Chapter

4 Animal Kingdom

TYPE A : MULTIPLE CHOICE QUESTIONS

1. Pouched mammals are known as *[1997]*
(a) prototherians (b) metatherians
(c) eutherians (d) therians

2. Sponges capture food with the help of *[1997]*
(a) pinacocytes (b) choanocytes
(c) trophocytes (d) theocytes

3. Chloragogen cells of earthworm are similar to which organ of vertebrates ? *[1997]*
(a) Liver (b) Lung
(c) Kidney (d) Spleen

4. Haemocoel is found in *[1997]*
(a) *Hydra and Aurelia*
(b) *Taenia and Ascaris*
(c) Cockroach *and Pila*
(d) *Herdmania and Balanoglossus*

5. Aquatic reptiles are *[1997]*
(a) ureotelic
(b) ureotelic on land
(c) ammonotelic
(d) uricotelic in water

6. Larva of house-fly lacks *[1997]*
(a) eyes (b) wings
(c) spiracles (d) none of these

7. Single filament of *Nostoc* without mucilage sheath is called as *[1998]*
(a) colony (b) mycelium
(c) trichome (d) hyphae

8. Organisms, attached to substratum generally possess *[1998]*
(a) radial symmetry
(b) asymmetrical body
(c) single opening of digestive canal
(d) cilia to create water current

9. *Hydra* recognizes its prey by *[1998]*
(a) nematocyst
(b) special organ
(c) chemical stimulus
(d) mechanical stimulus

10. The long bones are hollow and connected by air passage. They are characteristic of *[1998]*
(a) aves (b) mammalia
(c) reptilia (d) sponges

11. Aristotle's lantern is found in *[1998]*
(a) Asteroidea (b) Echinoidea
(c) Holothuroidea (d) Ophiuroidea

12. Sympathetic nerves in mammals arise from
(a) sacral region *[1998]*
(b) cervical region
(c) 3rd, 7th, 9th, 10th cranial nerves
(d) thoracico-lumbar region

13. Which of the following statement is true regarding corals ? *[1999]*
(a) Form branch colonies.
(b) Solitary or colonial.
(c) Grow as massive bodies.
(d) All of the above

14. Water current in *Leucosolenia* is produced by *[1999]*
(a) pinacocytes (b) choanocytes
(c) archaeocytes (d) collencytes

15. Which is the example of platyhelminthes ?*[1999]*
(a) *Entamoeba* (b) *Plasmodium*
(c) *Wuchereria* (d) *Schistosoma*

16. Paired spermathecae occur in *Pheretima* in which of the following segments ? *[1999]*
(a) 4, 5, 6, 7 (b) 5, 6, 7, 8
(c) 6, 7, 8, 9 (d) 3, 4, 5, 6

17. Weberian ossicles are found in *[1999]*
(a) frog (b) snakes
(c) fishes (d) birds

18. The vertebrae in birds are mostly *[1999]*
(a) procoelous (b) heterocoelous
(c) amphicoelous (d) acoelous

19. Basket star belongs to class *[1999]*
(a) Ophiuroidea (b) Echinoidea
(c) Crinoidea (d) Asteroidea

20. The egg case in female cockroach is formed by secretion of ***[2000]***
(a) collaterial gland (b) mushroom gland
(c) conglobate gland (d) prothoracic gland

21. Power of regeneration in sponges is due to ***[2000]***
(a) theocytes (b) archaeocytes
(c) amoebocytes (d) sclerocytes

22. The poisonous fluid present in nematocyst of *Hydra* is ***[2000]***
(a) toxin (b) venom
(c) hematin (d) hypnotoxin

23. Life cycle of *Taenia* is ***[2000]***
(a) monogenetic (b) digenetic
(c) polygenetic (d) hexogenetic

24. Pigment haemocyanin is found in ***[2000]***
(a) chordata (b) annelida
(c) porifera (d) mollusca

25. *Antedon* belongs to which of the following class? ***[2000]***
(a) Asteroidea (b) Ophiuroidea
(c) Crinoidea (d) Echinoidea

