20. The famous Indian Zoologist who wrote a memoir upon Pheretima posthuma is **[CBSE PMT 2001]**
(a) J.C. Bose (b) M.L.Bhatia
(c) K.N.Bahl (d) Beni Prasad

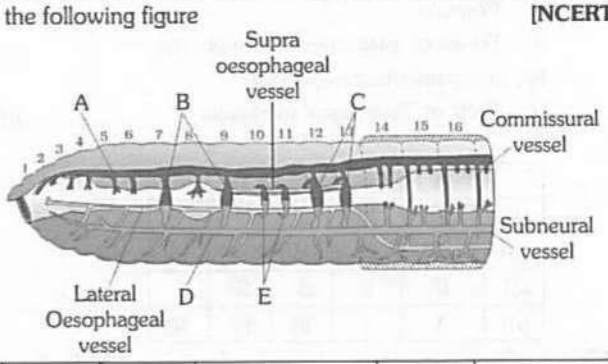
21. The highly degraded organic matter rich in nitrogen and potassium in particular, resulting from the activity of earthworms, is called **[NCERT; KCET 2006]**
(a) Worm castings (b) Vermicompost
(c) Compost bedding (d) Humus

22. In which of the following class of Annelida, one pair ovaries and several pair testes are found **[MP PMT 2003]**
(a) Archiannelida (b) Hirudinea
(c) Oligochaeta (d) Polychaeta

23. Which one of the following pairs of items correctly belongs to the category of organs mentioned against it **[CBSE PMT 2008]**
(a) Nephridia of earthworm and malpighian tubules of Cockroach - Excretory organs
(b) Wings of honey bee and wings of crow - Homologous organs
(c) Thorn of Bougainvillea and tendrils of Cucurbita - Analogous organs
(d) Nictitating membrane and blind spot in human eye - Vestigial organs

24. Aphrodite, commonly known as sea mouse is a **[J & K CET 2008]**
(a) Annelid (b) Mollusca
(c) Insect (d) Mammal

25. Observe the blood vascular system of earthworm given in the following figure **[NCERT]**



	A	B	C	D	E
(a)	Ventral vessel	Lateral hearts	Anterior loop	Dorsal vessel	Lateral-oesopharyngeal hearts
(b)	Dorsal vessel	Lateral hearts	Anterior loop	Ventral vessel	Lateral-oesopharyngeal hearts
(c)	Ventral vessel	Lateral hearts	Lateral-oesopharyngeal hearts	Dorsal vessel	Anterior loop
(d)	Dorsal vessel	Lateral hearts	Lateral-oesopharyngeal hearts	Ventral vessel	Anterior loop

26. The two organisms which breathe only through their moist skin are **[Odisha JEE 2009; J & K CET 2012]**
(a) Fish and frog (b) Frog and earthworm
(c) Leech and earthworm (d) Fish and earthworm

27. Earthworms are **[CBSE PMT 2006]**
(a) Uricotelic under conditions of water scarcity
(b) Ammonotelic when plenty of water is available
(c) Ureotelic when plenty of water is available
(d) Uricotelic when plenty of water is available

28. In the 4th, 5th and 6th segments of earthworm, lying above pharyngeal mass and connected with pharyngeal glands are found small, red coloured follicular bodies called **[NCERT; APMEE 2002; Kerala PMT 2006]**
(a) Septal glands (b) Blood glands
(c) Salivary glands (d) Nephridia
(e) Intestinal caecae

29. Region of Earthworm which is forest of nephridia is **[NCERT; CPMT 2002]**
(a) Clitellar region (b) Pharyngeal region
(c) Typhlosolar region (d) Intestinal region

30. Chloragogen cells are present in **[RPMT 1998]**
(a) Body wall of Leucosolenia
(b) Blood of Earthworm
(c) Coelomic fluid of Earthworm
(d) Blood of Cockroach

31. Leech is **[J & K CET 2005]**
(a) Carnivorous (b) Sanguivorous
(c) Ectoparasite (d) Both (b) and (c)

32. In Earthworm, genital papillae occur in segments **[NCERT]**
(a) 16 and 17 (b) 16 and 18
(c) 17 and 19 (d) 17 and 18

33. Flow of blood in dorsal blood vessel of Earthworm is
(a) Backward (b) Forward
(c) Sideward (d) Downward

34. The lateral hearts in earthworm have **[NCERT; AMU (Med.) 2010]**
(a) Four pairs of valves and are situated in segments 7 and 9
(b) Four pairs of valves and are situated in segments 6 and 8
(c) Three pairs of valves and are situated in segments 8 and 10
(d) Two pairs of valves and are situated in segments 6 and 11

35. The female genital aperture in earthworm is present ventrally on the segment **[NCERT; CPMT 2000; BHU 2006]**
(a) 10th (b) 12th
(c) 14th (d) 18th

