# ANIMAL KINGDOM

**BIOLOGY**

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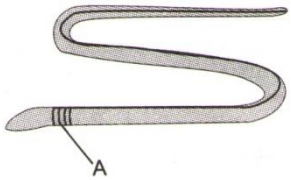
**Single Correct Answer Type**

1. The point by which Annelida advanced over Nematoda is
   a) True coelom
   b) Metameric segmentation
   c) Closed circulation
   d) All of the above
2. A transverse section of *Pheretima* taken through the 10th segment is observed in microscope. Which of the following structures can be observed in the section?
   a) Stomach, dorsal blood vessel, ventral blood vessel, supraoesophageal vessel, anterior loops, ring vessel and micronephridia
   b) Stomach, dorsal blood vessel, ventral blood vessel, lateral hearts, ring vessels and pharyngeal nephridia
   c) Intestine, dorsal blood vessel, ventral blood vessel, supraoesophageal vessel and septal nephridia
   d) Stomach, dorsal blood vessel, sub-neural blood vessel and lateral hearts
3. *Sycon* belongs to a group of animals which are best described as
   a) Multicellular with a gastrovascular system
   b) Multicellular having tissue organization, but no body cavity
   c) Unicellular or acellular
   d) Multicellular without any tissue organization
4. In which one of the following the genus name, its two characters and its class/phylum are correctly matched?

| | Genus | Two characters | Class/phylum |
|---|---|---|---|
| a) | *Salamandra* : | (i) A tympanum represents ear<br>(ii) Fertilization is external | Amphibia |
| b) | *Pteropus:* | (i) Skin possesses hair<br>(ii) Oviparous | Mammalia |
| c) | *Aurelia:* | (i) Cnidoblast<br>(ii) Organ level of organization | Coelenterata |
| d) | *Ascaris*: | (i) Body segmented<br>(ii) Males and females distinct | Annelida |

5. In forg's heart, there are muscular ridges which consist of fibers called
   a) Purkinje fibres
   b) Myonemes
   c) Telodendria
   d) Columnae carnae
6. Which is not a feature of annelids?
   a) Metameric segmentation
   b) Nephridia
   c) Psedocoelom
   d) Clitellum
7. Which one of the following kinds of animal are triploblastic?
   a) Flatworms
   b) Sponges
   c) Ctenophores
   d) Corals
8. Organ system level of organisation is observed in
   a) Chordates
   b) Annelids
   c) Molluscs
   d) All of these
9. Find the odd example.
   a) Sea lily
   b) Sea fan
   c) Sea cucumber
   d) Sea urchin

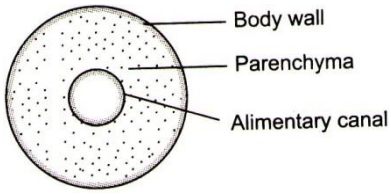
10. The snake eating snake is
    a) Black cobra b) King cobra c) Rattle snake d) Anaconda
11. Book lungs are respiratory organs in
    a) Scorpion b) Prawn c) Snail d) Cockroach
12. In *Pheretima*, the lateral hearts that connect the supra oesophageal blood vessel with ventral blood vessel are located in which segments?
    a) 7 and 9 b) 18 and 19 c) 14 and 15 d) 12 and 13
13. Sea anemone belongs to phylum
    a) Protozoa b) Porifera c) Coelenterata d) Echinodermata
14. Trochophore is the larva of
    a) *Neopilina* b) *Chiton* c) *Pila* d) All of these
15. In the given diagram, what does 'A' represent?




    a) Heart b) Lateral vessel c) Ventral vessel d) Dorsal vessel
16. Hydroskeleton is not found in
    a) Mollusca b) Echinoderms c) Annelida d) Cnidarian
17. Aschelminthes are usually
    a) Dioecious b) Hermaphrodites c) Metagenic d) Coelomates
18. Development of Mollusca is
    a) With a larvae named trocophore b) Always direct without larval stages
    c) With larvel stage called glochidium d) With larval stage called wriggler
19. Which character is not same in Aves and mammals?
    a) Single systemic arch b) Metanephric kidney
    c) Seven cervical vertebrae d) Homeotherms
20. Study the following features of a fish
    I. It is a crossopterygian fish
    II. It is found in the river Chalumnae
    III. It does not exhibit aestivation
    IV. It is an urecotelic animal
    Which of the above are true to '*Neoceratodus*'
    a) I and II b) II and IV c) I and III d) I and IV
21. In *Pheretima*, septa are absent between which segments?
    a) 3/4 and 9/10 b) 4/5 and 8/9 c) 5/6 and 7/8 d) 7/8 and 6/7
22. In frogs, oviduct is formed by
    a) Wolffian duct b) Metanephric duct c) Mullerian duct d) Bidder's canal
23. The life span of honey bee drone is
    a) 3-4 months b) 1-2 months c) 6-7 months d) 10-12months
24. A group of animals having marsupium is
    a) Nonotremata b) Eutheria c) Metatheria d) Pantotheria
25. What will you look for to identity the sex of the following?
    a) Male frog – a copulatory pad on the first digit of the hind limb
    b) Female cockroach – anul ceri
    c) Male shark – claspers borne on pelvic fins
    d) Female *Ascaris* – sharply curved posterior end
26. The excretory cells, that are found in Platyhelminthes are
    a) Protonephridia b) Flame cells c) Solenocytes d) All of these
27. Ommatidia serve the purpose of photoreception in

a) Humans b) Sunflower c) Cockroach d) Frog

28. *Periplaneta* has no respiratory pigment in its blood because
    a) Air is conducted directly to the body tissues b) It has haemocoelom
    c) It has anaerobic respiration d) It lacks blood cells in the blood
29. *Wuchereria bancrofti* is a common filarial worm. It belongs to phylum
    a) Platyhelminthes b) Nemathelminthes c) Annelida d) Coelenterata
30. The cross-section of the body of an invertebrate is given below. Identify the animal, which has this body plan.




    a) Cockroach b) Roundworm c) *Planaria* d) Earthworm
31. In earthworm, the characteristic internal median fold of dorsal wall of the intestine called typhlosole is present in
    a) 5 to 9 segments b) 9 to 14 segments c) 26 to 35 segments d) 15 to last segment
32. Which of the following phyla are schizocoela?
    a) Annelida, Platyhelminthes and Mollusca
    b) Annelida, Arthropoda and Mollusca
    c) Platyhelminthes, Aschelminthes and Annelida
    d) Aschelminthes, Annelida and Mollusca
33. Columella auris is found in
    a) Rabbit b) Frog c) Man d) All of these
34. Which one of the following is not a bird?
    a) Magpie b) Albatross c) Himalayan quail d) *Bufo*
35. Which of the following blood vessels in the circulatory system of frog has more oxygenated blood?
    a) Pulmocutaneous artery b) Pulmocutaneous vein
    c) Pulmonary artery d) Precaval veins
36. Which one of the following feature is common to leech, cockroach and scorpion?
    a) Nephridia b) Ventral nerve cord c) Cephalization d) Antennae
37. Which of the following cell types is capable of giving rise to other cell types in sponges?
    a) Thesocytes b) Pinacocytes c) Cnidocytes d) Archaeocytes
38. *Necturus* is commonly known as
    a) The flying frog b) The mud puppy c) The crested newt d) The toad
39. Which of the following display retrogressive metamorphosis?
    a) *Salpa* and *Herdmania* b) *Doliolum* and *Oikopleura*
    c) *Pyrosoma* d) All of these
40. Which of the following is true of Aves?
    a) They are poikilotherms and have a three chambered heart
    b) Tiny pebbles eaten by some birds and are used in crushing
    c) They have 10 pairs of cranial nerves
    d) All of the above
41. Which one of the following has a biradial symmetry?
    a) *Paramecium* b) Jellyfish c) Cockroach d) Sea anemone
42. Mouth part of housefly are
    a) Siphoning type b) Sponging type
    c) Biting and chewing type d) Piercing and sucking type
43. Zoological name of common Indian krait is
    a) *Bungarus caeruleus* b) *Ophiophagus Hannah*
    c) *Viper russeli* d) *Naja naja*

44. Which of the following animals have a single opening to the outside that serves both as mouth as well as anus?
a) *Octopus* b) *Asterias* c) *Ascidia* d) *Fasciola*
45. Cellulose digesting zooflagellate found in wood cockroaches is
a) *Lophomonas* b) *Trichomonas* c) *Trichonympha* d) *Leishmania*
46. Spiracles found in cockroach are
a) 2 pairs in thorax and 100 pairs in abdomen b) 2 pairs in thorax and 6 pairs in abdomen
c) 2 pairs in thorax and 8 pairs in abdomen d) 2 pairs in thorax and 4 pairs in abdomen
47. The phylum-Mollusca lack, which one of the following
a) Visceral hump b) Malpighian tubules c) Gills d) Radula
48. Down feathers are
a) First feathery covering in birds
b) Modified filoplumes found near nostrils and eyes
c) Tail feathers
d) Wing feathers
49. The number of abdominal segments in male and female cockroach is
a) 10, 10 b) 9, 10 c) 10, 11 d) 8, 10
50. Petromyzon and myxine belong to class
a) Gnathostomata b) Cyclostomata c) Urochordata d) Protochordata
51. All mammals without any exception are characterized by
a) Viviparity and biconcave red blood cell
b) Extra abdominal testis and four-chambered heart
c) Heterodont teeth and 12 pairs of cranial nerves
d) A muscular diaphragm and milk producing glands
52. Which of the following is true about phylum-Platyhelminthes?
a) They are mostly ectoparasites b) They are mostly free-living
c) They are mostly commensals d) They are mostly endoparasites
53. Submaxillary glands of rabbit pour their secretions through
a) Stenson's duct b) Ductus cholidocus c) Wharton's duct d) Naso-palatine duct
54. Which one of the following animals belongs to Cyclostomata?
a) *Channa* b) *Loris* c) *Dodo* d) *Petromyzon*
55. Reproduction in *Ctenoplana* takes place by
a) Budding b) Sexual reproduction c) Binary fission d) Multiple fission
56. Mosquito receive air through
a) Flagellum b) Cilia c) Pedicel d) None of these
57. Note the following words.
I.Fenestra
II. Pedical
III.Lacinia
IV. Flagellum
V.Galea
VI. Mentum
VII.Palpifer
VIII. Cardo
IX.Glossa
Which of the above found in the first pair of maxillae in case of cockroach?
a) III, V, VII and VIII b) I, III, V and IX c) I, VI, VII and IX d) II, V, VII and IX
58. *Ornithorhynchus* is an example of
a) Dinosaur b) Monotreme mammal c) Marsupial mammal d) Eutherian mammal
59. The presence of the tube feet is a characteristic feature of the phylum
a) Arthropoda b) Annelida c) Nemathelminthes d) Echinodermata

60. Choose the non-poisonous snake from the given options
    a) Krait and cobra snake
    b) Sea snake and coral snake
    c) Viper and rattle snake
    d) None of the above
61. Syndactyly, prehensile tail and long protrusible tongue are the unique features of
    a) Rhesus monkey
    b) *Archaeopteryx*
    c) Horse fish
    d) *Chamaeleon*
62. *Ichthyophis* belongs to class
    a) Mammalia
    b) Reptilia
    c) Amphibia
    d) Aves
63. The character of birds without exception is
    a) Omnivorous
    b) Flying wings
    c) Beak without teeth
    d) Lay eggs with calcareous shell
64. The larval stage of a harmful insects, causing a cavity like pathological condition in human subcutaneous tissue, is
    a) Naiad
    b) Nymph
    c) Maggot
    d) Wriggler
65. The cavity in the region of diencephalon in the brain of rabbit is called
    a) Lateral ventricle
    b) Third ventricle
    c) Foramen of monro
    d) Iter
66. Which one of the following is not a characteristic of phylum-Annelida?
    a) Closed circulatory system
    b) Segmentation
    c) Pseudocoelom
    d) Ventral nerve cord
67. Ammocoetes is
    a) Organs that help excrete ammonia in invertebrates
    b) Animals that have an amniotic sac surrounding the embryo in development stages
    c) A larval stage
    d) None of the above
68. Which one of the following is the true description about an animal concerned?
    a) Earthworm – The alimentary canal consists of a sequence of pharynx, oesophagus, stomach, gizzard and intestine
    b) Frog – Body is divisible into three regions : head, neck and trund
    c) Rat – Left kidney is slightly higher in position than the right one
    d) Cockroach – 10 pairs of spiracles (2 pairs on thorax and 8 pairs on abdomen)
69. How many hearts are found in earthworm?
    a) 8 (four pairs)
    b) 2 (one pair)
    c) 6 (three pairs)
    d) 12 (six pairs)
70. Which of the following belong to phylum-Annelida?
    a) *Hirudinaria, Nereis* and *Wuchereria*
    b) *Earthworms, Aphrodite* and Pila
    c) *Pheretima, Tubifex* and *Nereis*
    d) *Aplysia, Nereis* and *Dentalium*
71. Which of the following is not a larval form of Mollusca?
    a) Pluteus
    b) Trochophore
    c) Veliger
    d) Glochidium
72. In *Leucosolenia,* gametes develop from
    a) Amoebocytes
    b) Archaeocytes
    c) Choanocytes
    d) Myocytes
73. The main nitrogenous waste of *Hydra*, is
    a) Ammonia only
    b) Urea only
    c) Uric acid only
    d) Both (a) and (c)
74. Nematoblasts are formed by
    a) Interstitial cells
    b) Glands cells
    c) Mesoepithelial cells
    d) Nerve cells
75. Which of the following is an insect?
    a) Moth
    b) Mites
    c) Prawn
    d) Scorpion
76. The phylum-Annelida is named so because of
    a) More organs are placed towards anterior part of the body
    b) The presence of antenna
    c) Anteriorly placed neural system
    d) The presence of metameres
77. Ecdysone is produced by
    a) Prothoracic gland
    b) Corpora cardiaca
    c) Corpora allata
    d) Abdominal gland
78. The feeding organ in phylum-Mollusca is
    a) Ctenedia

b) Undulating membrane
c) Sucker
d) Radula

79. Coelom is important because
a) It allows the internal organs to grow
b) It separates the gut from the body will muscles
c) It has evolutionary significance
d) All of the above

80. *Ascaris* is characterized by
a) Absence of true coelom but presence of metamerism
b) Presence of neither true coelom nor metamerism
c) Presence of true coelom and metamerism
d) Presence of true coelom and metamerism (metamerisation)

81. The first phylum to have a complete alimentary canal is
a) Platyhelminthes b) *Ascaris* c) Aschelminthes d) Annelida

82. Exoskeleton of which phylum consists of a chitinous cuticle?
a) Annelida b) Porifera c) Arthropoda d) Echinodermata

83. Waggle dance in honeybees tells about
a) Direction of food source b) Distance of food source
c) Both (a) and (b) d) None of these

84. "Triploblastic, unsegmented, acoelomate exhibiting bilateral symmetry and reproducing both asexually and sexuality, with some parasitic forms".
The above description is the characteristic of phylum
a) Annelida b) Ctenophore c) Cnidaria d) Platyhelminthes

85. Which animals have all developed echolocation system like that of bats?
a) Wild cats b) Beavers c) Primates d) Whales and dolphins

86. The characteristic larva of phylum-Coelenterata is
a) Planula b) Cysticercus c) Rhabditiform d) Wriggler

87. What is common between parrot, *Platypus* and kangaroo?
a) Homeothermy b) Toothless jaws
c) Functional post-anal tail d) Ovoparity

88. The 'bilateral symmetry' refers
a) When the body can be divided into two unequal halves on passing central axis through it
b) To any plane passing through centre, which does not divide the body into equal halves
c) When the body can be divided into identical left and right halves only in one plane
d) Any plane passing through the central axis of the body dividing the organism into two equal halves

89. In which of the following animals, respiration occurs without any respiratory organ?
a) Frog b) Fish c) Cockroach d) Earthworm

90. The highly degraded organic matter rich in nitrogen and potassium in particular resulting from the activity of earthworms, is called
a) Worm castings b) Vermicompost c) Compost bedding d) Humus

91. Which one of the following abnormalities in the host is associated to *Wuchereria, Plasmodium* and *Fasciola* respectively?
I. Parasitic castration
II. Hyperplasia
III. Febrile paroxysm
IV. Peritonitis
V. Lymphangitis
a) V, III and II b) V, III and I c) II, IV and V d) II, IV and II

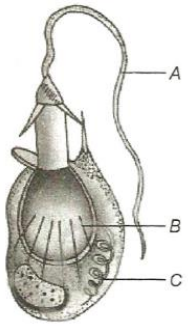
92. Trichocyst and nematocysts are meant for
a) Defence b) Nutrition c) Respiration d) Excretion

93. Water vascular system is found in
a) Mollusca b) Arthropoda c) Annelida d) Echinodermata

94. In which of the following, there is syncytial epidermis and longitudinal muscle cells in four bands?
a) Nematodes b) Platyhelminthes c) Annelids d) Echinoderms

95. Phylum-Chordata is divided into sub-phyla namely
a) Vertebrata, Protochordata and Urochordata
b) Urochordata, Gnathochordata and Vertebrata
c) Urochordata, Tunicata and Vertebrata
d) Tunicata, Cephalochordata and Vertebrata

96. Choose the correct options for the following diagram




a) A-Cnidcil, B-Refractile rod, C-Stylet b) A-Thread tube, B-Contractile fibril, C-Lasso
c) A-Stylet, B-Refractile rod, C-Capsule d) A-Cnidocil, B-Spine, C-Thread tube

97. Platyhelminthes are
a) Asymmetrical b) Radially symmetrical
c) Bilaterally symmetrical d) None of these

98. In Arthropoda, head and thorax are often fused to form cephalothorax, but in which one of the following classes, the body is divided into head, thorax and abdomen?
a) Insecta b) Myriapoda
c) Crustacea d) Arachnida and Crustacea

99. Mouth part of mosquito is
a) Sucking and piercing type b) Sponging type
c) Biting and chewing type d) None of the above

100. Which one of the following mammals is not an odd-toed ungulate?
a) Rhinoceros b) Camel c) Zebra d) Horse

101. The excretory organs in prawn are
a) Kidneys b) Malpighian tubules c) Green glands d) Nephridia

102. The dorsal plate of skeleton found on the abdomen of cockroach is called
a) Pleuron b) Sternum c) Tergum d) Vertex

103. Which of the following does not make a nest of its own?
a) Crow b) Parrot c) Cuckoo d) Sparrow

104. Which of the following statements are true (T) and which are false (F)? Choose the correct option
I. Amphibians have metanephric kidneys
II. The skull of mammals is dicondylic
III. Aves copulate by cloacal apposition
IV. Voice is produced in Aves by a syrinx
V. Lepus is gregarious in nature
a) II, IV and V are true, I and III are false b) II, III and IV are true, I and V are false
c) II and V are true, I, II and V are false d) I, II and V are true, III and IV are false

105. During its life cycle, *Fasciola hepatica* (liver fluke) infects its intermediate host and primary host at the following larval stages, respectively
a) Metacercaria and cercaria b) Miracidium and metacercaria
c) Redia and miracidium d) Cercaria and redia

106. From the following fishes, identify the one with a aglomerular kidney.
a) *Sphyrna* b) *Tilapia* c) *Cirrhinus* d) *Exocoetus*
107. The scientific name of Asian tiger mosquito is
a) *Aedes aegypti* b) *Aedes albopictus* c) *Aedes taeniornynchus* d) *Aedes albolineatus*
108. The response to external stimulus is quicker and more precise in which of the following symmetry?
a) Radial b) Bilateral c) Spherical d) Biradial
109. Unique features of phylum-Ctenophora is
a) Presence of comb plates and comb jellies b) Presence of comb plates only
c) Presence of tentacles only d) Alteration of generation only
110. Three types of body cavity are
a) True coelom, pseudocoelom and haemocoel
b) Pseudocoelom, protocoelom and acoelom
c) Acoelom, deuterocoel and homocoel
d) Protocoel, deuterocoel and pseudocoelom
111. Which of the following is a crustacean?
a) Prawn b) Snail c) Sea anemone d) *Hydra*
112. In earthworm, self-fertilization cannot occur due to
a) Protogyny b) Protandry c) Epigyny d) Hypogyny
113. Which one of the following pairs is mismatched?
a) *Pila globosa* – Pearl b) *Apis indica* – Honey
c) *Kenia lacca* – Lac d) *Bombyx mori* – Silk
114. Types of salivary glands present in rabbit are
a) One b) Two c) Three d) Four
115. Lateral line sense organs occur in
a) Salamander b) Frog c) Water snake d) *Scoliodon*
116. Dental formula of rabbit is
a) $\frac{2033}{1023}$ b) $\frac{2133}{1023}$ c) $\frac{2023}{1023}$ d) $\frac{1303}{1203}$
117. Amphids are cuticular elevations on ventrolateral lips of *Ascaris*. These are
a) Tangoreceptors b) Tactoreceptors c) Olfactoreceptors d) Chemoreceptors
118. Poison gland in snake is located in
a) Parietal b) Maxilla c) Mandible d) Neck
119. Bioluminescence is seen in phylum
a) Ctenoplana b) Coelenterata c) Ctenophora d) Cnidaria
120. Which one is the real product of honey bee?
a) Bee wax b) Honey c) Propolis d) Pollen
121. Which one of the following is a matching set of phylum and its three examples?
a) Cnidaria – *Bonellia, Physalia, Aurelia*
b) Platyhelminthes – *Planaria, Schistosoma, Enterobius*
c) Mollusca – *Loligo, Teredo , Octopus*
d) Porifera – *Spongilla, Euplectella, Pennatula*
122. Rhabditiform is the larva of
a) *Hydra* b) Platyhelminthes c) *Ascaris* d) Earthworm
123. Which of the following statements are true/false?
I. Poikilothermic animals are also called ectothermic animals
II. Sharks are ovoviviparous animals
III. Coxal glands are excretory organs present in arachnids
IV. Copper containing respiratory pigment is called haemocyanin, it is present in *Pila*
a) All the statements are false b) All the statements are true
c) I and II are true and III and IV are false d) I and III are true and II and IV are false
124. 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 poikilothermous animals
V.The most unique mammalian characteristic is the presence of milk producing mammary glands by which the young ones are nourished

a) I, II and III are true; IV, V are false
b) I, II and V and true; III and IV are false
c) I, II and III are false; IV and V are true
d) I, II and IV are false; III, and V are true

125. Nematoblasts of *Hydra* are
a) Sensory
b) Complicated
c) With nematocyst apparatus
d) All of the above

126. *Ascaris* has
a) Paired testes and single ovary
b) Paired ovaries and single testis
c) Single ovaries and single testis
d) Paired ovaries and paired testes

127. Ampullae of Lorenzini are present in
a) Fish
b) Lizard
c) Frog
d) Rabbit

128. Which of the following is colourless *Hydra*?
a) *Hydra fusca*
b) *Hydra viridis*
c) *Hydra oligactis*
d) *Hydra vulgaris*

129. In which of the following organisms testes descend into scrotum in breeding season but in non-breeding season goes up?
a) Frog
b) Kangaroo
c) Shrew
d) Bat

130. Correct sequenct in embryonic development of frog is
a) Zygote – Cleavage – Blastula – Gastrula
b) Zygote – Cleavage – Gastrula – Blastula
c) Cleavage – Zygote – Blastula – Gastrula
d) Zygote – Blastula – Cleavage – Gastrula

131. Larva of *Sycon* is
a) Parenchymula
b) Amphiblastula
c) Redia
d) Trochophore

132. Sea horse is
a) A bird
b) A mammal
c) An amphibian
d) A fish

133. Feeding type of animals belonging to phylum-Porifera is
a) Raptorial feeders
b) Suctorial feeders
c) Filter feeders
d) None of these

134. Which worm may go very deep in soil up to 60-90 cm and form vertical and complicated burrows for their movement?
a) Epigenic
b) Endogenic
c) Anecic
d) Geophagic

135. Which of the following animal is called a living fossil?
a) King locust
b) *Limulus*
c) *Bombyx*
d) *Balanoglossus*

136. Which of the following group will be amniotes?
a) *Hermidactylus – Salamander – Manis*
b) *Ornithorhynchus – Struthio – Necturus*
c) *Anguis – Eudynamis – Pteropuss*
d) None of the above

137. The character that differentiates chordate from non-chordate is
a) Triploblastic body organization
b) Heterotrophic mode of nutrition
c) Dorsal tubular nerve cord
d) Sexual reproduction

138. Cavity of coelenterates is called
a) Coelenterons
b) Coelom
c) Cavity
d) None of these

139. Which one of the following pairs of animal comprises 'jawless fishes'?
a) Lampreys and eels
b) Mackerals and rohu
c) Lampreys and hag fishes
d) Guppies and hag fishes

140. Consider the following four statements (I-IV) about certain desert animals such as kangaroo rat.
I.They have dark colour and high rate of reproduction and excrete solid urine.
II.They do not drink water, breathe at a slow rate to conserve water and have their body covered with thick hairs.
III.They feed on dry seeds and do not require drinking water.

IV.They excrete very concenntated urine and do not use water to regulate body temperature.
Which two of the above statements for such animals are true?
a) III and IV b) II and III c) III and I d) I and II

141. Which of the following nephridia does not found in earthworm?
a) Septal nephridia b) Macronephridia
c) Integumentary nephridia d) Pharyngeal nephridia

142. Some of the statements are given below
I. Porifera to Echinodermata lack a notochord
II. Platyhelminthes display tissue level organisation
III. Mesoglea is present in coelenterates during development
IV. Aschelminthes are coelomates
Choose the correct options
a) I, II, II and IV are True b) I and II are True c) I and III are True d) II and III are True

143. Butterfly belongs to
a) Homoptera b) Procoptera c) Hemiptera d) Lepidoptera

144. Which of the following shows polymorphism?
a) *Physalia* b) *Trypanosoma* c) Termite d) All of these

145. Which one of the following animal has both exoskeletal and endoskeletal structures?
a) Freshwater mussel b) Tortoise c) Frog d) Jelly fish

146. Which of the following are also known as collar cells?
a) Choanocytes b) Pinocytes c) Thesocytes d) Cnidoblast

147. Which of the following does not belong to phylum-Platyhelminthes?
a) *Fasciola* b) *Taenia* c) *Wuchereria* d) *Planaria*

148. True segmentation is also called
a) Metagenesis
b) Metamorphosis
c) Metamerism
d) Metasegmerism

149. Two common characters found in centipede, cockroach and crab are
a) Compound eyes and anal cerci b) Jointed legs and chitinous exoskeleton
c) Green gland and tracheae d) Book lungs and antennae

150. A four chambered heart is not found in
a) Mammals b) Birds c) Snake d) Crocodile

151. The function of typhlosole in earthworm
a) Is to secrete digestive juice
b) Is to slowdown rate of passage of food
c) Increase absorptive area of intestinal epithelium
d) Have no function

152. Which is the smallest known bird?
a) Artic Tern b) Hoopoe c) *Streptopelia* d) Bee humming bird

153. Bidder's canal is found in
a) Testis of frog b) Kidney of frog c) Kidney of mammal d) Ovary of mammal

154. Which sound producing organ is found in bird?
a) Pharynx b) Larynx c) Syrinx d) Trachea

155. Nidology is the study of
a) Cnidarians b) Aschelminthes c) Bird nests d) Mammals

156. The number of segments on the anal cerci of cockroach is
a) 12 b) 15 c) 18 d) 16

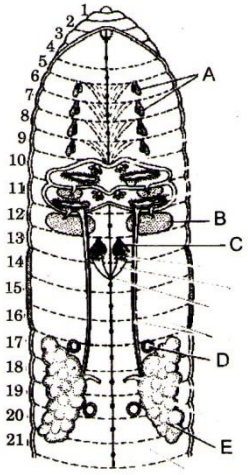
157. The organs that assists in sound production in mosquito, is
a) Hairy appendages b) Mouth parts c) Hemielytra d) Halteres

158. Mollusca is

a) Triploblastic, Acoelomate
b) Triploblastic, coelomate
c) Diploblastic, Acoelomate
d) Diploblastic, coelomate

159. Tube feet is the locomotory organ in
a) Star fish
b) Jelly fish
c) Silver fish
d) Scoliodon

160. In the diagram of the reproductive system of earthworm A, B, C, D and E represents.




a) **A-**Seminal vesicle, **B-**Spermathecae, **C-**Prostate gland, **D-**Ovary, **E-**Accessory gland
b) **A-** Seminal vesicle, **B-** Ovary, **C-** Accessory gland **D-** Spermathecae, **E-** Prostate gland,
c) **A-** Spermathecae, **B-** Seminal vesicle, **C-** Accessory gland **D-** Ovary, **E-** Prostate gland,
d) **A-** Spermathecae, **B-** Seminal vesicle, **C-** Ovary, **D-** Accessory gland **E-** Prostate gland,

161. Solenocytes are associated with
a) Respiration
b) Digestion
c) Nutrition
d) Excretion

162. The study of snakes is called
a) Herpetology
b) Ophiology
c) Saurology
d) Ornithology

163. Among the following which one lay eggs and does not produce young ones directly?
a) *Echidna*
b) Kangaroo
c) Polcapine
d) Whale

164. Egg of cockroach gives rise to
a) Nymph
b) Caterpillar
c) Larva
d) Pupa

165. Choose the correct option
a) Annelida – Exhibit bilateral symmetry, metamerism and coelom
b) Echinodermata – Exhibit tissue level organisation and radial symmetry
c) Arthropoda – Exhibit incomplete digestive system and segmentation
d) Notochord is present on ventral side in vertebrate

166. The animals belonging to phylum-Annelida use the following in locomotion
a) Nephridia and nephridial pores
b) Longitudinal and circular muscles
c) Organs of bursa
d) Spicules and ostia

167. Choanocyte in an ascon type of canal system, is lined by
a) Porocyte
b) Incurrent
c) Apopyle
d) Spongocoel

168. The zoological name of North Indian hare is
a) *Oryctolagus cuniculus*
b) *Lipus ruficaudatus*
c) *Lipus nigricollis*
d) *Sorex araneus*

169. Which one of the following is not a characteristic feature of sponges?
a) Cellular level of organization
b) Presence of ostia
c) Intracellular digestion
d) Body supported by chitin

170. Undifferentiated totipotent cells of sponges, are
a) Archaeocytes
b) Porocytes
c) Trophocytes
d) Myocytes

171. Air bladder occurs in
a) *Torpedo*
b) *Anabas*
c) *Scoliodon*
d) *Elasmobranch*

172. The secondary host of *Taenia saginata* is

a) Cow b) Pig c) Dog d) None of these

173. In echolocation, the animal that produces high frequency sounds is
a) Monkey b) Butterfly c) Squirrel d) Bat

174. Common feature in earthworm and cockroach is
a) Cuticle (exoskeleton) b) Solid and ventral nerve cord
c) Nephridia d) Malpighian tubules

175. Secondary radial symmetry is found in
a) Cnidaria b) Jelly fish c) Echinodermata d) Hemichordata

176. When the body is externally and internally divided into segments, it is called
a) True segmentation b) False segmentation c) Pseudo segmentation d) Asegmentation

177. Abdominal ganglia in cockroach are found in segments
a) 1, 2, 3, 4, 6 and 7 b) 1, 2, 3, 4, 5 and 6 c) 3, 4, 5, 6, 7 and 8 d) 8, 9 and 10

178. Siphonophora is the order in
a) Protozoa b) Cnidaria c) Porifera d) Annelida

179. Which of the following is observed in amphibians?
a) Three chambered heart b) Cold blooded animals
c) Absence of scales d) All of these

180. The excretory organ in cockroach is
a) Malpighian corpuscle b) Malpighian tubules c) Hepatic caecae d) Metanephridia

181. Which of the following is correctly states as it happens in the common cockroach?
a) Oxygen is transported by haemoglobin in blood
b) Nitrogenous excretory product is urea
c) The food is ground by mandibles and gizzard
d) Malpighian tubules are excretory organs projecting out from the colon

182. Connecting link between chordates and non chordates is
a) *Peripatus* b) *Balanoglossus* c) *Sphenodon* d) *Tachyglossus*

183. Canal system is present in phylum
a) Annelida b) Porifera c) Acanthocephala d) Echinodermata

184. Which of the following is not an insect?
a) Locust b) *Lepisma* c) Termites d) Spider

185. Which of the following phyla has no freshwater forms?
a) Echinodermata b) Mollusca c) Chordata d) Porifera

186. One of the characteristic of *Hydra* is
a) Predation b) Matamerism c) Hibernation d) Mimicry

187. Which animals belong to sub-phylum Urochordata?
a) Branchistoma and *Lancelet* b) *Salpa* and *Lancelet*
c) *Ascidia* and *Doliolum* d) *Salpa* and *Amphioxus*