26. Scales in Chondrichthyes are ***[2000]***
(a) placoid (b) ctenoid
(c) cycloid (d) all of these

27. Which of the following snake is not poisonous?
(a) *Naja- Naja* (b) *Python* ***[2000]***
(c) *Hydrophis* (d) *Bungarus*

28. Birds are ***[2000]***
(a) cold blooded (b) homeothermal
(c) poikilothermal (d) homeopoiesis

29. Which of the following substances is at its lowest level in fish food ? ***[2000]***
(a) Actin (b) Myosin
(c) Cholesterol (d) Tissue fluid

30. How many ovaries are found in birds ? ***[2000]***
(a) One (b) Two
(c) Three (d) Many

31. Gemmule formation in sponges are useful in
(a) asexual reproduction ***[2001]***
(b) sexual reproduction
(c) parthenogenesis
(d) parthenocarpy

32. The places of first, second and third moulting of *Ascaris* larva are ***[2002]***
(a) soil, alveoli, lung
(b) liver, soil, stomach
(c) soil, lung, liver
(d) soil, intestine, lung

33. What is left, when bath sponges dries up?***[2002]***
(a) Spicules (b) Hold fast
(c) Spongin fibres (d) Tentacles

34. *Hydra* receives impulses and stimuli through ***[2002]***
(a) nerve cells (b) sensory cells
(c) neuron cell (d) nematocysts

35. Which of the following are uricotelic animals?
(a) Rohu, Frog ***[2002]***
(b) Camel, Frog
(c) Lizard, Crow
(d) Eagles, Earthworm

36. In *Entamoeba histolytica*, the presence of chromatid bodies is characteristic of ***[2002]***
(a) precystic stage
(b) trophozoite stage
(c) mature binucleate stage
(d) both (a) and (b)

37. Just as *Xenopsylla* is a *Yersenia pestis*, so is ***[2003]***
(a) *Glossina palpalis* to *Wuchereria bancrofti*
(b) *Culex* to *Plasmodium falciparum*
(c) *Homo sapiens* to *Taenia solium*
(d) *Phlebotomus* to *Leishmania donovani*

38. Which of the following feature is common to leech, cockroach and scorpion? ***[2004]***
(a) Nephridia (b) Ventral nerve cord
(c) Cephalization (d) Antennae

39. Which one of the following statements is correct with respect to salt water balance inside the body of living organisms? ***[2005]***
(a) When water is not available camels do not produce urine but store urea in tissues.
(b) Salmon fish excretes lot of stored salt through gill membrane in fresh water.
(c) *Paramecium* discharges concentrated salt solution by contractile vacuoles.
(d) The body fluids of fresh water animals are generally hypotonic to surrounding water.

40. Which one of the following groups of structures/organs have similar function? ***[2005]***
(a) Typhlosole in earthworm, intestinal villi in rat and contractile vacuole in *Amoeba.*
(b) Nephridia in earthworm, Malpighian tubules in cockroach and urinary tubules in rat.
(c) Antennae of cockroach, tympanum of frog and clitellum of earthworm.
(d) Incisors of rat, gizzard (proventriculus) of cockroach and tube feet of starfish.

41. Which one of the following features is common in silverfish, scorpion, dragonfly and prawn? ***[2005]***

(a) Three pairs of legs and segmented body.
(b) Chitinous cuticle and two pairs of antennae.
(c) Jointed appendages and chitinous exoskeleton.
(d) Cephalothorax and trachae.

42. Which one of the following animals is correctly matched with its one characteristic and the taxon? ***[2006]***

	Animal	**Characteristic**	**Taxon**
(a)	Millipede	Ventral nerve cord	Arachnida
(b)	Duckbill platypus	Oviparous	Mammalia
(c)	Silverfish	Pectoral & Pelvic fins	Chordata
(d)	Sea anemone	Triploblastic	Cnidaria

43. All mammals without any exception are characterized by ***[2006]***

(a) viviparity and biconcave red blood cells.
(b) extra-abdominal testes and a four-chambered heart.
(c) heterodont teeth and 12 pairs of cranial nerves.
(d) a muscular diaphragm and milk producing glands.