36. In earthworm, the characteristic internal median fold of dorsal wall of the intestine called typhlosole is present in **[Kerala PMT 2008]**
(a) 5 to 9 segments (b) 9 to 14 segments
(c) 26 to 35 segments (d) 15 to last segment
(e) 35 to last segment

37. Hearts of Pheretima are situated in the segments **[NCERT]**
(a) 10, 13, 16 and 17 (b) 7, 9, 12 and 13
(c) 4, 5, 10 and 13 (d) 11, 14, 17 and 18

38. In earthworm fertilization occurs in **[NCERT; CPMT 2005; Bihar CECE 2006]**
(a) Oviduct (b) Spermatheca
(c) Clitellum (d) Coccon

39. The main function of clitellum is **[RPMT 2002; BCECE 2005]**
(a) Coccon formation (b) Locomotion
(c) Excretion (d) Copulation

40. Pheretima is **[NCERT]**
(a) Sterile (b) Hermaphrodite
(c) Radially symmetrical (d) Dioecious

41. In *Pheretima*, gizzard, buccal cavity, pharynx, oesophagus, pharyngeal nephridia receive the blood from this blood vessel **[EAMCET 2009]**
(a) Supra oesophageal (b) Lateral oesophageal
(c) Dorsal Blood (d) Subneural

42. Major nitrogenous excretory material of Earthworm is
(a) Uric acid (b) Ammonia
(c) Urea (d) Amino acids

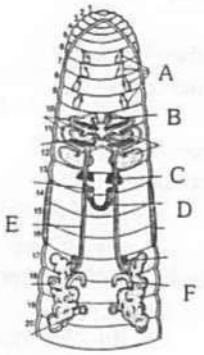
43. Occurrence of Earthworm in soil is indicated by
(a) Heaps of small rounded pellets
(b) Heaps of dry powder soil
(c) Holes
(d) Cast skin

44. Clitellum of *Pheretima* is thick girdle that is **[NCERT; BHU 1996; MHCET 2003; AFMC 2010]**
(a) Nonglandular around 14-16 segments
(b) Glandular around 14-16 segments
(c) Glandular around 16-18 segments
(d) Nonglandular around 16-18 segnments

45. The location of lymph glands in *Pheretima* is **[NCERT; EAMCET 2009]**
(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} segment

46. Trochophore larva is found in **[CPMT 2005]**
(a) *Chiton* (b) *Nereis*
(c) *Aphrodite* (d) All of these

47. Choose the correct combination of labelling from the options given **[NCERT; Kerala PMT 2009, 11]**

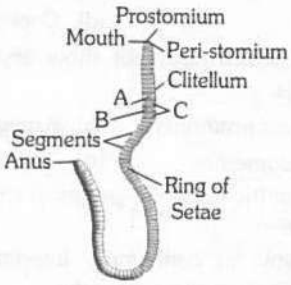


(a) A – testis, B – spermatheca, C – seminal vesicle, D – ovary, E – vas deferens, F – accessory gland
(b) A – spermatheca, B – testis, C – ovary, D – seminal vesicle, E – vas deferens, F – accessory gland
(c) A – spermatheca, B – testis, C – seminal vesicle, D – ovary, E –vas deferens, F – accessory gland
(d) A – spermatheca, B – testis, C – accessory gland, D – ovary, E – vas deferens, F – seminal vesicle
(e) A – spermatheca, B – ovary, C – seminal vesicle, D – testis, E – vas deferens, F – accessory gland

48. Earthworm has **[NCERT]**
(a) Two eyes (b) Many eyes
(c) No eyes (d) One eyes

49. Photoreceptors of Earthworm occur on
(a) Clitellum (b) Anal segment
(c) Dorsal surface (d) Lateral sides

50. Examine the ventral view of earthworm and identify A, B and C **[NCERT]**



	A	B	C
(a)	Female genital pore	Male genital pore	Genital papilla
(b)	Female genital pore	Genital papilla	Male genital pore
(c)	Male genital pore	Female genital pore	Genital papilla
(d)	Excretory pore	Female genital pore	Male genital pore

51. *Pheretima posthuma* (earthworm) is highly useful as **[NCERT]**

Or

Most important use of earthworm is **[CBSE PMT 1990; AFMC 2000]**
(a) Their burrows make the soil loose
(b) They make the soil porous, leave their castings and take organic debris in the soil
(c) They are used as fish meal
(d) They kill the birds due to biomagnification of chlorinated hydrocarbons

52. Earthworm possesses hearts **[NCERT; CBSE PMT 1991; RPMT 2000; AFMC 2006]**
(a) 6 pairs (b) 4 pairs
(c) 2 pairs (d) 1

53. The septal and pharyngeal nephridia open into alimentary canal and are of enteronephric type. It is an adaptation for **[NCERT; CPMT 1993; MP PMT 2004; AMU (Med) 2009]**
(a) Conservation of water (b) Conservation of heat
(c) Regulation of temperature (d) Regulation of amino acids

54. In earthworm, gizzard is found in **[CPMT 2009]**
(a) 8 – 10 Segment (b) 8^{th} segment
(c) 27^{th} segment (d) 8 – 11 segment

55. In earthworm, ovary is situated in segment **[NCERT; AFMC 1993; AIIMS 1993; BHU 2012]**
(a) 13 (b) 9
(c) 10 (d) 26

56. Blood of *Pheretima* is **[NCERT; CBSE PMT 1990; Odisha JEE 2005]**
(a) Blue with haemocyanin in corpuscles
(b) Blue with haemocyanin in plasma
(c) Red with haemoglobin in corpuscles
(d) Red with haemoglobin in plasma.

