalisation, dorsal nerve cord and radial symmetry.

'Radial symmetry' is the term that does not belong to the group.

Reason: Notochord, Cephalization, dorsal nerve cord are characteristic features of Phylum chordata. This Phylum comprises of animals with bilateral symmetry. Hence the term radial symmetry does not belong to the group.

30.Why flatworms are called acoelomates?

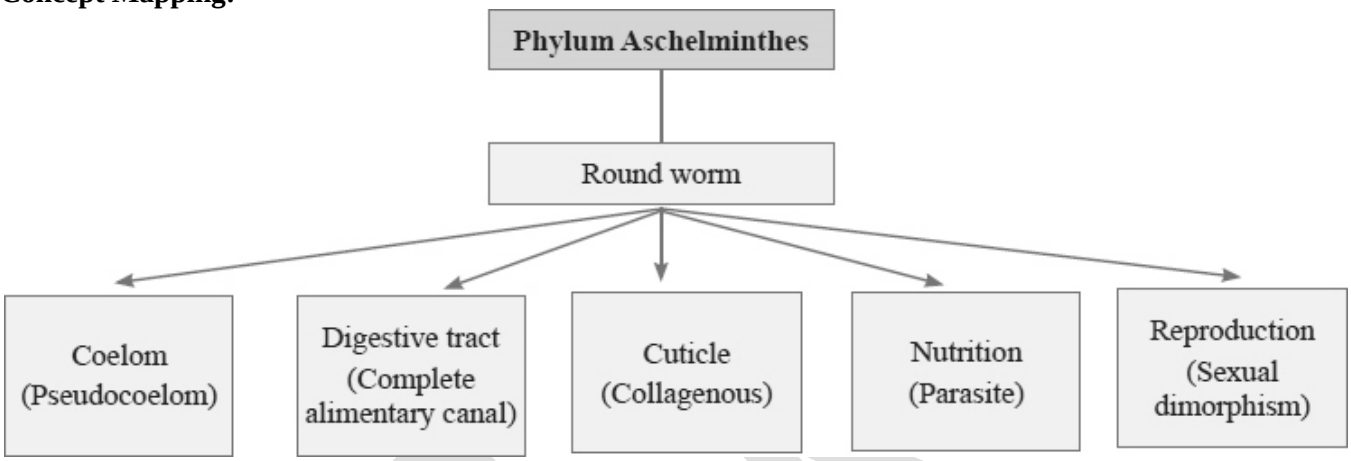
1. Flatworms are called acoelomate animals. They do not possess a body cavity or **coelom**.
2. Since there is no body cavity in these animals their body is solid without a perivisceral cavity. This restricts the free movement of internal organs. Eg.**Flatworms.**

31.What are flame cells?

Specialised cells called **flame cells** are seen in Phylum platyhelminthes. These cells help in osmoregulation and excretion. They have flickering cilia or flagella for driving the absorbed excretory products.

32.Concept Mapping – Use the following terms to create a concept map that shows the major characteristic features of the phylum nematode: Round worms, pseudocoelomates, digestive tract, cuticle, parasite, sexual dimorphism.

Concept Mapping:



33.In which phyla is the larva trochopore found?

Phylum Mollusca and Phylum Annelida.

34.Which of the chordate characteristics do tunicates retain as adults?

1. The larval stage of the tunicate possesses all the features characteristic of chordates, a notochord, a dorsal hollow nerve cord, pharyngeal slits and a post anal tail.
2. In the adult stage the notochord, nerve cord and tail disappear.

35.List the characteristic features that distinguish cartilaginous fishes with living jawless fishes.

S.No	Living Jawless fishes	Cartilaginous fishes
1.	These belong to class cyclostomata under subphylum vertebrata, Phylum chordata.	These belong to class Chondrichthyes. under subphylum vertebrata, Phylum chordata.
2.	These are Jawless fishes. Mouth is circular and suctorial.	Mouth is located ventrally and Jaws are very powerful.
3.	They have true teeth.	Teeth are modified placoid scales which are backwardly directed.
4.	They have pouch like gills.	They have lamelliform gills without operculum.
5.	**Eg:**Petromyzon, lamprey	**Eg:** Trygon (stingray)

36.List three features that characterise bony fishes.

Characteristics of bony fishes:

1. Their endoskeleton is bony.
2. They have swim bladder.
3. Gills are covered by opercula.

4. They are found in sea and fresh water.

37.List the functions of air bladder in fishes.

Functions of air bladder:

In fishes air bladder regulates buoyancy and helps them to float in water. If air bladders are absent, the animals need to swim constantly to avoid sinking.

38.Write the characteristics that contributes to the success of reptiles on land.

1. They are mostly terrestrial animals and their body is covered by dry and cornified skin with epidermal scales which checks loss of water.
2. Most reptiles lay cleidoic eggs with extra embryonic membranes like omnion, chorion, allantois, and yolk sac, Shell around the egg checks dessication.
3. Embryonic membranes enclose the embryo and provide watery environment. Internal fertilization method helps them to survive on land.

39.List the unique features of bird's endoskeleton.

1. The endoskeleton is fully ossified (bony).
2. The long bones are hollow with air cavities (pneumatic bones).

40.Could the number of eggs or young ones produced by an oviparous and viviparous female be equal? Why?

1. Animals which lay eggs are called**oviparous animals**.
2. Animals which give birth to young ones are called **viviparous animals**.
3. In the case of oviparous animals, they produce more number of eggs since the eggs are exposed to environmental conditions and predators. They have to pass through several developmental stages before becoming on adult. They face less chances of survival. Hence they produce more number of eggs to ensure continuation of race. Further the eggs are released from the parent and develop with the help of yolk stored in the egg. Parental care is not seen.
4. In viviparous animals one or few eggs are produced by the female since the mother has to undergo gestation period and nurture the young ones in her womb until they are born. Reproduction cycle requires more time. But the embryo is protected from environmental conditions and predators. Chances of survival are very high..
5. Therefore the number of eggs / young ones in a viviparous animal will be less as compared to an oviparous animal.

CHAPTER- 3- TISSUE LEVEL OF ORGANISATION

Evaluation

1. The main function of the cuboidal epithelium is

a. Protection b. Secretion c. Absorption **d. Both (b) and (c)**

2. The ciliated epithelium lines the

a. Skin b. Digestive tract c. Gall bladder **d. Trachea**

3. What type of fibres are found in connective tissue matrix?

a. Collagen b. Areolar c. Cartilage d. Tubular

4. Prevention of substances from leaking across the tissue is provided by

a. Tight junction b. Adhering junction

c. Gap junction d. Elastic junction

5. Non-shivering thermogenesis in neonates produces heat through

a. White fat **b. Brown fat** c. Yellow fat d. Colourless fat

6. Some epithelia are pseudostratified. What does this mean?