44. Which of the following does not come under the class mammals? ***[2007]***

(a) Flying fox (b) Hedgehog
(c) Manatee (d) Lamprey

45. Which one feature is common to leech, cockroach and scorpion? ***[2008]***

(a) Nephridia (b) Ventral nerve cord
(c) Cephalization (d) Antennae

46. Based on cellular mechanisms there are two major types of regeneration found in the animals. Which one of the following is the correct example of the type mentioned? ***[2008]***

(a) Morphallaxis - Regeneration of two transversely cut equal pieces of a *Hydra* into two small hydras
(b) Epimorphosis - Replacement of old and dead erythrocytes by the new ones.
(c) Morphallaxis - Healing up of a wound in the skin.
(d) Epimorphosis - Regeneration of crushed and filtered out pieces of a *Planaria* into as many new *Planarians.*

47. Which statement best explains why invertebrates regenerate lost tissue more readily than most vertebrates do? ***[2009]***

(a) Invertebrates contain specialized cells that produce the hormones necessary for this process.
(b) Invertebrate cells exhibit a higher degree of uncontrolled cell division than vertebrate cells do.
(c) Invertebrate animals reproduce asexually, but vertebrate animals reproduce sexually.
(d) Invertebrate animals have more undifferentiated cells than vertebrate animals have.

48. Which of the following is correctly matched?

(a) Human -Renal portal system ***[2009]***
(b) Earthworm - Closed circulatory system
(c) Cockroach - Nephridia
(d) None of the above

49. Which set of terms would most likely be used in a description of the nervous system of chordates? ***[2009]***

(a) Brain, dorsal nerve cord, highly developed receptors
(b) Brain, fused ganglia, ventral nerve cord
(c) No brain, fused ganglia, tympana
(d) No brain, nerve net, modified neurons

50. Which one of the following statements is **not** correct? ***[2010]***

(a) All echinoderms are viviparous.
(b) Roundworm has no circulatory system.
(c) In bony fishes, swim bladder is usually present.
(d) In cartilaginous fishes, fertilization is internal.

51. Ticks and mites are actually ***[2010]***

(a) arachnids (b) crustaceans
(c) insects (d) myriapods

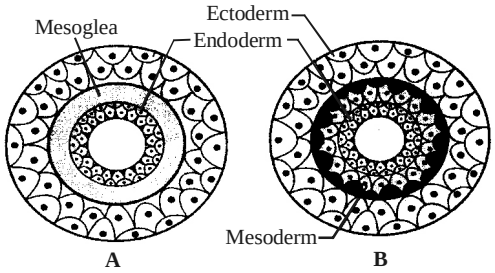
52. "Portuguese man of war" is *[2012]*
(a) Soldier of world war I
(b) Portuguese soldier
(c) A sponge
(d) A polymorphic, colonial, coelenterata

53. Which are exclusively viviparous ? *[2012]*
(a) Bony fishes
(b) Cartilagenous fishes
(c) Sharks
(d) Whales

54. Given are the four matches of phyla with their characteristic cells *[2013]*
A. Coelenterata - Nematocytes
B. Porifera - Choanocytes
C. Ctenophora - Solenocytes
D. Platyhelminthes - Nephrocytes
Mark the option that has both correct matches
(a) A and B (b) B and C
(c) C and D (d) B and D