57. Suctorial mouth occurs in **[AFMC 2000]**
(a) Butterfly (b) Leech
(c) *Taenia* (d) Cockroach

58. The animal which does not show any metamorphosis of larval stage is **[Pb. PMT 1997]**
(a) *Pheretima posthuma* (b) Asterial
(c) *Musca domestica* (d) Butterfly

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

60. Earthworms have how many segments **[NCERT; HPMT 2005]**
(a) 85 - 400 (b) 100 - 200
(c) 20 - 95 (d) 115 – 120

61. Specialised respiratory organs are absent in **[CPMT 2000]**
Or
In which of the following respiration occurs without any respiratory organ **[BHU 2006]**
(a) Mosquito larva (b) Tadpole
(c) Cockroach (d) Earthworm

62. Blood of Earthworm is red because its haemoglobin is **[RPMT 1995]**
(a) Intracellular (b) Intercellular
(c) Oxidised (d) Reduced

63. Earthworm found in India is **[NCERT; RPMT 1995]**
(a) Lumbricus (b) Pheretima
(c) Drawida (d) Megascolex

64. Which one assists in locomotion **[CBSE PMT 1993; DPMT 1995]**
(a) Trichocysts in *Paramecium*
(b) Pedicellariae of Star Fish
(c) Clitellum in *Pheretima*
(d) Posterior sucker in *Hirudinaria*

65. Trait common amongst Earthworm, Leech and Centipede is **[CBSE PMT 1993]**
(a) Absence of legs (b) Hermaphrodite nature
(c) Ventral nerve cord (d) Malpighian tubules

66. Leech secretes which of the following anticoagulant **[AFMC 2005]**
(a) Hirudin (b) Heparin
(c) Serotonin (d) Histamine

67. In Earthworm, arrangment of blood vessels is **[BHU 1994, 2000, 01]**
(a) Different in last fifteen segments
(b) Different in first thirteen segments
(c) Same throughout
(d) Different in middle thirteen segments

68. Chloragogen cells are involved in **[RPMT 1995; APMEE 1995; DPMT 1999]**
(a) Digestion (b) Excretion of water
(c) Respiration (d) Fat storage

69. Excretory organs of Earthworm are **[NCERT; RPMT 1995; Manipal 1995, 99]**
(a) Coelom (b) Flame cells
(c) Nephridia (d) Gizzard

70. Spermathecae in earthworm is **[NCERT; AFMC 2005]**
(a) For producing sperm
(b) For storage of sperm obtained from male earthworm during copulation and used in future
(c) Both (a) and (b)
(d) None of these

71. In Earthworm, the effective organ for food digestion is **[RPMT 1995]**
(a) Pharynx (b) Buccal cavity
(c) Mouth (d) Stomach

72. Life span of Earthworm is **[RPMT 1996]**
(a) 1 – 3 years (b) 2 – 8 years
(c) 3.5 – 10.5 years (d) 6 – 8 years

73. Copulation period of Earthworm is **[APMEE 1996]**
(a) One hour (b) Two hours
(c) Four hours (d) About one week

74. In *Pheretima* nephridia occur in **[APMEE 1996]**
(a) All segment except 1 – 4 and 10 – 14
(b) 1 – 2, 4 – 6, 15 to last segments
(c) Meganephridia in pre-clitellar and micronephridia in post-clitellar segments
(d) Micronephridia in all segments meganephridia from clitellar region to end

75. In Earthworm **[APMEE 1996]**
(a) Ovaries are larger than testes
(b) Testes are larger than ovaries
(c) Both are equal
(d) Right testes are larger the ovaries

76. Trochophore larva is found in **[DPMT 2004]**
(a) Annelida (b) Platyhelminthes
(c) Coelenterate (d) Prawn

77. Name the animal having both setae and nephridia **[DPMT 1996]**
(a) Sea Urchin (b) Sea Mouse
(c) Sea Anemone (d) Sea Pen

78. Spermathecal pores of *Pheretima* are present in **[NCERT; CPMT 1996, 98; AMU (Med.) 2005; Kerala PMT 2010]**
(a) 5/6, 6/7 7/8 and 8/9
(b) 6/7, 7/8. 8/9 and 9/10
(c) 1/2, 2/3, 3/4 and 4/5
(d) 14/15, 15/16, 16/17 and 17/18

