



Page No 254

Solution SAQ - 27

Bilateral symmetry:

- (i) Limbs and organs are paired.
- (ii) Cephalization is present.
- (iii) The animal body can be divided into two equal halves by one plane called mid-sagittal plane.

Radial symmetry:

- (i) Limbs and organs occur all around the central axis.
- (ii) Cephalization is absent.
- (iii) The animal's body can be divided into two equal halves by any vertical plane passing through the central axis.

Solution SAQ - 28

- (i) Transparent body with biradial symmetry.
- (ii) Two tentacles and eight longitudinal rows of ciliary comb-plates for locomotion are present.
- (iii) Marine, solitary and free-swimming.
- (iv) No polymorphism or dimorphism occurs.

Example: Pleurobrachia and Cestum.

Solution SAQ - 29

- (i) Bilaterally symmetrical and dorsoventrally flattened animals.
- (ii) Body thin, soft, leaf-like or ribbon-like.
- (iii) Digestive cavity (when present) with a single opening, the mouth (anus is absent).
- (iii) Suckers and hooks are usually present.
- (iv) Circulatory and respiratory systems and skeleton are absent.

Example: Fasciola (liver-fluke) and Taenia solium (pork tape-worm)

Solution SAQ - 30

- (i) Bilaterally symmetrical, triploblastic, pseudocoelomate and unsegmented animals.
- (ii) Body is worm-like, cylindrical or flattened.
- (iii) Body is covered with a tough, resistant cuticle; cilia absent.
- (iv) Sexes are separate.

Example: Ascaris (round-worm) and Ancylostoma (hook-worm).

Solution SAQ - 31

- (i) Body triploblastic, bilaterally symmetrical, soft, elongated, vermiform and cylindrical or dorsoventrally flattened.
- (ii) Exoskeleton absent; body is covered by a thin cuticle.
- (iii) Alimentary canal is tube-like, complete and extends straight from mouth to anus.
- (iv) Reproduction is by sexual means. Sexes may be united (hermaphroditic) or separate.

Example: Nereis (sand worm) and Hirudinaria (leech).

Solution SAQ - 32

An individual which has both type of sex organs is called a hermaphrodite.

Example: Liver fluke, tape-worm.

Solution SAQ - 33

Triploblastic animals are the ones with three germ layers (a mesoderm as well as ectoderm and endoderm). The mesoderm allows them to develop true organs.

Example: Flat worms and humans.

Solution SAQ - 34

A coelomate animal is the one which has a body cavity in which well developed organs can be accommodated.

Example: Earthworm and Hirudinaria.

Solution SAQ - 35

- (i) Triploblastic, bilaterally symmetrical and metamerically segmented animals.
- (ii) Body segments are grouped into two regions - cephalothorax (head and thorax together) and abdomen, or three regions - head, thorax and abdomen. Anterior part of body forms a distinct head, bearing sense organs and brain.
- (iii) Exoskeleton of cuticle, containing protein, lipid, chitin and often calcium carbonate is secreted by underlying epidermis and shed (moulted) at intervals.
- (iv) Alimentary canal is complete; mouth and anus lie at opposite ends of the body.

Example: Palaemon (prawn) and Peripatus

Solution SAQ - 36:

- (i) Body is soft, bilaterally symmetrical, with little segmentation and without appendages. The size of body varies from a microscopic to a giant form such as Octopus of upto 50 feet.
- (ii) Body cavity is haemocoel. True coelom is reduced and restricted to the pericardial cavity and the lumen of gonads and nephridia.
- (iii) Digestive tract has a simple structure.
- (iv) Sexes are usually separate.

Example: Octopus and Sepia.

Solution SAQ - 37

- (i) Simple animals may be a star like, spherical or elongated.
- (ii) Body is triploblastic, coelomate, unsegmented and radially symmetrical.
- (iii) Body lacks head but has oral and aboral surfaces. Oral surface of the body has five radial areas called ambulacra.
- (iv) Body wall is covered with spiny hard calcareous (calcium carbonate) plates (ossicles) that forms a rigid or flexible endoskeleton.

Example: Echinus (sea urchin) and Asterias (star fish).

Solution SAQ - 38

- (a) Palaemon.
- (b) Musca.
- (c) Asterias.
- (d) Loligo.
- (e) Pila.
- (f) Unio.

Solution SAQ - 39

Echinodermata; The ambulacral system is the locomotive apparatus of the Phylum Echinodermata (sea-urchins, star-fishes, etc), the most important feature of which is the protrusible tube-feet that the animals can dilate with water at will, and thus move forward.