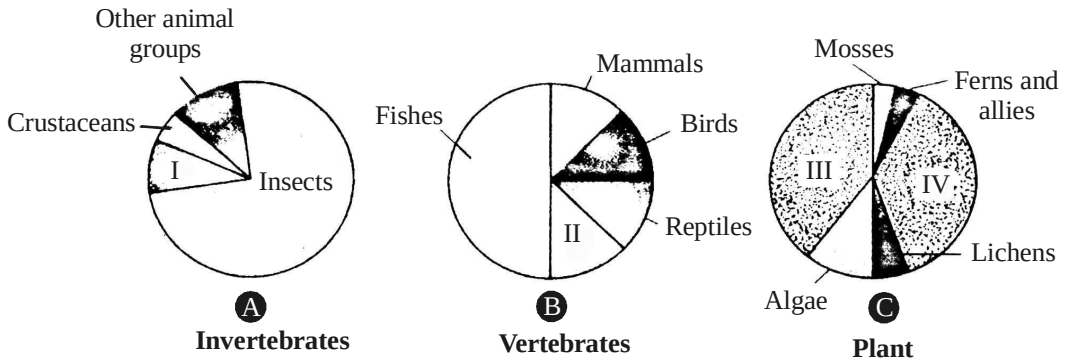
55. Cockroaches are brown or black bodied animals that are included in class _____ of phylum _____. *[2014]*
(a) Reptilia; Annelida
(b) Insecta; Arthropoda
(c) Insecta; Annelida
(d) Reptilia; Arthropoda

56.



The above diagram shows the germs layer. The animals having structures shown in the figures A and B are respectively called *[2014]*
(a) Diploblastic, Triploblastic
(b) Triploblastic, Diploblastic
(c) Diploblastic, Diploblastic
(d) Triploblastic, Triploblastic

57. Given below are pie diagrams A, B and C related to proportionate number of species of major taxa of invertebrates, vertebrates and plants respectively. Critically study and fill in the blanks I, II, III and IV



[2015]
(a) I- Molluscs, II-Amphibians, III-Fungi, IV-Angiosperms
(b) I- Molluscs, II-Amphibians, III-Angiosperms, IV-Fungi
(c) I- Hexapoda, II-Amphibians, III-Fungi, IV-Angiosperms
(d) I- Turtles, II-Amphibians, III-Fungi, IV-Angiosperms

58. Which of the following statements are true/false?
(i) In Torpedo, the electric organs are capable of generating strong electric shock to paralyze the prey.
(ii) Bony fishes use pectoral, pelvic, dorsal anal and caudal fins in swimming.
(iii) Amphibian skin is moist and has thick scales.
(iv) Birds are poikilothermic animals.
(v) The most unique mammalian characteristic is the presence of milk producing mammary glands by which the young ones are nourished. ***[2015]***
(a) (i), (ii) and (iii) are true; (iv), (v) are false
(b) (i), (ii) and (v) are true; (iii) and (iv) are false
(c) (i), (iv) and (v) are true; (ii) and (iii) are false
(d) (i), (ii) and (iv) are false; (iii) and (v) are true

59. Column-I contains organisms and column-II contains their excretory structures. Choose the correct match form the options given below.

	Column- I (Organism)		**Column -II (Excretory structures)**
A.	Cockroach	I.	Nephridia
B.	Cat fish	II.	Malpighian tubules
C.	Earthworm	III.	Kidneys
D.	*Balanoglossus*	IV.	Flame cells
E.	Flatworm	V.	Proboscis gland

[2017]
(a) A – I; B – III; C – II; D – IV; E – V
(b) A – III; B – I; C – II; D – V; E – IV
(c) A – II; B – I; C – III; D – V; E – IV
(d) A – II; B – III; C – I; D – V; E – IV

60. In which one of the following the genus name, its two characters and phylum are not correctly matched ?

	Genus name	**Two characters**	**Phylum**
(a)	Pila	(i) Body segmented Mouth with radula	Mollusca
(b)	Asterias	(ii) Spiny skinned Water vascular system	Echinodermata
(c)	Sycon	(iii) Pore bearing Canal system	Porifera
(d)	Periplaneta	(iv) Jointed appendages Chitinous exoskeleton	Arthropoda

[2017]

TYPE B : ASSERTION REASON QUESTIONS

Directions for (Qs. 61-69) : These questions consist of two statements, each printed as Assertion and Reason. While answering these questions, you are required to choose any one of the following five responses.