79. Typhlosole found in *Pheretima* occurs in **[CPMT 1996]**
(a) Oesophagus (b) Stomach
(c) Gizzard (d) Intestine

80. Chromophil cells present on pharynx of Earthworm take part in secretion of **[RPMT 1996]**
(a) Mucus (b) Lipases
(c) Carbohydrases (d) All the above

81. Nephrostome occurs in **[RPMT 1998]**
(a) Septal nephridia
(b) Integumentary nephridia
(c) Pharyngeal and septal nephridia
(d) Pharyngeal and integumentary nephridia

82. Animals having multiple or numerous setae are included under **[RPMT 1998]**
(a) Polychaeta (b) Oligochaeta
(c) Hirudinea (d) Onychophora

83. Movement of coelomic fluid helps in locomotion of **[JIPMER 1999]**
(a) *Hydra* (b) Frog
(c) Starfish (d) Earthworm

84. Which of the following annelids is a parasite on snails and frogs **[MP PMT 2013]**
(a) Acanthobdella (b) Pontobdella
(c) Branchellion (d) Glossiphonia

85. Which one is not deuterostome **[AFMC 1999]**
(a) Chordata (b) Cephalochordata
(c) Annelida (d) Echinodermata

86. In Earthworm, mouth is situated on **[NCERT; APMEE 1999]**
(a) Prostomium (b) Peristomium
(c) Stomium (d) Protostomium

87. A mismatch is **[Chd. CET 2000]**
(a) Odd toe–Horse (b) *Pheretima*–parapodia
(c) *Hydra*–Cnidaria (d) Cartilaginous Fish–Shark

88. The nerve chord in earthworm originates from **[NCERT; AMU (Med.) 2012]**
(a) Supra-pharyngeal ganglia and has a fused pair of ganglia in each segment from the 3rd to the last
(b) Supra-pharyngeal ganglia and has a fused pair of ganglia in each segment from the 4th to the last
(c) Sub-pharyngeal ganglia and has fused pair of ganglia in each segment from the 5th to the last
(d) Sub-pharyngeal ganglia and has a fused pair of ganglia in each segment from the 6th to the last

89. *Pheretima* and its close relatives derive nourishment from **[NCERT; CBSE PMT (Pre.) 2012]**
(a) Sugarcane roots
(b) Decaying fallen leaves and soil organic matter
(c) Soil insects
(d) Small pieces of fresh fallen leaves of maize, etc

90. In Earthworm, neurons are **[CPMT 2000; BHU 2006]**
(a) Sensory (b) Motor
(c) Both (a) and (b) (d) Mixed

91. In *Pheretima*, septa are absent **[CPMT 2000]**
(a) 5/6, 10/11 (b) 5/6, 7/8
(c) 6/7, 7/8 (d) First four segments

92. Enteronephric nephridia of earthworm are concerned with **[CBSE PMT 2000]**
(a) Excretion (b) Respiration
(c) Digestion (d) Osmoregulation

93. Blood vessel in *Pheretima* having valves is **[AIIMS 2000]**
(a) Dorsal (b) Ventral
(c) Lateral (d) Integumentary

94. Oxygen carrying blood pigment of Earthworm is **[Kerala PMT 2000]**

Or

Which of the follwoing is absent in the coelomic fluid of earthworm **[AFMC 2012]**
(a) Haemocyanin (b) Haemoglobin
(c) Haemoerythrin (d) Chlorocruorin
(e) Pinnaglobin

95. Nephridia of *Pheretima* are **[RPMT 2000]**
(a) Protonephridia (b) Solenocytes
(c) Micrometanephridia (d) Meganephridia

96. In Earthworm the dorsal wall of the intestine from the 26th segment to 95th segment forms a median internal fold called **[Kerala CET 2005, 07]**
(a) Trochophore (b) Typhlosole
(c) Clitellum (d) Trachea
(e) Nephridium

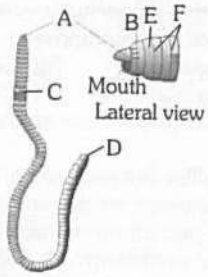
97. Which is not correct for Earthworm **[CPMT 2001]**
(a) It walks with a speed of 25 cm/min
(b) It can remain without oxygen for 6-30 hrs
(c) Life span is 3.5 – 10 years
(d) Setae easily dissolve in KOH

98. In *Pheretima* coelomic fluid contains **[BHU 2001]**
(a) Dissolved haemoglobin (b) Dissolved RBC
(c) Broken WBC (d) Watery plasma

99. Locomotory organ of annelida is **[Odisha JEE 2011]**
(a) Sucker (b) Parapodia
(c) Setae (d) All of these

100. External segmentation is absent but internal segmentation is present in **[APMEE 2001]**
(a) Polychaeta (b) Oligochaeta
(c) Archiannelida (d) Hirudinea