188. In which of the following organisms, self-fertilization is seen?
a) Fish b) Roundworm c) Earthworm d) Liver fluke

189. Metachrosis is an animal's
a) Ability to undergo transformation b) Ability to change according to season
c) Ability to change colour d) Ability to stay still for long periods of time

190. Which of the following statements are correct?
I.Venom of cobra is neurotoxic.
II.Venom of sea snake is neurotoxic.
III.Venom of viper is haemotoxic.
a) I, II and III b) I and III c) I and II d) II and III

191. Which one of the following is correctly matched regarding earthworm?
a) Buccal cavity – 1$^{st}$ to 5$^{th}$ segment b) Stomach – 11$^{th}$ to 12$^{th}$ segment
c) Typhlosole -26$^{th}$ to 95$^{th}$ segment d) Testes – 10$^{th}$ to 14$^{th}$ segment

192. Which one of the following animals is correctly matched with its one characteristic and the taxon?

| Animal | Characteristic | Taxon |
|---|---|---|
| a) Millipede | Ventral nerve cord | Arachnida Mammalia |
| b) Duck-billed platypus | Oviparous | Mammalian |
| c) Silver fish | Pectoral and pelvic fins | Chordata |
| d) Sea anemone | Triploblastic | Cnidaria |

193. Torsion of visceral mass is seen in animals belonging to class
a) Cephalopoda b) Scaphopoda c) Amphineura d) Gastropoda
194. Which one is not correct?
a) Humans-Ureotelic b) Birds-Uricotelic c) Lizards-Uricotelic d) Whale-Ammonotelic
195. Which of the following animals can successfully reproduce without utilizing the process of mitosis?
a) *Amoeba* b) *Hydra* c) Tapeworm d) *Sycon*
196. Alteration of generation is also called
a) Metamorphosis b) Metastasis c) Metazoan d) Metagenesis
197. Which of the following is the generic name of an extinct ancient lizard bird?
a) *Archaeopteryx* b) *Bulbulcus* c) *Dodo* d) None of the above
198. Choose the correct option with regards to Chondrichthyes
a) Presence of swim bladders that help them to maintain bouyancy
b) These are usually ammoniotelic animals
c) Statement (b) is true, but (a) is false
d) Both statements (a) and (b) are false
199. Members of phylum-Porifera are
a) Exclusively marine animals
b) Exclusively freshwater animals
c) Mostly freshwater animals but few are marine animals
d) Mostly marine animals but few are freshwater animals
200. The anterior V-spot in microfilaria of *Wuchereria* represents
a) Nerve ring
b) Cervical papilla
c) Excretory system
d) Reproductive system
201. The animal that has 19 body segments, 6 pairs of appendages and respires through the trachea is
a) Spider b) Prawn c) Scorpion d) Head louse
202. In the heart of rabbit, the mitral valve is attached to the papillary muscles by
a) Chordae tendinae b) Purkinje fibres c) Columnae carnease d) Bundle of His
203. Body forms present in Cnidarians are
a) Cylindrical and umbrella-shaped
b) Corals and coral reefs
c) Polyp and medusa
d) Cnidoblasts and nematocytes
204. The adhesive pads (soft-pads) present in the legs of cockroach are
a) Galea b) Lacinia c) Glossa d) Plantulae
205. Regeneration in *Hydra* will be faster, if it is cut off from
a) Tentacles b) Hypostome c) Base d) All of these
206. Which of the following statements are true/false?
I. In higher phyla cellular level of organisation is seen
II. Phylum-Platyhelminthes have cellular level of organisation
III. Cellular level of organisation is seen when the cells are not arranged as loose cell aggregates
IV. Molluscs exhibit tissue level of organisation
Choose the correct option of the following
a) I and II are true, but III and IV are false
b) All statements are false
c) All statements are true
d) III and IV are true, but I and II are false
207. Solenocytes and nephridia are respectively found in
a) Platyhelminthes and Annelida
b) Annelida and Nematoda
c) Cnidaria and Mollusca
d) Mollusca and Echinodermata

208. Select the correct order of classification of *Rana tigrina* upto genus.
a) Chordate, Craniata, Amphibia, Gnathostomata, *Rana*
b) Chordate, Craniata, Gnathostomata, Amphibia, Rana
c) Chordate, Amphibia, Gnathostomata, Craniata, *tigrina*
d) Chordate, Craniata, Amphibia, Gnathostomata, *tigrina*

209. An animal without anus is
a) *Unio* b) *Pheretima* c) *Fasciola* d) *Periplaneta*

210. Aves are divided into the following sub-classes
a) Neornithes and Anasbrnithes
b) Archaeornithes and Anguis
c) Archaeornithes and Neornithes
d) Anguis and Anasbrnithes

211. Cnidarias are divided into the following classes
a) Hydrozoa, Desmospongia and Scyphozoa
b) Actinozoa, Scyphozoa and Anthozoa
c) Scyphozoa, Anthozoa and Hydrozoa
d) None of the above

212. Which of the following is properly matched?
a) Platyhelminthes – Trematoda – *Planaria*
b) Echinodermata – Asteroidea – Star fish
c) Arthropoda – Insecta – Spider
d) Mollusca – Cephalopoda – *Unio*

213. Correctly matched set of phylum, class and example is
a) Protozoa-Mastigophora-*Entamoeba*
b) Mollusca-Bivalvia-*Pinctada*
c) Arthropoda-Diplopoda-*Scolopendra*
d) Chordata-Cyclostomata-*Phrynosoma*

214. Which one is harmful insect among the following?
a) *Apis* b) *Pyrilla* c) *Tachardia* d) *Antheraea*

215. Blood vascular system of earthworm is
a) Open type with Hb in RBC
b) Open type with Hb in plasma
c) Closed type with Hb in RBC
d) Closed type with Hb in plasma

216. Polyp phase is absent in
a) *Hydra* b) *Aurelia* c) *Physalia* d) *Obelia*

217. Platyhelminthes are also called
a) Roundworms b) Flatworms c) Ringworms d) Hookworms

218. Cilia of gills of bivalve molluscs help in
a) Feeding b) Digestion c) Reproduction d) Excretion

219. In rabbit, placenta is formed by
a) Chorio allantoic membrane and yolk sac
b) Amnion, chorion and yolk sac
c) Chorio allantoic membrane and endometrium
d) Allantois and endometrium

220. Choose the correct statement associated with ovoviviparous condition
a) When the embryo directly derives nourishment from the mother
b) The animals lay egg in a nest especially made for this purpose
c) The eggs are heavily yolked eggs
d) None of the above

221. A sponge harmful to oyster industry is
a) *Cliona* b) *Euspongia* c) *Hyalonema* d) *Spongilla*

222. The arthropods exoskeleton is composed of
a) Several kinds of polysaccharides
b) Layers of proteins and a polysaccharide called chitin
c) Several kind of proteins
d) Single complex protein called arthropodin

223. Nephridia of earthworm are performing same functions as
a) Gills of prawn
b) Flame cells of *Planaria*
c) Trachea of insects
d) Nematoblasts of *Hydra*

224. Choose the correct option
a) Phylum-Mollusca is the third largest phylum
b) Phylum-Arthropoda is the second largest phylum

c) Phylum-Mollusca is the largest phylum
d) Phylum-Arthropoda is the largest phylum of Animalia

225. If *Hydra* is cut transversely in three equal parts, then
a) All three parts will die
b) Regeneration will occur in all the three parts
c) Regeneration will occur only in anterior part
d) Regeneration occur only in middle part

226. The centrum of VIII vertebra of frog is
a) Procoelous b) Heterocoelous c) Amphicoelous d) Opisthocoelous

227. The cells that help in excretion in *Fasciola* are called
a) Choanocytes b) Nematocytes c) Nephridia d) Flame cells

228. Food storage in *Leucosolenia* occurs by
a) Ostia b) Osculum c) Thesocytes d) Spongocoel

229. Sperms in *Ascaris* are characterized by one unusual feature, *i.e.,*
a) Long form
b) Lack of flagellum
c) Motility
d) Ability to induce meiosis in egg

230. Male *Anopheles* does not transmit malarial parasite because
a) It catches fever
b) It is too small to carry parasite
c) The parasite is killed in its stomach
d) It does not drink blood

231. Characteristic feature of phylum-Echinodermata is
a) Radial symmetry
b) Water vascular system
c) Mantle cavity
d) All of these

232. In housefly, pseudotracheae is found in
a) Haustellum b) Rostrum c) Labellum d) None of these

233. A sagittal section
a) Passes dorsoventrally to the anteroposterior axis of the body
b) A transverse section passing through the middle of the body
c) Passes along the length perpendicular to the dorsoventral axis of the body
d) A vertical section passing through the middle line of the body

234. Insects are different from spiders in which of the following features
a) Presence or absence of wings, number of legs, presence of absence of haemocoel
b) Presence of absence of antennae, number of germ layers, presence or absence of appendages
c) Number of body divisions, number of leg, absence or presence of spinnerels
d) None of the above

235. The movement or locomotion in Aschelminthes is due to
a) Calcareous skeleton b) Siliceous skeleton c) Hydro skeleton d) Exoskeleton

236. Which of the following insect is not of any economic benefit?
a) Silkworm b) Lac insect c) Locust d) Honey bee

237. Age of fishes is also known as
a) Permian era b) Silurian era c) Devonian era d) Ordovician era

238. The skeleton of animals belonging to phylum-Porifera are made up of
a) Spicules b) Spiracles c) Spines d) Spongocytes

239. In *Pheretima*, the red coloured round bodies in 4$^{th}$, 5$^{th}$ and 6$^{th}$ segment above the alimentary canal are believed to be involved in
a) Reproduction b) Digestion c) Excretion d) Leucocyte production

240. Scales are found in
a) Pisces b) Rabbit c) Human d) Rat

241. Body cavity of adult *Ascaris* is
a) Haemocoel b) Amphicoel c) Pseudocoel d) Schizocoel

242. If a snake is identified to be having large hexagonal vertebral and the dorsal surface and bluish with narrow white streaks, it is

a) *Echis carinata* b) *Bungarus coerulus* c) *Viper russelli* d) *Hemibungarus*

243. In coelomates, the problem of diffusion of food from gut to tissues is solved by
a) The presence of coelomic fluid. b) Churning the food within the body cavity.
c) Developing a circulatory system. d) Developing gut associated glands.

244. The generic name of tusk shell is
a) *Dentalium* b) *Chaetoderma* c) *Chiton* d) *Neopilina*

245. Which statement is incorrect about members of phylum-Porifera?
a) Have cellular level of organisation
b) Have separate sexes
c) Sexual reproduction takes place by gamete formation
d) Have a water canal system

246. Which of the following features are present in chordates?
a) Dorsal heart, presence of post-anal tail and central nervous system in dorsal
b) Ventral heart, presence of post-anal tail and presence of gill slits
c) Dorsal heart, pharynx perforated by gill slits and dorsal ventral system
d) Ventral heart, absence of notochord but presence of post-anal part of the tail

247. Which of the following assists in the locomotion of the organism stated?
a) Epithelium of *Pheretima* b) Trichocysts of *Paramecium*
c) Pedicellaria of star fish d) Posterior sucker of *Hirudinaria*

248. The dorsal diverticulum of urethra in male rabbit is
a) Uterus b) Uterus masculinus c) Prepuse d) Vas deferens

249. Which is not correctly matched?
a) Annelida –Enterocoelomate b) Platyhelminthes –Acoelomate
c) Arthropoda – Schizocoelomate d) Nemathelminthes –Pseudocoelomate

250. Fertilized eggs of *Periplanata Americana* are encased in
a) Ootheca b) Cocoon c) Genital chamber d) Phallomere

251. In the life cycle of mosquito, comma-shaped stage is
a) Larval stage b) Pupal stage c) Imago stage d) None of these

252. *Hemicyclops* belongs to the class
a) Cyclostomata b) Ostracodermi c) Gnathostomata d) Pisces

253. Nephridia in *Pheretima* are formed from
a) Mesenchyme b) Endoderm c) Mesoderm d) Ectoderm

254. Leech secretes, which of the following anticoagulants?
a) Hirudin b) Heparin c) Serotonin d) Histamine

255. Which character is found only in mammals?
a) Neck b) Diaphragm c) Optic lobes of brain d) Tail

256. Organ of mastication in cockroach is
a) Labrum b) Labium c) Mandibles d) Maxilla

257. Which of the following blood vessels is the largest in earthworm and possess valves?
a) Dorsal blood vessel b) Sub-neural blood vessel
c) Ventral blood vessel d) Supra oesophageal blood vessels

258. The dioecious animal is
a) Liver fluke b) Hook worm c) Tapeworm d) Earthworm

259. Metameric segmentation is the characteristic of
a) Platyhelminthes and Arthropoda b) Echinodermata and Annelida
c) Annelida and Arthropoda d) Mollusca and Chordata

260. The taste receptors of cockroach are
a) Compounds eyes b) Companiform sensillae
c) Palps of maxillary and labium d) Tactile hairs

261. Which of the following groups includes only arthropods?
a) Prawn, *Schistosoma, Planaria* b) Cockroach, scorpion, prawn

c) *Chiton, Neopilina*, scorpion d) *Chiton*, prawn, cockroach

262. Chitin is a
a) Lipid b) Protein c) Polysaccharide d) Sphingomyelin

263. Pheromone is
a) A product of endocrine gland b) Used for animal communication
c) *m*RNA d) Always protein

264. The velocity of conduction of nerve impulse in frog is
a) 300 $ms^{-1}$ b) Same as of electricity
c) Faster than sound d) 30 $ms^{-1}$

265. Mark what is incorrect regarding to the phylum-Arthropoda
a) Open type of circulatory system
b) Bilaterally symmetrical, coelomate animals
c) Diploblastic with head, thorax and abdomen
d) Presence of Malpighian tubules and antennae

266. The migrating birds rely on the
a) Anaerobic oxidation of proteins b) Highly efficient aerobic oxidation of fats
c) Anaerobic oxidation of carbohydrates d) All of the above

267. Choose a limbless amphibian from the list given below
a) Salamander b) *Necturus* c) *Ichthyopis* d) All of these

268. Which structure is not related to respiration in frog?
a) Diaphragm b) Skin c) Buccal cavity d) Lungs

269. Which of the following sets of characters are applicable in metamorphosis of tadpole larva of frog and toads?
a) Reabsorption of gills and reabsorption of tail
b) Reabsorption of gills and lengthening of tail
c) Complete development of gills and reabsorption of tail
d) Complex development of gills and lengthening of tail

270. Study the following in *Pheretima*.
I.Dorso intestinal blood vessels
II.External intestinal plexus
III.Internal intestinal plexus
IV.Ventro intestinal blood vessel
Arrange the blood vessels in correct sequence of blood flow from ventral blood vessel to dorsal blood vessel.
The correct sequence is
a) IV → II → I → III b) III → I → II → IV c) II → III → IV → I d) IV → II → III → I

271. The peculiar pungent smell of cockroach is produced by the secretion of
a) Pheromones b) Flame cells c) Abdominal glands d) Cervical glands

272. Metamorphosis in cockroach is regulated by
a) Corpora cardiaca b) Brain c) Thyroid d) Corpora allata

273. Which of the following is a flightless bird?
a) Ostrich b) Emu c) Kiwi d) All of these

274. Gill is monopectinate in
a) *Unio* b) *Chiton* c) *Octopus* d) *Pila*

275. Bioluminescence is well marked in
a) Flatworms b) Ctenophores c) Cnidarians d) Aschelminthes

276. Identify the correct pair of birds with a raft-like keel and lacking preen gland and syrinyx
a) *Tinamus* and *Apteryx* b) *Rhea* and *Dromeous*
c) *Casuarius* and *Struthio* d) *Kiwi* and *Rhea*

277. Sponges are

a) Pelagic b) Free-swimming c) Planktonic d) Sessile

278. Which of the following has exoskeleton of scales and paired copulatory organ penis?
a) Sharks b) Lizards c) Urodela d) Urochordata

279. An acoelomate animal with bilateral symmetry, is
a) *Hydra* b) Liver fluke c) *Physalia* d) *Obelia*

280. All chordates have the following characteristics
a) Bilaterally symmetrical, presence of coelom, triploblastic, closed or open circulatory system
b) Bilaterally symmetrical, presence of coelom, diploblastic or triploblastic
c) Open circulatory system, diploblastic or triploblastic, coelom and bilaterally symmetrical
d) Bilaterally symmetrical, coelom, present, triploblastic with closed circulatory system

281. In *Rattus rattus*, internally cerebral hemisphere are connected by
a) Corpus striatum b) Corpus cardiacum c) Corpus callosum d) Corpus allatum

282. A triploblastic, pseudocoelomate, bilaterally symmetrical human parasite, which is oviparous and the transmission is by contact. It is
a) Filarial worm b) Hook worm c) Palalo worm d) Tape worm

283. *Ascaris* is found in
a) Body cavity b) Lymph nodes c) Tissue d) Alimentary canal

284. Common characteristic of mosquitoes, houseflies and cockroaches are
a) One pair each of wings and halters
b) Three pair of legs and one pair of developed wings
c) Two pair of legs and two compound eyes
d) Compound and simple eyes

285. About how many times does the nymph of the *Periplaneta americana* undergo moulting before becoming an adult?
a) 4 b) 2 c) 17 d) 3

286. Jacobson's organs which are additional olfactory organs are present in
a) Rat b) Snakes c) Man d) All of these

287. Stink gland is found in
a) $4^{th}$ and $5^{th}$ terga of cockroach
b) $5^{th}$ and $6^{th}$ terga of cockroach
c) $5^{th}$ and $6^{th}$ sterna of cockroach
d) $4^{th}$ and $5^{th}$ sterna of cockroach

288. In the $4^{th}$ , $5^{th}$ and $6^{th}$ segments of earthworm, lying above pharyngeal mass and connected with pharyngeal glands are found small, red coloured follicular bodies called
a) Septal glands b) Blood glands c) Salivary glands d) Nephridia

289. Different colours of frog skin are controlled by
a) Hormones b) Melanocytes c) Nervous system d) Both (a) and (c)

290. Which of the following is not true regarding phylum-Coelenterata?
a) They are diploblastic animals
b) They have cellular level of organisation
c) They have nematocyte cells present on the tentacles
d) The gastro-vascular opening is called the hypostome

291. *Hydra* captures the victim by injecting the chemical
a) Kaliotoxin b) Hypnotoxin c) Toxoplasmin d) Sarafotoxin

292. In *Ascaris*, the coelom is
a) Schizocoelom b) Pseudocoelom c) True coelom d) Haemocoelom

293. The feet with toes forming cloven hoof is seen in
a) Horse b) Zebra c) Rhinoceros d) Sheep

294. *Petromyzon* belongs to
a) Agnatha b) Gnathostomata c) Protochordata d) Euchordata

295. The second largest aquatic vertebrate is
a) Blue whale b) Whale shark c) Sea elephant d) Dugongs

296. In insects which feed on nectar, the proboscis is formed by

a) Hypopharynx b) Mandibles c) Glossa d) Labrium

297. In *Hydra*, the beaded processes of sensory cells make synapsis with the process of
a) Nerve cell b) Epithelio-muscular cell
c) Both (a) and (b) d) None of the above

298. In which of the following phyla, while the adult shows radial symmetry, the larva shows bilateral symmetry?
a) Annelida b) Arthropoda c) Mollusca d) Echinodermata

299. Which one of the following is not the characteristic feature of frog?
a) The skin is moist and slimy
b) Each of the fore limbs and hindlimbs end in five digits
c) Hepatic portal and renal portal systems are present
d) Skin, buccal cavity and lungs are the respiratory organs

300. *Trygon* has
a) Two chambered heart b) The males have claspers
c) Presence of gill slits d) All of the above

301. Identify the figure *A* and *B* and choose the correct option


1. Female *Ancylostoma*
2. Female *Ascaris*
3. Male *Taenia*
4. Female *Wuchereria*
5. Male *Ancylostoma*
6. Male *Ascaris*

A B
a) 2 3 b) 4 3 c) 6 2 d) 6 3

302. The larva of *Bombyx mori* is known as
a) Nymph b) Trochophore c) Cocoon d) Caterpillar

303. Mollusc, which does not have ink gland is
a) *Pila* b) *Loligo* c) *Sepia* d) *Octopus*

304. The intermediate host of *Schistosoma* is
a) Snail b) Mosquito c) Housefly d) Sheep

305. One very special feature in the earthworm *Pheretima* is that
a) The typhlosole greatly increases the effective absorption area of the digested food in the intestine
b) The S-shaped setae embedded in the integument are the defensive weapons used against the enemies
c) It has a long dorsal tubular heart
d) Fertilization of eggs occurs inside the body

306. What is left when bath-sponges dries up?
a) Spicules b) Spongin fibres c) Tentacles d) Holdfast

307. Which of the following can regenerate entire alimentary canal?
a) Amphibian b) Fish c) Sea cucumber d) Birds

308. In rabbit, end of a long bone is connected with another by
a) Tendon b) Ligaments c) Muscle d) Cartilage

309. The long bones are hollow and connected by air passage. These are characteristic of
a) Mammalia b) Aves c) Reptilia d) Sponges

310. Choanocytes form the lining of paragastral cavity in

a) Jelly fish b) Sponges c) Helminthes d) Echinoderms

311. In Ophiuroidea, branched arms are seen in
a) *Gorgonocephalus* b) *Clypeaster* c) *Salmacis* d) *Gorgonia*

312. Characteristic of coelenterate is occurrence of
a) Nematocysts b) Polymorphism c) Flame cells d) Choanocytes

313. Mammals evolved from therapsid reptiles in Triassic period. The type of skull in these reptiles is
a) Anapsid skull b) Parapsid skull c) Synapsid skull d) Diapsid skull

314. The level of organisation in Platyhelminthes is
a) Cellular level b) Tissue level
c) Organ level d) Organ-system level

315. If a live earthworm is pricked with a needle on its outer surface without damaging its gut, the fluid that comes out is
a) Excretory fluid b) Coelomic fluid c) Haemolymph d) Slimy mucus

316. The animal with bilateral symmetry in young stage, and radial pentamerous symmetry in the adult stage belongs to the phylum
a) Annelida b) Mollusca c) Cnidaria d) Echinodermata

317. Which of the following snake is non-poisonous?
a) Cobra b) Krait c) Viper d) *Python*

318. Excretory organ in phylum-Hemichordata is
a) Proboscis gland b) Gills c) Collar d) None of these

319. Classification of sponges is primarily based on the
a) Body organization b) Body plan c) Skeleton d) Canal system

320. Select the statement that explain neoteny
a) Neonatal forms are found in mammals b) Larval stages become sexually mature
c) Third larval stage of *Ascaris* shows need any d) None of the above

321. Which of the following is incorrect for Aves?
a) Heart is four chambered and animals are oviparous
b) Presence of air cavities in bones and presence of feathers on the body
c) Digestive tract has additional chambers and animals are homiothermous
d) The forlimbs are not modified into wings

322. Select the phylum that is the largest of the kingdom-Animalia
a) Phylum-Mollusca b) Phylum-Arthropoda c) Phylum-Annelida d) Phylum-Coelenterata

323. What distinguishes an insect from a crustacean?
a) Number of appendages b) Number of eyes
c) Presence of wings d) Arrangement of nerve cord

324. Biramous appendages are present in
a) Insect b) Crustacea c) Onychophora d) Cephalopoda

325. Which one of the following does not have an excretory system?
a) *Myxine* b) *Carcharodon* c) *Balanoglossus* d) *Asterias*

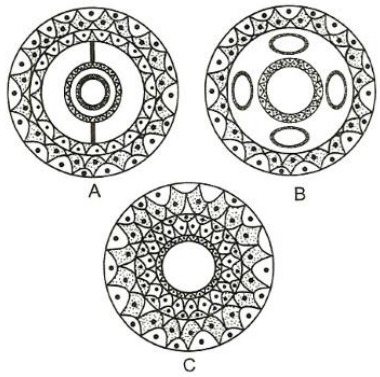
326. Which one of the following groups of three animals each is correctly matched with their one characteristic morphological feature?

| | Animal | Morphological Feature |
|---|---|---|
| a) | Liver fluke, sea anemone, sea cucumber | Bilateral symmetry |
| b) | Centipede, prawn, sea urchin | Jointed appendages |
| c) | Scorpion, spider, cockroach | Ventral solid central nervous system |
| d) | Cockroach, locust, *Taenia* | Metameric segmentation |

327. Metameric segmentation is the main feature of

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

328. Which of the following figure shows coelomate condition? Refer to NCERT for figures




a) A b) B c) C d) None of these

329. Which among the following is an Indian monkey?

a) *Ramapithecus* b) *Macaca* c) Gorilla d) *Pongidae*

330. Vivipary is found in

a) Coelenterata b) Protozoa c) Rabbit d) Pisces

331. The number of gills present in osteichthyes is

a) 2 pairs b) 6 pairs c) 5 pairs d) 4 pairs

332. Reptiles are different from amphibians in

a) The skin
b) Structure of the heart
c) Development stages
d) All of these

333. The pseudocoelomate among these is

a) Porifera b) Annelida c) Aschelminthes d) Mollusca

334. Select which of the following is not an insect?

a) *Apis indica* b) *Aranea* c) *Anopheles* d) None of these

335. Which one is not found in testis of frog?

a) Sertoli cell b) Seminiferous tubule c) Germinal cell d) Interstitial cell

336. Asymmetrical animals are

a) *Amoeba* b) *Spongilla* c) *Spongia* d) All of these

337. Which class shows the presence of amnion and chorionic membranes during development?

a) Amphibian b) Osteichthyes c) Reptilia d) Chondrichthyes

338. Body cavity lined by mesoderm is called

a) Coelenteron b) Pseudocoel c) Coelom d) Blastocoels

339. Animals of class-Mammalia have

a) Seven cervical vertebrae
b) Seven cranial nerve
c) Single ventricular chamber
d) Fourteen cervical vertebrae

340. Order-primata contains

a) Shrew and hedgehog b) Bats and vampire c) Monkeys and man d) Horses and zebra

341. Which one of the following has an open circulatory system?

a) *Pheretima* b) *Periplaneta* c) *Hirudinaria* d) *Octopus*

342. Collar cells are characteristic of

a) Earthworm b) Roundworms c) Coelenterates d) Sponges

343. Which of the following groups of animals have the following feature?

I. Diploblastic
II. Acoelomate
III. Radial symmetry

a) *Planaria, Physalia, Aurelia*
b) *Taenia, Fasciola, Wuchereria*
c) *Adamsia, Berore, Meandrina*
d) *Fasciola, Sycon,* Sea walnut

344. Which one of the following animals is correctly matched with its particular named taxonomic category?
a) Cuttlefish – Mollusca, a class
b) Humans – Primata, the family
c) Housefly – *Musca*, an order
d) Tiger – *tigris*, the species

345. Radial symmetry is seen in
a) Echinodermata, Ctenophora and Cnidaria
b) Mollusca, Porifera and Echinodemata
c) Porifera, Annelida and Arthropoda
d) None of the above

346. A detritivorous animal of economic importance is
a) Earthworm
b) Giriraja fow
c) Caterpillar larva
d) Leech

347. The female genital pores of *Pheretima posthuma* located upon the segment
a) $14^{th}$
b) $16^{th}$
c) $18^{th}$
d) $15^{th}$

348. Which statement is incorrect about *Pleurobrachia*?
a) They are diploblastic
b) They have tissue level organisation
c) They have comb plates
d) They are triploblastic

349. Maximum diversity is found in which of the following phylum?
a) Chordata
b) Arthropoda
c) Protozoa
d) Annelida

350. Biradial symmetry and lack of cnidoblasts are the characteristics of
a) Starfish and sea anemone
b) *Ctenoplana* and *Beroe*
c) *Aurelia* and *Paramecium*
d) *Hydra* and starfish

351. Which parasite is present in seminal vesicle of earthworm?
a) *Monocystis*
b) *Nosema*
c) *Sarcocystis*
d) *Nictotherus*

352. In *Pheretima*, locomotion occurs with the help of
a) Circular muscles
b) Longitudinal muscles and setae
c) Circular, longitudinal muscles and setae
d) Parapodia

353. In Mollusca, eye is present over a stalk, called
a) Ostracum
b) Operculum
c) Ommatophores
d) Osphradium

354. Choose the correctly matched characters of the phylum
a) Ctenophore – Radial symmetry – Cellular level of organisation – Acoelomate
b) Platyhelminthes – Bilateral symmetry – Organ and organ system level of organisation – Pseudocoelomate
c) Echinodermata – Radial symmetry – Organ system level of organisation – Coelomate
d) Coelenterata – Bilateral symmetry tissue level organisation – acoelomate

355. Mollusc are usually
a) Terrestrial and parasitic
b) Aquatic and parasitic
c) Aquatic or terrestrial
d) None of these

356. Third moulting in *Ascaris* larva takes place in
a) Lung
b) Liver
c) Heart
d) Intestine

357. Which of the following statements are true/false?
I. Cell aggregate body plan is found in phylum-Platyhelminthes
II. Radial symmetry is the most common symmetry found in animals
III. Pseudocoelom is only found in phylum-Aschelminthes
IV. All triploblastic animals have a true coelom
V. Haemocoel is sometimes observed in animals belonging to phylum-Platyhelminthes
a) I and V are true and II, III and IV are false
b) II, III and V are true and I and IV are false
c) I, II and III are true and IV and V are false
d) I, II, IV and V are false, only III is true

358. Book lungs and look gills are found in which of the following animals, respectively?
a) Prawns and lobsters
b) Cockroaches and cuttle fish
c) *Pila* and crabs
d) Scorpion and king crabs

359. In rabbit, foliate papillae are
a) Situated on the margin of tongue
b) Situated on the upper surface of tongue

c) Situated at the base of tongue
d) Situated at the sides of the base of the tongue

360. Scientific name of starfish is
a) *Echinus* b) *Limulus* c) *Echidna* d) *Asterias*

361. The second layer of epidermis in rat integument is
a) Stratum lucidium
b) Stratum germinativum
c) Stratum corneum
d) Stratum granulosum

362. Diploblastic animals belong to the phylum
a) Protista
b) Protozoa
c) Coelenterates
d) Platyhelminthes

363. Differentiated embryonic layers are called
I. ectoderm II. Endoderm
III. Mesoderm III. Mesoglea
a) I, II and IV b) I, II and III c) II, III and IV d) I, III and IV

364. The pair of amphibians found in Indian peninsula is
a) *Amphiuma*
b) *Tyloto triton and Ichthyophis*
c) *Hyla and Ambystoma*
d) *Psittacus and Apteryx*

365. Which set includes pathogenic arthropods?
a) Tse-tse fly, mosquito, flea-plague
b) Crab, *Culex*, spider
c) *Anopheles*, *Culex,* cray fish
d) Silver fish, house fly, sandfly

366. In which of the following reptiles four chambered heart is present?
a) Lizard b) Snake c) Scorpion d) Crocodile

367. Which of the parts in cockroach are fundamentally similar in structure?
a) Anal styles and labrum
b) Maxillae and legs
c) Mandibles and antennae
d) Wings and anal cerci

368. The respiratory pigment present in cockroach is
a) Haemoglobin b) Haemocyanin c) Oxyhaemoglobin d) None of these

369. Which of the following animal phyla does not possess a coelom?
a) Platyhelminthes b) Annelida c) Mollusca d) Echinodermata

370. Which of the following hormones regulates growth and metamorphosis in insect?
a) Juvenile hormone
b) Brain hormone
c) Ecdysone
d) Prothoracicotropic hormone

371. Juvenile hormone is secreted by
a) Thyroid gland b) Thymus gland c) Adrenal gland d) Corpora allata

372. Among the following, colonial insects are
a) Locusts b) Mosquitoes c) White ants d) Bed bug

373. Animals are classified on the basis of their symmetry into….. groups
a) 2 b) 3 c) 4 d) 5

374. Correct order of ear ossicles in rabbit is
a) Incus, stapes, malleus b) Malleus, incus, stapes c) Malleus, stapes, incus d) Incus, malleus, stapes

375. In rabbit, the two fibro-elastic strands of the larynx extend between the
a) Thyroid and arytenoids cartilages
b) Thyroid and cricoids cartilages
c) Santorini and thyroid cartilages
d) Cricoid and tracheal cartilaginous rings

376. Which of the following are true to the prototherians?
I.Pectoral girdle is associated with T-shaped interclavicle.
II.Mammary glands are modified as sebaceous glands.
III.Pelvic girdle possesses epipubic bones.
IV.Vertebrae are with epiphyses.
a) I and III b) I and II c) III and IV d) II and III