(a) If both Assertion and Reason are correct and the Reason is a correct explanation of the Assertion.
(b) If both Assertion and Reason are correct but Reason is not a correct explanation of the Assertion.
(c) If the Assertion is correct but Reason is incorrect.
(d) If both the Assertion and Reason are incorrect.
(e) If the Assertion is incorrect but the Reason is correct.

61. **Assertion :** Cold blooded animals do not have fat layer.
Reason : Cold blooded animals use their fat for metabolic process during hibernation. ***[1997]***

62. **Assertion :** Birds have one ovary.
Reason : This reduces the body weight for flight. ***[1999]***

63. **Assertion:** Lateral line system is found in fishes and aquatic larval amphibians.
Reason: Lateral line system has receptor of sensory cells derived from ectoderm. ***[2002]***

64. **Assertion :** Bats and whales are classified as mammals.
Reason : Bats and whales have four-chambered heart. ***[2003]***

65. **Assertion :** Holoblastic cleavage with almost equal sized blastomeres is a characteristic of placental animals.
Reason : Eggs of most mammals, including humans, are of centrolecithal type. ***[2003]***

66. **Assertion :** All birds, except the ones like koel (cuckoo) build nests for retiring and taking rest during night time (day time for nocturnal).
Reason : Koel lays its eggs in the nests of tailor bird. ***[2003]***

67. **Assertion :** The honey bee queen copulates only ones in her life time.
Reason : The honey bee queen can lay fertilized as well as unfertilized eggs. ***[2004]***

68. **Assertion** : Torsion can be seen in ctendium.
Reason : Ctenidium acts as the respiratory organ. ***[2007]***

69. **Assertion :** Tapeworm, roundworm and pinworm are endoparasites of human intestine.
Reason : Improperly cooked food is the source of intestinal infections. ***[2004, 2008]***

Directions for (Qs. 70-76) : Each of these questions contains an Assertion followed by Reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.
(c) If Assertion is correct but Reason is incorrect.
(d) If both the Assertion and Reason are incorrect.

70. **Assertion :** Sponges have body organization of "cellular level".
Reason : There is some physiological division of labour. ***[2009]***

71. **Assertion :** Acraniata is a group of organisms which do not have distinct cranium.
Reason : It includes small marine forms without head. ***[1997, 2012]***

72. **Assertion :** Sponges belong to Porifera.
Reason : Sponges have canal system. ***[1998, 2014]***

73. **Assertion :** The duck-billed Platypus and the spiny ant-eater, both are egg-laying animals yet they are grouped under mammals.
Reason : Both of them have seven cervical vertebrae and 12 pairs of cranial nerves. ***[2005, 2015]***

74. **Assertion :** Typhlosole increases the effective area of absorption in the intestine.
Reason : Typhlosole, present in the intestine, is the characteristic feature of cockroach. ***[2016]***

75. **Assertion :** Ambulacral system plays a major role in locomotion of echinoderm.
Reason : Hydraulic pressure of fluid and contraction of muscle of tube feet make possible movement of echinoderm. ***[2010, 2017]***

HINTS & SOLUTIONS

Type A : Multiple Choice Questions

1. (b) Pouched mammals are metatherians or marsupials because their female has a pouch or marsupium containing the teats for rearing the young ones. *e.g.*, Kangaroo and Wallaby.

2 (b) Sponges capture food with the help of flagellated cells/collar cells/choanocytes. These cells maintain a flow of water through the body and improves both respiratory and digestive functions, pulling in oxygen and nutrients and allowing a rapid expulsion of CO_2 and other waste products.

3. (a) Chloragogen cells of earthworm are similar to the liver of vertebrates because of the connection with storage and synthesis of glycogen and fat, deamination and urea formation.

4. (c) Presence of haemocoel (a blood filled body cavity) is a characteristic of arthropods and molluscs, *e.g.* cockroach and *Pila*.