101. See the following figure and identify A to F **[NCERT]**



Dorsal view of earthworm

	A	B	C	D	E	F
(a)	Prostomium	Peristomium	Endo-steum	Cloaca	Metamer es	Ring of setae
(b)	Prostomium	Peristomium	Endo-steum	Anus	Metamer es	Ring of setae
(c)	Prostomium	Peristomium	Clitellu m	Anus	Metamer es	Ring of setae
(d)	Peristomium	Prostomium	Clitellu m	Anus	Metamer es	Ring of setae

102. Phaosome in Earthworm is **[APMEE 2002]**
(a) Lens (b) Pigment
(c) Nephridium (d) Hormone

103. In earthworms setae are present in all segments except **[NCERT; CPMT 1993; RPMT 1994; Kerala PMT 2011]**
(a) First and the last segments
(b) First and the clitellum
(c) First segment
(d) Clitellum and last segments
(e) First clitellum and last segments

104. Which one will excrete silicates consumed by Earthworm alongwith food **[APMEE 2002]**
(a) Intestinal cells (b) Basal cells
(c) Chloragogen cells (d) Flame cells

105. Pharyngeal nephridia of Earthworm *Pheretima* occur in segments **[NCERT; CMC 2002]**
(a) 3, 4 and 5 (b) 4, 5 and 6
(c) 5, 6 and 7 (d) 6, 7 and 8

106. Bilateral symmetry, blastopore mouth and true coelom occur in **[CMC 2002]**
(a) Echinodermata (b) Chordata
(c) Annelida (d) Platyhelminthes

107. Which one is correct **[Odisha JEE 2002]**
(a) Flatworms are eucoelomates
(b) Fishes are radially symmetrcial
(c) Birds are poikilothermic
(d) Earthworm is metamerically segmented

108. Pick up the mismatched **[Odisha JEE 2002]**
(a) Annelida – *Hydra*
(b) Nemathelminthes – *Ascaris*
(c) Arthropoda – *Cockroach*
(d) Echinodermata – Starfish

109. Locomotion occurs is Earthworm with the help of **[RPMT 2002]**
(a) Setae
(b) Setae and circular muscles
(c) Parapodia
(d) Setae, circular muscles and longitudinal muscles

110. Which of the following nephridia does not found in earthworm **[AFMC 2004]**
(a) Septal nephridia (b) Macro nephridia
(c) Integumentary nephridia (d) Pharyngeal nephridia

111. In which phylum the body is segmented **[MP PMT 2010]**
(a) Porifera (b) Coelenterata
(c) Annelida (d) Mollusca

112. Which one of the following species of earthworm is not recommended for vermicomposting **[KCET 2010]**
(a) *Eudrilus eugeniae* (b) *Eisenia fetidae*
(c) *Perionyx excavatus* (d) *Pheretima posthuma*

113. Which of the following is incorrect for *Pheretima* **[CPMT 2010]**
(a) Genital papillae are present on 17^{th} and 19^{th} segment
(b) Male genital pores are present on 18^{th} segment
(c) Clitellum is present on segments 24, 25 and 26
(d) Segments of earthworm are called somites

114. The breakdown of detritus into smaller particles by earthworm is a process called **[CBSE PMT (Mains) 2011; NEET 2013; KCET 2015]**
(a) Mineralisation (b) Catabolism
(c) Humification (d) Fragmentation

115. Which one of the following structures in *Pheretima* is correctly matched with its function **[CBSE PMT (Mains) 2011]**
(a) Setae – defence against predators
(b) Typhlosole – storage of extra nutrients
(c) Clitellum – secretes cocoon
(d) Gizzard – absorbs digested food

Phylum-Arthropoda

1. Which of the following features is not present in *periplaneta Americana* **[NEET (Phase-I) 2016]**
(a) Schizocoelom as body cavity
(b) Indeterminate and radial cleavage during embryonic development
(c) Exoskeleton composed of N-acetylglucosamine
(d) Metamerically segmented body

2. The presence of compound eyes is characteristics of the phylum **[VITEEE 2008; WB JEE 2008]**
(a) Nematoda (b) Mollusca
(c) Echinodermata (d) Arthropoda

3. Which of the following is not an arachnid **[AFMC 2008]**
(a) Spider (b) Itchmite
(c) Louse (d) Tick

4. The process of conversion of a small cockroach into an adult cockroach is called as **[RPMT 1999]**
(a) Moulting (b) Metamorphosis
(c) Ecdysis (d) Transformation

5. 'Hexapoda' is another name of **[RPMT 1999]**
(a) Crustacea (b) Arachnida
(c) Insecta (d) Archiannelid

6. Glow worm is
(a) Annelid (b) Helminthes
(c) Insect (d) Mollusca

7. Which thing is common in leech, mosquito bed bug and rat **[AIIMS 1993]**
(a) All have anticoagulatin
(b) All have nucleus
(c) All have no cellular membrane
(d) All have sexual phase