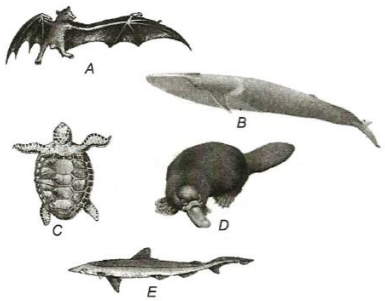
377. Branch of zoology dealing with the study of fishes is known as

a) Herpetology b) Ichthyology c) Mammology d) Ornithology

378. Which of the following is a flightless bird?
a) Columba and corvus splendes b) Struthio and penguin
c) Tyto and psittacula d) All of the above

379. Chloragogen cells are present in *Pheretima*. These are specialized for performing function of
a) Nutrition b) Reproduction c) Excretion d) Respiration

380. Which of the following do not belong to class-Mammalia?




a) B and E b) A and C c) E and C d) D and E

381. Radial symmetry is found in
a) Frog b) Starfish c) Humans d) *Pheretima*

382. Which one of the following is the most effective in *Ascaris* infection?
a) Chloroquinine b) *Cinchona* c) *Colchicum* d) Oil of *Chenopodium*

383. Which of the following statements is true?
a) All chordates are vertebrates b) All vertebrates are chordates
c) Invertebrates possess a tubular nerve cord d) Non-chordates have a vertebral column

384. Bilateral symmetry, metameric segmentation, coelom and open circulatory system are the features of
a) Annelida b) Arthropoda c) Mollusca d) Echinodermata

385. The functional kidney of frog tadpole is
a) Archinephros b) Pronephros c) Mesonephros d) Metanephros

386. In *Pheretima*, the number of ring vessels per segment in 12$^{th}$ and 13$^{th}$ segments is
a) 10 pairs b) 11 pairs c) 12 pairs d) 24 pairs

387. Excretory organs in echinoderm is
a) Nephridia b) Green glands c) Flame cells d) None of these

388. Accessory gland associated with the genital organs in female rats are
I.Vestibular bartholin
II.Cowper's gland
III.Ampullary gland
IV.Vesicular gland
a) I and II b) III and II c) IV only d) I only

389. In rabbit, head of epididymis present at the head of the testis is called
a) Vas deferens b) Cauda epididymis c) Gubernaculum d) Caput epididymis

390. Phylum of *Taenia solium* is
a) Aschelminthes b) Annelida c) Platyhelminthes d) Mollusca

391. 'Water-vascular' system is found in
a) Sea-anemone b) Sea-pen c) Sea-cucumber d) Sea-horse

392. Nucleated RBC is present in
a) Man b) Rat c) Frog d) Rabbit

393. Fertilization in earthworm occurs in
a) Cocoon b) Spermathecae c) Coelom d) Seminal vesicles

394. Protandry refers to the
a) Excretory organs present in Arthropoda b) Connecting links between 2 phyla
c) Earlier maturation of male sex organs than female sex organs d) Features in ancient missing links

395. Which of the following groups of animals maintains high and constant body temperature such as mammals?
a) Reptiles b) Amphibians c) Birds d) Fishes
396. Which of the following orders lack canine teeth?
a) Rodentia b) Primates c) Carnivora d) None of these
397. Animals active at night are
a) Diurnal b) Nocturnal c) Parasites d) Nocto-diurnal
398. Which type of kidneys are found in amphibians?
a) Holonephric b) Mesonephric c) Pronephric d) Metanephric
399. A coelom is a
a) Cavity between body well and gut wall b) Body cavity lined by mesoderm
c) Body cavity not lined by mesoderm d) Body cavity lined by endoderm
400. Starfish belongs to phylum
a) Porifera b) Coelenterata c) Echinodermata d) Arthropoda
401. Number of segments found in abdomen of cockroach are
a) 8 b) 10 c) 12 d) 15
402. In cockroach, the first pair of wings are known as
a) Sterna b) Terga c) Integument d) Tegmina
403. Bone marrow is absent in
a) Reptiles b) Amphibians c) Aves d) Mammals
404. In cockroach, larval and nymphal characters are maintained by
a) Ecdysone b) Salivary glands c) Parotid gland d) Juvenile hormone
405. Chondrichthyes is characterized by
a) Placoid scale b) Ventral mouth
c) Ctenoid scale and ventral mouth d) Placoid scale and ventral mouth
406. Taxonomically, which of the following set belongs to Arthropoda?
a) Cattle fish, jelly fish, silver fish b) Bat, pigeon, kite
c) Lobsters, spider, shrimps d) Oyster, otter, *Octopus*
407. Which one of the following is not a characteristic feature of the sub-phylum-Vertebrata?
a) Dorsal tubular nerve cord b) Ventral muscular heart
c) Presence of notochord in the adult d) Presence of kidneys
408. The post anal tail is present in
a) Chordates b) Vertebrates c) Invertebrates d) All of these
409. Natural pearl is
a) A mollusk b) An annelid c) An arthropod d) An echinodermate
410. In frog, chromosome number is reduced to half
a) When 2nd polar body is separated b) When 2nd polar body is divided
c) When 3rd polar body is separated d) When 1st polar body is separated
411. The excretory material of bony fish is
a) Urea b) Protein c) Ammonia d) Amino acid
412. Which of the following is present in phylum-Porifera?
a) Amoebocytes b) Thesocytes c) Choanocytes d) All of these
413. The worker honey bee normally lives for about
a) 10 days b) 15 days c) 30 days d) 90 days
414. The glands present in the skin of frog are
a) Mucous and poisonous b) Sweat and mammary
c) Sweat and sebaceous d) Mucous and sweat
415. Cysticercus stage is found in
a) *Taenia* b) *Plasmodium* c) *Leishmania* d) *Wuchereria*
416. The substance or structure found in the eyes of birds is
a) Keratin b) Nectin c) Pleura d) Pectin

417. Radula is found in
a) *Pila* sp b) *Chiton* sp c) *Lamellidens* sp d) *Pinctada* sp
418. In which animal, diapharagm has no role in respiration?
a) Frog b) Rat c) Camel d) Rabbit
419. Which one of the following phyla is correctly matched with its two general characteristics?
a) Arhropoda – Body divided into head, thorax and abdomen and respiration by tracheae
b) Chordate – Notochord at some stage and separate anal and urinary openings to the outside
c) Echinodermata – Pentamerous radial symmetry and mostly internal fertilization
d) Mollusca – Normally oviparous and development through a trochophore or veliger larva
420. The class name-Reptilia refers to
a) They have scales or scutes presence on the body
b) They shed their skin and undergo moulting
c) They have creeping or crawling mode of locomotion
d) None of the above
421. 'Turbellarians' are free living
a) Nematodes b) Cestodes c) Flatworms d) Trematodes
422. Which of the following belongs to the class-Amphineura?
a) *Chiton* b) *Nautilus* c) *Dentalium* d) *Pinctada*
423. The male cockroach can be identified by the presence of
a) Collaterial gland b) Green gland c) Broad abdomen d) Anal style
424. Which of the following is a catadromous fish?
a) *Hilsa* sp b) *Mystus* sp c) *Anguilla* sp d) *Channa* sp
425. What is the scientific name of pinworm of man?
a) *Trichinella spiralis* b) *Dracunculus medinensis*
c) *Trichuris trichuria* d) *Enterobius vermicularis*
426. *Fasciola hepatica* is a digenetic parasite. Sheep and snail are two hosts. Snail is
a) Intermediate host b) Paratenic host c) Vector host d) Reservoir host
427. The number of trigeminal nerve in frog is
a) $4^{th}$ b) $5^{th}$ c) $8^{th}$ d) $9^{th}$
428. Animals are classified on the basis of which of the following features?
I. Coelomic cavity II. Level of organisation
III. Notochord IV. Skeletal structure
a) I and II b) I and III c) I, II and III d) II and IV
429. Pylangium in frog is found in
a) Conus arteriosus b) Sinus venosus c) Atrium d) Ventricle
430. Select the group of animals that have a protostomous plan
a) *Culex, Dugesia, Aurelia* b) *Ancylostoma, Limulus, Physalia*
c) *Apis indica, Loligo, Hirudinaria* d) *Ophiothrix, Rhabdopleura, Antedon*
431. *Hydra* possesses
a) One testis and one ovary b) One testis and many ovaries
c) Many testes and many ovaries d) Many testes and one ovary
432. Which one of the following is an exotic carp species?
a) *Barbus stigma* b) *Cyprinus carpio* c) *Labeo bata* d) *Cirrhinus mrigala*
433. A temporary, ectoparasitic, nocturnal insect with piercing and sucking type of mouth parts is
a) *Pediculus* b) *Cimex* c) *Tachardia* d) *Musca*
434. The unique character of animals belonging to class-Mammalia is
a) Only mammals possesses hair on skin
b) Completely four chambered heart
c) Presence of mammary glands
d) Fertilisation is internal
435. Select the prosimians from the given options

a) Lemurs, monkey and gibbons
b) Chimpanzee, monkey and loris
c) Tarsius, lemur and loris
d) Chimpanzee, gibbons and orangutan

436. Hormone responsible for metamorphosis in tadpole is
a) Adrenaline b) Thyroxine c) Aldosterone d) Vasopressin

437. Which of the following animals has a true coelom?
a) *Ascaris* b) *Pheretima* c) *Sycon* d) *Taenia solium*

438. Right aortic arch is present in
a) Reptiles only b) Mammals only c) Birds only d) Both (b) and (c)

439. The type of asexual reproduction found in *Hydra* is
a) Multiple fission b) Budding c) Sporulation d) Binary fission

440. Neopallium is found in the brain of
a) Amphibian b) Advanced reptiles c) Mammals d) Both (b) and (c)

441. Insects have
a) 2 pairs of legs b) 3 pairs of legs c) 4 pairs of legs d) 1 pair of legs

442. Which is not in pair in rabbit?
a) Azygous vein b) Hemizygous vein c) Caudal vein d) All of these

443. The golden age of reptiles was
a) Proterozoic era b) Palaeozoic era c) Mesozoic era d) Coenozoic era

444. *Schistosoma* is a parasite found in
a) Testes of frog b) Liver c) Intestine d) Blood

445. Which of the following characters are present in class-Crustacea?
a) Ciphalothorax, gills and appendages
b) Head and thorax, gills and appendages
c) Cephalothorax, book gills and appendages
d) Head and thorax, book gills and appendages

446. Pseudocoelom is not found in
a) *Ascaris* b) *Ancylostoma* c) *Fasciola* d) None of these

447. The skull of frog is
a) Tricondylic b) Monocondylic c) Dicondylic d) Non-condylic

448. Earthworms have no skeleton, but during burrowing the anterior end becomes turgid and acts as a Hydraulic skeleton. It is due to
a) Coelomic fluid b) Blood c) Gut peristalsis d) Setae

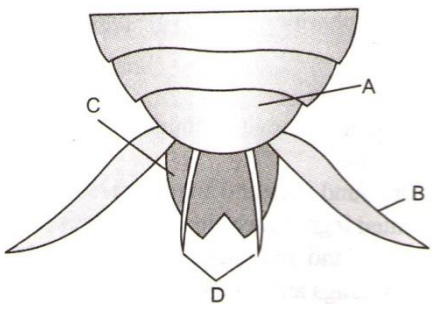
449. *Dugesia* belongs to which class
a) Trematoda b) Cestoda c) Turbellaria d) None of these

450. What is true for *Wuchereria bancrofti*?
a) Absence of an intermediate host
b) Male worms are longer than female worms
c) Lives in bile ducts of human beings
d) Seen in lymph of humans

451. Identify the group, which includes animals all of which give birth to young ones directly.
a) Dolphin, kangaroo, bat, cat
b) *Platypus*, penguin, bat, hippopotamus
c) Shrew, bat, kiwi, cat
d) Lion, whale, ostrich, bat

452. Skeletal system in phylum-Arthropoda is
a) Endoskeletal spicules structures
b) Endoskeletal siliceous structures
c) Exoskeletal calcareous covering
d) Exoskeletal chitinous covering

453. The diagram represents the reproductive organ of male cockroach. Choose the correct combination of labeling



a) A – 8th Sternum, B – Anal cercus, C – 10th tergum, D – Anal styles
b) A – 10th tergum, B – Anal cercus, C – Anal styles, D – Sternum
c) A – Anal styles, B – Anal cercus, C – 10th Tergum D – 8th Sternum
d) A – 8th Sternum, B – Anal cercus, C – 10th Tergum, D – 8th Sternum

454. Coxal glands are excretory organs in
a) Birds b) Scorpions c) Porifers d) Annelids

455. Which of the following requires an invertebrate intermediate host?
*VI. Dugesia*
*VII. Schistosoma*
*VIII. Echinococcus*
*IX. Ancylostoma*
X. *Wuchereria*
a) III and IV b) II and V c) III and V d) I and IV

456. Each male genital opening of *Pheretima* has separate openings of
a) Two ducts b) Three ducts c) Five ducts d) Four ducts

457. Which insect is useful for us?
a) *Periplaneta* b) *Musca* c) *Bombyx* d) Mosquitoes

458. To which taxonomic group does whale belong to?
a) Fishes b) Reptiles c) Arthropoda d) Mammals

459. Flame cells are excretory organ of
a) *Planaria* b) *Hydra* c) *Hydrilla* d) Cockroach

460. Which of the following is true about hookworms?
a) Fertilisation is external b) Presence of excretory tube and excretory pore
c) Triploblastic and acoelomate animals d) Hermaphrodites

461. Acoustic spots in frog are present in
a) Osseous labyrinth b) Carotid
c) Membranous labyrinth d) All of these

462. Venom of viper affects
a) Nervous system b) Circulatory system c) Respiratory system d) None of these

463. What is common among silver fish, scorpion, crab and honey bee?
a) Compound eyes b) Poion glands c) Jointed appendages d) Metamorphosis

464. The function of clitellum in *Pheretima* is
a) Formation of cocoon b) Secretion of hormone
c) Nutrition of sperm d) Respiration

465. Select the phylum that is neither bilaterally symmetrical nor radially symmetrical nor radially symmetrical
a) Ctenophora b) Coelenterata c) Porifera d) Annelida

466. *Hydra* recognizes its prey by
a) Nematocyst b) Some special organs
c) Chemical stimulus of prey d) Mechanical stimulus of prey

467. Which one has no intermediate host?
a) *Taenia* b) *Ascaris* c) *Fasciola* d) *Plasmodium*

468. Which is true for honeybee?
a) Queen is sterile haploid female b) Workers are diploid males and females
c) Bee hive has four types of bees d) Drones are haploid fertile males

469. Shell of molluscs is derived from
a) Foot b) Mantle c) Ctenidia d) Placoid

470. Rabbit is
a) Carnivore b) Herbivore c) Both (a) and (b) d) Sanguivore

471. Choose the animals that belong to phylum-Echinodermata from the options
a) Sea urchin, cuttle fish and sea lily
b) *Echinus*, sea hare and sea cucumber

c) Antedon, *Ophiura* and *Echinus*
d) *Ophiura*, *Chaetopleura* and *Echinus*

472. The animal's body belonging to phylum-Mollusca is divided into
a) Head, thorax and abdomen
b) Head, muscular foot and abdomen
c) Head, thorax and visceral hump
d) Head, muscular foot and visceral hump

473. Wriggler is the larva of
a) Mosquito b) Butterfly c) Housefly d) Cockroach

474. Addition of which element in water speed up the metamorphosis in frog tadpole larva?
a) $I_2$ b) K c) Na d) Cl

475. Phylum that exhibit radial or radial like symmetry are
a) Coelenterates b) Echinoderms c) Ctenophores d) All of these

476. Characteristic symptom of ancylostomiasis is
a) Gastro-intestinal disturbance
b) Anaemia
c) Nervous disorders
d) All of the above

477. Characteristic cells of *Hydra* are
a) Archaeocytes b) Thesocytes c) Cnidoblasts d) Trophocytes

478. The nitrogeneous metabolic waste in *Hydra* is mostly
a) Ammonia and is removed from whole surface of body
b) Urea and is removed mainly by tentacles
c) Urea and is removed from whole surface of body
d) Uric acid and is removed from whole surface of body

479. The echinoderms are
a) Arborial insects b) Marine animals c) Terrestrial insects d) Freshwater worms

480. List the phyla in the correct order of their placement in classification
I. Chordata II. Annelida
III. Arthropoda IV. Platyhelminthes
V. Ctenophora VI. Aschelminthes
a) VI, I, V, IV, III, II b) II, III, IV, V, VI, I c) V, IV, VI, II, III, I d) III, II, VI, I, V, IV

481. Superposition image formation takes place in cockroach during
a) Bright light b) Diffused light c) Dim light d) None of these

482. Which of the following has enterocoelomate invertebrate?
a) Echinodermata b) Arthropoda c) Annelida d) Mollusca

483. Which of the following is the character of dorsal blood vessel of the earthworm?
a) Collecting in the whole body
b) Collecting in first 13 segments
c) Distributing in the whole body
d) Distributing in the first 13 segments

484. Which one is correct?
a) Notochord is ectodermal in origin present in some animals
b) Notochord is a mesodermally derived rod like structure formed on the dorsal side in embryonic development in some animals
c) Arthropoda are non-chordates
d) Both (b) and (c)

485. Mammal's heart is
a) Myogenic b) Neurogenic c) Voluntary d) Sympathetic

486. Which of the following organs in earthworm neutralizes human acid present in humus?
a) Typhlosole b) Calciferous glands c) Intestinal caecum d) Gizzard

487. Which one of the following is a matching pair of a body feature and the animal possessing it?
a) Post-anal tail – Octopus
b) Ventral central nervous system – Leech
c) Pharyngeal gill slits absent in embryo – *Chamaeleon*
d) Ventral heart – Scorpion

488. Notochord is

a) Endodermally derived structure, formed on the dorso ventral side
b) Ectodermally derived structure, formed on the dorsal side
c) Mesodermally derived structure, formed on the dorsal side
d) Mesodermally derived structure, formed on the ventral side

489. Some vertebrae in birds fuse to form
a) Sacrum b) Synsacrum c) Coccyx d) None of these

490. Tube-within-tube body plan is found in which animal?
a) *Euspongia* b) *Fasciola* c) *Hydra* d) None of these

491. WBCs of frog are
a) Nucleated amoeboid b) Biconvex c) Concave d) Non-nucleated

492. Animals having a built in thermostat to maintain constant body temperature are known as
a) Biothermic b) Poikilothermic c) Oligothermic d) Homeothermic

493. Which of the following is not a characteristic of snakes?
a) Eggs b) Sternum c) Scales d) Kidney

494. Sea fan belongs to
a) Coelenterata b) Porifera c) Echinodermata d) Mollusca

495. Choanocyte is the characteristic feature of
a) Sponges b) Arthropods c) Annelids d) None of these

496. Features common to the animals belonging to class-Amphibia and class-Reptilia are
a) Presence of scales with internal fertilisation and usually four chambered heart
b) Presence of tympanum, poikilotherms and usually three chambered heart
c) Presence of cloaca, oviparous and external fertilisation
d) Skin is moist

497. Two-chambered heart is a feature of
a) Amphibians b) Fishes c) Reptiles d) Birds

498. Choose the cartilaginous fishes from the following
a) *Catla* and *Sawfish*
b) *Pristis* and *Carcharodon*
c) *Scoliodon* and Hagfish
d) *Trygon* and Lamprey

499. Which of the following is not correctly matched?
a) *Sycon* – Canal system b) Starfish – Radial symmetry
c) *Ascaris* – Flame cell d) Prawn - Haemocoel

500. Which of the following vertebrates show the formation of middle ear (eustachian recess) for the first time?
a) *Exocoetus* b) *Rana* c) *Echis* d) *Hippocampus*

501. The most powerful poison produced by vertebrates is
a) Paratotoxin b) Hypotoxin c) Haemotoxin d) Batrachotoxin

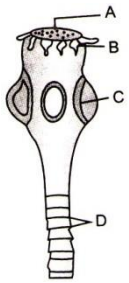
502. What is true about class-Insecta?
a) Two pairs of wings b) One pair of wings
c) Three pairs of jointed legs d) No wings

503. Asymmetry in Gastropoda is due to
a) Torsion b) Coiling c) Twisting d) None of these

504. Choose the respiratory organ that are not present in phylum-Arthropoda
a) Tracheal system b) Gills
c) Water vascular system d) Book lungs

505. The jawless vertebrate is
a) Crocodile b) Loris c) *Hyla* d) *Petromyzon*

506. In the given diagram different parts are indicated by alphabets. Choose the answer, in which these alphabets correctly match with the parts they indicate.




a) A-Rostellum B- Hooks C- Sucker D- Proglottids
b) A-Suctorial mouth B-Hooks C- Sucker D- Segments
c) A-Mouth B-Tentacles C- Sucker D- Segments
d) A-Sucker B- Hairs C- Ring D-Proglottids

507. A list of animals is given below. Identify the animals with open circulatory system and choose the correct answer
I.Ascidia
II.Cockroach
III.Earthworm
IV.Prawn
V.Silverfish
VI.Snail
VII.Squid
a) II, IV and VI b) I, II, IV and VI c) III, IV, V and VII d) II, IV, V and VI

508. Parthenogenesis is a term of
a) Sexual reproduction b) Asexual reproduction
c) Budding d) Regeneration

509. The integument of the frog is always kept moist because
a) It cannot move with dry skin b) It performs cutaneous respiration
c) It cannot catch food with dry skin d) It cannot jump better with moist skin

510. What is true about Mollusc?
a) Presence of metameric segmentation
b) Presence of mantle cavity and coelom cavity
c) Presence of tissue level of organisation
d) Presence of chitinous exoskeleton

511. Higher phylum like echinoderms are
a) Triploblastic animals b) Quadroblastic animals
c) Diploblastic animals d) Uniblastic animals

512. From the following statements select the wrong one.
a) Millipeds have two pairs of appendages in each segment of the body
b) Prawn has two pairs of antennae
c) Animals belonging to phylum-Porifera are exclusively marine
d) Nematocysts are characteristic of the phylum-Cnidaria

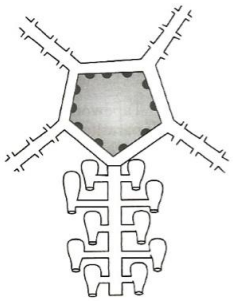
513. The skeleton of corals is composed of
a) Siliceous spicules b) Calcium sulphate c) Calcium carbonate d) Potassium sulphate

514. The type of symmetry belongs to animals is
a) Transverse symmetry b) Lateral symmetry
c) Bilateral symmetry d) Oblique symmetry

515. Scientific name of king cobra is
a) *Naja naja* b) *Bungarus coerulus* c) *Naja Hannah* d) *Vipera russelli*

516. Symmetry in Cnidaria is
a) Radial b) Bilateral c) Pentamerous d) Spherical

517. What is missing in the following diagram?



a) Podium and tiedamanns body
b) Madrepori canal and madreporite
c) Madreporite and podial canal
d) None of the above

518. Frog's tadpole is
a) Uricotelic b) Ureotelic c) Ammonotelic d) Aminotelic

519. Sub-class-Prototheria is related with egg laying mammal such as
a) Kangaroo b) *Echidna* c) Primate d) None of these

520. Which of these is referred to as 'Venus flower basket'?
a) *Spongilla* b) *Sycon* c) *Euplectella* d) *Cliona*

521. Identify the aquatic mammal(s) from the following
I.*Balenoptera*
II.*Equus*
III.*Delphinus*
IV.*Pteropus*
V.*Felis*
a) I and III b) II and IV c) V only d) IV and V

522. Which of the following is a viviparous fish?
a) *Exocoetus* b) *Gambusia* c) *Clarias* d) *Labeo*

523. Members of this phylum exhibit adaptations to widely varied environmental conditions. Identify the phylum
a) Porifera b) Coelenterata c) Echinodermata d) Mollusca

524. What is true about *Nereis*, scorpion, cockroach and silver fish?
a) They all have jointed paired appendages
b) They all possess dorsal heart
c) None of them is aquatic
d) They all belong to the same phylum

525. *Salamandra* belongs to sub-class
a) Apoda b) Urodela c) Anura d) None of these

526. Chloragogen cells of earthworms are analogous to vertebrate
a) Lungs b) Liver c) Gut d) Kidneys

527. Which of the following characters is present essentially in chordates?
a) Ventral spinal chord
b) Dorsal heart
c) Pharyngeal gill slits
d) Blood flow in forward direction in ventral blood vessels

528. Which of the following is not absent in Mollusca?
a) Heart b) Pedicellaria c) Ctenidia d) Mantle

529. In Echinodermata, tube feet are related with
a) Locomotion
b) Excretory system
c) Respiratory system
d) Reproductive system

530. The mantle in the phylum-Mollusca is a
a) Calcareous shell
b) Chitinous outer covering
c) Soft spongy layer of skin
d) None of these

531. Select the correct statement.
a) Birds are poikilothermic.
b) Flatworms are coelomic animals.
c) Earthworm is metamerically segmented.
d) Fishes are radially symmetrical.

532. Which stage in the life cycle of *Taenia solium* infects the intermediate host?
a) Hexacanth larva b) Oncosphere c) Cysticercus larva d) Miracidium
533. Choose the false option
a) *Amoeba*-Asymmetrical
b) Coelenterates-Diploblastic, radial symmetry, non-chordates
c) Chordates-*Petromyzon, Ornithorhynchus, Equus*
d) Annelid-Pseudocoelomate
534. Blood of earthworm is
a) Red in colour, due to dissolved haemoglobin in corpuscle
b) Red in colour, due to dissolved haemoglobin in plasma
c) Blue in colour, due to dissolved haemocyanin in plasma
d) Blue in colour, due to dissolved haemocyanin in corpuscles
535. Which bird travels the longest distance each year?
a) Flamingo b) *Bubulcus* c) *Sterna macrura* d) None of these
536. Which of the following sets of derivatives of integumentary structures characterize birds, as glorified reptiles?
a) Scales and claws b) Syrinx and uropygial gland
c) Claws and uropygial gland d) Syrinx and scales
537. Which is not correct?
a) Ovaries matured first in earthworm b) Spermatheca present in 6-9 segments
c) Male genital apertures at 18 segment d) One pair of ovary in 13 segment
538. Rostellum and hooks are absent in the scolex of
a) *Taenia saginata* b) *Taenia solium*
c) *Echinococcus granulosus* d) *Fasciola hepatica*
539. Ink glands are found in
a) Sponge b) Star fish c) *Sepia* d) Jelly fish
540. Which of the following is a monogenetic parasite?
a) *Taenia solium* b) *Ascaris* c) *Fasciola hepatica* d) *Plasmodium vivax*
541. Choose the correct option with reference to *Ascaris*.
a) Hatching of embryos takes place in the stomach due to lytic enzyme
b) Adulthood is reached inside the body of the host in ten days time
c) Development and moulting takes place in the alveoli of lungs
d) Hatching of embryos takes place within ten hours
542. Which type of cells absent in sponges?
a) Trophocytes b) Myocytes c) Archaeocytes d) Cnidocytes
543. Which one of the following statements about all the four of *Spongilla,* leech, dolphin and penguin is correct?
a) Penguin is homeothermic, while the remaining three are poikilothermic
b) Leech is a fresh water form, while all others are marine
c) *Spongilla* has special collar cells called choanocytes, which are not found in the remaining three
d) All are bilaterally symmetrical animals
544. In *Pheretima*, gizzard, buccal cavity, pharynx, oesophagus, pharyngeal nephridia receive the blood from which of the following blood vessel?
a) Supra oesophageal b) Lateral oesophageal c) Dorsal blood d) Subneural
545. Bat belongs to order
a) Chiroptera b) Lagmorpha c) Urodla d) Hymenoptera
546. The Indian salamander is
a) *Siren* b) *Tylototriton* c) *Ambystoma* d) *Necturus*
547. Earthworms are
a) Ureotelic, when plenty of water is available
b) Uricotelic, when plenty of water is available

c) Uricotelic under conditions of water scarcity
d) Ammonotelic when plenty of water is available

548. The notochord is derived from which of the following layers?
a) Ectoderm b) Mesoderm c) Endoderm d) Placoderm

549. Book lungs are respiratory organs in
a) Insects b) Arachnids c) Molluscans d) Echinoderms

550. Which of the following is a harmful social insect?
a) Termite b) *Bombyx mori* c) *Tachardia lacca* d) *Apis indica*

551. Which type of respiratory organs are present in spiders and scorpions?
a) Book lungs b) Gills c) Gill books d) Lungs

552. Spermathecae in *Pheretima* is located in the segments
a) 14 to 18 b) 10 to 13 c) 6 to 10 d) 6 to 9

553. In bony ventebrates, the laying down of none is often preceded by the presence of
a) Chitin b) Starch c) Cartilage d) Platelets

554. The nerve net of *Hydra* lacks
a) Neurons b) Connections
c) Dendrites d) Directions in impulse

555. Spider web is formed by a fluid secreted by its
a) Abdominal gland b) Salivary gland c) Cephalothorax d) None of these

556. Choose the group of parasitic animal
a) *Wuchereria – Pheretima – Nereis*
b) Liverfluke – *Dugesia - Ascaris*
c) *Fasciola – Taenia – Ancylostoma*
d) *Wuchereria – Fasciola – Dugesia*

557. Pneumatic bones are expected to be found in
a) House lizard b) Flying fish c) Pigeon d) Tadpole of frog

558. Maximum life span of dog in year is
a) 5 b) 10 c) 15 d) 20

559. The group of anamniota includes
a) Reptiles and birds b) Birds and mammals
c) Fishes and amphibians d) Reptiles and mammals

560. Osteichthyes and Chondrichthyes are similar in which of the following features?
a) Presence of two chambered heart and ctenoid scales
b) Presence of 10 pairs of cranial nerve and absence of neck
c) Presence of opesthonephric kidneys and bony endoskeleton
d) Presence of poison stings and electric organs

561. Medusa is the reproductive organ of
a) *Hydra* b) *Aurelia* c) *Obelia* d) Sea anemone

562. Teeth of rabbit are
a) Thecodont b) Diphyodont c) Heterodont d) All of these

563. Which one of the following pairs of items correctly belongs to the category of organs mentioned against it?
a) Thorns of *Bougainvillea* – Analogous organs and tendrils of *Cucurbita*
b) Nictitating membrane and – Vestigial organs blind spot in human eye
c) Nephridia of earthworm – Excretory organs and Malpighian tubules of cockroach
d) Wings of honey bee and wings of crow – Homologous organs

564. Which one of the following groups of animals is bilaterally symmetrical and triploblastic?
a) Coelenterates (Cnidarians) b) Aschelminthes (roundworms)
c) Ctenophores d) Sponges

565. Ovoviviparity is seen in this caecilian
a) *Wuchereria* b) *Typhlonectus* c) *Ichthyophis* d) *Uraeotyphlus*

566. Right lung of rat has four lobes. The left lung has how many lobe/lobes?

a) One b) Two c) Three d) Four

567. The cloaca in frog is a common chamber for the urinary tract, reproductive tract and
a) Alimentary canal b) Portal system
c) Hepatic portal vessels d) Notochord

568. Pecten, a comb-like structure is found in the eye of
a) Fishes b) Frogs c) Birds d) Mammals

569. Food of *Hydra* is
a) Aquatic plants b) Aquatic animals
c) Algae and aquatic animals d) Some crustaceans

570. Dry skin with scales or scutes without gland is a characteristic of
a) Fishes b) Reptilia c) Amphibia d) Aves

571. Metagenesis in seen in
a) *Hydra* b) *Aurelia* c) *Obelia* d) *Adamsia*

572. Sea mouse belongs to phylum
a) Mollusca b) Cnidaria c) Arthropoda d) Annelida

573. Arms are absent in
a) Sea urchin b) Sea cucumber c) Both (a) and (b) d) None of these

574. Integumentary nephridia are also called
a) Enteronephric
b) Exonephric
c) Sometimes enteronephric and sometimes exonephric
d) Both (a) and (b)

575. Which of the following is wrongly matched?
a) Arthropoda – Cockroach b) Annelida – *Hydra*
c) Echinodermata – Star fish d) Nemathelminthes – *Ascaris*

576. Scorpion belongs to a class to which one of the following also belong?
a) Ticks b) Crabs c) Both (a) and (b) d) Cockroaches

577. Which is common between earthworm, leech and centipede?
a) They have Malpighian tubules b) They are hermaphrodite
c) They have ventral nerve cord d) They have no legs

578. Haemocoel is found in
a) *Hydra* and *Aurelia* b) *Taenia* and *Ascaris*
c) Cockroach and *Pila* d) *Balanoglossus* and *Herdmania*

579. Which one of the following is not a mammalian character?
a) Presence of milk producing gland b) They have two pairs of limbs
c) Skin is unique in possessing hair d) Homodont type of dentition

580. The flightless bird among the following is
a) *Columba* b) *Neophron* c) *Struthio* d) *Corvus*

581. Phylum-Aschelminthes is different from phylum-Platyhelminthes in
a) Symmetry b) Shape of the body
c) Number of germ layers in embryonic stage d) None of the above