5. (c) Aquatic reptiles are ammonotelic. Their main excretory product is nitrogenous ammonia. Availability of water makes them ammonotelic.

6. (b) Larva of housefly is legless, headless and wingless maggot.

7. (c) *Nostoc* is a colonial cyanobacterium. It contains a number of interwined filaments on the periphery, a mucilage filled hollow interior and a dense mucilage covering on the outside.

8. (a) The organisms attached to substratum generally possess radial symmetry.

Radial animals are usually sessile, freely floating or weakly swimming.

9. (c) *Hydra* recognizes its prey by a chemical stimulus.

10. (a) Presence of air passages in the bones (pneumatic bones) is a characteristic of birds.

11. (b) Aristotle's lantern is a chewing toothed apparatus in class echinoidea of phylum echinodermata.

12. (d) Sympathetic nerves in mammals arise from thoracico–lumbar region. Sympathetic nervous system is represented by a chain of 21 sympathetic ganglion on either side of spinal cord. It receives preganglionic sympathetic fibres from the spinal cord which make these exit along with thoracic and lumbar region.

13. (b) Corals belong to class anthozoa which exist as solitary or colonial. Corals is the rock like external skeletons. Coral animals secrete external skeletons of calcium carbonate.

14. (b) Water current in *Leucosolenia* is produced by flagellated choanocytes.

15. (d) Platyhelminthes are flat worms, *e.g.* blood fluke, *Schistosoma*.

16. (c) Four pairs of small spermathecae are present on the intersegmental groove of 5 & 6, 6 & 7, 7 & 8 and 8 & 9 segments. They receive sperms from another worm during copulation.

17. (c) Weberian ossicles are the chain of 4 small bones that connect air bladder and internal ear of teleost fishes. They serve to enhance hearing by conducting pressure changes produced by externally originating sound waves from the swim bladder to the ear.

18. (b) The vertebrae in birds are of heterocoelous type.

19. (a) Basket star (*Astropecten*) belongs to class ophiuroidea of phylum echinoderm.

20. (a) A pair of unequal, branched collaterial glands (opening separately into genital chamber) form an egg case ootheca.

21. (b) In sponges, archaeocytes are totipotent cells which can transform into sclerocytes, spongocytes or collencytes. They also have a role in nutrient transport and sexual reproduction.

22. (d) Penetrant, the largest nematocysts in *Hydra* produce hypnotoxin.

23. (b) Life cycle of *Taenia* is digenetic. Their primary host is pig and secondary is man.

24. (d) Copper containing pigment, hemocyanin is found in molluscs.

25. (c) *Antedon* (sea lily/feather star) is found in the class crinoidea of phylum echinodermata.

26. (a) Chondrichthyes have placoid scales and teleosts have cycloid and ctenoid type of scales.

27. (b) *Python* is the largest non-poisonous snake.

28. (b) Birds are warm blooded/homeothermal animals. Their body temperature is independent of that of their external environment.

29. (c) Fish meal has good nutritive value because it contains easily digestive proteins (55 – 77%), minerals (10 – 20%) and moisture (6 – 12%).

30. (a) Birds have only one ovary (left) which reduces their body weight. It is an adaptation for flight.

31. (a) Gemmule is a type of internal bud formed in sponges to pass the unfavourable season. It is helpful in asexual reproduction.

32. (a) The rhabditoid larva moults within egg shell in soil to form second stage rhabditoid (capable of infection). Egg hatches in the intestine, bores through epithelium of intestine to enter the circulatory system and then it reaches alveoli where it moults for the second time. After its 3rd moult, it leaves the lungs through trachea.

33. (c) Spongin is an organic horny elastic substance. They are fibres insoluble, chemically inert and resistant to protein digesting enzymes.

34. (b) *Hydra* has diffused type of nervous system. It receives stimulus through sensory cells scattered in epitheliomuscular layer.