8. Cockroach belongs to class **[RPMT 1999]**
(a) Hexapoda (b) Apoda
(c) Myriapoda (d) Cephalopoda

9. The image formed in the eyes of cockroach is **[RPMT 1999]**
(a) Apposition (b) Superposition
(c) Both (a) and (b) (d) None of these

10. What is common among silver fish, scorpion, crab and honey bee **[CBSE PMT 1998; AIIMS 2007]**
(a) Compound eyes (b) Poison glands
(c) Jointed legs (d) Metamorphosis

11. Which one of the following groups of three animals each is correctly matched with their one characteristic morphological feature **[CBSE PMT 2008]**

	Animals	Morphological feature
(a)	Scorpion, Spider, Cockroach	Ventral solid central nervous system
(b)	Cockroach, Locust, Taenia	Metameric segmentation
(c)	Liver fluke, Sea anemone, Sea cucumber	Bilateral symmetry
(d)	Centipede, Prawn, Sea urchin	Jointed appendages

12. A moth is closely related to
(a) Butterfly (b) Cricket
(c) Beetle (d) Wasp

13. Which one of the following is the true description about an animal concerned **[NCERT; Manipal 2005; CBSE PMT 2008]**
(a) Rat – Left kidney is slightly higher in position than the right one
(b) Cockroach – 10 pairs of spiracles (2 pairs on thorax and 8 pairs on abdomen)
(c) Earthworm – The alimentary canal consists of a sequence of pharynx, oesophagus, stomach gizzard and intestine
(d) Frog – Body divisible into three regions – head, neck and trunk

14. The biggest phylum in regard to the number of species is **[NCERT; CPMT 1994]**

Or

Which one of the following have the highest number of species in nature **[CBSE PMT (Pre.) 2011]**

(a) Arthropoda (b) Platyhelminthes
(c) Chordata (d) Protozoa

15. The arthropods do not possess **[EAMCET 1998]**

(a) True coelom (b) Exoskeleton
(c) Haemocoel (d) Malpighian body

16. The number of abdominal segments in male and female cockroach is **[NCERT; Kerala PMT 2008]**

(a) 10, 10 (b) 9, 10
(c) 10, 11 (d) 8, 10
(e) 9, 9

17. Which of the following is absent in the mouth part of housefly **[APMEE 1995; CPMT 1999; MH CET 2003]**

(a) Labrum (b) Epipharynx
(c) Mandibles (d) Maxillary palps

18. Which of the following animals is unisexual **[Kerala PMT 2008]**

(a) Tapeworm (b) Leech
(c) Sponge (d) Earthworm
(e) Cockroach

19. Which of the following is not a characteristic features of arthropods **[J & K CET 2012]**

(a) Jointed appendages (b) Unsegmented body
(c) Moulting (d) Articulated exoskeleton

20. Note the following :

(A) Fenestra (B) Pedical (C) Lacinia
(D) Flagellum (E) Gelea (F) Mentum
(G) Palpifer (H) Cando (I) Glossa

Which of the above found in the first pair of maxillae in the case of Cockroach **[EAMCET 2009; AMU (Med.) 2010, 12]**

(a) C, E G and H (b) A, C, E and I
(c) A, F, G and I (d) B, E, G and I

21. In cockroach, which of the following is the principal motor centre **[EAMCET 2009]**

(a) Supraoesophageal ganglia
(b) Suboesophageal ganglia
(c) Metathoracic ganglia
(d) Abdominal ganglia

22. The terga, sterna and pleura of cockroach body are joined by **[AIPMT (Cancelled) 2015]**

(a) Muscular tissue (b) Arthrodial membrane
(c) Cartilage (d) Cementing glue

23. Spiders and scorpions are included in class **[CBSE PMT 1993; CPMT 2010]**

(a) Arachnida (b) Echarida
(c) Actinozoa (d) Anthozoa

24. Book-lungs are respiratory organs which are found in **[AFMC 2009]**

(a) Insects (b) Crustaceans
(c) Arachnids (d) Onychophores

25. Stink gland is found in **[CPMT 2009]**

(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

26. Maximum number of economically important species are in the class **[MP PMT 2006]**

Or

Which of the following classes has largest number of animals **[MP PMT 1998]**

(a) Diplopoda (b) Chilopoda
(c) Crustacea (d) Insecta

27. Which of the following is not an insect **[RPMT 1995, 99; AFMC 1996; KCET 1997; RPMT 1999; BVP 2002]**

(a) Cockroach, beetle (b) Bed bug
(c) Mosquito, wasp (d) Spider, Tick

28. Which of the following features is **not** present in the phylum – Arthropoda **[NEET (Phase-I) 2016]**

(a) Chitinous exoskeleton
(b) Metameric segmentation
(c) Parapodia
(d) Jointed appendages