582. Which of the following statements is true?
a) All living members of class-Cyclostomata are parasites on some fishes
b) There are about 25,000 species in the class-Osteichthyes
c) *Ciona* belongs to the sub-phylum-Cephalocohordata
d) Arthropods are diploblastic animals

583. In phylum-Porifera opening through which water leaves the spongocoel is called
a) Ostia b) Omadidia c) Osculum d) Choanocytes

584. In which one of the following the genus name, its two characters and its class/phylum are correctly matched?

| Genus | Two characters | Class/Phylum |
|---|---|---|

a)

| | | |
|---|---|---|
| *Salamandra* | (i) A tympanum Represents ear<br>(ii) Fertilisation is external | Amphibian |

b)

| | | |
|---|---|---|
| *Pteropus* | (i) Skin possesses hair<br>(ii) Oviparous | Mammalia |

c)

| | | |
|---|---|---|
| *Aurelia* | (i) Cnidoblast<br>(ii) Organ level of organisation | Coelenterata |

d)

| | | |
|---|---|---|
| *Ascaris* | (i) Body segmented<br>(ii) Males and females distinct | Annelida |

585. If an earthworm is left in 40% KOH solution for a long time, which part would be left undissolved?
a) Setae b) Spermathecae c) Sand particles d) Circular muscles

586. Select the false statement.
a) In rats, the teeth are heterodont and thecodont
b) In female rats, the urinary and genital apertures are located above anus
c) In female rats, six pairs of nipples are present on the ventral surface of the trunk
d) In rats, 12 pairs of cranial nerves and 33 pairs of spinal nerves are present

587. Which of the following belongs to class-Insecta?
a) *Julus* b) Silver fish c) Lobsters d) Prawn

588. Male and female cockroach are differ due to presence or absence of
a) Anal cerci b) Anal style c) Both 'a' and 'b' d) Anal sitae

589. The internal buds of freshwater sponges are otherwise called.
a) Choanocyte b) Gemmule c) Osculum d) Blastula

590. In honey bee, the drones are
a) Sterile male b) Fertile male c) Fertile female d) Sterile female

591. Excretory organ of spider is
a) Coxal glands b) Flame cells c) Malpighian tubule d) Nephridia

592. In nemathelminthes, the coelom not lined by peritoneum is called
a) Acoelom b) Pseudocoelom c) Enterocoelom d) Haemocoel

593. Which of the following are not members of sub class-Anura?
a) *Hyla, Xenopus* and *Pipa* b) *Rhacophorus* and *Bufo*
c) *Ambystoma* and *Ichthyophis* d) *Rana tigerina* and *Alytes*

594. Spermathecae in earthworm is
a) For producing sperm
b) For storage of sperm obtained from male earthworm
c) Both (a) and (b)
d) None of the above

595. Which of the following is not a feature of *Protopterus*?
a) Breathes through lungs b) Walks by fins used as legs
c) Cannabilism d) It gives birth to young ones

596. All mammals without any exception are characterized by
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

597. Which one of the following is a flightless bird?
a) *Passer* b) *Corvus* c) *Aptenodytes* d) *Pavo cristatus*

598. The sclerite, covers the top to the head and the space between the two compound eyes in *Periplaneta*, is
a) Clypeus b) Labrum c) Vertex d) Genae

599. Cross fertilisation is favoured by
a) Neoteny b) Metagenesis c) Protandry d) None of these

600. Complete metamorphosis is found in
a) House-fly and mosquito b) House-fly and cockroach

c) Mosquito and cockroach d) None of the above

601. The herbivorous insect that has piercing and sucking type of mouth parts is
a) *Cimex* b) *Culex* c) *Apis* d) *Tachardia*

602. Ctenophora shows affinities with
a) Cnidaria b) Aschelminthes c) Cephalopoda d) Turbellaria

603. A gradual decrease in the size of the tail during metamorphosis in the life cycle of frog is a good example for
a) Programmed cell death b) Cell necrosis
c) Cell senescence d) Pinocytic activity

604. Ecdysone is secreted from
a) Insect b) Trematoda c) Nematode d) Polychaeta

605. The animal that never performs locomotion is
a) *Ascaris* b) *Leucosolenia* c) Both (a) and (b) d) *Hydra*

606. Salamander can regenerate
a) Tail b) Limbs c) External gills d) All of these

607. Which is a condition that in connected in the both external and internal structures and it is first found in which phylum of the animal kingdom
a) Mutagenesis-Platyhelminthes b) Metagenesis-Coelenterata
c) Appendages-Arthropoda d) Metamerism-Annelida

608. In the pectoral girdle of frog, there is a cup like cavity on each side called
a) Acetabulum b) Sigmoid arc c) Glenoid cavity d) Thoracic cavity

609. In mammals, the secondary palate is formed by the union of
a) Premaxilla, pterygoid and squamosal bones b) Maxilla, quadrate and palatine bones
c) Premaxilla, maxilla and palatine bones d) Premaxilla, quadrate and squamosal bones

610. Salivary gland in earthworm is found in
a) Dorsal wall of buccal cavity b) Ventral wall of buccal cavity
c) Pharyngeal wall d) None of the above

611. Which of the following is absent in the mouth part of housefly?
a) Labrum b) Epipharynx c) Mandibles d) Maxillary palps

612. Roundworms are different from Platyhelminthes in the following features
a) Roundworms are triploblastic
b) Roundworms have a complete digestive system
c) Roundworms have flame cells
d) All of the above

613. Changes that allow the conversion of larva into adult, is called
a) Metagenesis b) Alternation c) Metamorphosis d) Metastasis

614. In earthworm, the dorsal wall of the intestine from the 26$^{th}$ segment to 95$^{th}$ segment forms a median internal fold called
a) Trochophore b) Typhlosole c) Clitellum d) Trachea

615. Eggs of cockroach are
a) Alecithal b) Microlecithal c) Telolecithal d) Cintrolecithal

616. 3-segmented club shaped maxillary palp is present in
a) Male *Culex* b) Male *Anopheles* c) Female *Culex* d) Female *Anopheles*

617. The radial symmetry is observed in
I.Platyhelminthes
II.Coelenterates
III.Aschelminthes
IV.Annelids
V.Echinoderms
a) II, III and V b) I, II, III and V c) II, III and I d) II and V

618. Which of the following does not belong to the class-Hexactinellida?

a) *Hyalonema* b) *Cliona* c) *Euplectella* d) None of these

619. All flatworms differ from all roundworms in having
a) Triploblastic body b) Solid mesoderm
c) Bilateral symmetry d) Metamorphosis in the life history

620. Which brain structure in rabbit is directly related to vision?
a) Corpus albicans b) Hippocampal lobe
c) Corpus callosum d) Corpora quadrigemina

621. Which of the following statements are true?
a) Phylum-Porifera-Presence of choanocytes and nematocysts
b) Phylum-Coelentrata-*Meandrina* belongs to this phylum
c) Phylum-Ctenophora-All exhibit bilateral symmetry
d) Phylum-Platyhelminthes-*Wuchereria* belongs to this phylum

622. Class-crustacea differs from Insecta in having
a) Two pairs of antennae b) Jointed foot
c) Chitinous cuticle d) None of these

623. Pearls are produced by the animals of phylum
a) Annelida b) Arthropoda c) Mollusca d) Echinodermata

624. Third cleavage of frog's development is
a) Vertical b) Equatorial c) Latitudinal d) None of these

625. Which of the following animals is sanguivorous?
a) *Nereis* b) Tapeworm c) Earthworm d) *Hirudinaria*

626. Spiders belong to class
a) Insect b) Chilopoda c) Diplopoda d) Archinda

627. Temperature changes in the environment affect most of the animals which are
a) Homeothermic b) Aquatic c) Poikilothermic d) Desert living

628. Part of the right lung of rat which is not distinguishable due to passage of post caval through it is
a) Anterior b) Middle c) Posterior d) Post caval

629. In Mollusca, the osphradium has function of
a) Reproduction b) Respiration
c) Testing physical and chemical qualities of food d) Excretion

630. Which is not correct for birds?
a) Exothermic b) Pneumatic bones c) Lung with air sacs d) Amniotes

631. From *Ascaris* egg, first larva hatches out in the
a) Intestine of host b) Stomach of host
c) Outside the body d) Uterus of female *Ascaris*

632. Choose the correct option for *Wuchereria*?
I. Triploblastic with the presence of an excretory pore
II. Presence of a muscular pharynx
III. Males longer than females
IV. Cellular level of organisation
a) II and III are True b) I and IV are True c) I and II are True d) III and IV are True

633. Engulfing of food either in solid or liquid is called
a) Sporozoic nutrition b) Holozoic nutrition
c) Parasitic nutrition d) Saprophytic nutrition

634. When the circulatory system lacks arteries, veins and capillaries, it is called as
a) Closed type b) Mixed type
c) In appropriate information d) Open type

635. Which one of the following exhibits concentric 'tube within tube' plan?
a) Cbidaria b) Annelida c) Platyhelminthes d) Nematode

636. The part of spermatheca of earthworm that acts as store house of spermatozoa is
a) Ampulla b) Diverticulum c) Both (a) and (b) d) None of these

637. Absence of circulatory system in *Hydra* is compensated by
a) Pseudocoelomic fluid
b) Gastrovascular cavity
c) Presence of tentacles
d) None of these

638. Which one of the following is a matching pair of an animal and a certain phenomenon it exhibits?
a) *Chamaelon* – Mimicry
b) *Taenia* – Polymorphism
c) *Pheretima* – Sexual dimorphism
d) *Musca* – Complete metamorphosis

639. *Periplaneta Americana* has themoreceptor sensillae on
a) 1st, 2nd and 3rd segments of tarsus of legs
b) 3rd, 4th and 5th segments of tarsus of legs
c) Pedicel of antenna
d) 15th segment of anal cerci

640. Mark the false statement for the phylum-Annelida
a) They are bilaterally symmetrical coelomate animals
b) They have both monoecious and dioecious animal representatives
c) Excretory system consists of flame cells
d) They do not have asexual reproduction

641. In tissue level of organisation the
a) Cells are arranged as loose cell aggregate
b) Tissues are grouped to form organs
c) Cells performing the same function are arranged into groups
d) Tissues are grouped to form systems

642. Phylum-Ctenophora is divided into following classes
a) Tentaculata and Micropharyngea
b) Nuda and Macropharyngea
c) Tentaculata and Nuda
d) Nuda and Hormiphora

643. Medusa is the reproductive structure of
a) *Hydra*
b) *Obelia*
c) Sea anemone
d) None of these

644. The limbless amphibian is
a) *Ichthyophis*
b) *Hyla*
c) *Rana*
d) *Salamandra*

645. A single opening of the digestive system is found in
a) Protista
b) Ctenophore
c) Porifera
d) Platyhelminthes

646. Aquatic reptiles are
a) Ammonotelic
b) Ureotelic
c) Ureotelic in water
d) Ureotelic over land

647. In earthworm, gizzard is found, in which of the following segments?
a) 9th segment
b) 18th segment
c) 13th segment
d) 16th segment

648. Phallomerase in male *Periplaneta* arise from
a) 8th and 9th sternum
b) 7th sternum
c) 8th sternum
d) 9th sternum

649. Animal undergoes inactive stage during winter known as
a) Aestivation
b) Hibernation
c) Adaptation
d) Acclimatization

650. Conglobate gland is found in
a) Female cockroach
b) Male cockroach
c) *Anopheles* mosquito
d) *Culex* mosquito

651. Pearl is produced in the bivalve belonging to the genus
a) *Ostraea*
b) *Pinctada*
c) *Pecten*
d) *Lamellidens*

652. Select the correct set of animals of class-Mammalia.
a) Lion, hippopotamus, penguin, bat
b) Lion, bat, whale ostrich
c) Hippopotamus, penguin, whale, kangaroo
d) Whale, bat, kangaroo, hippopotamus

653. Which is the first class among the tetrapods to shows completely 4-chambered heart?
a) Amphibia
b) Reptilian
c) Aves
d) Mammalia

654. Choose the kind of erythrocyte found in Reptiles
a) Circular – biconvex – nucleated
b) Oval – biconcave – denucleated
c) Circular – biconcave – denucleated
d) Oval – biconvex – nucleated

655. Gonads of *Obelia* occur
a) On blastocyst
b) In hydrula stage
c) In radial canals of medusa
d) At bases of tentacles of medusa

656. Cerebral hemispheres of rat are connected by
a) Corpus luteum b) Corpus callosum c) Corpus albicans d) Corpus spongiosum

657. Sub classes for class-Mammalia are
a) Eutheria and Metatheria b) Ornithorhynchus and Pleurorhynchus
c) Hemiechinus and Macropus d) Theria and Prototheria

658. Dermatobiasis in cattle is caused by
a) Maggots of bot fly b) Wriggler of mosquito
c) Nits of lead louse d) Drones of honeybee

659. In frog's heart which of the following is considered as pace-maker?
a) Pylangium b) Synangium c) Sinus venosus d) Truncus arteriosus

660. Proboscis gland in *Balanoglossus* is associated with
a) Digestion b) Respiration c) Circulation d) Excretion

661. Which of the following is common in Annelida and Arthropoda?
a) Basal nerve cord b) Dorsal nerve cord c) Ventral nerve cord d) Anterior nerve cord

662. The poisonous fluid present in nematocyst of *Hydra* is
a) Venom b) Haematin c) Toxin d) Hypnotoxin

663. Asexual reproduction in sponges takes place by
a) Binary fission b) Budding c) Fragmentation d) Encystment

664. Which animal shows coprophagy?
a) Giraffe b) Elephant c) Rabbit d) Snake

665. Which one of the following statements about certain given animals is correct?
a) Roundworms (Aschelminthes) are pseudocoelomates
b) Molluscs are acoelomates
c) Insects are pseudocoelomates
d) Flatworms (Platyhelminthes) are coelomates

666. The location of lymph glands in *Pheretima* is
a) $4^{th}$, $5^{th}$ and $6^{th}$ segments b) $10^{th}$ to $20^{th}$ segments
c) $26^{th}$ to the last segments d) $13^{th}$ segments

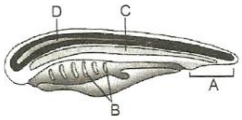
667. The young one of cockroach is called
a) Caterpillar b) Nymph c) Fingerling d) Maggot

668. Which of following has discoidal placenta?
a) Rabbit b) Deer c) Sheep d) Pig

669. Body cavity of *Hydra* is called
a) Haemocoel b) Coelenteron c) Enterocoel d) Pseudocoel

670. Which one of the following features is common in silverfish, scorpion, dragon fly and prawn?
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 tracheae

671. Match the items labelled A, B, C and D in the given diagram with the given characters and choose the correct answer




I. Nerve cord
II. Post-anal part
III. Notochord
IV. Gill Slits

A B C D
a) II IV III I b) I III II IV c) III I IV III d) IV II III I

672. Which of the following is present in the integument of frog but not in mammals?
a) Dermis b) Mucous gland
c) Sweat glands d) Stratum germinativum

673. The canal system is characteristic feature of
a) Helminthes b) Coelenterates c) Sponges d) Echinoderms

674. Which one of the following parasites shows alternation of generation and alternation of host in its life cycle?
a) *Fasciola* b) *Ascaris* c) *Wuchereria* d) Taenia

675. Pancreas is absent in which group of vertebrates?
a) Reptiles b) Cyclostomates c) Birds d) Mammals

676. The nematocysts inject …… in its prey
a) Coelenteron b) Neurotoxin c) Hypnotoxin d) Hypotoxin

677. Tubular heart of cockroach has how many chambers?
a) 10 b) 13 c) 12 d) 11

678. Non-chordates show
a) Notochord b) Dorsal tubular nerve chord
c) Pharyngeal gill cleft d) Absence of hepatic portal system

679. In earthworms, setae are present in all segments, expect the
a) First and the last segments b) First and the clitellum
c) First segments d) First, clitellum and last segments

680. Canal system in Porifera is not concerned with
a) Respiration b) Nutrition c) Sexual reproduction d) None of the above

681. Preen glands occur on
a) Reptilia b) Aves c) Pisces d) Mammalia

682. Fossil representatives of phylum-Arthropods are called
a) Triplolites b) Tagmalites c) Trilobites d) Archaeopods

683. Study the following features of a fish.
XI. It is a crossopterygian fish.
XII. It is found in the river Chalumnae.
XIII. It does not exhibit aestivation.
XIV. It is an urecotelic animal.
XV. Which of the above are true to '*Neoceratodus*'
a) I and II b) II and IV c) I and III d) I and IV

684. Which of the these statements are wrong?
I.Parapodia are lateral appendages in arthropods used for swimming.
II.Radula in molluscs are structures involved in excretion.
III.Aschelminthes are dioecious.
IV.Echinoderm adults show radial symmetry.
V.Ctenophorans are diploblastic.
a) I and II b) I and III c) I, IV and V d) III and V

685. The Mediterranean type of popular fowls are called
a) White leghorn b) New Hampshire c) Plymouth rock d) Rhode island red

686. In which of the following animals, post anal tail is found?
a) Earthworm b) Lower invertebrate c) Scorpion d) Snake

687. In earthworm, neurons are
a) Motor b) Associated c) Sensory d) All of these

688. Pseudocoelomate animals belong to the phylum
a) Platyhelminthes b) Arthropoda c) Mollusca d) None of these

689. Cells that are peculiar to the phylum-Porifera
a) Chimeras b) Chondrocytes c) Dendrocytes d) Choanocytes

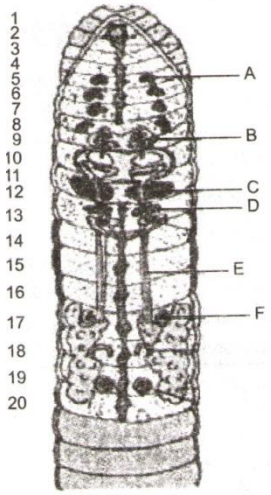
690. The number of heart chambers found in cockroach is

a) 4 b) 7 c) 5 d) 13

691. Study the following sentences.
I.It is a terrestrial arthropod.
II.The prosoma bears a pair of chelicerae, a pair of the pedipalps and four pairs of walking legs.
III.The metasoma ends in a telson.
IV.First pair of walking legs are modified as poisonous claws.
Which of the above are true for *Heterometrus*?
a) I and III b) I and II c) I and IV d) III and IV

692. What is common among *Planaria* and *Hydra*?
a) Both belong to phylum-Coelenterata b) Both are diploblastic
c) Both have regenerative capacity d) Both have a water vascular system

693. Choose the correct combination of labeling from the options given.




a) **A-**Testis, **B-**Spermatheca, **C-**Seminal vesicle, **D-**Ovary, **E-**vas deferens, **F-**Accessory gland
b) **A-**Spermatheca, **B-** Testis, **C-** Ovary, **D-** Seminal vesicle, **E-** vas deferens, **F-** Accessory gland
c) **A-** Spermatheca, **B-** Testis, **C-** Seminal vesicle, **D-** Ovary, **E-** vas deferens, **F-** Accessory gland
d) **A-** Spermatheca, **B-** Testis, **C-** Accessory gland, **D-** Ovary, **E-** vas deferens, **F-** Seminal vesicle,

694. Changes that allow the conversion of larva into adult, are called
a) Metagenesis b) Alternation c) Metamorphosis d) Metastasis

695. In cockroach, vision is due to
a) One compound eye b) Two compound eyes
c) Two simple eyes d) Two compound and two simple eyes

696. Which of the following features is not found in Aves
a) Preen glands on tail b) Crop and a gizzard c) Air cavities in bones d) Teeth inside the beak

697. The cockroach of genus-*Blatta* is also called
a) German cockroach b) Australian cockroach
c) Oriental cockroach d) American cockroach

698. Which animal of the following belongs to class-Crustacea?
a) Cockroach b) Cyclops c) Grasshopper d) Mosquito

699. In which segment, the clitellum is present in earthworm?
a) 16 segments b) 17-19 segments c) 14-16 segments d) 5-6 segments

700. Tissue level of organisation is seen in
a) Platyhelminthes b) Chordata c) Arthropoda d) None of these

701. Which of the following animals sows discontinuous distribution?
a) Green muscle b) Bats c) Lung fish d) Pacific salmon

702. Excretion in phylum-Porifera is
a) Ureotelic b) Uricotelic c) Ammoniotelic d) Aminotelic

703. Body of earthworm is divided into how many similar segments, which are called metameres or somites?
a) 60 to 120 b) 100 to 120 c) 80 to 120 d) 120 or more

704. Arthropods are characterized by
a) Jointed appendages
b) Open blood vascular system
c) Triploblastic
d) All of the above

705. Which of the following respires through gills?
a) Whale
b) Turtle
c) Frog
d) Prawn

706. Annelids have a central nerve cord that is
a) Impermeable to $K^+$
b) Hollow
c) Dorsal
d) Ventral

707. Animals that do not belong to class-Crustacea include
a) Lobster and daphnia
b) Millipede and Centipede
c) Crab and shrimp
d) None of the above

708. Urochordate animals have
a) Notochord that extends from head to tail region
b) Notochord is present throughout larval stages and adult life
c) Notochord present only in adult stages
d) Notochord present only in larval stage

709. Thigmotaxis is not shown by
a) *Paramecium*
b) *Amoeba*
c) *Ascaris*
d) *Hydra*

710. In a copulating pair of earthworm, which two processes take place?
a) External fertilization and cross fertilization
b) Cross fertilization and reciprocal fertilization
c) Internal fertilization and cross fertilization
d) Reciprocal fertilization and internal fertilization

711. The second largest number of species containing phylum in the animal kingdom is
a) Annelida
b) Arthropoda
c) Mollusca
d) Chordata

712. Which of the following statements is false?
a) Male round worm is smaller than female
b) Earthworms are hermaphrodites
c) Echinoderms are protostomous coelomates
d) Human teeth are anatomically comparable to scales of shark

713. Limbless amphibians are called
a) Paddle worms
b) Glow worms
c) Caecilian worms
d) Pin worms

714. Salient feature of Arthropoda is
a) Aquatic and free living
b) Chitinous exoskeleton and jointed appendages
c) Both (a) and (b)
d) None of the above

715. Which of the following are absent in snakes?
a) Pectoral girdle
b) Urinary bladder
c) Sternum
d) All of these

716. Which of the following is not a Porifera
a) *Sycon*
b) *Spirulina*
c) *Euspongia*
d) *Spongilla*

717. Tube-feet are the locomotory organs of
a) Platyhelminthes
b) Echinodermata
c) Mollusca
d) Arthropoda

718. Which one of the following characters is not typical of the class-Mammalia?
a) Seven cervical vertebrae
b) Thecodont dentition
c) Ten pairs of cranial nerves
d) Alveolar lungs

719. In cockroach, which of the following is the principal motor centre?
a) Supraoesophageal ganglia
b) Suboesophageal ganglia
c) Metathoracic ganglia
d) Abdominal ganglia

720. Excretory organs in *Taenia* are
a) Flame cells
b) Nephridia
c) Nephrons
d) Kidneys

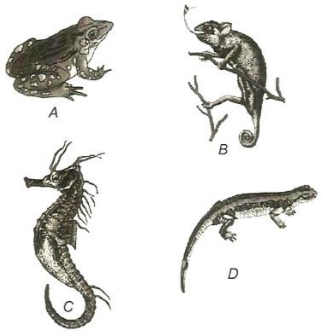
721. How many eggs are found in egg chamber of female cockroach?
a) 2
b) 4
c) 8
d) 16

722. A dorsal horn is present on the……. of mulberry silk worm (caterpillar).
a) $8^{th}$ abdominal segment
b) $6^{th}$ abdominal segment
c) $5^{th}$ abdominal segment
d) $2^{nd}$ thoracic segment

723. In *Hydra*, reproduction occurs in favourable conditions by

a) Budding b) Gametes c) Gemmules d) Binary fission

724. Which of the following are amphibians?




a) *A* and *C* b) *B* and *D* c) *C* and *D* d) *A* and *D*

725. Which of the following is an exclusive character of class-Mammalia?
a) Homoiothermy b) Internal fertilization
c) Presence of a 4-chambered heart d) Presence of a muscular diaphragm

726. Skeletal system in echinoderms is
a) Formed by the distension of the water vascular system
b) Calcareous exoskeleton
c) Siliceous endoskeleton
d) None of the above

727. Which one of the following animals possesses high regeneration capacity?
a) *Planaria* b) *Taenia* c) *Salpa* d) *Periplaneta*

728. Veliger larva occurs in phylum
a) Mollusca b) Echinodermata c) Arthropoda d) Cnidaria

729. Tadpole's tail is a/an
a) Excretory organ b) Attachment organ c) Respiratory organ d) Locomotory organ

730. The largest phylum in respect of number of species is
a) Coelenterata b) Arthropoda c) Protozoa d) Porifera

731. Read the following paragraph.
An insect whose mouthparts are biting and chewing type in the larval condition, while they are siphoning type in the adult and this insect gives an economically important substance during yet another stage of its development.
The insect is
a) *Anopheles* b) *Laccifer* c) *Bombyx* d) *Apis*

732. Which of the following statements are true/false?
I. Mollusca possess cellular level of organisation
II. Arthropoda are true coelomates
III. Platyhelminths are pseudocoelomates
IV. Ctenophora have bilateral symmetry
Choose the correct option
a) I and II are True b) Only II are True c) I and IV are True d) II, III and IV are True

733. Which of the following is not a defence evolved by a prey to avoid predators?
a) Ejection of noxious chemicals b) Possession of toxic hairs
c) Mimicry of inedible objects d) Secretion of pheromones

734. The correct sequence of arrangements of segments in the leg of cockroach is
a) Tibia, trochanter, femur, tarsus and coxa b) Trochanter, coxa, tibia, femur and tarsus
c) Coxa, femur, trochanter, tibia and tarsus d) Coxa, trochanter, femur, tibia and tarsus

735. The function of iris in the eyes of frog is to
a) Alter the size of pupil b) Move nictitating membrane
c) Refract light rays d) Move the lens forward and backward

736. Which of the following pairs is correct?

a) Annelida – Polychaeta – leech
b) Arthropoda – Crustacea – cockroach
c) Mollusca – Cephalopoda – *Octopus*
d) Protozoa – *Hydra*

737. Which one of the following groups of animals is correctly matched with its one characteristic feature without even a single exception?
a) Chordata – possess a mouth provided with an upper and a lower jaw
b) Chondrichthyes – possess cartilaginous endoskeleton
c) Mammalia – give birth to young ones
d) Reptilia – possess 3-chambered heart with one incompletely divided ventricle

738. Chitin as exoskeleton is found in
a) *Periplaneta* b) *Ascaris* c) *Pheretima* d) *Hydra*

739. In *Pheretima*, the glands that help in binding the worms during copulation are
a) Prostate glands b) Albumin glands c) Accessory glands d) Mucous glands

740. Which one of the following animals lay eggs yet the female secretes milk?
a) Bat b) Kangaroo c) *Platypus* d) Ostrich

741. *Taenia solium* derives its energy from the breakdown of
a) Nucleic acids b) Amino acids c) Glycogen d) Glycerol

742. Which statement is incorrect for animals belonging to class of Chondrichthyes?
a) Presence of placoid scales
b) Absence of air bladder
c) Presence of cartilaginous endoskeleton
d) Notochord is persistent only at larval stage, after that it disappears

743. Pouched mammals are
a) Prototherians b) Metatherians c) Eutherians d) Therians

744. *Ascaris* is
a) A parasite
b) An autotroph
c) Facultative autotroph
d) Facultative heterotrophy

745. Which one of the following match is incorrect?

| | Column I | Column I |
|---|---|---|
| a) | Garden lizard | *Hemidactylus flavirisidis* |
| b) | Mountain lizard | *Varanus* |
| c) | Worm lizard | *Rhineura* |
| d) | Collared lizard | *Iguana* |

746. The colour of the body in earthworm is brown due to
a) Porphyrin b) Haemoglobin c) Blood d) Haemocyanin

747. Class-Crustacea have the following features
a) Tracheae and Malpighian tubules
b) Tracheae and green glands
c) Book gills and coxal glands
d) Gills and antennal glands

748. Budding is found in
a) *Sycon* b) *Hydra* c) *Fasciola* d) *Obelia*

749. Which one of the following is not used in organic farming?
a) *Glomus* b) Earthworm c) *Oscillatoria* d) Snail

750. Highest degree of polymorphism is found in
a) Protozoa b) Cnidaria c) Platyhelminthes d) Arthropoda

751. Botryoidal tissue is found in
a) Hirudinea b) Polychaeta c) Oligochaeta d) All of these

752. The sea snakes have
a) Cylindrical tail
b) Dry horny scale at tail end
c) Laterally compressed tail
d) Dorso-ventrally flattened tail

753. Which one of the following correctly describes the location of some body parts in the earthworm *Pheretima*?
a) Two pairs of accessory glands in 16-18 segments
b) Four pairs of spermathecae in 4-7 segments
c) One pair of ovaries attached at intersegmental septum of 14th and 15th segments
d) Two pairs of testes in 10th and 11th segments

754. *Tachyglossus* is a connecting link between
a) Reptiles and birds
b) Amphibians and reptiles
c) Birds and mammals
d) Reptiles and mammals

755. Radial symmetry is seen in
a) *Hydra* b) *Schistosoma* c) *Taenia* d) *Fasciola*

756. Which of the following phylum or class exhibit the presence of a notochord?
a) Arthropods
b) Echinodermata
c) Chondrichthyes
d) Porifera

757. Which of the following is correctly matched?
a) *Wallago attu* – Cat fish
b) *Tengra* – Carp
c) *Catla catla* – Cat fish
d) Payas – Carp

758. In contrast to annelids, the Platyhelminthes show
a) Radial symmetry
b) Presence of pseudocoel
c) Bilateral symmetry
d) Absence of body cavity

759. In *Pheretima*, the anterior loops carry blood from
a) Commissural blood vessels
b) Ventral blood vessels
c) Supraoesophageal
d) Lateral oesophageal

760. The enteronephric nephridia in *Pheretima* consists which of the following parts given below?
XVI. A nephrostome
XVII. Terminal nephridial duct
XVIII. Septal excretory canal
XIX. Supra intestinal excretory canal
XX. Long thick walled excretory canal
a) II, V b) I, III, IV, V c) III, IV, V d) I, III, IV

761. Blastula of frog has
a) Blastopore b) Blastocoel c) Archenteron d) Gastropore

762. Which of the following is not found in *Hydra*?
a) Epithelio-muscular cells
b) Cnidocyte
c) Choanocyte
d) Nerve cells

763. An egg laying mammal is
a) *Delphinus* b) *Macaca* c) *Ornithorhynchus* d) *Macropus*

764. Which of the following have the highest number of species in nature?
a) Insects b) Birds c) Angiosperms d) Fungi

765. Which of the following is correct for the circulatory system of cockroach?
a) It is present on the dorsal side and it has thirteen units of heart in abdominal region
b) It is present on the ventral side and it has ten abdominal and three thoracic units of heart
c) It is present on the ventral side and it has thirteen units of heart in abdominal region
d) It is present on the dorsal side and it has ten abdominal and three thoracic units of heart

766. Which one is absent in frog?
a) Phrenic nerve b) Renal portal vein c) Both (a) and (b) d) None of these

767. 'Portuguese man of war' is
a) *Obelia* b) *Physalia* c) *Aurelia* d) *Branchiostoma*