35. (c) Animals excreting uric acid are called uricotelic. It is least toxic and causes least loss of body water, *e.g.* land reptiles, birds *etc.*

36. (a) Chromatid bodies are present in the precystic stage in *Entamoeba histolytica.* These bodies disappear as the cyst mature.

37. (d) *Phlebotomus* (sand fly) transmits *Leishmania donovani* which causes dum dum fever/kala azar.

38. (b) In leech, cockroach and scorpion, double ventral nerve cord is present.

39. (a) When water is not available, the camels produce dry faeces and concentrated urine. One of the best sources of metabolic water in camels is oxidation of food in the hump.

40. (b) Nephridia in earthworm, malpighian tubules in cockroach and urinary tubules in the rat are excretory in function.

41. (c) Silverfish, scorpion, dragonfly and prawn are arthropods. They are characterised by jointed appendages and chitinous exoskeleton.

42. (b) Millipede is myriapod, silver fish is insecta and sea anemone is diploblastic.

Duck bill platypus is a small semiaquatic oviparous mammal.

Ornithorhynchus anatinus, the Duckbill platypus, is a unique mammal native to Queensland, New South Wales, Victoria, South Australia, and Tasmania. This animal is about the size of a house cat and is covered by thick waterproof hair. It has a beak like a duck, webbed forelimbs for swimming, clawed hind feet for aid in burrowing, a common opening for the reproductive, excretory and digestive systems, and a broad, flat tail. In addition, the males have a single spur on each hind ankle that contains venom, and the females lay eggs.

43. (d) Mammals are characterised by muscular diaphragm and milk producing glands.

44. (d) A lamprey (sometimes also called as lamprey eel) is a jawless fish that belongs to the class cyclostomata. Lampreys possess toothed funnel-like sucking mouth, having scaleless slimy skin with seven pairs of circular gill slits on each side. They are well known as those species which bore into the flesh of other fish to suck their blood.

45. (a) Nephridia are invertebrate organs which function similarly to kidneys. They remove metabolic wastes from an animal's body. They are of two basic types, metanephridia and protonephridia. A metanephridium is a type of excretory gland or nephridium found in annelids, arthropods and molluscs. A protonephridium is a network of dead-end tubules lacking internal openings. The ends are called *flame cells* or *solenocytes*; they functions in osmoregulation.

46. (a) Morphallaxis refers to the type of regeneration in which lost body parts are replaced by the remodeling of the remaining tissue. In this type of regeneration, little or no cellular proliferation takes place during the regeneration process. A classic example of an organism that regenerates using this mechanism is the *Hydra*. When a *Hydra* is cut into two pieces, two *Hydra* as will be regenerated, both smaller than the parental *Hydra*. Once regeneration is completed, the two *Hydra* can continue to grow and reach the size of their original parent. Growth requires cellular proliferation but during the regenerative process very little cellular proliferation takes place.

47. (d) Invertebrates, animals without a backbone such as an earthworm, are simpler than vertebrates such as a human. Therefore, their cells are not as complex and they may be able to regenerate or grow lost body parts easier than a more complex animal.

48. (b) Earthworm has closed circulatory system. The blood circulates in definite walled blood vessels. Renal portal system is characteristic of reptiles. In reptiles, renal portal system brings blood from internal organs to the kidneys because their digestive tract and urinary tract only have cloaca to eliminate wastes. Humans have hepatic portal system that brings all the venous flow from digestive system into the liver. In cockroach, the excretory organs are malpighian tubules not nephridia.

49. (a) Chordates are a group of animals such as fish, frogs, snakes, birds, dogs, monkeys and humans. We all have central nervous systems made up of a brain and a dorsal (back) nerve cord. We all have highly developed receptors to detect changes in the environment for us to respond to. Fused ganglia is a primitive brain found in earthworms, tympana are primitive ears found in grasshoppers, and nerve nets are branched nerves without direction found in the *Hydra.*

50. (a) The animals of phylum echinodermata are oviparous. They have the ability of regeneration.

51. (a) Scorpion, spider, tick and mites comes under class arachnida of phylum arthropoda.