29. What is the similarity between cockroach, anopheles and housefly **[CPMT 1996]**

(a) Cuticle covering the body
(b) Two pair wings
(c) Three pair legs
(d) Presence of cephalothorax

30. The common characters found in centipede, cockroach, and crab are **[CBSE PMT 2006]**

(a) Green gland and tracheae
(b) Book lungs and antennae
(c) Compound eyes and anal cerci
(d) Jointed legs and chitinous exoskeleton

31. Crayfish is a **[MP PMT 1998]**

(a) Crustacean animal (b) Edible fish
(c) Poisonous fish (d) None of the above

32. Which one of the following has an open circulatory system **[CBSE PMT 2006]**

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

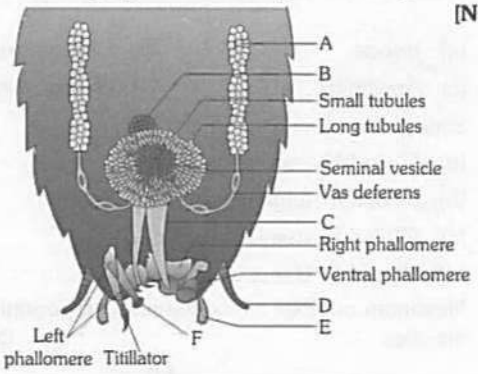
33. In which of the following sets all are vectors **[NCERT; CPMT 1998]**

(a) *Physalia, Musca domestica, Anopheles*
(b) *Amoeba, Physalia, Musca*
(c) *Anopheles, Musca, Culex*
(d) All of the above

34. *Phlebotomus argentipus* is a vector for **[EAMCET 1998]**

(a) *Trypanosoma evansi* (b) *Trypanosoma gambiense*
(c) *Leishmania donovani* (d) *Trypanosoma cruzi*

35. See the following figure and identify A to F in given diagram **[NCERT]**



	A	B	C	D	E	F
(a)	Testis	Phallic gland	Ejaculatory duct	Caudal style	Anal cercus	Pseudo penis
(b)	Testis	Phallic gland	Ejaculatory duct	Anal cercus	Caudal style	Pseudo penis
(c)	Testis	Collaterial gland	Ejaculatory duct	Terga	Caudal style	Pseudo penis
(d)	Testis	Collaterial gland	Ejaculatory duct	Anal cercus	Caudal style	Pseudo penis

36. Respiration pigment of blood in cockroach is **[RPMT 2006]**
(a) Haemozoine (b) Haemocyanin
(c) Haemoglobin (d) Absent

37. Which is a matching set in taxonomy **[CMC Vellore 1993]**
(a) Leech, locust, sea urchin, lobster
(b) Star fish, jelly fish, cuttle fish, octopus
(c) Milliped, crab, centipede, cockroach
(d) Nereis, planaria, round worm, earthworm

38. Book lungs are the respiratory organs in **[NCERT; RPMT 2006]**
(a) Protozoans (b) Cnidarians
(c) Arthropodes (d) Amphibians

39. The taste receptors of cockroach are **[DPMT 2006]**
(a) Compounds eyes
(b) Companiform sensillae
(c) Palps of maxillary and labium
(d) Tactile hairs

40. Bilateral symmetry, metameric segmentation coelom and open circulatory system are the characters of **[MP PMT 2009]**
(a) Annelida (b) Arthropoda
(c) Mollusca (d) Echinodermata

41. *Pasteurella/Yersinia pestis* (causal agent of Bubonic Plague) is transmitted by **[APMEE 1995]**
(a) Bed bug/*Cimex* (b) Rat flea/*Xenopsylla*
(c) Louse/*Pediculus* (d) Mosquito/*Aedes*

42. Among the following, colonial insects are **[BHU 2006]**
(a) Locusts (b) Mosquitoes
(c) White ants (d) Bed bug

43. Complete metamorphosis is observed in
(a) Silver Fish (b) Gypsy Moth
(c) Bed Bug (d) Grasshopper

44. Basic unit in the eye of Cockroach/insect is **[NCERT; APMEE 1995; Pb. PMT 1999; HPMT 2002]**
(a) Retina (b) Rhabdome
(c) Corneal facet (d) Ommatidium

45. Malpighian tubules are **[NCERT; BHU 2006]**
(a) Excretory organs of insects
(b) Excretory organs of frog
(c) Respiratory organs of insects
(d) Endocrine glands of insects

46. Structure common between Earthworm and Cockroach is **[NCERT; CPMT 1994; AFMC 1994; RPMT 2005]**

Or

Which one of the following features is common to earthworm, butterfly, spider and prawn **[WB JEE 2016]**

Or

Which one feature is common to leech Cockroach and scorpion **[AIIMS 2004, 08]**
(a) Cocoon (b) Ommatidia
(c) Dorsal nerve cord (d) Ventral nerve cord