# ANIMAL KINGDOM

**BIOLOGY**

## : ANSWER KEY :

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | d | 2) | a | 3) | d | 4) | a | 173) | d | 174) | b | 175) | c | 176) | a |
| 5) | d | 6) | c | 7) | a | 8) | d | 177) | a | 178) | b | 179) | d | 180) | b |
| 9) | b | 10) | b | 11) | a | 12) | a | 181) | c | 182) | b | 183) | b | 184) | d |
| 13) | c | 14) | d | 15) | d | 16) | d | 185) | a | 186) | a | 187) | c | 188) | d |
| 17) | a | 18) | c | 19) | c | 20) | c | 189) | c | 190) | a | 191) | c | 192) | b |
| 21) | a | 22) | c | 23) | b | 24) | c | 193) | d | 194) | d | 195) | d | 196) | b |
| 25) | c | 26) | d | 27) | c | 28) | a | 197) | a | 198) | d | 199) | d | 200) | c |
| 29) | b | 30) | c | 31) | c | 32) | b | 201) | a | 202) | a | 203) | c | 204) | d |
| 33) | b | 34) | d | 35) | b | 36) | b | 205) | a | 206) | b | 207) | a | 208) | b |
| 37) | d | 38) | b | 39) | d | 40) | b | 209) | c | 210) | c | 211) | c | 212) | b |
| 41) | d | 42) | b | 43) | a | 44) | d | 213) | b | 214) | b | 215) | d | 216) | b |
| 45) | a | 46) | c | 47) | b | 48) | a | 217) | b | 218) | a | 219) | c | 220) | c |
| 49) | a | 50) | b | 51) | c | 52) | d | 221) | a | 222) | a | 223) | b | 224) | d |
| 53) | c | 54) | d | 55) | b | 56) | d | 225) | b | 226) | c | 227) | d | 228) | c |
| 57) | a | 58) | b | 59) | d | 60) | d | 229) | b | 230) | d | 231) | b | 232) | c |
| 61) | d | 62) | c | 63) | c | 64) | c | 233) | d | 234) | c | 235) | c | 236) | c |
| 65) | b | 66) | c | 67) | c | 68) | d | 237) | c | 238) | a | 239) | d | 240) | a |
| 69) | a | 70) | c | 71) | a | 72) | b | 241) | c | 242) | b | 243) | c | 244) | a |
| 73) | a | 74) | a | 75) | a | 76) | d | 245) | b | 246) | b | 247) | d | 248) | b |
| 77) | a | 78) | d | 79) | d | 80) | b | 249) | a | 250) | a | 251) | b | 252) | b |
| 81) | c | 82) | c | 83) | c | 84) | d | 253) | d | 254) | a | 255) | b | 256) | c |
| 85) | b | 86) | a | 87) | a | 88) | c | 257) | a | 258) | b | 259) | c | 260) | c |
| 89) | d | 90) | b | 91) | a | 92) | a | 261) | b | 262) | c | 263) | b | 264) | d |
| 93) | d | 94) | a | 95) | d | 96) | b | 265) | c | 266) | b | 267) | c | 268) | a |
| 97) | c | 98) | a | 99) | a | 100) | b | 269) | a | 270) | d | 271) | a | 272) | d |
| 101) | c | 102) | c | 103) | c | 104) | b | 273) | d | 274) | d | 275) | b | 276) | c |
| 105) | b | 106) | d | 107) | b | 108) | b | 277) | d | 278) | b | 279) | b | 280) | d |
| 109) | b | 110) | a | 111) | a | 112) | b | 281) | c | 282) | b | 283) | d | 284) | b |
| 113) | a | 114) | d | 115) | d | 116) | a | 285) | c | 286) | d | 287) | b | 288) | b |
| 117) | d | 118) | b | 119) | c | 120) | a | 289) | d | 290) | b | 291) | b | 292) | b |
| 121) | c | 122) | c | 123) | b | 124) | b | 293) | d | 294) | a | 295) | b | 296) | c |
| 125) | a | 126) | b | 127) | a | 128) | d | 297) | a | 298) | d | 299) | b | 300) | d |
| 129) | d | 130) | a | 131) | b | 132) | d | 301) | c | 302) | d | 303) | a | 304) | a |
| 133) | c | 134) | c | 135) | b | 136) | c | 305) | a | 306) | b | 307) | c | 308) | b |
| 137) | c | 138) | a | 139) | c | 140) | a | 309) | b | 310) | b | 311) | a | 312) | a |
| 141) | b | 142) | c | 143) | d | 144) | a | 313) | c | 314) | c | 315) | b | 316) | d |
| 145) | b | 146) | a | 147) | c | 148) | c | 317) | d | 318) | d | 319) | c | 320) | b |
| 149) | b | 150) | c | 151) | c | 152) | d | 321) | d | 322) | b | 323) | a | 324) | b |
| 153) | b | 154) | c | 155) | c | 156) | b | 325) | d | 326) | c | 327) | a | 328) | a |
| 157) | d | 158) | b | 159) | a | 160) | d | 329) | b | 330) | c | 331) | d | 332) | d |
| 161) | d | 162) | b | 163) | a | 164) | a | 333) | c | 334) | b | 335) | d | 336) | d |
| 165) | a | 166) | b | 167) | d | 168) | b | 337) | c | 338) | c | 339) | a | 340) | c |
| 169) | d | 170) | a | 171) | b | 172) | a | 341) | b | 342) | d | 343) | c | 344) | d |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 345) | a | 346) | a | 347) | a | 348) | d | 549) | b | 550) | a | 551) | a | 552) | d |
| 349) | b | 350) | b | 351) | a | 352) | c | 553) | c | 554) | d | 555) | a | 556) | c |
| 353) | c | 354) | c | 355) | c | 356) | a | 557) | c | 558) | d | 559) | c | 560) | b |
| 357) | d | 358) | d | 359) | d | 360) | d | 561) | b | 562) | d | 563) | c | 564) | b |
| 361) | a | 362) | c | 363) | b | 364) | b | 565) | b | 566) | a | 567) | a | 568) | c |
| 365) | a | 366) | d | 367) | b | 368) | d | 569) | d | 570) | b | 571) | c | 572) | d |
| 369) | a | 370) | a | 371) | d | 372) | c | 573) | c | 574) | b | 575) | b | 576) | a |
| 373) | a | 374) | b | 375) | a | 376) | a | 577) | c | 578) | c | 579) | d | 580) | c |
| 377) | b | 378) | b | 379) | c | 380) | c | 581) | b | 582) | b | 583) | c | 584) | a |
| 381) | b | 382) | d | 383) | b | 384) | b | 585) | a | 586) | b | 587) | b | 588) | b |
| 385) | b | 386) | c | 387) | d | 388) | d | 589) | b | 590) | b | 591) | a | 592) | b |
| 389) | d | 390) | c | 391) | c | 392) | c | 593) | c | 594) | b | 595) | d | 596) | c |
| 393) | a | 394) | c | 395) | c | 396) | a | 597) | c | 598) | c | 599) | c | 600) | a |
| 397) | b | 398) | b | 399) | b | 400) | c | 601) | d | 602) | a | 603) | a | 604) | a |
| 401) | b | 402) | d | 403) | c | 404) | d | 605) | a | 606) | c | 607) | d | 608) | c |
| 405) | d | 406) | c | 407) | c | 408) | c | 609) | c | 610) | c | 611) | c | 612) | b |
| 409) | a | 410) | d | 411) | c | 412) | d | 613) | c | 614) | b | 615) | d | 616) | b |
| 413) | d | 414) | a | 415) | a | 416) | d | 617) | d | 618) | b | 619) | b | 620) | d |
| 417) | a | 418) | a | 419) | a | 420) | c | 621) | b | 622) | a | 623) | c | 624) | c |
| 421) | c | 422) | a | 423) | d | 424) | c | 625) | d | 626) | d | 627) | c | 628) | d |
| 425) | d | 426) | a | 427) | b | 428) | c | 629) | c | 630) | a | 631) | a | 632) | c |
| 429) | a | 430) | c | 431) | d | 432) | b | 633) | b | 634) | d | 635) | b | 636) | b |
| 433) | b | 434) | c | 435) | c | 436) | b | 637) | b | 638) | d | 639) | a | 640) | c |
| 437) | b | 438) | c | 439) | b | 440) | d | 641) | c | 642) | c | 643) | b | 644) | a |
| 441) | b | 442) | d | 443) | c | 444) | d | 645) | d | 646) | a | 647) | a | 648) | d |
| 445) | a | 446) | c | 447) | c | 448) | a | 649) | b | 650) | b | 651) | b | 652) | d |
| 449) | c | 450) | d | 451) | a | 452) | d | 653) | c | 654) | d | 655) | c | 656) | b |
| 453) | a | 454) | b | 455) | b | 456) | b | 657) | d | 658) | a | 659) | c | 660) | d |
| 457) | c | 458) | d | 459) | a | 460) | b | 661) | c | 662) | d | 663) | c | 664) | c |
| 461) | c | 462) | b | 463) | c | 464) | a | 665) | a | 666) | c | 667) | b | 668) | a |
| 465) | c | 466) | a | 467) | b | 468) | d | 669) | b | 670) | c | 671) | a | 672) | b |
| 469) | b | 470) | b | 471) | c | 472) | d | 673) | c | 674) | a | 675) | b | 676) | c |
| 473) | a | 474) | a | 475) | d | 476) | d | 677) | b | 678) | d | 679) | d | 680) | d |
| 477) | c | 478) | a | 479) | b | 480) | c | 681) | b | 682) | c | 683) | c | 684) | a |
| 481) | d | 482) | a | 483) | d | 484) | d | 685) | a | 686) | c | 687) | d | 688) | d |
| 485) | a | 486) | b | 487) | b | 488) | c | 689) | d | 690) | d | 691) | b | 692) | c |
| 489) | b | 490) | b | 491) | a | 492) | d | 693) | c | 694) | c | 695) | b | 696) | d |
| 493) | b | 494) | a | 495) | a | 496) | b | 697) | c | 698) | b | 699) | c | 700) | d |
| 497) | b | 498) | b | 499) | c | 500) | b | 701) | c | 702) | c | 703) | b | 704) | d |
| 501) | d | 502) | c | 503) | c | 504) | c | 705) | d | 706) | d | 707) | b | 708) | d |
| 505) | d | 506) | a | 507) | d | 508) | b | 709) | c | 710) | a | 711) | c | 712) | c |
| 509) | b | 510) | b | 511) | a | 512) | c | 713) | c | 714) | b | 715) | d | 716) | b |
| 513) | c | 514) | c | 515) | c | 516) | a | 717) | b | 718) | c | 719) | b | 720) | a |
| 517) | b | 518) | c | 519) | b | 520) | c | 721) | d | 722) | a | 723) | a | 724) | d |
| 521) | a | 522) | b | 523) | d | 524) | c | 725) | d | 726) | d | 727) | a | 728) | a |
| 525) | b | 526) | b | 527) | c | 528) | b | 729) | d | 730) | b | 731) | c | 732) | b |
| 529) | a | 530) | c | 531) | c | 532) | b | 733) | d | 734) | d | 735) | a | 736) | c |
| 533) | d | 534) | b | 535) | c | 536) | a | 737) | b | 738) | a | 739) | c | 740) | c |
| 537) | a | 538) | a | 539) | c | 540) | b | 741) | c | 742) | d | 743) | b | 744) | a |
| 541) | c | 542) | d | 543) | c | 544) | c | 745) | a | 746) | a | 747) | d | 748) | b |
| 545) | a | 546) | b | 547) | d | 548) | b | 749) | d | 750) | b | 751) | a | 752) | c |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **753)** | **d** | **754)** | **d** | **755)** | **a** | **756)** | **c** |
| **757)** | **a** | **758)** | **d** | **759)** | **d** | **760)** | **a** |
| **761)** | **b** | **762)** | **c** | **763)** | **c** | **764)** | **a** |
| **765)** | **d** | **766)** | **a** | **767)** | **b** | | |

# ANIMAL KINGDOM

**BIOLOGY**

## : HINTS AND SOLUTIONS :

1 **(d)**
Annelids have true coelom, metameric segmentation and closed circulation.

2 **(a)**
A transverse section of *Pheretima* taken through the 10th segment shows the following structures - stomach, dorsal blood vessel, ventral blood vessel supraoesophageal vessel, anterior loops, ring vessel and micronephridia.

3 **(d)**
*Sycon* belongs to phylum-Porifera. The porifers are most primitive group of multicellular animals. They have no tissue grade of organization and represent cell aggregated body plan, hence, included in the sub-kingdom-Parazoa.

4 **(a)**
*Salamandra* (salamander) is a member of class-Amphibia. A tympanum represents the ear.

5 **(d)**
In frog's heart, a number of muscular ridges called columnae carne projected from the wall of ventricle into its cavity, dividing the peripheral part of the cavity into a number of pockets. It prevent suction that would occur with a flat surfaced membrane and thus impairs the heart's ability to pump efficiently.

6 **(c)**
Annelids do not possess pseudocoelom but true coelom.

7 **(a)**
Flatworms (phylum-Platyhelminthes) are triploblastic animals with organs. The cells of the body wall are arranged in three germ layers. Sponges, ctenophores and corals are diploblastic animals.

8 **(d)**
Organ system level of organisation is seen in chordates, annelids and mollusk. *i.e.*, in all phyla from Platyhelminthes on wards

9 **(b)**
Sea fan (*Gorgonia*) belongs to phylum-Coelenterata, whereas sea cucumber (*Cucumaria*), sea urchin (*Echinus*) and sea lily (*Antedon*) belong to phylum-Echinodermata.

10 **(b)**
The king cobra (*Ophiophagus hannah*) is the world's longest venomous snake, which can be measured upto 6.7 metres or 22 feets in length. King cobra is a snake eater and its diet probably consists of other snakes like pythons and even smaller ones of its species.

11 **(a)**
Book lungs are the respiratory organs of scorpions and spiders.

12 **(a)**
The important transverse vessels in first 13 segments are lateral hearts (segments 7 and 9), anterior loops (segments 10 and 11) and lateral oesophageal hearts (setgments 12 and 15).

13 **(c)**
Sea anemone (*Metridium*) belongs to class-Anthozoa of phylum-**Coelenterata**. It inhabiting warm coastal Wales along the North Atlantic and Pacific coasts.

14 **(d)**
**Trochophore** is ciliated larval stage of polychaetes (*eg, Neries*), molluscs and rotifers. *Neopilina*, *Chiton* and *Pila* belong to phylum-Mollusca.

15 **(d)**
It represent the dorsal blood vessel of earthworm. It is the largest blood vessel. Behind the 13th segment, it is collecting vessel and between 1- 3, it is distributing vessel.

16 **(d)**
Hydroskeleton is found in and Annelids, echinoderms and other invertebrate for respiration

17 **(a)**
Aschelminthes are dioecious with separate sexes and females are usually longer than males

18 **(c)**
Development may be direct or with larval stages called glochidium or veliger

19 **(c)**
Presence of seven cervical vertebrae is characteristic feature of mammals only.

20 **(c)**
Crossopterygian are called lobed fined fishes. *Neoceratodus* (order-Dipnoi) is a crossopterygian fish. It is found in Burnett and Mary rivers of Queen's land, Australia

21 **(a)**
In *Pheretima posthuma* (earthworm), septae are absent between 3/4 and 9/10 segments.

22 **(c)**
Oviducts of frog are independently developed by **Mullerian ducts**.

23 **(b)**
Drones are the male honey bees, developed parthenogenetically and have a life span of about five weeks (or 1-2 months).

24 **(c)**
Metatherians are pouched mammals. The complete development of embryo takes place in abdominal pouch or marsupium.

25 **(c)**
A clasper is a male anatomical structure found in some groups of animals, and used in mating. Male cartilaginous fish like shark have claspers formed from the posterior portion of their pelvic fin which serves as intromittent organs used to channel semen into the female's cloaca during mating.

26 **(d)**
Platyhelminthes (*e.g., Planaria,* liver fluke and tapeworm) possess the simplest tubular excretory system called **protonephridia** flame cells or solenocytis. Excretory material is ammonia in aquatic flatworms.

27 **(c)**
Ommatidium is the basic unit of arthropod compound eye. It comprises a cornea lens, crystalline cone, a group of usually 7-8 retinal cells radially arranged around a central rhabdome. Ommatidia serve the purpose of photoreception.

28 **(a)**
In the blood of *Periplaneta*, there is no respiratory pigment because air is conducted directly to the body tissues.

29 **(b)**
*Wuchereria bancrofti* (the filarial worm) belongs to phylum-Nemathelminthes.

30 **(c)**
The given cross-section is of *Planaria* (acoelomate), a flatworm. Flatworms are devoid of cavities in between the alimentary canal and body wall, hence are acoelomate.

31 **(c)**
Typhlosolar region in earthworm is from 27 segments onwards and continue upto last 23-25 segments in front of anus. Typhlosole increases the absorptive surface area.

32 **(b)**
When the coelom arises as a result of a split in the mesoderm sheet, it is called schizocoel. In enterocoel, the coelom arises as an outgrowth of the enteron. The pouches pinch off and enlarge until they squeeze out off the blastocoel. Schizocoel is seen in Annelida, Arthropoda, Mollusca and Chordates. Echinodermata are entercoelomates

33 **(b)**
The middle ear of frog consists of only a single rod shaped bone called **columella auris** which extend across the tympanic chamber from tympanic membrane to fenestra ovalis. Columella auris is also present in reptiles and birds. It transmits sound to the inner ear and homologous to the mammalian stapes.

34 **(d)**
Most of the species of true toad belongs to genus *Bufa*.

35 **(b)**
The oxygenated blood from two lungs is collected by right and left pulmonary venis, which unite to from a common pulmonary vein (pulmocutaneous vein) which open directly into the left auricle on the dorsal side.

36 **(b)**
Ventral nerve cord is common to leech (Annelida), cockroach and scorpion (Arthropoda).

37 **(d)**
**Archaeocytes** are the totipotent cells, which provide great regenerating power to sponges. Sex cells (sperm and ova) arise from undifferentiated archaeocytes.

38 **(b)**
*Necturus* is also known as mud puppy and belongs to sub-class-Urodela

39 **(d)**
Metamorphosis is a charge from juvenile to adult stage in which larval stage is quite different from adult stage. In retrogressive metamorphosis, the larva possesess advanced characters which are lost during the development and adult is either sedentary or degenerated with primitive

characters. All urochordates display retrogressive metamorphosis

40 **(b)**
Aves have two additional chambers to the alimentary canal: the crop and the gizzard. Birds eat tiny pebbles that lodge in the gizzard and help the muscular gizzard in crushing food. Birds have 12 pairs of cranial nerves

41 **(d)**
In **biradial** symmetry, the body can be divided into two similar halves by one or two vertical planes only, *e.g.,* sea anemones. The animals, which show radial and biradial symmetry have oral and aboral sides.

42 **(b)**
The house fly is characterized by one pair of wings, **sponging** and lapping types of mouth parts and short antennae.

43 **(a)**
Zoological name of common Indian krait is *Bungarus caeruleus*. Kraits are highly poisonous snake.

44 **(d)**
*Fasciola hepatica* (Sheep lever fluke) belongs to phylum-Platyhelminthes. These worms have incomplete alimentary canal, there is a single opening for both digestion and egestion. This is also called as blind sac body plan.

45 **(a)**
*Lophomonas* is the cellulose digesting zooflagellate found in wood cockroach.

46 **(c)**
Spiracles are 10 in number, out of these 2 pairs are found in thoracic portion, while rest 8 pairs are found in abdominal portion.

47 **(b)**
Phylum-Mollusca lack Malpighian tubules, instead have feather like gills in the mantle cavity that are useful for respiration and excretion

48 **(a)**
Down feathers are found only in newly hatched birds, its the first feathery covering on the body which provide insulation to new hatched ones

49 **(a)**
Abdomen of adult consists of 10 segments, while embryo has 11 segments.

50 **(b)**
Class-Cyclostomata includes round mouthed fish like lampreys (*Petromyzon*) and hags (*Myxine*)

51 **(c)**
In mammals the teeth are heterodont (*i.e.,* consists of incisors, canines, premolar and molars) thecodont (in sockets of jaw bones). The brain has 12 pair of cranial nerves.

52 **(d)**
Most members of phylum-Platyhelminthes are endoparasites characterised by the presence of hooks and suckers for attachment inside the host

53 **(c)**
The submaxillary and submandibular glands of rabbit are the largest salivary glands. They are found near the angles of mandible. Their large duct that is **Wharton's duct** open just behind the lower incisors.

54 **(d)**
*Petromyzon* belongs to class-Cyclostomata. Cyclostomata are aquatic, marine or freshwater vertebrates.

55 **(b)**
*Ctenoplana* belongs to phylum-Ctenophora. Reproduction in all the animals belonging to phylum-Ctenophora takes place by sexual reproduction only

57 **(a)**
Maxillae are appendages of 5$^{th}$ head segment and known as first pair of maxillae. The first maxillae of cockroach has biramous structure, with protopodite containing cardo as its basal portion alongwith **stipes** articulated at 90°. Stipes bear a five jointed expedite or maxillary palp towards outside (its basal podomer called **palpifer**) and endopodite towards inside, with two closely placed podomeres celled **galea** and **lacinia.**

58 **(b)**
*Ornithorhynchus anatinus* (Duck-billed platypus) is a monotreme mammal, which belongs to sub-class-Prototheria (primitive egg laying mammals), order-Monotremata (living prototherians).

59 **(d)**
Echinoderms are characterized by the presence of a well developed water vascular system (a system of water filled canals) which provides *Hydra*ulic power for thousands of tube feet which are sac like protrusions of body wall used for locomotion, feeding and respiration.

60 **(d)**
All the snakes mentioned are poisonous snakes

61 **(d)**
*Chamaeleon* belongs to sub-order-Zacertilia includes lizards of order-Squamata. Syndactyly (a condition where two or more digits are fused together); prehensile tail and long protrusible

tongue are the unique features of *Chamaeleon*.

62 **(c)**
*Ichthyophis* is a limbless **amphibian** of 15-22 cm length that lives in burrows in moist soil.

63 **(c)**
**Beak** or bill of birds is formed due to prolonged growth in jaw bones. Beak of birds never bears teeths, rest three options may become exception in birds.

65 **(b)**
Diencephalon (thalamencephalon) is small and narrow. Its roof consists of anterior choroid plexus and floor consists of hypothalamus. Pineal body is present dorsally and pituitary ventrally upon infundibulum. Its cavity is diocoel or **third ventricle**.

66 **(c)**
Pseudocoelom is the body cavity of Aschelminthes.

67 **(c)**
Ammocoetes is a filter feeding larval stage in animals belonging to class-Cyclostomata

68 **(d)**
The respiratory system of cockroach consists of tracheae, tracheoles and spiracles. In cockroach, 10 pairs of spiracles are present on the lateral side of the body. Two pairs are in thoracic region and remaining eight pairs are in the abdominal region.

69 **(a)**
In each of the segments, 7, 9, 12 and 13 of earthworm, a pair of large, thick, rhythmically contractile vertical vessels celled hearts are present, *i.e.,* four pairs of hearts are present.

70 **(c)**
*Pheretima* is earthworm, *Tubifex* is blood worm both belong to Class-Oligochaeta. *Nereis* belongs to class-Polychaeta

71 **(a)**
*Pluteus* is a larval form of Echinodermata.

72 **(b)**
In *Leucosolenia*, **archaeocytes** give rise to the sex cells (ova and sperms) and play an important role in regeneration.

73 **(a)**

| **Nitrogenous Waste** | **- Example** |
|---|---|
| Ammonia | – *Hydra* |
| Urea | – Mammals like rabbit |
| Uric acid | – Reptiles and insects |

74 **(a)**
Nematoblasts or cnidoblasts are specialized and modified interstitial cells, which are found in coelenterates, *e.g., Hydra*.

75 **(a)**
Moth is an insect.

76 **(d)**
Phylum-Annelida is so named because the animals belonging to this phylum has the body which/has is marked into distinct segments or metameres

77 **(a)**
The moulting hormone of the prothoracic glands, named ecdyson, was isolated in a crystalline form in 1954 by Butenandt and Karlson. Ecdyson is a steroid hormone, known to trigger moulting it acts on the tissue to promote all the changes characterizing a moult.

78 **(d)**
The feeding organ in phylum-Mollusca is a radula, it is a file like rasping organ. Undulating membranes and suctorial organs are present in ciliated protozoans

79 **(d)**
Coelom allow the internal organ to grow. It separates the gut from body wall muscles

80 **(b)**
Body of *Ascaris* is elongate, cylindrical gradually tapering at both ends. There is no metameric segmentation. In *Ascaris*, between body wall and visceral organs is a spacious fluid filled cavity. This cavity is not true coleom as it is not lined by coelomic epithelium, has no relations with reproductive and excretory organs and develops from blastocoel.

81 **(c)**
Phylum-Platyhelminthes have an incomplete alimentary canal, but the alimentary canal is complete in phylum-Aschelminthes with a mouth and anus. This is the first phylum with a complete alimentary canal

82 **(c)**
Exoskeleton of arthropods has chitinous cuticle that sheds at intervels called ecdysis for growth and development.

84 **(d)**
Phylum-Platyhelminthes (flatworms) are the only forms, with triploblastic, unsegmented, acoelomate and bilateral symmetry. They reproduce both sexually and asexually and also have some parasitic forms, *e.g., Fasciola, Taenia*, etc.

85 **(b)**

Beavers or castor fibre have well developed echolocation system like that of bats.

86 **(a)**
**Coelenterata** (coelom + enteron) or phylum-Cnidaria shows both sexual and asexual reproduction. The larval stages are **planula** (*Obelia*) and **ephyra** (*Aurelia*).

87 **(a)**
Parrot (birds), platypus and kangaroo (both mammals) are homeothermic animals.

88 **(c)**
In bilateral symmetry the animal body can be divided into identical left and right halves, in only one plane

89 **(d)**
**Earthworm** respires through general body surface and has no **respiratory organs.**

90 **(b)**
Vermicompost is highly degraded organic matter rich in $N_2$ and K resulting from activity of earthworm. **Humus** is the decomposed plant material of the soil. A horizon contains high amount of humus.

91 **(a)**
*Wuchereria* - Lymphangitis
*Plasmodium* - Febrile paroxysm
*Fasciola* - Hyperplasia

92 **(a)**
For a long time cnidarians and ctenophores were grouped together in the phylum-Coelenterata because these are similar in general appearance, but now, Ctenophora became a new phylum.

93 **(d)**
The characteristic feature of Echinodermata is the presence of water vascular system, which helps in the process of locomotion. It is a modified part of coelom and consists of madreporite, stone canal, ring canal, radial canal, Tiedeman's bodies, lateral canals and tube-feet.

94 **(a)**
In **nematodes**, syncytial epidermis and longitudinal muscles are in four bands.

95 **(d)**
Phylum-Chordata is divided into three sub-phyla-Urochordata, Cephalochordata and Vertebrata. Urochordata is also called as Tunicata. Urochordata and Cephalochordata are also called as Protochordata

96 **(b)**
A-Thread tube; B-contractile fibril; C-Lasso.
The figure is representing the various component of Cnidoblast or cnidocyte, found in animals of phylum-Coelenterata, Cnidocytes/Cnidoblasts contains stinging capsule, which releases the toxin, thus used in the defense mechanism, by the animals belonging to phylum coelenterate

97 **(c)**
Platyhelminthes are bilaterally symmetrical organisms with organ level body organisation

98 **(a)**
An arthropod body consists of head, thorax and abdomen, but in some cases head and thorax may be fused to form cephalothorax. Class-Insecta have body divided into head, thorax and abdomen.

99 **(a)**
The mouth parts of male mosquitoes are of 'sucking type', while those of female mosquitoes are of piercing and sucking type (of pierce the skin and suck the blood for feeding).

100 **(b)**
Horse, donkey, rhinoceros, zebra, etc are the members of order-Perissodactyla which includes hoofed mammals with unguligrade foot porture and hoof is formed of uneven number of toes (*i.e.,* odd toed ungulates), while camel, llama, cheetal, etc., are the members of order-Artiodactyla which includes the even toed ungulates.

101 **(c)**
**Green gland** or antennary glands are located in the coxa of antenna in prawn.

102 **(c)**
**Tergum** is found on the abdomen of cockroach.

103 **(c)**
Cuckoo does not make a nest of its own and lays eggs in the nest of crow to be hatched and the young to be read. Crows, parrots and sparrow, make their own nest.

104 **(b)**
Amphibians have opisthonephric kidney. *Lepus* is the generic name for hare, it is a solitary animal

105 **(b)**
*Fasciola hepatica* infects its intermediate host at miracidum stage and its primary host at metacercaria stage.

106 **(d)**
*Exocoetus* possesses aglomerular kidney.

107 **(b)**
*Aedes albopictus* is the scientific name of Asian tiger mosquito.

108 **(b)**

In **bilaterally** symmetrical animals, the response to external stimulus is quicker and more precise.

109 **(b)**
Tentaclest are present only in animals belonging to class-Tentaculata, while comb plates are unique features of phylum-Ctenophora

110 **(a)**
Three types of body cavity are true coelom, pseudocoelom and haemocoel. In phylum-Arthropoda and Mollusca a haemocoel is seen, the true coelom is reduced and blood fills the spaces between the viscera

111 **(a)**
Prawn (*Palaemon*) belongs to class-Crustacean of phylum-Arthropoda. *Hydra* and sea anemone are coelenterates snail belongs to class-Gastropoda of phylum-Mollusca.

112 **(b)**
Due to protandry, self-fertilization does not occur in earthworm. In that case, earthworm testis mature earlier than ovaries which lead to cross fertilization between two worms.

113 **(a)**
Pearl is obtained from pearl oyster (*Pinctada vulgaris*), while honey from *Apis indica*, lac from *Kenia lacca* and silk from *Bombyx mori*.

114 **(d)**
In rabbit four salivary glands are present, which are:
1.Sublingual

2.Infra orbital

3.Parotid

4.Sub maxillary

115 **(d)**
In *Scoliodon* (dog fish), a faint lateral line runs along either lateral side of trunk and tail and over the head region. It contains special receptor organ.

116 **(a)**
Dental formula of rabbit is $\frac{2033}{1023} \times 2 = 28$

117 **(d)**
Amphids in *Ascaris* are gustatory sensory or **chemoreceptors**, *i.e.,* these excited by chemical changes.

118 **(b)**
All the poisonous snakes have poison apparatus in their head. Two maxillary teeth are enlarged, grooved or tubular.

119 **(c)**
When living organisms emit light this property is called bioluminescence. This is usually seen in animals belonging to phylum-Ctenophores. *Ctenoplana* belongs to phylum-Ctenophores. Phylum-Coelenterata and Cnidaria do not exhibit bioluminescence

120 **(a)**
Bee wax is a real product of honey bee as it is secreted by hypodermal glands of worker bees. It is used in polishes, churches, modelling and to wax the thread.

121 **(c)**
*Loligo, Teredo* and *Octopus* are the members of phylum-**Mollusca**.

122 **(c)**
Rhabditiform is the larva of *Ascaris*. It is also called first juvenile stage.

123 **(b)**
Poikilothermic animals are also known as ectothermic animals. Shark are oviparous, animals as they give birth to young ones by laying eggs coxal glands are the excretory organ of members belonging to class-Arachnids the copper containing in respiratory pigment called haempcyanin is present in phylum-Mollusca and Arthropoda but the structure of haemocyanin in these two phylum different and *Pila* belongs to class in- Mollusca

124 **(b)**
Skin in **amphibians** is naked, *i.e.,* scales are absent. Glands are present, which keeps it moist. It functions in respiration besides protection. Birds (Aves) are **warm blooded** or **homiothermic** or **endothermal** tetrapods as the temperature of the body remain constant as compared to that of surrounding. While, amphibians and reptiles are **cold blooded or poikilothermal** or **ectothermal** tetrapods as the temperature of the body varies according to the surrounding.

125 **(a)**
Nematoblasts (cnidoblasts) are sensory in nature and acts as a organ for offence and defence.

126 **(b)**
Male *Ascaris* is monodelphic (*i.e.,* single testis) and female *Ascaris* is didelphic (*i.e.,* has two ovaries).

127 **(a)**
In *Scoliodon* or dog fish, there are present some pores, the ampullary pores on the upper and

lower surface of the head, each of which leads into an ampulla (pl. ampullae) called ampulla of Lorenzini. Through these, the fish receives information of the temperature fluctuations in the surrounding water.

128 **(d)**
*Hydra vulgaris* is more or less colourless.

129 **(d)**
In seaconally breeding mammals, the testis descend in scrotum only in breeding season. They remain in the abdomen at other time, *e.g.,* bat and otter.

130 **(a)**
Correct sequence in embryonic development of frog is
Zygote – cleavage – blastula - gastrula.

131 **(b)**
Larva of *Sycon* is **amphiblastula**, which has flagella only at one pole.

132 **(d)**
Sea horse (*Hippocampus guttalatus*) is the most peculiar bony fish, which belongs to class-Osteichthyes of group-Agnatha or Pisces.

133 **(c)**
Sponges are filter feeders, also known as suspension feeders. Food particles strained out of the water current

134 **(c)**
Anecic worms may go very deep into soil upto 60-90 cm and form vertical and complicated burrows for their movement, *e.g., Lumbricus terrestris, Aporrectodea lenga*.

135 **(b)**
*Limulus* or king crab is also called a living fossil

136 **(c)**
Reptilians, birds and mammals are amniotes. Amphibians like salamander and *Necturus* (the mud puppy) are not amniotes. *Angius* is the glass snake (Reptilia), *Eudynamis* is the cuckoo or koel (Aves) and *Pteropus* the large bat or flying fox is a mammal are all amniotes. All amniotes have special embryonic membranes (amnion, chorion, allantois, yolk sac) that surround the embryo during development

137 **(c)**
Chordates possess dorsal, hollow, fluid-filled nerve cord. It is formed by infolding of a mid-dorsal strip of ectoderm and it generally sinks below surface. It lies above the notochord and outside the coelom, it has a hollow canal running from one end to the other. This dorsal tubular nerve cord persists throughout life in most chordates but few degenerates it before maturity. It serves for the integration and coordination of body activities.

138 **(a)**
A gastrovascular cavity is found in Coelenterates called coelenteron.