52. (d) Portuguese man of war is a polymorphic, colonial coelenterate *Physalia physalis*. It is named so due to its appearance which resembles with portuguese vessels sailing in sea in 15th and 16th centuries

53. (d) Whales are exclusively viviparous.

In viviparous animals (majority of mammals including human beings), the zygote develops into a young one inside the body of the female organism. After attaining a certain stage of growth, the young ones are delivered out of the body of the female organism.

54. (a) **55. (b)**

56. (a) Diploblastic animals have two germinal layers, outer ectoderm and inner endoderm, *e.g.*, Porifera and Coelenterate. Triploblastic animals have three germinal layers – outer ectoderm, middle mesoderm and inner endoderm, *e.g.*, Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Molluscs, Echinodermata and Chordata.

57. (a)

58. (c) The amphibian skin is moist.

59. (d)

60. (a) Molluscans are soft bodied animals. Their body is unsegmented with a distinct head, muscular foot and visceral hump. In *Pila*, the buccal cavity contains a rasping organ, the radula with transverse rows of teeth.

Type B : Assertion Reason Questions

61. (a) Cold blooded organisms utilize their stored food at the time of hibernation and aestivation.

62. (a) Birds have only left ovary which is an adaptation to reduce the weight for flight.

63. (b) Lateral line system is made up of sensory cells of ectodermal origin. It is meant for balancing the body while swimming. So, is found in fishes and larval forms of amphibians.

64. (b) Bats and whales are classified as mammals. They have milk secreting mammary glands.

Whales and bats are mammals. Whales are warm blooded, breath air through lungs and give birth to live young that are suckled on milk secreted from the mother's mammary glands. Bats have hair, give birth to live young and feed these young on milk produced in mammary glands. They are the only true flying mammals and are so unique that they have been placed in an order of their own chiroptera. 4-chambered hearts in mammals and birds keep fully oxgenated.

65. (c) Cleavage in placental mammals is holoblastic because of microlecithal eggs.

66. (c) Koel (*Eudynemis*) lays eggs in crow's nest for incubation and rearing.

67. (a) Honey bee queen copulates only once in her life span (nupital flight) and stores all the sperms in her seminal receptacles. It depends on her whether she releases sperms while laying eggs or not, so there are both fertilized and unfertilized eggs.

68. (b) Ctenidium is a gill situated on the right side of the branchial chamber. It helps in respiration by beating cilia. During development, ctenidium shifts from left side to right side which is called "torison". It is characteristic feature of gastropods.

69. (b) Tapeworm, roundworm & pinworm are all endoparasites. The main cause of the intestinal infection is improperly cooked food. However, tapeworm infection occur by eating improperly cooked food, roundworm is transmitted by contaminated food & water and pinworm or ringworm is transmitted through food or improper sanitary condition.

70. (b) Sponges are multicellular but they have cellular level of body organization *i.e.*, true tissue, movable parts, or appendages are not formed. Although, there is some physiological division of labour, accompanied with structural differentiation amongst body cells. But here, similar cells are arranged neither in permanent layer nor masses to form tissues.

71. (b) Cephalochordates and urochordates are acraniates. These are marine animals without cranium, jaws, vertebral column and paired appendages. Notochord is present and they are less developed than crainates.

72. (b) Sponges belong to Porifera and they have characteristic canal system.

73. (b) Both duck billed platypus and spiny ant eaters are mammals because of their constant body temperature and presence of diaphragm.

74. (d) Typhlosole is the characteristic feature of earthworm. It can be defined as an extra flap of tissue or an infolding along the inner wall of intestine. The typhlosole in earthworm increases the surface area of the intestine for efficient secretion and absorption during digestion.

75. (a) The water vascular system is a unique organ system that functions in locomotion, feeding, respiration and excretion. Ambulacral canal is connected to outside through external tube feet. Hydraulic pressure of fluid and contraction of muscle of tube feet make possible movement of Echinoderm.