Solution SAQ - 40

- (i) The body is boat shaped or stream lined.
- (ii) Head, body and tail are compressed to make it suitable for locomotion in water, so that it offers little or no resistance for swimming in water.
- (iii) The pelvic fins, pectoral fins, dorsal fin, anal and caudal fins act as paddles and control the direction of movement in water and provide balance.
- (iv) The gills are well developed and suited for gaseous exchange in water.
- (v) The lateral line receptors enable the fish to detect any changes caused by mechanical disturbances in the surrounding water.
- (vi) The presence of air bladders in many bony fishes acts as an accessory respiratory organ as well as an organ for buoyancy. Using these bladders the fishes are able to maintain themselves at desired depths.
- (vii) The body is covered with scales.
- (viii) The presence of a third membrane called the nictitating membrane in the eye.

Solution SAQ - 41

- (i) Marine fishes with completely cartilaginous endoskeleton are called chondrichthyes. They are generally large in size.
 - (ii) Streamlined body is either laterally compressed or spindle-shaped or dorsoventrally flattened and disc shaped.
 - (iii) Mouth is ventral in position.
 - (iv) Skin is tough and covered with minute placoid scales.
- Example: Scoliodon (dog fish) and Torpedo (electric ray)

Solution SAQ - 42

- (i) Osteichthyes are marine and fresh water fishes with partly or whole bony endoskeleton.
- (ii) Body is generally spindle shaped.
- (iii) Skin is either naked or covered with cycloid or ctenoid scales.
- (iv) Heart is two chambered containing one auricle and one ventricle.

Example: Labeo (Rohu) and Synchiropus splendidus (mandarin fish)

Solution SAQ - 43:

(a)

Cartilaginous fishes:

- (i) They have a cartilaginous endoskeleton.
- (ii) They contain five to seven pairs of gill slits.
- (iii) Their mouth is ventral in position.
- (iv) Swim bladder is absent in them.

Bony fishes:

- (i) They have a bony endoskeleton.
- (ii) They contain four pairs of gill slits.
- (iii) Their mouth is terminal in position.
- (iv) Air bladder is usually present in them

(b)

Amphibia:

- (i) Their skin is glandular, smooth and moist.
- (ii) Scales are not present in them.
- (iii) They have a three chambered heart.
- (iv) Fertilisation is external.

Reptilia:

- (i) Their skin is non-glandular, dry and keratinized.
- (ii) Horny scales are present over their body.
- (iii) Their heart is incompletely four chambered.
- (iv) Fertilisation is internal.

(c)

Aves:

- (i) Forelimbs are modified into wings.
- (ii) The body is covered with feathers and scales.
- (iii) Mammary glands are absent.
- (iv) A toothless beak is present.

Mammals:

- (i) Wings are absent except in bats.
- (ii) Feathers and scales are absent. Hair is present.
- (iii) Females have mammary glands.
- (iv) Teeth are present. Jaws do not form beak.

Solution SAQ - 44

- (i) Mammals are warm-blooded and the most evolved animals of the Animal kingdom.
- (ii) Body is divisible into head, neck, trunk and tail. Moveable eyelids are present.
- (iii) Females have milk-producing mammary glands which secrete milk for the nourishment of the young.
- (iv) Respiration is through lungs only.

Example: Human beings and Monkey.

Solution SAQ - 45

Flight adaptations of the birds are the following:

- (i) Forelimbs are modified into wings.
- (ii) Body is covered with exoskeleton of waterproof and lightweight feathers.
- (iii) Long bones of endoskeleton are pneumatic having air cavities.

- (iv) All birds are toothless; their jaws are modified into horny beaks.
- (v) Body is streamlined to reduce air resistance during its flight.
- (vi) Birds have air sacs helping in double respiration.
- (vii) Flight muscles are well developed.
- (viii) Tail feathers form a steering apparatus.
- (ix) Birds have an acute vision.

Solution SAQ - 46

- (i) Body is bilaterally symmetrical, metamerically segmented, triploblastic and coelomate.
- (ii) A post-anal tail present at some stage of life.
- (iii) Segmental muscles in an unsegmented trunk.
- (iv) Ventral heart, with dorsal and ventral blood vessels and closed blood vascular system.

Solution SAQ - 47

Protochordata is one of the groups of phylum chordata.

Protochordata constitutes the marine, small, primitive, or lower chordates. The members of protochordates lack a head, skull or cranium, vertebral column and brain. About 2000 species are found in this group. This is further divided into three subphylum: Hemichordata (e.g. Balanoglossus), Urochordata (e.g. Herdmania) and Cephalochordata (e.g. Branchiostoma) based on the position of notochord.

Solution SAQ - 48

- (i) Urochordata: Herdmania.
- (ii) Cephalochordata: Branchiostoma.

Solution SAQ - 49

Notochord is a transient mesodermal rod in the most dorsal portion of the chordate embryo. In other words, notochord is an ensheathed flexible rod of turgid cells located along the back of chordate embryos and some primitive chordates ventral to nerve cord. It provides place for the attachment of muscles. Notochord has given rise to jointed axial skeleton of vertebral column.

Nerve cord is a collection of nerve fibres that runs throughout the length of an animal. It is hollow and dorsal in chordates where it gets modified into central nervous system of brain and spinal cord. Nerve cord is solid and ventral in nonchordates.

***** END *****