139 **(c)**
Lampreys and *Myxine* (hag fish) belong to the class-Cyclostomata, group-Agnatha of vertebrata. Agnatha have mouth without jaws, the mouth is ventral, suctorial and circular.

140 **(a)**
Kangaroo rat is a desert rodent. It's body is covered by hairs. Its urine is more than 20 times concentrated as its plasma. This concentrated waste enables it to live in dry or desert environment, where little water is available to drink. Most of its water is metabolically produced from the oxidation of carbohydrates, fats and proteins in the seeds that it eat. The animal remains in cool burrow during day time and the respiratory moisture condensed in nasal passages.

141 **(b)**
Three types of nephridia are found in earthworm according to their location, namely the septal nephridia, pharyngeal nephridia and integumentary nephridia.

142 **(c)**
Platyhelminthes exhibits organ level of organisation. Aschelminthes are pseudocoelomates

143 **(d)**

| Order | Example |
|---|---|
| Lepidoptera | *Butterfly* |
| Hemiptera | *Cimex* (bed bug) |
| Homoptera | *Aphis* (aphid) |

144 **(a)**
The colony of *Physalia* is a massive type colony, containing many zooids. Among the zooids, a large cup-shaped float is seen, which is bright blue in colour and remains above the sea water normally. On the undersurface of float many gastrozooids, gonozooids and dactylozooids are present. The colony, thus, shows a very high degree of polymorphism (*i.e.,* existence of two distinctly different forms in a species).

145 **(b)**
In tortoise (*Testudo*), class-Reptilia, phylum-

Chordata, both exoskeleton and endoskeleton are found.

146 **(a)**
In sponges, **choanocytes** are also known as collar cells.

147 **(c)**
*Fasciola* or liverfluke, *Planaria* and *Taenia* or tapeworm are examples of animal that belonging to phylum-Platyhelminthes. *Wuchereria* of filiarial worm is an example of phylum-Aschelminthes

148 **(c)**
True segmentation is also called metamerism

149 **(b)**
Crab, centipede and cockroach belongs to phylum-Arthropoda. These have jointed appendages and chitinous exoskeleton.

150 **(c)**
Reptiles like snake, lizard have three and half chambered heart but exceptionally crocodile have four chambered heart.

151 **(c)**
Typhlosolar region is a part of intestine, which runs from 27$^{th}$ segment upto 24 to 25 segments in front of the anus. In this part, the mid-dorsal wall of intestine is thrown into longitudinal fold called **typhlosole**, which increases the absorptive surface of the intestine.

152 **(d)**
The bee humming bird is only 57 mm long. It is the smallest known bird

153 **(b)**
Bidder's canal lies inside the kidney of male frog. Sperm from testes are carried into the Bidder's canal.

154 **(c)**
In human larynx contains vocal cords, the sound producing elastic fibres called voice box. The sound producing organ in birds is syrinx.

155 **(c)**
Nidology is the study of bird nests

156 **(b)**
The 10$^{th}$ tergum of cockroach bears a pair of long tapering **anal cerci**. Each anal cercus is made of 15 segments.

157 **(d)**
In flies and mosquito, metathorax bears a pair of small drumstick shaped or club-shaped processes called **halteres** or balancers.

158 **(b)**
Phylum-Mollusca is the second largest phylum of animals. These are mostly aqutic, triploblastic, coelomate animals with organ system level of organisation.

159 **(a)**
Tube feet are the soft, hollow, extensile and retractile appendages of echinoderms.

160 **(d)**
Earthworm is hermaphrodite. Four pairs spermathecae are located in 6$^{th}$ to 9$^{th}$ segments (one pair in each segment). There are two pairs of testes present in 10$^{th}$ and 11$^{th}$ segment. One pair of ovaries is attached at the inter-segmental septum of the 12$^{th}$ and 13$^{th}$ segments. Two pairs of accessory glands are present one pair each in 17$^{th}$ and 19$^{th}$ segments and a pair of prostate glands in between 17$^{th}$ and 19$^{th}$ segments.

161 **(d)**
Solenocytes or flame cells are the excretory organs of phylum-Platyhelminthes.

163 **(a)**
*Echidna* belongs to Prototheria group of class-Mammalia. It is oviparous and only female incubates the eggs. Young laps the milk from mammary gland.

164 **(a)**
Ootheca of cockroach contains 16 fertilized eggs. Nymph of cockroach emerge out from ootheca.

165 **(a)**
Echinodermata exhibits organ system level of organisation and radial symmetry. Arthropoda exhibits complete digestive system. Notochord in present on the dorsal side in vertebrates

166 **(b)**
Nephridia are part of the excretory and osmoregulatory system. Organs of bursa are copulatory organs present in male hookworms. Spicules are present in animals belonging to phylum-Porifera. Longitudinal and circular muscles are useful in locomotion in animals of the phylum-Annelida

167 **(d)**
Canal system of *Leucosolenia* is of **ascon** type. It is the simplest type canal system found in sponges, in this ostia, **spongocoel** and osculum together form canal system.

168 **(b)**
The zoological name of North Indian hare is *Lipus ruficaudatus.*

169 **(d)**
The sponges possess an endoskeleton in the form of calcareous spicules, siliceous spicules and sponging fibres.

170 **(a)**
Archaeocytes are undifferentiated embryonic amoebocytes of sponges with blunt pseudopodia and large nucleus. These show totipotency and it can produce other types of cells needed by sponges.

171 **(b)**
Air bladder is present in bony fishes, *e.g., Anabas*, which is respiratory balancing and sound producing organ.

172 **(a)**
Cow and buffalo are secondary hosts for *Taenia saginata*.

173 **(d)**
Bat produces high frequency sounds in echolocation.

174 **(b)**
In earthworm as well as cockroach, a ventral nerve cord extends back along the midventral axis from the sub-pharyngeal ganglion.

175 **(c)**
Secondary radial symmetry is found in phylum-Echinodermata. The members of this phylum are exclusively marine forms, in which the larvae are bilaterally symmetrical but later on, the symmetry of adults usually becomes pentamerous radial.

176 **(a)**
Metamerism or true segmentation is seen when the body is externally and internally divided into segments

177 **(a)**
In cockroach, there are 6 abdominal ganglia. These are found in first 7 abdominal segments 1, 2, 3, 4, 6 and 7. There is no abdominal ganglia in 5$^{th}$ segment.

178 **(b)**
Siphonophora is an order of hydrozoa, a class of marine invertebrates belonging to phylum-Cnidaria.

179 **(d)**
Amphibians are characterised by three-chambered heart they are cold-blooded animals and their skin is moist and generally lack scales

180 **(b)**
Excretory organs of cockroach are **Malpighian tubules**, which open into the alimentary canal at the junction of midgut and hindgut. Free ends of these tubules are closed.

181 **(c)**
In cockroach, mandibles are a pair of hard, strong, large, dark coloured triangular structures which move in horizontal motion and crush food between them. Gizzard or proventriculus has an outer layer of thick circular muscles and thick inner cuticle forming six highly chitinous plate called teeth. The gizzard acts as the grinding chamber and helps in grinding the food particles.

182 **(b)**
Balanoglossus conecting link betweenchordata and non-chordata.
*Peripatus* is a connecting link between Annelida and Arthroposa.

183 **(b)**
Canal system is found in sponges, which belongs to phylum-Porifera.

184 **(d)**
Spider belongs to Arachnida.

185 **(a)**
**Echinoderms** are exclusively marine and largely bottom dwellers, enterocoelous coelomate, triploblastic animals.

186 **(a)**
*Hydra* is exclusively carnivorous and obtained its food as a predator.

187 **(c)**
Animals belonging to sub-Phylum-Urochordata are *Ascidia, Salpa* and *Doliolum*

188 **(d)**
Generally, cross-fertilization takes place in liver fluke (*Fasciola hepatica*), rarely self-fertilization takes place. Fertilization is internal in liver fluke.

189 **(c)**
Certain animals like the *Chamaeleon* are able to change colour, this is known as metachrosis

191 **(c)**
Buccal cavity – 1$^{st}$ to 3$^{rd}$ segment
Stomach – 9$^{th}$ to 14$^{th}$ segment
Typhlosole – 26$^{th}$ to 95$^{th}$ segment
Testis – 10$^{th}$ to segment
Gizzard - 8$^{th}$ segment

192 **(b)**

| Animal | Characteristic | Taxon |
|---|---|---|
| Duck-billed platypus | Oviparous | Mammalian |
| Millipede | Oviparous | Arthropoda |
| Silver fish | Three long terminal cerci | Arthropoda |
| Sea anemone | Diploblastic | Cnidaria |

193 **(d)**
Animals of class-Gastropoda undergo twisting or torsion of the visceral mass during development,

leads to a symmetrical embryo becoming an asymmetrical adult

194 **(d)**
Ureotelic animals include man and all other mammals and aquatic mammals like whales. So, whale is ureotelic not ammonotelic.

195 **(d)**
A sexual reproduction in *Sycon* (*Scypha*) is accomplished by **budding**.

196 **(b)**
In bilaterally symmetrical animals, the response to external stimulus is quicker and more precise

197 **(a)**
Archaeornithes is a sub-class of Aves and includes ancient extict birds. Archaeopteryx lithographica was a lizard bird that belongs to this sub-class

198 **(d)**
Chondrichthyes lacks swim bladders, that help them to maintain bouyancy hence must swim constantly to avoid sinking. Chondrichthyes are ureotelic animals. Both statements (a) and (b) are false for Chondrichthyes

199 **(d)**
Poriferans are called pore bearing animals. Mostly they are marine and very few are freshwater. The freshwater sponge is *Spongilla*.

200 **(c)**
V –spot in microfilaria of *Wuchereria* represents rudiment excretory system. Adult *Wuchereria* lives in the human lymph vessels and lymph glands. It causes the disease elephantiasis or filariasis.

201 **(a)**
Spider is the animal that have 19 body segments, 6 pairs of appendages and respires through trachea and book lungs.

202 **(a)**
In the heart of rabbit, the left auriculo-ventricular valve consists of two flaps and is termed as bicuspid or mitral valve. It is attached to the papillary muscles **chordae tendinae**.

203 **(c)**
Polyp and medusa are the two basic body forms present in Cnidarians

204 **(d)**
**Plantulae** are adhesive pads (soft pads), which are located at each of the tarsus in the legs of cockroach.

205 **(a)**
*Hydra* has great power of regeneration. Just below the tentacles there is a growth zone where interstitial cells give rise to all other cells of the body. One characteristic feature of regenerating piece in *Hydra* is that it retains polarity. End nearer to mouth develops mouth and tentacles, while the end nearer to base forms a new pedal disc.

206 **(b)**
All statements are false
The correct statement are
(i) In higher phyla organ and organ system level of organisation is seen
(ii) Phylum-Platyhelminthes have organ level of body organisation
(iii) Cellular level of organisation is seen when the cells are arranged as loose cell aggregates
(iv) Molluscs exhibit organ level of body organisation

207 **(a)**
Solenocytes and nephridia are found in Platyhelminthes and annelids respectively. They are excretory in function.

208 **(b)**
The correct order of classification of *Rana tigrina* is :

| | |
|---|---|
| Phylum | – Chordata |
| Group | – Craniata |
| Division | – Gnathostomata |
| Class | – Amphibia |
| Order | – Anura |
| Genus | – *Rana* |
| Species | – *tigrina* |

209 **(c)**
**Blind sac** body plan is exhibited by some eumetazoans like cnidarians (*e.g., Hydra*) and flateworms (*e.g., Fasciola*) in which, the body of animal has a single opening which acts as both mouth and anus.

210 **(c)**
Super-class-Aves is divided into sub-classes *Archaeornithes* and *Neornithes*

211 **(c)**
Phylum-Coelenterata or Cnidaria are divided into class-Scyphozoa, Anthozoa and Hydrozoa. Actinozoa is another name for class-Anthozoa. Class-Desmospongia belongs to phylum-Porifera

212 **(b)**
Star fish (*Asterias*) belongs to class-Asteroidea, sub-phylum-Eleutherozoa, phylum - Echinodermata.

213 **(b)**
*Pinctada* sp are the bivalve mollusks, commonly

known as pearl oysters. These belong to sub-class-Zamellibranchia, class-Bivalvia or pelycipoda, phylum-Mollusca and kingdom-Animalia.

214 **(b)**
Sugarcane leaf hopper, *Pyrilla perpusilla*, is a serious pest of sugarcane. Both nymphs and adults suck the cell sap of succulent leaves of sugarcane by their rostrum.

215 **(d)**
Blood vascular system in earthworm (*Pheretima posthuma*) is closed type (*i.e.,* blood flows in definite blood vessels). The blood is red in colour due to presence of haemoglobin or erythrocruorin dissolved in plasma.

216 **(b)**
*Aurelia* (jelly fish) belongs to class-Scyphozoa, in which medusoid phase is dominant and polypoid phase is absent.

217 **(b)**
Platyhelminthes are also called flatworms, as they are dorso-ventrally flattened

218 **(a)**
Cilia of gills of bivalve molluscs help in feeding.

219 **(c)**
In rabbit, allantois comes in contact with chorion and their mesodermal layers fuse together and becomes highly vascular. Thus, a compound layer is formed called **allanto-chorion** or **chorio-allantoic**. Its chorionic villi invade the maternal uterine wall (endometrium) forming an allantoic placenta for absorbing nutrients.

220 **(c)**
Ovoviviparous are heavily yolked eggs that develop in the reproductive tract of the mother, without deriving nourishment from her producing egg that are hatched within the body

221 **(a)**
Boring sponges, such as *Cliona*, attach themselves to shells of oysters, clams, branches, etc.

222 **(a)**
Arthropods are the most successful group of animals. Their success is due to unique chitinous cuticle. Exoskeleton is light weight, tough and composed of structural polysaccharide chitin. Exoskeletal is made up of chitin and strengthened with proteins and calcium carbonate occurs on the outside. It usually occurs in the forms of plate called sclerites.

223 **(b)**
Nephridia of earthworm performs same function (excretion) as the flame cells in *Planaria*.

224 **(d)**
Phylum-Arthropoda is the first largest phylum. Phylum-Mollusca is the second largest phylum

225 **(b)**
If a living *Hydra* is cut into two, three or more very small pieces, every piece develops into a new individual.

226 **(c)**
The centrum of 8$^{th}$ vertebrae of frog is amphicoelous, *i.e.,* concave at both ends. Its transverse processes are somewhat narrower, pointed and directed straight outwards. The neural spine is somewhat flattened and directed upwards.

227 **(d)**
Solenocytes or flame cells are the excretory organs of phylum-Platyhelminthes

228 **(c)**
Food storage in *Leucosolenia* occurs by **thesocytes**. Thesocytes with rounded pseudopodia are food laden amoebocytes.

229 **(b)**
*Ascaris* sperm is without flagellum, tail less, asymmetric and amoeboidal.

230 **(d)**
Female *Anopheles* feeds on blood of man and large animals, while male *Anopheles* sucks juices of flowers and fruits only. Because of their blood-sucking adaptation, female *Anopheles* causes viral, bacterial and protozoan infections.

231 **(b)**
Presence of water vascular system is the most distinctive characteristic of echinoderms

232 **(c)**
The **labellum** in housefly is made of a pair of large oval and fleshly oral lobes, which are transversed by a network of fine grooves or channels called **pseudotracheae**, because of their resemblance to tracheae in appearance.

233 **(d)**
Options (a) and (b) is a transverse section, option (c) is a horizontal section and option (d) is a vertical section or a sagittal section

234 **(c)**
Insects and spiders belong to phylum-Arthropoda. However, insect body is divided into three divisions the head, thorax and abdomen. Spiders have two body divisions the cephalothorax and abdomen. Insects have three pairs of legs and spiders have four pairs of legs. Spinnerets are silk

producing present only in spiders. Antennae and wings are absent in spiders

235 **(c)**
Aschelminthes lack a mineralised skeleton. High fluid pressure in the pseudocoelom helps in maintaining the body form, hence called as a hydroskeleton

236 **(c)**
Locust are of no economic importance, instead are gregarious pests that may even destroy crops

237 **(c)**
The Devonian period is known as 'the age of fishes'. It is famous for the thousands of species of fish that developed in Devonian, sea. The Devonian period of Palaeozoic era lasted from 417 million years ago to 354 million years ago.

238 **(a)**
Animals belonging to the phylum-Porifera are supported by spicules or sponging fibres

239 **(d)**
Small red coloured follicular bodies called **blood glands** are found in these segments. These produce white blood corpuscles (leucocytes) and haemoglobin.

240 **(a)**
Scales are found in pisces and reptiles. Scales play an important role in identification and classification of fish species. Types of scales are- placoid, cosmoid, gamoid and cycloid.

241 **(c)**
The animals, in which the mesoderm is present as scattered pouches in between the ectoderm and endoderm, are called pseudocoelomates, *e.g.,* Aschelminthes. *Ascaris* is a member of Aschelminthes and its adult has a body cavity called pseudocoel.

242 **(b)**
*Bungarus* (kraits) are highly poisonous snakes. Common krait has black or steel grey colour with white arches on the back. Central scales of back are larger and hexagonal.

243 **(c)**
In coelomates, the problem of diffusion of food from gut to tissues is solved by developing a circulatory system. After digestion and absorption, most of the absorbed food materials are passed into paracellular spaces (in between the enterocytes) from where they enter blood capillaries and then transported to tissues.

244 **(a)**
The generic name of tusk shell is *Dentalium*.

245 **(b)**
Sponges are hermaphrodites, *i.e.*, sexes are not separate and sexual reproduction takes place by gamete formation. Both eggs and sperms are produced by the same individual

246 **(b)**
Chordates have a notochord, central nervous system in dorsal with pharynx performed by gill slits and heart is ventral, post anal tail is present

247 **(d)**
*Hirudinaria* have a posterior sucker for locomotion. Leech creep by looping and swim by undulations of body.

248 **(b)**
The dorsal diverticulum of urethara in male rabbit is uterus musculinus.

250 **(a)**
Genital pouch of *Periplaneta americana* is divisible into genital chamber and oothecal chamber. Ootheca of cockroach is formed of a protein secreted by collateral glands.

251 **(b)**
Pupa of mosquito has a comma-shaped body, consisting of swollen unsegmented cephalothorax (head + thorax) and a stender, depressed 9-segmented abdomen. Pupa is commonly known as tumbler.

252 **(b)**
*Hemicyclops* belongs to the extinct class-Ostracodermi.

253 **(d)**
In *Pheretima*, nephridia are excretory organs. These are found in all body segments except the first two. These are originated from ectoderm.

254 **(a)**
Leeches secrete anticoagulant 'hirudin' from salivary glands. Hirudin does not allow blood clotting of host.

255 **(b)**
Presence of diaphragm is the characteristic feature of mammals along with mammary gland, pinna, 7-cervical vertebra, etc.

256 **(c)**
Mandibles work in chewing. Abductor and adductor muscles associated with the **mandibles** move in horizontal plane to cut and chew the food particles, these are brought in between the mandibles by the first maxillae.

257 **(a)**
In dorsal blood vessel, blood flows from behind to forward by the rhythmic contraction and they

also possess valves, which prevent the backward flow of blood.

258 **(b)**
Hoodworm (*Ancylostoma*) is a dioecious animal.

259 **(c)**
Metameric segmentation is the characteristic of **Annelida** (*e.g.,* earthworm) and **Arthropoda** (*e.g.,* cockroach). Metamerism is body structure having repeated segments. It helps to develops specialization of organs.

260 **(c)**
The taste receptor (gustatoreceptors) are organs of taste. In cockroach, they are mainly confined to the tips of maxillary palps, labial palps, labium and hypopharynx.

261 **(b)**
Cockroach, scorpion and prawn belong to phylum-Arhropoda.

262 **(c)**
Chitin is a polysaccharide.

263 **(b)**
Pheromones are used for animal communication. These are screted from exocrine glands as liquid, transmitted as liquid or gases and smelled or tasted by other animals of the same species.

264 **(d)**
The velocity of conduction of nerve impulse in frog is 30 metre/second.

265 **(c)**
All statements are true except (c). Although body of arthropods is divided into head, thorax and abdomen but arthropods are triploblastic, coelomate animals

267 **(c)**
*Ichthyopsis* is a limbless amphibian

268 **(a)**
Diaphragm is abrent in frog and is not related to respiration. Frog has developed various types of external respiration to suit its amphibious mode of life. They include cutaneous respiration, buccopharyngeal respiration and pulmonary respiration.

269 **(a)**
Tadpole larva lives in water, so it has gills and a tail but during metamorphosis gills and tails are reabsorbed.

270 **(d)**
There are five longitudinal blood vessels in *Pheretima*. Ventro-intestinal blood vessels supplies blood to integumentary nephridia. The dorso-intestinal blood vessel receives blood from intestine and a pair of cimmissural vessel.

271 **(a)**
**Pheromones** are also known as ectohormones. These are secreted upon skin surface and produce characteristic smell by mature female cockroach, which is detected by the antennal chemoreceptors of male.

272 **(d)**
The corpora allata are concerned with the production of moulting and pupating hormones in insects.

273 **(d)**
Flightless birds show discontinuous distribution. They have well developed powerful legs, small head, rudimentary eyes and wings, *e.g.,* ostrich, emu, kiwi, cassowary, etc.

274 **(d)**
Gill of *Pila* consists of a long ctenidial axis with a single row of a long series of triangular leaflets known as lamellae. Such a gill is called monopectinate.

275 **(b)**
Bioluminescence is the property of a living organism to emit light. It is well marked in ctenophores.

276 **(c)**
*Struthio camelus* (ostrich) is a gregarious polygamous and omnivorous flightless bird. Oil glands, preen gland are absent. Syrinx is also absent.
*Casuarius* sp is a flightless bird. The head is beautifully coloured due to presence of helmet like horny casque. The preen gland and syrinx are absent.

277 **(d)**
Sponges are **sessile**, *i.e.,* live permanently attached to rocks or other surfaces.

279 **(b)**
Platyhelminthes are bilaterally symmetrical animals. The body of animal can be divided into two equal halves through only one plane, *e.g.,* liver fluke (*Fasciola hepatica*).

280 **(d)**
All chordates are bilaterally symmetrical, coelomates, triploblastic with closed circulatory system and organ system level of organisation

281 **(c)**
In *Rattus rattus*, there are two large cerebral hemisphere which are smooth internally. These spheres are connected by a bundle of nerve fibre called **corpus callosum**.

282 **(b)**
Hookworm (*Ancylostoma*) is triploblastic bilaterally symmetritical and pseudocoelomate.

283 **(d)**
*Ascaris lumbricoides* is a common intestinal parasite of man, therefore, it is found in alimentary canal.

284 **(b)**
Cockroach, housefly and mosquito belong to phylum-Arthropoda. In mosquito and housefly, the second pair of wings forms a knob like structure known as 'haltere' or 'balancer'. Its function is to balance the body during flight.

285 **(c)**
The development of *Periplaneta americana* is paurometabolous meaning there is development through nymphal stage. The nymphs look very much like adults. The nymph grows by moulting about 13 times to reach the adult form. The next to last nymphal stage has wing pads but only adult cockroaches have wings.

286 **(d)**
Jacobson's organ are present in all but they are well developed in snakes and lizards. It is an auxillary olfactory sense organ located in the vomer bones, between the nose and the mouth.

287 **(b)**
The posterior region of body of cockroach is called abdomen. The abdomen of adult consists of 10 segments, while embryo has 11 segments. In female cockroach, abdomen is broader than in male. In between sclerites (terga) of 5/6 segments specially in the vicinity of arthrodial membrane, a pair of stink glands are present.

288 **(b)**
**Blood glands** are located in the $4^{th}$, $5^{th}$ and $6^{th}$ segments above the pharyngeal mass. These serve for manufacture of blood corpuscles and haemoglobin.

289 **(d)**
Frogs have three types of pigmentations or chromatophores (melanophores, iridophores and xanthophores). These chromatophores are controlled by the frog's central nervous system and hormones.

290 **(b)**
Phylum-Coelenterata or Cnidaria have tissue level of organisation. Cellular level of organisation is only present in phylum-Porifera

291 **(b)**
Nematocysts in *Hydra* discharge and inject poisonous fluid **hypnotoxin**, which paralyses the prey.

292 **(b)**
**Pseudocoelom** is false coelom, derived from embryonic blastocoel.

293 **(d)**
The feet with toes forming cloven hoof is seen in sheep.

294 **(a)**
*Petromyzon* (lamprey) belongs to phylum-Chordata, group-Craniata, sub-phylum-Agnatha and order-Petromyzontia.

295 **(b)**
Blue whale is considered as the largest aquatic vertebrate. Whale shark (*Rhincodon typus*) is a show moving, filter feeding, largest living fish species. It is considered as the second largest aquatic vertebrate, which can grow upto 60 feet length and 13.6 tonnes in weight.

296 **(c)**
In the insect which feeds on nectar, the proboscis is formed by glossa.

297 **(a)**
*Hydra* possess a very primitive type of nervous system with bipolar and multipolar neurons lying above muscular processes forming irregular and discontinuous nerve plexus.

298 **(d)**
Echinoderms are exclusively marine and largely bottom dwellers, enterocoelus coelomate, triploblastic animals. The adult echinoderms have pentamerous radial symmetry derived from an original bilateral symmetry.

299 **(b)**
In frog, the forelimbs have four digits (as thumb is absent in forelimbs), while hindlimbs have five digits.

300 **(d)**
*Trygon* is also called sting ray and belongs to class-Chondrichthyes. They have two-chambered heart, males have claspers and respiration is by exchange of gases with the water through gills

301 **(c)**
A-Male-*Ascaris*
B-Female-*Ascaris*
Females in phylum-Aschelminthes are longer than male

302 **(d)**
The larva of *Bombyx mori* is known as caterpillar. A fully grown caterpillar has a length of about 7.5 cm. These larvae are voraceous feeder so they

have continuous supply of food. Each caterpillar larvae has well developed mandibulate type of mouth parts adapted to feed easily on the mulberry leaves.

303 **(a)**
Ink gland is not found in *Pila*.

304 **(a)**
*Schistosoma mansoni* is the common human **blood fluke**. It belongs to class-Trematoda of Platyhelminthes. **Blood fluke** is digenetic, primary host is man and secondary or inter mediate host is **snail**.

305 **(a)**
A pair of short and conical intestinal caecae project from the intestine on the 26th segment. The characteristic feature of the intestine between 26-35 segment is the presence of internal median fold of dorsal wall called typhlosole. This increases the effective area of absorption in the intestine

306 **(b)**
Masses of bath sponges are collected and allowed to die and decay. Gradually, the entire living part disintegrates, while the skeleton made up of dense network of fibres composed of sulphur containing flexible collagen like protein (*s*-origin) is left. It is used for scrubbing the body at the time of bath, as well as few mopping and polishing floors, furniture, shoe, etc.

307 **(c)**
Sea cucumber (*Cucumaria*) is an echinoderm that has the capacity to regenerate entire alimentary canal.

308 **(b)**
**Ligaments** consist of mainly collagen fibres and some elastic fibres. It connects one end of a long bone to another.

309 **(b)**
In Aves, long bones are hollow and connected by air passage.

310 **(b)**
The cavity common to all sponges is spongocoel or paragastric cavity. It is lined by endoderm, which contains a single layer of collared, flagellated cells, called choanocytes. Each cess contains a single nucleus, 1-2 contractile vacuoles, food vacuoles, blepharoplast, rhizoplast and a single basal granule (kinetosome) from which a single, long, whip-like flagellum is originated.

311 **(a)**
The body outline of Ophiuroidea (*e.g.,* *Gorgonocephalus* sp) is similar to the Asteroidea, *i.e.,* ophiuroids have five arms joined to central body disc, *i.e.,* branched arms.

312 **(a)**
Coelenterates have nematocysts as its characteristics feature.

313 **(c)**
The skull of mammals represents a highly modified synapsid pattern. In synapsids, the temporal region of skull develops a **single opening** bound horizontal along its lower border by a bony connection between jugal and squamosal bones.

314 **(c)**
Organ level of organisation is present in Platyhelminthes. The animals belonging to this phylum are bilaterally symmetrical, triploblastic and acoelomate

315 **(b)**
The body cavity of earthworm is true coelom (schizicoel) as it is formed by the division of mesoderm. The coelom is filled with milky, alkaline coelomic fluid, which contains different types of corpuscles. Thus, if a live earthworm is prickled with a needle on its outer surface, the coelomic fluid will come out.

316 **(d)**
Echinoderms are triploblastic animals with organ system level or organization. Larval forms possess bilateral symmetry, while adults have radial symmetry.

317 **(d)**
*Python* is a non-poisonous snake.

318 **(d)**
Excretory organ in animals belonging to phylum-Hemichordata is the proboscis gland

319 **(c)**
Sponges are classified on the basis of **skeleton**.

320 **(b)**
Neoteny refers to larval stages becoming sexually mature and able to reproduce

321 **(d)**
Mammary gland is a characteri-stic feature of class-mammalia

322 **(b)**
Phylum-Arthropoda is the largest phylum of the kingdom-Animalia. It includes over 2/3rd of all known species

323 **(a)**
The appendages are mostly biramous in crustaceans, while typically three pairs (hexapoda) in insects.

324 **(b)**
Biramous appendages are present in crustacean (prawn). It consists of a basal protopodite with two rami, an inner endopodite and an outer exopodite.

325 **(d)**
In the members of phylum-Echinodermata like *Asterias* (star fish), *Echinus* (sea urchin), *Antedon* (sea lily), *Cucumaria* (sea cucumber) and *Ophiura* (brittle star) an excretory system is absent.

326 **(c)**
Scorpion, spider and cockroach have ventral solid central nervous system.

327 **(a)**
Metameric segmentation is a feature of Annelida.

328 **(a)**
A true coelom is seen when the body cavity is lined by mesoderm

329 **(b)**
*Macaca* is an Indian monkey.

330 **(c)**
An animal whose female gives birth to young one is called viviparous and this phenomenon as vivipary, *e.g.,* rabbit, dog, humans, etc.

331 **(d)**
Class-Osteichthyes contains freshwater and marine bony fishes having skin with cycloid, ctenoid scales. The bony fishes possess **four pairs** of gills situated in gill or branchial chambers. Each gill consists of two rows of slender gill filaments.

332 **(d)**
Reptiles are different in their integuments. Amphibians have smooth moist skin, while the reptilian skin is scaly, rough and dry, and is periodically shed off by a process of moulting. The amphibian heart is three-chambered, while the reptilian heart is four-chambered. The amphibian larva usually undergoes metamorphosis unlike reptilian young one

333 **(c)**
Aschelminthes are triploblastic, bilaterally symmetrical, pseudocoelomate (false coelom derived from embryonic blastocoel), unsegmented organisms.

334 **(b)**
(*aranea*) (spider) is an Arachnida and not an insect

335 **(d)**
Interstitial cell are absent in testis of frog.

336 **(d)**
*Amoeba* and sponges are asymmetrical

338 **(c)**
Coelom is the secondary body cavity which exists between the body wall and the digestive tube and is lined on all sides by mesoderm.

339 **(a)**
The number of cervical vertebrae are seven in almost all mammals including human beings.

340 **(c)**
The order-Primata is divided into three sub-orders:
1.Lemuroidea, *e.g.,* lemur and *Loris*

2.Tarsioidea, *e.g.,* tarsier.

3.Anthropoidea, *e.g.,* monkeys, apes and man.

Shrew and hedgehog belongs to order-Insectivora of class-Mammalia. Horse and Zebra belong to order perissodactyla while bats and vampire belongs to order chiroptera.

341 **(b)**
In open circulatory system, the blood flows in open spaces like lacunae and sinuses and it bathes the cells directly, *eg,* arthropods (cockroach or *Periplaneta*).

342 **(d)**
Collar cells or choanocytes are present only in sponges.

343 **(c)**
Only Coelenterates and Ctenophora and diploblastic acoelomates, with radial symmetry. *Adamsia* is sea anemone, which belong to phylum-Coelenterates and *Meandrina sinuosa* belongs to phylum-Coelenterates. *Berore* is a Ctenophora

344 **(d)**
A group of individual organisms with fundamental similarities is called **species**. One species is distinguished from the other closely related species on the basis of distinct morphological differences. Tiger (*Panthera tigris*) is one of the species of *Panthera*.

345 **(a)**
Only phylum-Coelenterata, Ctenophora and Echinodermata display radial symmetry. Mollusca exhibit bilateral symmetry

346 **(a)**
Detritivores are animals, which feed on decaying organic matter, *e.g.,* earthworm.

347 **(a)**
In *Pheretima posthuma* or common Indian earthworm, female genital pores are present upon

14th segment.

348 **(d)**
*Pleurobrachia* belongs to phylum-Ctenophora. Ctenophora are diploblastic, with tissue level of organisation and presence of comb plates. Comb plates is characteristic feature of phylum-Ctenophora, *Plurobrachia* are not triploblastic

349 **(b)**
Phylum-Arthropoda is the largest phylum of animal kingdom including about 900,000 species in all habitats, which constitute about 70% of all the known species of animals.

350 **(b)**
*Ctenoplana* and *Beroe* lack cnidolasts and have biradial symmetry. These belong to phylum-Ctenophora.

351 **(a)**
*Monocystis* are typically endoparasites of earthworm and occur in their coelom and seminal vesicles.

352 **(c)**
In *Pheretima*, locomotion occurs with the help of circular, longitudinal muscles and setae.

353 **(c)**
In Mollusca, each eye is located upon, stumpy peduncle called **ommatophore**.

354 **(c)**
Ctenophora have radial symmetry with tissue level of organisation, acoelomate animals. Platyhelminthes have bilateral symmetry with organ and organ-system level of organisation but are also acoelomate animals. Characters of echinoderms are true. Coelentrata have bilateral symmetry with tissue level organisation acoelomate animals

355 **(c)**
Mollusca are terrestrial or aquatic, present both in freshwater and marine water

356 **(a)**
The third moulting in *Ascaris* larva takes place in **lung**.

357 **(d)**
Cell aggregate body plan is only found in Porifera. Bilateral symmetry is the most common symmetry found in animals. Pseudocoelom is only found in Aschelminthes. Triploblastic animal like Platyhelminthes lacks a coelom. Haemocoel is present in Mollusca and Arthropoda

358 **(d)**
Book lungs and book-gills are organs for respiration found in scorpion and king crabs, respectively

359 **(d)**
Foliate papillae, persent in rabbit, are located at sides of the base of tongue and are the smallest papillae.

360 **(d)**
*Asterias* is the scientific (generic) name of starfish.

361 **(a)**
The sequence of layers in the epidermis of vertebrate skin (integument) from uppermost layer to the inner one is
Stratum coneum → stratum lucidium → stratum granulosum → germinative layer → dermis.
Hence, the second layer in the rat integument is stratum lucidium.

362 **(c)**
Poriferans and Coelenterates are diploblastic animals, while all animals in and after Platyhelminthes are triploblastic animals. Protozoa are single celled animalcules and do not form any germ layers

363 **(b)**
Mesoglea is the undifferentiated layer present in between the ectoderm and endoderm in sponges. The third germinal layer is a differentiated layer, which is present between the ectoderm and endoderm and is called mesoderm

364 **(b)**
*Tyloto triton* is a genus of newt known as crocodile newts, out of which *T. verrucosus* (Himalayan crocodile newt) is found in Indian peninsual. *Ichthyophis peninsularis* is a species of caecilian found in India.

365 **(a)**
The mosquito (*Culex*, *Anopheles* and *Aedes*) are pathogenic. The fleas (*Pulex*) is also pathogen, *i.e,* ectoparasites of birds and mammals, feeding on blood and the tse-tse fly is pathogen for sleeping sickness.

366 **(d)**
Crocodiles have a completely four chambered heart similar to the birds and mammals.

367 **(b)**
Maxillae and legs are similar in structure.

368 **(d)**
In cockroach, there is no respiratory pigment. Every tissue of body is in direct communication with atmospheric air for gaseous exchange. For this, a complicated system of air tubes or trachea (tracheal system) is present, which open at

surface through spiracles or stigmata.

369 **(a)**
The animals of phylum-Platyhelminthes are triploblastic bilaterally symmetrical, acoelomate and mostly parasitic.

370 **(a)**
Metamorphosis is the phenomenon of passing through different juvenile forms before becoming adult or imago. In insects, the process of growth and metamorphosis is regulated by juvenile hormone which is secreted by the corpora allata (components of retrocerebral complex).

371 **(d)**
Corpora allata is small endocrine gland in the insect head. Juvenile hormone is secreted by this gland, which is responsible for maintenance of larval condition during moulting.

372 **(c)**
While ants are social, colonial and polymorphic insects.

373 **(a)**
On the basis of symmetry animals are classified into radiats and bilateria

374 **(b)**
The middle ear of mammals is a air filled chamber containing a remarkable chain of three tiny bones or ossicles, known as the **malleus** (hammer), **incus** (anvil) and **stapes** (strirrup), named because of their fancied resemblance to these objects.

375 **(a)**
In rabbit, the two fibroelastic strands of the larynx extend between the thyroid and arytenoid cartilages.

376 **(a)**
T-shaped interclavicle in the pectoral girdle is the reptilian character present in prototheria. The pelvic girdle of prototherian possesses epipubic bones.

377 **(b)**
Ichthyology – Study of fishes
Mammalogy – Study of mammals
Herpetology – Study of reptiles and amphibians
Ornithology – Study of birds

378 **(b)**
*Struthio* is the ostrich, it runs very fast but is a flightless bird, as is also penguin which is adapted for swimming due to its habitat in polar region

379 **(c)**
Chloragogen cells are involved in synthesis and storage of fat and glycogen. Their special function is deamination of excess amino acids and formation of urea. They also store waste products in yellow granules. So, these are excretory as well as storage cells.

380 **(c)**
A- *Pteropus* or flying fox
B- Balaenoptera or the blue whale
C- Chelone or turtle
D- Ornithorhynchus or platypus
E-*Scoliodon* or dog fish
C and E- These not mammals. C is a reptile and E is a *Chondrichthyes*

381 **(b)**
Starfish shows radial symmetry. It belongs to phylum-Echinodermata.

382 **(d)**
Oil of *Chenopodium*, alcopar, bendex, dewormis, meber, etc, are some of the antihelminthic drugs used to exterminate *Ascaris*.

384 **(b)**
The member of phylum-Arthropoda show bilateral symmetry, three germ layers in body wall, external metamerism, jointed and paired appendages, haemocoel and open type of circulatory system with dorsal heart.

385 **(b)**
Kidney of frog tadpole is **pronephric**; kidney of amphibia is mesonephric, while of birds and mammals is metanephric.

386 **(c)**
In *Pheretima*, the fing vessels are characteristic circular vessels of stomach situated with its muscular coat. There are about 12 vessels per segment.

387 **(d)**
Echinoderms are ammonotelic and nitrogenous waste are excreted *via* gills, bursae, respiratory trees and tube feet

388 **(d)**
**Vestibular Bartholin glands** are the accessory glands associated with the female reproductive system. The glands are located subcutaneously within the wall of the vaginal opening and secrete lubricating fluid, into the vestibule and vaginal opening during coitus.

389 **(d)**
A compact, somewhat flattened and whitish mass, called epididymis is closely abutted against the dorsal aspect of each testis. In rabbit, head of epididymis present at the head of the testis is called **caput epididymis**, while the smaller

posterior enlarged part of epididymis is called cauda epididymis.

390 **(c)**
*Taenia solium* (tapeworm) belongs to phylum-Platyhelminthes.

391 **(c)**
Echinoderms have water-vascular system (ambulacral system) with tube-feet for locomotion, feeding and respiration, *e.g.,* *Cucumaria* (sea cucumber).

392 **(c)**
Nucleated RBCs are present in frog.

393 **(a)**
Fertilization is external and occurs in cocoon. Cocoon is formed around clitellum.

394 **(c)**
Protandry refers to earlier maturation of male sex organs than female sex organs

396 **(a)**
Order-Rodentia comprises of rodents like rats, squirrels, guinea-pigs, beavers, etc. The animal of this order lack canines and the toothless space in the jaw is termed as diastema. The other two orders have canine teeth. Canines are large in order-Carnivora

397 **(b)**
The animals, which are active at night and rest during the day are called **nocturnal**.

398 **(b)**
Tubules of mesonephric kindney arise in the middle of nephric ridge. The mesonephrose usually becomes functional in the embryo but persists in adults of fishes and Amphibia.

399 **(b)**
Body cavity lined by mesoderm is a coelomic cavity. Coelom is absent in acoelomate animals. When the mesoderm is present as scattered pouches in between ectoderm and endoderm, the animals are called pseudocoelomates

400 **(c)**
Starfish is a member of phylum-Echinodermata.

401 **(b)**
Abdomen of cockroach is divisible into ten segments in adults and 11 in embryo. Each segment has four sclerites.

402 **(d)**
Forewing is modified into the leathery tegmina in cockroach. It is reduced, often serves not so much in flight. Tegmina is a protective cover for the delicate membranous hindwings when at rest.

403 **(c)**
Bone of the birds like ostrich, owl are hollow and known as pneumatic, *i.e.,* bone marrow is absent in bones of birds. This is the adaptation for aerial life of birds.

404 **(d)**
**Juvenile hormone** is produced by corpora allata in insect, it favours the development of juvenile characteristics.

405 **(d)**
Chondrichthyes is one of the classes of super-class-Pisces, sub-phylum-Vertebrata and phylum-Chrodata. The members of class-Chondrichthyes are marine animals with streamlined body and have cartilaginous endoskeleton. Mouth is located ventrally. The skin is tough, containing minute placoid scales. The teeth are modified placoid scales which are backwardly directed *e.g.,* Dog fish (*Scoliodon*), saw fish (*Pristis*), great white shark (*Carcharodon*), sting ray (*Trygon*), etc.

406 **(c)**
Lobsters, spiders and shrimps all belong to same taxonomic group, *i.e.,* Arthropoda.

407 **(c)**
Notochord is only present in the embryonic stage, it is replaced by **vertebral column** (back bone) in the adult forms.

408 **(c)**
All members of the phylum-Chordata exhibit the following four characteristic features - presence of dorsal nerve cord, the notochord, postanal tail and pharyngeal slits. The post anal tail is a muscular region of the body that extends beyond the anus. It includes skeletal support and musculature that improves the locomotion of many aquatic chordate species.

409 **(a)**
Pearl is produced by certain bivalve Mollusca.

410 **(d)**
In frog, when 1$^{st}$ polar body is separated by meiosis then chromosome number becomes half.

411 **(c)**
The excretory material of bony fishes like *Hippocampus* is ammonia.

412 **(d)**
Choanocytes are flagellated collar cells present in the choanocytic layer. Food particles strained out by water are passed on to amoebocytes and food is stored in thesocytes. Amoebocytes, thesocytes and choanocytes are all present in sponges

413 **(d)**
The queen bee normally lives for about five years.

The worker bees live only for about 90 days due to their heavy duty life.

414 **(a)**
The skin of frog is smooth or rough, having mucous and poisonous glands.

415 **(a)**
Cysticercus is the larval form of a tapeworm (*Taenia*), which grows into the adult when eaten by the primary host and consists of a scolex inverted into a larger bladder.

416 **(d)**
Pectin is found in the eyes of birds

417 **(a)**
*Pila* possesses radula. Radula is a rasping organ of molluscs situated in a sac on the underside of the buccal cavity. It is used for tearing plant material by rubbing it against the hardened surface of the mouth.

418 **(a)**
Diaphragm has no role in the respiration in frog but in mammals it increase the surface area for respiration.

419 **(a)**
Arthropoda is the largest phylum of animal kingdom. Body of Arthropoda is divisible into head, thorax and abdomen, and respiration by tracheoles and spiracles.

420 **(c)**
All animals belonging to this class creep or crawl

421 **(c)**
Turbellaria is a class of phylum-Platyhelminthes. Turbellarians are mostly free living **faltworms**, majorly aquatic (marine), presence of cilia, body unsegmented, mouth ventral, suckers absent with tango-chemo-and photoreceptors, *e.g., Planaria* (*Dugesia*), *Bipalium*, etc.

422 **(a)**
*Chiton* belongs to class-Amphineura (polyplacothora).

423 **(d)**
**Anal styles** are paired, thin small unjointed outgrowths, which project backwardly from the sides of the 9th sternum of the male cockroach only. They are sensitive to touch.

424 **(c)**
Catadromous fish spend most of their lives in fresh water, then migrate to the sea to breed. This type is exemplified by eels of the genus, *Anguilla*, numbering 16 species.

425 **(d)**
The human pinworm is *Enterobius vermicularis*.

426 **(a)**
Snails (*e.g., Limnaea, Planoribs, Bulinus*) are the secondary or intermediate host of *Fasciola hepatica.*

427 **(b)**
Trigeminal nerve or trigeminus is 5th pair of cranial nerves.

428 **(c)**
Animals are classified based on coelomic cavity, level of organisation and presence or absence of notochord

429 **(a)**
**Conus arteriosus** is a muscular and contractile structure, present in right auricle of frog which consists of **pylangium** (bulbus arteriosus) and **synangium** (ventral aorta).

430 **(c)**
Prostostomous animals are those whose mouth is derived from the blastropore of the embryo and the anus is formed at the opposite end. Animals belonging to phylum-Platyhelminthes, Aschelminthes, Annelida, Mollusca and Arthropoda are prostostomous animals. *Apis, indica*, honey bee belongs to phylum-Arthropoda, *Loligo*, a squid belongs to Mollusca and *Hirudinaria*, a cattle leech belongs to phylum-Annelida. In option (a) *Aurelia* belongs to Coelenterata, In option (b) *Physalia* also belongs to coelenterata and option (d) contains echinoderms

431 **(d)**
There are many testes and single ovary in *Hydra*.

432 **(b)**
The species which are improted in India from other countries are called exotic species. Common carp (*Cyprinus carpia*) is imported from China.

433 **(b)**
*Cimex* is a temporary, ectoparasitic, nocturnal insect with piercing and sucking types of mouth parts.

434 **(c)**
Mammalia is the only class, which has the presence of mammary glands. It is a unique characteristic among the members of this class but four chamber heart and internal fertilisation found in the members of class-Mammalia as well as Aves

435 **(c)**
Prosimians means the animals which originate before monkeys. These include lemur, loris and tarsius. Apes include gibbon, orangutan,

chimpanzee and gorilla

436 **(b)**
The hormone thyroxine is secreted by the thyroid gland. Thyroxine necessarily takes part in the process of metamorphosis in tadpole.

437 **(b)**
The animals, which have true coelom are called **eucoelomates** or coelomates, *e.g.,* annelids, echinoderms and chordates. Among given options, *Pheretima* (annelid) has true coelom (schizocoel; derived by splitting up of embryonic mesoderm). The coelom is filled with milky white alkaline coelomic fluid.

438 **(c)**
Presence of right aortic arch is characteristic to all **birds**.

439 **(b)**
In *Hydra*, the asexual reproduction mainly occurs through external budding in the middle and basal part of the body. The bud initially seen as a protuberance which gradually grows as a diverticulum. Soon, it develops gastrovascular cavity, tentacles, hypostome and mouth. The cavity of bud later on separates off from the parent body. Thus, forming a young *Hydra*.

440 **(d)**
In advance reptiles and all mammals, a new association centre, the neopallium appears in the cerebral cortex.

441 **(b)**
Members of class-Insecta (phylum-Arthropoda) are also known as Hexapoda due to the presence of six legs (3 pairs), located on the thoracic segments. Insects form the largest class of animals.

442 **(d)**
Azygous vein, hemizygous vein and caudal veins are not in pair in rabbit.

443 **(c)**
Mesozoic era – Age of reptiles
Coenozoic era – Age of mammals
Palaeozoic era – Age of fishes

444 **(d)**
*Schistosoma* is commonly called blood fluke. It is a parasite and found in blood and lives in the hepatic portal system and mesenteric blood vessels of human beings.

445 **(a)**
Class-Crustacea belongs to sub-phylum-Mandibulata of phylum-Arthropoda. In crustaceans, the head often joined with thorax to form cephalothorax, respiration by gills or body surface and appendages typically biramous.

446 **(c)**
Pseudocoelom is not found in *Fasciola*.

447 **(c)**
Skull of frog is triangular in shape. It is decondylic and platybaric due to presence of two occipital condyles and absence of an inter orbital septum. The skull is completely cartilagenous in tadpole stage but becomes mostly bony in the adult frog.

448 **(a)**
The body cavity (coelom) of earthworm is filled with an alkaline, colourless or milky coelomic fluid containing water, salts, some proteins and four types of coelomic corpuscles. During burrowing and locomotion, contraction of septa (which partioned coelom into series of coelomic chambers) increases pressure on coelomic fluid, thus making the anterior body segment turgid and elongated.

449 **(c)**
*Dugesia* is a genus of *Dugesiid triclad*, common representative of class-Turbellaria

450 **(d)**
*Wuchereria bancrofti* infection causes filariasis or elephantiasis, *Culex* mosquito is its intermediate host. Female worms are twice as long as the male worms. *Wuchereria* live in lymph vessels and lymph glands

451 **(a)**
Dolphin, kangaroo, bat and cat are mammals, which give birth to young ones directly.

452 **(d)**
Animals of phylum-Arthropoda have an hard, chitinous outer covering, they lack any endoskeletal structures

454 **(b)**
Scorpions have one pair of coxal glands situated near the base of third pair of walking legs.

455 **(b)**
*Schistosoma* is a blood fluke of the class-Trematoda of phylum-Platyhelminthes. It has a intermediate host, snail. It causes the disease schistosomiasis in humans. *Wauchereria bancrofti* is a nematode. Its intermediate host are the species of *Culex*.

456 **(b)**
Each male genital opening (in 18$^{th}$ segment) of *Pheretima* has separate openings of three ducts (one prosthatic duct and two vasa deferentia, *i.e.,* spermatic duct).

457 **(c)**
*Bombyx mori* is a silk producing insect, which is reared on mulberry leaves for commercial production of silk.

458 **(d)**
The whales are large marine **mammals**.

459 **(a)**
Flame cells are the specialized hollow excretory or osmo-regulatory structures. These are found in Planarians.

460 **(b)**
Hookworms belongs to phylum-Aschelminthes and have generic name *Ancylostoma*. They have an excretory tube and excretory pore to remove the body waste from body cavity. Fertilisation in this phylum is internal. They are triploblastic pseudocoelomate animals and sexes are usually separate, *i.e.*, dioecious

461 **(c)**
In frog, acoustic spots are present in membranous labyrinth.

462 **(b)**
Snake venom is a complex mixture of organic compounds secreted by poison glands. Venom of *Viper* is haemolytic, so affects circulatory system, while venom of cobra affects nervous system, *i.e.,* neurotoxic in nature.

463 **(c)**
Silverfish, scorpion, crab and honeybee all belongs to phylum-Arthropoda which have jointed appendages as their characteristics feature.

464 **(a)**
The function of clitellum in *Pheretima* is the formation of cocoon.

465 **(c)**
Phylum-Porifera consists of sponges that are considered as asymmetrical. Animals belonging to Phylum-Ctenophora and Coelenterata are radially symmetrical and animals belonging to Annelida are bilaterally symmetrical

466 **(a)**
Nematocysts are the stinging cells of coelenterates so that they are called cnidrians. By using the nematocyst, they paralyze the prey by injecting poison.

467 **(b)**
*Ascaris* does not have intermediate host. It is a monogenetic parasite.

469 **(b)**
Molluscs are the soft bodied, unsegmented animals covered by a shell. In between the shell and body wall is a covering called **mantle**, which secretes the shell.

470 **(b)**
An animal, which feeds only on plant and plant product is called **herbivore** and this type of feeding habit is called herbivorous, *e.g.,* rabbit, cow, etc.

471 **(c)**
Cuttlefish or *Sepia*, Chaetopleura or chiton and *Aplysea* or sea-hare belong to phylum-Mollusca. *Antedon* or sea lily, *Cucumaria* or sea cucumber, Echinus or sea urchins and *Ophiura* or brittle star belong to phylum-Echinodermata

472 **(d)**
The body of animals belonging to phylum-Arthropoda are divided into head, thorax and abdomen, while animals belonging to phylum-Mollusca are divided into head, muscular foot and visceral hump

473 **(a)**
The aquatic larva of mosquitoes is termed as wriggler as it swims actively in water by wriggling movements.

474 **(a)**
The metamorphosis of frog is controlled by the thyroid hormones that contains **iodine** element. Thus, addition of $I_2$ element in water speeds up the metamorphosis in frog tadpole.

475 **(d)**
Phylum-Coelenterates, echinoderms and ctenophores are the only phylum which exhibits radial symmetry. However, one must remember that Echinoderms look like radially symmetrical but their original symmetry is bilateral

476 **(d)**
Ancylostomiasis is the condition of infection by *Ancylostoma* hookworms. Humans, who have become infected will show symptoms of intestinal bleeding, abdominal pains, anaemia, severe diarrhoea and malnutrition.

477 **(c)**
**Cnidoblasts**, stinging cells are unique cells of the phylum-Cnidria. Functions of cnidoblast cells are offence, defence and food capturing.

478 **(a)**
In *Hydra*, the exchange of oxygen and carbon dioxide and the excertion of waste nitrogeneous matter (**chiefly ammonia**) occur directly by diffusion through cell membrane to outside.

479 **(b)**

All existing species of Echinodermata are marine.

480 **(c)**
The correct order of the phyla is Ctenophora, Platyhelminthes, Aschelminthess, Annelida, Arthropoda and Chordata

481 **(d)**
Superposition image formation normally does not take place in cockroach owing to noncontractile pigment sheath separating ommatidia.

482 **(a)**
**Enterocoelomate** means the members having coelom, in which embryonic stage has communication with the archenteron. It is called enterocoel.

484 **(d)**
All phyla from Porifera to Echinodermata, including phylum-Arthropoda are non-chordates, *i.e.*, lacking notochord

485 **(a)**
Myogenic heart has contraction initiated by a special node of modified heart muscles called sino-atrial node (SA node), *e.g.,* the heart of vertebrates, tunicates and molluscs.

486 **(b)**
Earthworm has a straight alimentary canal representing a tube within tube plan. Wall of stomach contains calciferous glands, the secretion of which neutralized the acidity of soil or humus. Typhlosole is a highly glandular vascular longitudinal ridge increasing the area for absorption of digested food.

487 **(b)**
The nervous system of leech consisting of ventral-central nervous system, peripheral nervous system and sympathetic nervous system.

488 **(c)**
Notochord is derived from mesoderm and formed on the dorsal side, during embryonic development

489 **(b)**
In some birds, a synsacrum is formed by fusion of posterior thoracic lumbar, sacral and anterior caudal vertebrae.

490 **(b)**
Tube-within-tube is a body plan in which two tubes are present, an outer body wall and an inner digestive tract. The body cavity between the two tubes is filled with a fluid. All animals from phylum-Platyhelminthes to Chordates have tube-within-tube body plan and may be either protostomous or deuterostomous

491 **(a)**
WBCs are colourless, nucleated and mostly amoeboid cells of at least five types in amphibia (frog).

492 **(d)**
**Homeothermic** are the animals having a nearly uniform or constant body temperature. These animals are known as warm blooded animals, *e.g.,* birds, man.

493 **(b)**
Breast bone is known as sternum. It is absent in snakes.

494 **(a)**
Sea fan (*Gorgonia*) belongs to phylum-Coelenterata.

495 **(a)**
Choanocytes (collar cells) are cells with single flagella generating current by which **sponges** draw water through their ostia and capture food particles.

496 **(b)**
Class-Amphibia and class-Reptilia share the following features. Presence of tympanum is seen in both classes, which represents the ear. Animals of both classes are cold-blooded or poikilotherms and usually have a three-chambered heart with the exception of a crocodile

497 **(b)**
Fishes (super class-Pisces) have two chambered heart (one auricle and one ventricle), with very well developed sinus venous and conus arteriosus. However lung fishes have three chambered heart (two auricles and one ventricle).

498 **(b)**
*Pristis* (sawfish), *Scoliodon* (dogfish), *Trygon, carcharodon* (great white shark) are (cartilaginous) fishes while *myxine* (hagfish), *Petromyzon* (lamprey) are bioless fishes

499 **(c)**
Flame cells are excretory organ of Platyhelminthes. The excretory organ of *Ascaris* is protonephridia.

500 **(b)**
Amphibians (*i.e., Rana*) show the formation of middle ear for the first time.

501 **(d)**
Batrachotoxin is produced by arrow frogs of genus-*Dendrobates*. It is the most powerful nerve poison produced by vertebrates

502 **(c)**
Presence of three pairs of jointed legs is the

characteristics feature of class-Insecta of phylum-Arthropoda.

503 **(c)**
Asymmetry n gastropods is due to torsion a characteristic feature that distinguish gastropod from other molluscs.

504 **(c)**
Water vascular system is characteristic of phylum-Echinodermata. Tracheal system, gills, book gills and book lungs are all organs of respiration in animals belonging to phylum-Arthropoda

505 **(d)**
*Petromyzon* is the jawless vertebrate. It is also known as sea lamprey.

507 **(d)**
Invertebrates having open circulatory system are cockroach, prawn, silverfish, snail, leech, spiders, crabs, *Pila*, etc.

509 **(b)**
In frog, respiration take place through skin, lungs and bucco pharyngea. To perform cutaneous (skin) respiration the skin should be moist due to the presence of mucous secreting glands.

510 **(b)**
Phylum-Mollusca do not have metameric segmentation, they have a calcareous, exoskeleton with organ system level of organisation, but shows the presence of mantle cavity and coelomic cavity during development

511 **(a)**
Phylum-Echinodermata are triploblastic animals i.e., form three germ layers during embryonic development. Phylum-Platyhelminthes, Aschelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, Hemichordata and Chordata includes all triploblastic animals

512 **(c)**
Animals belonging to phylum-Porifera are mostly marine, few fresh water, all aquatic.

513 **(c)**
Skeleton of corals is composed of calcium carbonate. Siliceous spicules and calcareous spicules are present in phylum-Porifera

514 **(c)**
Only two types of symmetry are exhibited by animals, *i.e.*, rest of the animals are asymmetrical, *i.e.*, bilateral and radial

515 **(c)**
*Naja hannah* is the zoological name of king cobra *Naja naja* is commonly called the Indian cobra or Nag.
*Bungarus coerulus* - common krait, *Viper ruselli* – viper.

516 **(a)**
Radial symmetry is the characteristic feature of coelenterates and echinoderms. Section of these animals in two or more planes produces halves which are approximately mirror images of each other.
Bilateral symmetry occurs in most metazoans. These have only one plane in which they can be divided into two halves, which are mirror images of each other. In spherical symmetry, the body of the individual can be divided into similar halves by any plane passing through the centre. This type of symmetry is found in *Volvox*, a colonial green algae.

517 **(b)**
Madreporic canal joins the madreporite to the ring ambulacral vessle. Water vascular system is feature, found only in Echinoderms

518 **(c)**
Animals which excrete ammonia as a waste product are called ammonotelic animals and this phenomenon is called ammonotelism, *e.g.,* frog's tadpole, *Ascaris*, leech, etc.

519 **(b)**
Kangaroo are marsupials and *Echidna* is the egg laying mammals, which is placed in Prototheria sub-class of Mammalia.

520 **(c)**
*Euplectella* is one of the most beautiful glass sponges and commonly called venus flower basket.

521 **(a)**
*Balenoptero* (blue whale) and *Delphinus* (dolphin) are aquatic mammals.

522 **(b)**
*Gambusia* is a viviparous teleost fish which feeds on insect larvae, while *Exocoetus, Clarias* and *Labeo* are oviparous.

523 **(d)**
Animals of the phylum-Mollusca exhibit adaptation to various types of environmental conditions, such as aquatic, (both marine as well as freshwater), terrestrial and amphibious.

524 **(c)**
*Nereis* living in burrows in sand or mud often with clams. Scorpion are abundant in deserts. Cockroaches are found in warmth, dampness and plenty of organic food to devour. *Lepisma* (sliver

fish) residing in damp coal places and feeding on starch of starchly matter.

525 **(b)**
*Salamandra* or the spotted salamander belongs to sub-class-Urodela

526 **(b)**
Chloragogen cells are analogous to liver of vertebrates because chloragogen cells and liver of vertebrates perform same function like glycogen synthesis, urea formation but structurally they are different from each other.

527 **(c)**
Chordates at some time in their life history, exhibit the following three characters:

1. Presence of notochord; notochord is a rod-like structure made up of chordal cells.
2. Presence of dorsal tubular nerve cord.
3. Presence of gill clefts during development.

528 **(b)**
**Pedicellariae** are small pincer like processes found on the body surfaces of certain echinoderms.

529 **(a)**
Tube feet are locomotory organs of echinoderms consisting of elongated outgrowths of the body wall, able to be protruded or retracted by alteration of fluid pressure in the water vascular system. In starfish, they are arranged in rows in ambulacral groove.

530 **(c)**
The body of Mollusca is covered by a calcareous shell but the mantle is a soft and spongy layer of skin over the visceral hump

531 **(c)**
Earthworm (*Pheretima posthuma*) has segmented body. It belongs to phylum-Annelida.

532 **(b)**
The six-hooked embryo of *Taenia solium* is called hexacanth. Hexacanth along with all its membranes is called oncosphere. The oncospheres are passed out along with human stools, which is eaten up by the pig (secondary or intermediate host). Thus, oncospheres reach in the intestines of pigs and infect them.

533 **(d)**
Annelids are true coelomates

534 **(b)**
The blood of earthworm contains a red coloured respiratory pigment haemoglobin. It is found in dissolved state in the plasma.

535 **(c)**
*Sterna* macrura is the Arctic Term. It is a migratory bird that travels 40,000 km from one pole to the other, annually

537 **(a)**
Earthworm, *Pheretima posthuma* is a monoecious (hermaphrodite) animal but in them cross-fertilization takes place, male reproductive organs mature prior to female reproductive organ. This situation is known as protandry.

538 **(a)**
In *Taenia saginata*, scolex is small and rounded like a pin head. It has no rostellum and hooks. Scolex of *T. solium* is with rostellum and armed with hooks.

539 **(c)**
Sepia or cuttle fish is a mollusc, which possesses ink gland. This gland produces ink, which is released to form a small cloud for escaping from the enemy.

540 **(b)**
*Ascaris* is monogenetic parasite with no intermediate host.

541 **(c)**
Larva of *Ascaris* first inter the host intestine and reaches the liver through portal system and lymph channel, now its reaches to heart and then to lungs. In **lungs**, larva settle down in capillaries of alveoli for sometime and undergoes two moulting one after the other.

542 **(d)**
**Cnidocytes** or stinging cells are spherical or oval cells found in entire epidermis except that of basal disc and are found only in cnidarians.
Archaeocytes, trophocytes and myocytes are found in sponges.

543 **(c)**
*Spongilla* belongs to phylum-Porfera, in which, choanocytes are the characteristic cells, these are absent in leech, dolphin and penguin.

544 **(c)**
In *Pheretima posthuma*, the dorsal blood vessel is considered as dorsal tubular heart. This blood vessel is a collecting blood vessel behind 13$^{th}$ segment, while in initial 13 segment, it works as the distributing vessel. The blood flows in it from backward to forward.

545 **(a)**

Bat belongs to order - Chiroptera, class - Mammalia.

546 **(b)**
*Tylototriton verrucosus* or Indian salamander, belongs to order-Urodela.

547 **(d)**
Class – **Oligochaeta** includes terrestrial earthworms and some other species that live in freshwater. Aquatic oligochaetes excrete ammonia, while terrestrial oligochates excrete urea but *Lumbricus* produces both ammonia and urea.

548 **(b)**
Notochord is a mesodermally derived rod-like structure formed on the dorsal side during embryonic development in some animals

549 **(b)**
Arachnids have book lungs as respiratory organs.

550 **(a)**
Termite is a harmful social insect as it destroys wood, paper, leather, clothes and even the plant bodies or crops in the fields. *Bombyx mori* (produces silk), *Tachardia lacca* (produces lac) and *Apis indica* (mainly produces honey and wax) are useful or beneficial insects.

551 **(a)**
In scorpion and spiders, the respiratory organs are **book lungs**.

552 **(d)**
Spermathecae or receptacula seminales are present ventro-laterally, one pair in each segments of 6, 7, 8 and 9 in earthworm. Spermathecae receive sperms from another worm during copulation and store them in their diverticula in *Pheretims* a and in ampullae in other earthworm.

553 **(c)**
The laying down of bones in bony vertebrates is preceded by the presence of **cartilage**.

554 **(d)**
The nerve net of *Hydra* lacks directions in impulse. Never net of *Hydra* is unpolarized so that impulses can pass in all directions (diffuse transmission).

555 **(a)**
Spider is a common arachnid which secretes webs. Spinnerets (spinning argon) produce silken threads for construction of spider web to trap insects. Spider web is formed by a fluid secreted by its **abdominal glands**.

556 **(c)**
*Dugesia* or *Planaria* is a free living Platyhelminthes, *Pheretima* is earthworm and *Nereis* are both non-parasitic animals. *Fasciola, Taenia* and *Ancylostoma* are all parasitic

557 **(c)**
Bones of Aves (*e.g.,* pigeon) are pneumatic. Pneumatic bones contain air cavities to reduce weight. Pneumatic bones help in aerial mode of life.

558 **(d)**
Maximum life span of dog is 20 years.

559 **(c)**
Amnion is an extra-embryonic membrane that surrounds embryo. The animals which lack amnion are known as anamniotes, *e.g.,* fishes, amphibians. In the amniota group, we have all animals which have extra-embryonic membranes like reptiles, birds and mammals.

560 **(b)**
Animals belonging to class-Chondrichthyes and Osteichthyes have 10 pairs of cranial nerves and absence of neck. Chondrichthyes have a cartilaginous endoskeleton, placoid scales, opisthonephc kidneys and two-chambered heart. Class-Osteichthyes have two chambered heart, optisthonephric kidneys, ctenoid scales and a bony endoskeleton

561 **(b)**
**Medusa** is the reproductive organ found in *Aurelia* (jelly fish).

562 **(d)**
Teeth of rabbits are:
**1.Thecodont**; having deep rooted teeth in bony socket as in other mammals.

**2.Diphyodont**; having two sets of teeth in life time, temporary and permanent teeth as in other mammals.

**3.Heterodont**; having different types of teeth, *e.g.,* incisors, canines, premolars, molars, *e.g.,* mammals.

563 **(c)**
In annelids like *Nereis*, earthworm, leech, etc, the tubular coiled structures called **nephridia** are excretory organs. In phylum-Arthropoda, insects centipedes, millipedes and arachnides possess Malpighian tubules as their principal excretory organ.

564 **(b)**

**Aschelminthes** are bilateral symmetrical and triploblastic animals, *e.g., Ascaris*.
**Coelenterates** are radially symmetrical and diploblastic animals, *e.g., Obelia*.
**Ctenophores** are biradial symmetrical and diploblastic animals, *e.g., Ctenoplana*.
**Sponges** are asymmetrical or radially symmetrical and diploblastic animals, *e.g., Sycon.*

565 **(b)**
Caecilians are in order of amphibians that superficially resemble earthworms or snakes. Some caecilians are ovoviviparous which means that the eggs hatch inside the mother and the young live in her until maturity, *e.g., Typhlonectus*. *Typhlonectus* is a fully aquatic caecilian found only in south America.

567 **(a)**
In frog, cloaca is the common chamber for urinary tract, reproductive tract and alimentary canal.

568 **(c)**
Pectin is found in all birds except kiwi. It is a comb-like structure found in the eyes near blindspot and helps in accommodation and nutrition of eye ball.

569 **(d)**
*Hydra* is carnivorous and feeds upon small animals specially some crustaceans, *e.g., Cyclops, Daphnia*.

570 **(b)**
The skin of **reptiles** is dry, cornified and devoid of glands.

571 **(c)**
Metagenesis is seen in those forms of phylum-Coelenterata that exist in both body forms, *i.e.*, polyp and medusa. Polyps produce through asexual reproduction and medusa also arise through budding form polyps. These are meant for sexual reproduction in *Obelia*, Metagenesis is alternation of generation

572 **(d)**
*Aphrodite*, a marine polychaete, which is commonly called 'sea mouse', belongs to phylum-Annelida.

573 **(c)**
Arms are absent in the class-Echinoidea (*e.g.,* sea urchins and sand dollars) and holothuroidea (*e.g.,* sea cucumbers).

574 **(b)**
**Integumentary nephridia** are scattered on the entire inner surface of body wall in all the segments except first two. These are **exonephric**.

575 **(b)**
*Hydra* belongs to phylum-Coelenterata.

576 **(a)**
Scorpion and ticks belongs to Arachnida **class of phylum**-Arthropoda.

577 **(c)**
Ventral nerve cord possess segmental ganglia. It is common in earthworm, leech and centipede.

578 **(c)**
**Haemocoel** is a cavity formed by combination of many sinuses and filled with haemolymph, in which the viscera are embedded. This type of body cavity *ie,* haemocoel is present in members of phylum-Arthropoda (like cockroach) and phylum-Mollusca (like *Pila*).

579 **(d)**
In mammals, dentition is of heterodont type. In heterodont, more than one type of teeth are present, like in humans four type of teeth (incisor, canine, premolar and molar) occur.

580 **(c)**
*Struthio camelus* (true ostrich) is known as flightless bird. It belongs to order-Struthionifirmes, sub-class-Neornithes of class-Aves.

581 **(b)**
Animals of both phylum-Aschelminthes and phylum-Platyhelminthes show bilateral symmetry and are triploblastic, however they greatly differ in their shape of the body. Platyhelminthes are dorsoventrally flattened, while animals of phylum-Aschelminthes are circular in a cross-section of their body

582 **(b)**
'Pisces' is the largest class of vertebrates in number of species. There are about 40,000 species in super class-Pisces including about 25,000 species of the class-Osteichthyes (the freshwater and marine bony fishes).

583 **(c)**
Ostia are the minute pores on the body, through which water enters the central cavity (called the spongocoel) and water exits the spongocoel through the osculum

584 **(a)**
*Salamandra* (salamander) is a member of class-Amphibia. A *tympanum* represents the ear and fertilisation is external *Ascaris* lacks segmented body, *Pteropus* is viviparous, *Aurelia* have tissue level of organisation

585 **(a)**

Setae are S-shaped rod-like, chitinous structures.

586 **(b)**
In female rats, the urinary and genital apertures are separate but open into vulva through a vaginal orifice (copulatory organ of female rat).

587 **(b)**
*Lepisma* (silver fish) belongs to class-Insecta.

588 **(b)**

| Male Cockroach | Female Cockroach |
|---|---|
| Body is relatively smaller and more flattened. | Body is relatively larger and thicker. |
| Abdomen has 9 distinct segments. | Abdomen has only 7 distinct segments. |
| Hind end of abdomen is somewhat pointed. | Hind end of abdomen is blunt and boat-shaped. |
| Seventh sternite is undivided. | Seventh sternite is divided. |
| A pair of anal styles are articulated with 9th abdominal sternite. | **Anal styles are absent**. |
| Wings are relatively larger; extend somewhat beyond hind end of body. | Wings are smaller; extend only up to hind end of body. |

589 **(b)**
**Gemmules** are internal buds containing archaeocytes and are concerned with asexual reproduction in all freshwater sponges and a few marine sponges.

590 **(b)**
Drones are fertile males in a colony of social bees, *i.e.,* honeybee (*Apis* sp). The function of drones is to fertilize the queen of their own or some other colony and they die after mating with the queen bee, as the male reproductive organ explode within the female.

591 **(a)**
Spiders belong to the order-Araneae of class-Arachnida. They have the **coxal glands** as excretory organ.

592 **(b)**
In Aschelminthes (Nemathelminthes), the space between body wall and the alimentary canal represents pseudocoelom because, it is not lined by mesoderm.

593 **(c)**
*Ambystoma* or the tiger salamander is a urodele and chthyophis belongs to sub-class-Apoda

594 **(b)**
Spermathecae are used to store sperms after copulation.

595 **(d)**
A *Protopterus* is also called as the African lung fish. It breathe through its lungs *via* its mouth. Its paired fins are used as legs to walk in shallow water. It is a carnivore and exhibits cannabilism as protopterus lay eggs. During birth to young one is a characteristic features of mammals

596 **(c)**
All mammals have heterodont teeth and 12 pairs of cranial nerves.

597 **(c)**
*Aptenodytes* (penguin) is a flightless aquatic bird occurs in flocks in the Antarctic region and some island of South Africa.

598 **(c)**
Head of the cockroach is formed by the fusion of six segments and is covered by six sclerities. The six sclerites that cover the head are two epicranial plates (separated by a Y-shaped suture line called **vertex**), one frons, one clypeus and two genae.

599 **(c)**
Protandry and protogyny is present in bisexual animals, when testes and ovaries do not mature, simultaneously it ensures cross-fertilisation

600 **(a)**
House fly and mosquitoes show complete (holometabolus) metamorphosis. Complete metamorphosis has four stages-egg, larva, pupa and adult.

601 **(d)**
*Tachardia* is the herbivorous insect that has piercing and sucking type of mouth parts.

602 **(a)**
Trichocysts are sac-like defence organelles in the ectoplasm of *Paramecium*; these discharge straight, tapering rods, which might spear a naked intruder. Nematocysts are large, centrally located sac-like organelles in the cnidocytes of *Hydra* and are filled with poisonous 'hypnotoxin'.

603 **(a)**
Upon metamorphosis, amphibian tadpoles lose there tail through programmed cell death induced by thyroid hormone ($T_3$). Before transformation, the tail functions as an essential locomotory organ.

604 **(a)**
Ecdysone or prothoracic gland hormone is secreted from prothoracic gland in insects ecdysone controls moulting of nymph.

605 **(a)**
*Ascaris* never performs locomotion.

606 **(c)**
Salamander can regenerate its tail, limbs and external gills.

607 **(d)**
A condition that is connected with both internal and external structures is true segmentation or metamerism. It first appears in phylum-Annelida

608 **(c)**
Pectoral girdle (shoulder girdle) composed of two similar halves. Which are united midventrally but sparated dorsally. Each half is made up of supra scapula (a calcified cartilage), scapula, coracoids, precoracoid, epicoracoid and paraglenoid cartilage. Posteriorly, scapula forms a deep cup like depressing the **glenoid cavity**.

609 **(c)**
The hard palate is formed from premaxilla, maxilla and palatine bone.

610 **(c)**
In earthworm, pharyngeal wall possesses salivary gland.

611 **(c)**
Mandibles are absent in the mouth parts of housefly. The mouth parts of housefly are sponging type not biting type.

612 **(b)**
Platyhelminthes have an incomplete digestive system but the digestive system is complete in Aschelminthes or roundworms

613 **(c)**
**Metamorphosis** is a marked structural change that allows the conversion of larva into adult.

614 **(b)**
**Typhlosole** is a highly glandular, vascular, longitudinal ridge, increasing the area for absorption of digested food.

615 **(d)**
Eggs of cockroach are centrolecithal. In **centrolecithal** eggs, the yolk is localized at the centre.

616 **(b)**
Maxillary palps are 3-segmented and club-shaped in male *Anopheles*, whereas 5-segmented in females *Anopheles*.

617 **(d)**
In radial symmetry, body is in the form of a flat or tall cylinder. Body can be divided into similar halves by more than two planes passing through one main axis. Radial symmetry is found is some sponges and in the *Hydra*s, jellyfish, sea urchins.

618 **(b)**
*Cliona* is a boring spong, belongs to class-Desmospongiae. *Euplectella* or venus flower basket and *Hyalonema* both being to class-Hexatinellida

619 **(b)**
Flatworms (Platyhelminthes) and roundworms (Aschelminthes) both possess triploblastic body, bilateral symmetry and metamorphosis in the life history. But flat worms differ from all roundworms in having solid mesoderm. The mesodermally derived tissue includes a loose tissue called parenchyma and this tissue includes fills the body space, *i.e.*, space between the body wall and more specialized tissue or organs.

620 **(d)**
The midbrain has two pair of optic tobes called corpora quadrigemina. **Corpora quadrigemina** is related to vision activity.

621 **(b)**
Phylum-Porifera have choanocyte cells but nematocyst is present in cnidoblasts cells and seen in animals that belong to phylum-Coelenterata. All ctenophora's exhibit radial symmetry. *Wuchereria* belongs to phylum-Aschelminthes but *Meandrina* (also called brain coral) belongs to phylum-Coelenterata

622 **(a)**
The main characterstics of class-Crustacea and Insecta are as follows :

| Crustacea | Insect |
|---|---|
| Two pairs of antennae | One pair of antennae |
| Chitinous cuticle and jointed foot | Two-chitinous cuticle and jointed foot |
| Prawn, crab | Cockroach, grasshopper |

623 **(c)**
Pearl are produced by the animals of phylum Molluca. A pearl is a result of an injury to molluscs. It is secreted by the mantle as a means of protection against some foreign body. Pearl is obtained from *Pinctada vulgaris*.

625 **(d)**
The blood sucking habit is known as **sanguivorous**. It is found in *Hirudinaria* (Indian cattle leech).

626 **(d)**
Spiders belong to class-Arachnida

627 **(c)**
**Poikilothermy** (cold bloodedness) is a condition of any animal whose body temperature fluctuates considerably with that of its environment.

628 **(d)**
In rat, left lung is smaller and single lobed, while right lung is larger and 3 lobed (it is actually 4 lobed with median and post caval lobe being region through, which post caval passes).
The three lobes are anterior, posterior and middle.

629 **(c)**
Osphradium is a sense organ in mollusc which acts as chemoreceptor. It is present at the base of gills, on the ventral surface of posterior adductor muscle. Osphradium is used to test physical and chemical qualities of food.

630 **(a)**
Birds have pneumatic bones, lungs with air sacs and embryonic membranes (*i.e.,* amnion, chorion, yolk sac and allantois).

631 **(a)**
In the intestine of human, the protective covering of ingested eggs are digested and 0.25 to 0.3 mm long juveniles become free in intestine lumen.

632 **(c)**
Statement I and II are true for *Wuchereria* and statements III and IV are false. In *Wuchereria* as for all animals belonging to phylum-Aschelminthes females are longer than males and they have an organ-system level of organisation

633 **(b)**
**Holozoic** nutrition is the ingestion of food in solid or liquid form.

634 **(d)**
In open type of circulatory system cells and tissues are directly bathed in the blood which is pumped out of the heart. There are no arteries, veins capillaries as found in closed circulatory system

635 **(b)**
In annelids, alimentary canal is straight with anterior mouth and posterior anus. Due to spacious, fluid filled body cavity between body wall and alimentary canal, the body appears like a tube within a tube in section.

636 **(b)**
Spermatheca possess four pairs of flask shaped sac. Each sac possess diverticulum, which is meant for storage of sperm and large ampulla for their nourishment.

637 **(b)**
*Hydra* shows a central cavity or coelenteron, which is functionally referred as gastrovascular cavity.

638 **(d)**
Complete metamorphosis is found in *Musca*.

639 **(a)**
*Periplaneta americana* has thermoreceptor sensillae on 1st, 2nd and 3rd segments of tarsus of legs.

640 **(c)**
The excretory system in Annelida consists of nephridia. Flame cells are part of the excretory system of animals belonging to phylum-Platyhelminthes

641 **(c)**
The cells performing the same function are arranged in tussues, thus called as tissue level of organisation

642 **(c)**
Tentaculata and Nuda are the two classes of phylum-Ctenophora. Tentaculata shows the presence of tentacles and nuda lacks tentacles

643 **(b)**
Medusa is the reproductive structure found in *Aurelia* (jelly fish)

644 **(a)**
*Ichthyophis* belongs to order-Gymnophiona, sub-class-Lissamphibia, class-Amphibia of phylum-Chordata. The member of this order are limbless, blind, elongated worm like, burrowing tropical forms and are known as caecilians or blind worms.

645 **(d)**
Platyhelminthes has a single opening within the body that serves as both mouth and anus

646 **(a)**
**Ammonotelic** animals excrete ammonia, *e.g.,* aquatic invertebrates, bony fishes, tailed amphibians and aquatic reptiles.

647 **(a)**
Gizzard is a muscular compartment of the alimentary canal, that is specialized for breaking up of food. In earthworm, it is the main grinding organ of alimentary canal and occupies most of the part of 9th segment. Its wall is very thick and hard due to a very thick circular muscle layer. Internally, it is lined by the cuticle.

648 **(d)**
Genital pouch of male cockroach lies at the hind end of abdomen bounded dorsally by 9th and 10th

terga and ventrally by 9th sternum.

649 **(b)**
**Hibernation** is the inactive stage during winter or the dormancy during winter. It is known as winter sleep. During hibernation lung breathing is stopped while skin breathing continues which suffice the need of oxygen.

650 **(b)**
Conglobate gland or phallic gland is found ventrally beneath to utricular gland in the sixth abdominal segment of male cockroach. It is an accessary gland which secretes a alkaline fluid which forms covering of spermatophores during copulation.

651 **(b)**
Pearl is an 'inside out' tiny shell, which is secreted by a bivalve mollusc belonging to the genus-*Pinctada* (*P. vulgaris*).

652 **(d)**
Penguin and ostrich are not mammals, while whale, bat kangaroo, hippopotamus are mammals.

653 **(c)**
Aves is the first class to show completely four-chambered heart

654 **(d)**
Amphibian, Reptilia and Aves show oval-biconvex nucleated erythrocytes. Mammalia have circular biconcave-denucleated erythrocytes

655 **(c)**
Each medusa of *Obelia* bears four gonads situated on the sub-umbrellar surface, one each in the middle of each radial canal.

656 **(b)**
**Corpus callosum** is a neural connection between two cerebral hemispheres of mammals.

657 **(d)**
Class-Mammalia is divided into sub-class-Theria and Prototheria. Eutheria and Metatheria are infraclass under sub-class-Theria. *Hemiechinus* is the generic name for hedge hog. *Macropus* is the generic name for kangaroo and *Ornithorhynchus* is the generic name for duck-bill platypus

658 **(a)**
Robust botflies, *Dermatobia hominis*, also called the 'berne' 'nuche' or 'forcel' infect cattle, dogs, cats, sheep, rabbit and other animals including man.

659 **(c)**
In the frog is heart, the pace maker is the sinus venosus, an enlarged region between the vena cava and the right atrium. The mammalian SA noade is believed to be an evolutionary remnant of the sinus venosus.

660 **(d)**
In *Balanoglossus* and *Saccoglossus* (Phylum-Hemichordata), excretory organ is proboscis gland.

661 **(c)**
In Arthropoda, ventral nerve cord run along the mid ventral line of the abdomen and in Annelida the ventral nerve cord arises from the sub-pharyngeal ganglia and runs backwards in the mid ventral line to the posterior end of the body.

662 **(d)**
Nematocyst is filled with a poisonous fluid called **hypnotoxin**, which is a mixture of proteins and phenols. Nematocyst is a definite response of *Hydra* for offence, defence, food capture, anchorage and locomotion.

663 **(c)**
Asexual reproduction in sponges takes place by fragmentation, while the sexual reproduction takes place by formation of gametes

664 **(c)**
Coprophagy is the condition (process) when the animal eats its own faecal matter as in rabbits

665 **(a)**
Roundworms (phylum-Aschelminthes) are pseudocoelomates, false coelom is drived from embryonic blastocoel. Flatworms (phylum-Platyhelminthes) are acoelomate animals.

666 **(c)**
In *Pheretima*, lymph glands are present on both sides of dorsal blood vessel from segment 26th and those behind it.

667 **(b)**
The young ones of cockroach are structurally quite like the adults except that these are very small, light coloured and wingless and possess incompletely developed reproductive organs, hence these are called **nymphs**.

668 **(a)**
Discoidal placenta is a character of rat and rabbit. In discoidal placenta villi are strong and form disc like structure.

669 **(b)**
Body cavity of *Hydra* is called **coelenteron**, which serves the purpose of digestion and circulation.

670 **(c)**
Silverfish, scorpion, dragon fly and prawn all belongs to phylum-Arthropoda. Jointed appendages and chitinous exoskeleton are the

characteristic features of this phylum.

672 **(b)**
**Mucous glands** are present in the skin of frog, which secrete mucus that makes the frog's skin slippery and moist and help in cutaneous respiration, *i.e.,* gaseous exchange occurs through skin.

673 **(c)**
Sponges have canal system. Body of sponge is perforated in such a way that it produces a canal system made up of osculum, ostia and gastrovascular cavity. Specialized collar cells are present in sponges. Beating of flagella of collar cells produce a water current, through which these obtain nutrition, respiration, etc.

674 **(a)**
*Fasciola hepatica* is a dignetic termatode. It spends its life cycle in two hosts. Sheep (primary host) and the invertebrate host (intermediate host) snail. They have an alternation of generation in their life cycle. This means the egg hatches into a larval form, this larval form reproduces asexually to produce numerous copies of itself. Eventually, these copies change into another larval form, which in time grows into a sexually reproducing adult. This possession of an asexual generation, means that a single egg can produce not just one infectious agent, but may be even tens or hundreds or thousands.

675 **(b)**
Pancreas are absent in cyclostomates, a class of Agnatha.

676 **(c)**
Nematocysts are stinging cells that have a long thread like tube that may either coil around a prey and inject a toxin called hypnotoxin

677 **(b)**
Circulatory system of cockroach is open or lacunar type. Tubular heart of cockroach is situated in pericardial sinus over the dorsal diaphragm. It is longitudinally beaded with 13 chambers perforated by ostia having valves.

678 **(d)**
Presence of hepatic portal system is the characteristic of chordates.

679 **(d)**
In earthworm, in each body segments, except the first, last and clitellum, there are rows of S-shaped setae, embedded in the epidermal pits in the middle of each segments. Their principle role is in locomotion.

680 **(d)**
Canal system in Porifera is concerned with all respiration, nutrition and sexual reproduction.

681 **(b)**
Preen glands are present at the base of tail and seretes oil to keep feathers water proof.

682 **(c)**
Trilobiles are fossil records of Arthropods that are over 600 million yrs old

683 **(c)**
Crossopterygian are called lobed fined fishes. *Neoceratodus* (order-Dipnoi) is a crossopterygian fish. It is found in Burnett and Mary rivers of Queen's land, Australia.

684 **(a)**
Aquatic annelids like *Nereis* possess lateral appendages, parapodia, which help in swimming. In molluscs, the mouth contains a file-like rasping organ for fedding called, radula. Gills present in mantle cavity have respiratory and excretory functions.

686 **(c)**
In snakes, post anal tail is found.

687 **(d)**
Neurons in earthworm are motor, sensory and adjustor (association neurons).

688 **(d)**
Only animals belonging to the phylum-Aschelminthes are pseudocoelomates. Animals belonging to the phylum-Platyhelminthes are acoelomates, while Arthropoda and Mollusca are coelomates

689 **(d)**
Choanocytes or collar cells are flagellated cells characteristic of the phylum-Porifera

690 **(d)**
Heart of cockroach is a pulsatile 13-chambered structure. It is present below the tergal plates middorsaly in the thorax and abdomen. Its inhalant openings are called ostia, which are guarded by valves. This heart is infact, the dorsal blood vessel, which pulsates with the help of external alary muscles. The blood in heart flow uniderectionally from posterior end to the anterior end of the body.

691 **(b)**
*Heterometrus* is a terrestrial arthropod. Its prosoma bears a pair of chelicerae, a pair of padipalps and four pairs of walking legs.

692 **(c)**
*Planaria* and *hydra* both possess regenerative

capacity

694 **(c)**
**Metamorphosis** is a marked structural change that allows the conversion of larva into adult.

696 **(d)**
Aves lack teeth but have oil glands called preen glands present in their tail. They have a crop and a gizzard which aids in digestion Bones have air cavities that leads to reduce weight of the bird and makes flight possible among birds

697 **(c)**
The common species of cockroach found in India is Oriental cockroach (*Blatta orientalis*).

698 **(b)**
*Cyclops* belongs to class-Crustacea of phylum-Arthropoda.

699 **(c)**
A glandular band called clitellum surrounds 14, 15, 16 segments.

700 **(d)**
Tissue level organisation is seen in phylum-Coelenterata and Ctenophora

701 **(c)**
Lung fishes have discontinuous disrlbution.

702 **(c)**
Excretory system in phylum-Porifera is ammoniotelic, as they excrete out ammonia

703 **(b)**
Soft and naked body of earthworm (*Pheretima posthuma*) is divided into 100-120 similar segments called **metameres** or **somites**.

704 **(d)**
Arthropoda is the largest phylum. Arthropoda are characterized by the following features-bilateral symmetrical body, triploblastic and metamerically segmented, jointed, appendages open circulatory system etc.

705 **(d)**
The respiration in prawn takes place by gills. There are 8 gills inside each gill chamber.

706 **(d)**
Annelids have a central **ventral** nerve cord.

707 **(b)**
Class-Crustacea includes *Daphnia*, crab, prawn, lobster, crab, shrimp and others. Millipede or *Julus* belongs to class-Diplopoda and centipede or scolopendra belongs to class-Chiliopoda

708 **(d)**
In Urochordata, the notochord is present only in larval tail, while in Cephalochordata notochord is present throughout life

709 **(c)**
*Ascaris* do not show thigmotaxis.

710 **(a)**
In a copulating pair of earthworm, cross-fertilization and external fertilization takes place.

711 **(c)**
Phylum-Arthropoda is the first largest, having most successful invertebrates in terms of number of species (about 900,000). Phylum-Mollusca is the second largest containing more then 100,000 species and probably the most sophisticated in all invertebrates.

712 **(c)**
**Deuterostomia** are animals, in which clastopore of gastrula becomes the anus of the adult, *e.g.,* Echinodermata and Chordata. Coelom forms by outpocketing or as an outgrowth of gut, *i.e.,* enterocoelous.

713 **(c)**
Caecilian worms are burrowing, limbless, tropical amphibians and worm like appearance belong to the family-Caecillidae, forming the amphibian order-Apoda (or Caecilia or Gymnophiona). These have a grooved skin that gives them a segmented appearance, small eyes, which are weak or blind and have no trace of limbs or pelvis.

714 **(b)**
The phylum-Arthropoda is characrterised by the jointed appendages and chitinous exoskeleton.

715 **(d)**
Snakes lack limbs, hence both pelvic and pectoral girdles are missing. Urinary bladder and the sternum bone are also missing

716 **(b)**
*Spirulina* is a cyanobacteria and does not belong to phylum-Porifera

717 **(b)**
Tube-feet are the locomotory organs of echinoderms. These are sac-like protrusions of the body wall, used for locomotion, feeding and respiration.

718 **(c)**
Mammals have 12 pairs of cranial nerves.

719 **(b)**
Suboesophageal ganglia is related to the mandibular, maxillary and labial nerves. It is the principal motor centre in cockroach.

720 **(a)**
The excretory system of *Taenia solium* consists of lateral longitudinal canals, secondary canals, capillaries and **flame cells**.

721 **(d)**
A pair of ovary present in 2nd to 6th abdominal segment of cockroach. Each ovary is made up of 8 ovariole, which are full of developing eggs. Thus, 16 eggs are arranged in a linear manner.

722 **(a)**
Caterpillar of silk worm possesses a dorsal horn on the 8th segment of thorax.

723 **(a)**
In *Hydra*, reproduction occurs in favourable conditions by **budding**.

724 **(d)**
A-*Rana* or frog and D-*Salamandra* or salamander, these belong to class-Amphibians

726 **(d)**
The water vascular system in Echinoderms, helps in locomotion together with the tube feet. Echinoderms have an **endoskeleton** made of **calcareous plates** and spines

727 **(a)**
*Planaria* (*Dugesia*) has remarkable power of regeneration. If an individual is cut transversely into two parts, the anterior fragment will regenerate a new tail and a posterior piece will develop a new head.

728 **(a)**
Velliger larva is found in phylum-Mollusca.

729 **(d)**
Tadpole's tail is a locomotory organ.

730 **(b)**
Arthropoda is the largest phylum of animal kingdom. In respect of number of species (about 9, 00,000).

731 **(c)**
The caterpillar larvae of silkmoth (*Bombyx mori*) are voracious feeder, so they have the continuous supply of food. Each caterpillar larvae has a mandibulate (biting and chewing) type of mouthparts adapted to feed easily on mulberry leaves, while adult has siphoning type of mouthparts. Commercial silk is obtained from the cocoons of *Bombyx mori.*

732 **(b)**
Mollusca bear organ system level of organization Platyhelminths are acoelomate. Ctenophora have radial symmetry. Arthropodrs are true coelomates

733 **(d)**
Pheromones are the chemicals, which when released by an animal in its surrounding, affect the behavior and development of other individuals of the same species and act as a chemical messenger among them. These are meant for sexual attraction, recognition of area and individuals, alarming and communication, aggressiveness, etc but not for a defence mechanism of prey to avoid predator.

734 **(d)**
Leg of cockroach is five segmented. The correct sequenve of arrangements of segments from base are **coxa, trochanter, femur, tibia** and **tarsus**.

735 **(a)**
The smooth muscles found in iris, regulate the amount of light entering the eye ball by varying the size of the pupil.

736 **(c)**
*Octopus* (devil fish) is a mollusc, belonging to class-Cephalopoda.

737 **(b)**
The members of class-Chondrichthyes are marine animals with streamline body and have cartilaginous endoskeleton.

738 **(a)**
Athick and strong chitinous cuticle covers the whole body of cockroach (*Periplaneta*) as exoskeleton.

739 **(c)**
In *Pheretima*, accessory glands help in binding the worms during copulation.

740 **(c)**
Duck-billed platypus (*Ornithorhynchus anatinus*) is a semi-aquatic prototherian found in Australia and Tasmania. In these, the females lay eggs yet produce milk and possess mammary glands without teats. Milk collects in two abdominal grooves from where the young ones obtain it through lapping.

741 **(c)**
*Taenia solium* stores food mainly in the form of glycogen. Glycogen content of *T. solium* by net weight is 2.17 per cent.

742 **(d)**
Animals belonging to class-Chondrichthyes are so called because of the presence of cartilaginous endoskeleton. They lack air bladder thus, swim constantly and have placoid scales, notochord is persistant through out the life

743 **(b)**
Pouched mammals have abdominal pouch or marsupium in which young ones live for some times, *e.g.,* **Metatherians**, like kangaroo.

744 **(a)**

*Ascaris lumbricoides* is a common intestinal parasite of man.

745 **(a)**

Garden lizard—*Calotes*

House lizard—*Hemidactylus*

746 **(a)**

The dark brown colour of skin of earthworm is due to the pigment porphyrin, which comes from chlorophyll in the decaying vegetable matter on which the earthworm feeds.

747 **(d)**

Animals belonging to class-Crustacea breathe through the body surface or gills and excretion takes place through autumnale gland

748 **(b)**

*Hydra* reproduces asexually by exogenous budding, a type of vegetative propagation and sexually by formation of gametes. *Hydra* reproduces by budding, when plenty of food is available.

749 **(d)**

Except snail, all three are used in organic farming.

*Glomus* – Endomycorrhiza
*Oscillatoria* – BGA
Earthworm - Vermicompost

750 **(b)**

Cnidarians are among those very few animals, which show the phenomenon of polymorphism, *i.e.,* occurrence of more than one type of individuals in the same species.

751 **(a)**

In class-Hirudinea, coelom is greatly reduced by the formation of peculiar connective tissue called botryoidal tissue. It is excretory in function.

752 **(c)**

In sea snakes, the tail is laterally compressed. This helps them to swim properly in the water and is also helpful in balancing and changing the direction easily in water, as it acts like a flipper of boat.

753 **(d)**

In earthworm, two pairs of testes are found in $10^{th}$ and $11^{th}$ segments, accessory glands in $17^{th}$ and $19^{th}$ segments, four pairs of spermathecae from $6^{th}$ to $9^{th}$ segment and one pair of ovaries in $13^{th}$ segment.

754 **(d)**

*Tachyglossus aculeatus* (= *Echidna aculeate*) or spiny ant eater is a connecting link between reptiles and mammals. Its reptilian characters are presence of cloaca, lay eggs which are reptilian in structure and development, eggs contain enough yolk, and embryonic development is similar to reptiles, while mammalian character includes mammary glands which produce milk and nourish children.

755 **(a)**

*Hydra* is colourless, carnivourous coelenterate having radial symmetry. *Taenia, Schistosoma* and *Fasciola* are platyhelminthes having triploblastic bilateral symmetry.

756 **(c)**

Class-Chondrichthyes are part of super-class-Pisces that are of the phylum-Chordata. All chordates displays the presence of a notochord during embryonic development

757 **(a)**

*Wallago attu* (malhi) is a cat fish.

758 **(d)**

The platyhelminthes do not have body cavity.

759 **(d)**

In *Pheretima*, there is a pair of thin walled, non-muscular, loop like blood vessels found in $10^{th}$ and $11^{th}$ segments. These vessels are known as anterior loops and carry blood from lateral oesophageal to supra oesophageal vessel.

760 **(a)**

Enteronephric enphridia are so called because these opens into alimentary canal. These occurred as paired tufts on either side of pharynx and oesophagus in the $4^{th}$, $5^{th}$ and $6^{th}$ segment. It consists of terminal nephridial duct and long thick walled excretory canal.

761 **(b)**

In solid stage morula a cavity is developed known as blastocoel and this stage is known as blastula. Archenteron is a cavity of gastrula and opening of archenteron is known as blastopore.

762 **(c)**

**Choanocytes** are the characteristic feature of Porifera, *e.g.,* sponges.

763 **(c)**

*Ornithorhynchus* is an egg laying mammal.

765 **(d)**

Circulatory system of cockroach is open or lacunar type. The blood flows through haemocoelic system. Heart of cockroach is a dorsal, pulsatile 13 chambered (ten abdominal and three thoracic chambers) structure.

766 **(a)**

Three slender branches one each from the ventral rami of third, fourth and fifth cervical nerves on each side constitute a phrenic nerve to innervate the diaphragm (diaphragm is absent in frog).

767 **(b)**

*Physalia* (Hydrozoa) is also known as 'Portuguese man of war'. It belongs to phylum-Cnidaria.