47. Tumbler is pupa of
(a) Housefly (b) Mosquito
(c) Butterfly (d) Beetle

48. What is common between earthworm and *Periplaneta* **[AIIMS 2012]**
(a) Both have red coloured blood
(b) Both possess anal styles
(c) Both have Malpighian tubules
(d) Both have segmented body

49. In cockroach, larval and nymphal characters are maintained by **[BHU 2006]**
(a) Ecdysone (b) Salivary glands
(c) Parotid gland (d) Juvenile hormone

50. The correct sequence of arrangements of segments in the leg of cockroach is **[Kerala PMT 2006]**
(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
(e) Trochanter, Coxa, Femur, Tarsus and Tibia

51. Mouth parts of a butterfly are of type
(a) Sponging (b) Siphoning
(c) Piercing and sucking (d) Chewing and sucking

52. Conglobate gland occurs in **[BCECE 2005; BHU 2008]**
(a) Female cockroach (b) Male cockroach
(c) Anopheles mosquito (d) Culex mosquito

53. Similarity between *Anopheles* and *Culex* is **[AFMC 2010]**
(a) Eggs are laid in floating raft
(b) Respiratory siphon is present
(c) Eggs have lateral air floats
(d) Males of both suck juices of flowers and fruits

54. In Housefly the larva lives in **[BHU 1995]**
(a) Water (b) Muddy soil
(c) Dung (d) Vegatation

55. In *Pheretima*, septa are absent between which segments **[BHU 2006]**
(a) 3/4 and 9/10 (b) 4/5 and 8/9
(c) 5/6 and 7/8 (d) 7/8 and 6/7

56. The ingrowth of exoskeleton in the head of cockroach is called **[AFMC 2012]**
(a) Notum (b) Apodemes
(c) Pleura (d) Tentorium

57. An insect without pupa stage is
(a) Mosquito (b) Silk Moth
(c) Bed Bug (d) Butterfly

58. Young Housefly/Mosquito is known as
(a) Maggot (b) Caterpillar
(c) Nymph (d) Imago

59. Which set includes pathogenic Arthropods **[AFMC 2006]**
(a) *Tse-tse* fly, mosquito, flea-plague
(b) Crab, *Culex*, spider
(c) *Anopheles*, *Culex*, cray fish
(d) Silver fish, house fly, sandfly

60. Which of the following causes parasitic castration of crab **[BHU 2012]**
(a) *Sacculina* (b) *Adamsia*
(c) *Spongilla* (d) None of these

61. Ecdysone is produced by
(a) Prothoracic gland (b) Corpora allata
(c) Corpora cardiaca (d) Abdominal gland

62. Cockroach is
(a) Carnivorous (b) Herbivorous
(c) Omnivorous (d) Sanguivorous

63. Johnston's organ found in **[Bihar MDAT 2002]**
(a) Antenna of Mosquito (b) Head of Cockroach
(c) Abdomen of Housefly (d) Abdomen of Spider

64. Which disease is spread by Housefly **[CPMT 1993]**
(a) Dengue fever (b) Encephalitis
(c) Filariasis (d) Gangrene

65. Halteres in Mosquitoes and Housefly develop from
(a) Prothorax (b) Metathorax
(c) Mesothorax (d) Head

66. Mouth parts of Cockroach are of **[NCERT; BHU 1999; RPMT 2000; CPMT 2001]**
(a) Piercing and sucking (b) Sucking and siphoning
(c) Cutting and biting type (d) Sucking and rasping

67. In insect, oxygen is carried to different tissues by

Or

In Insects, respiratory gas exchange occurs through **[HPMT 2002]**
(a) Diffusion through surface
(b) Tracheal tubes
(c) Respiratory pigment through blood
(d) Gills

68. Wings are vestigeal in Cockroach **[CPMT 1997]**
(a) Female *Blatta orientalis*
(b) Male *Blatta orientalis*
(c) Male *Periplanata americana*
(d) Female *Periplanata americana*

69. Anal cerci occur in
(a) Both male and female cockroaches
(b) Male Cockroach
(c) Female Cockroach
(d) Female *Ascaris*

70. In the life cycle of mosquito, comma-shaped stage is **[DPMT 2004]**
(a) Larval stage (b) Pupal stage
(c) Imago stage (d) None of these

71. The order of metamorphosis in Housefly is **[AIIMS 1999; JIPMER 2000]**
(a) Egg, nymph, pupa and adult
(b) Egg, larva, nymph and adult
(c) Egg, larva, pupa and adult
(d) Egg, pupa, larva and adult

72. An aquatic living fossil, with ancient origin and many primitive characters which respires through book gills is **[NCERT; AMU (Med.) 2012]**
(a) *Limulus* (b) *Cancer*
(c) *Lucifer* (d) *Daphnia*

73. Hormone produced by corpora allata in insects is **[APMEE 1996; AIIMS 1997; Manipal 2001; AMU (Med.) 2009]**
(a) Growth hormone (b) Moulting hormone
(c) Inhibiting hormone (d) Juvenile hormone

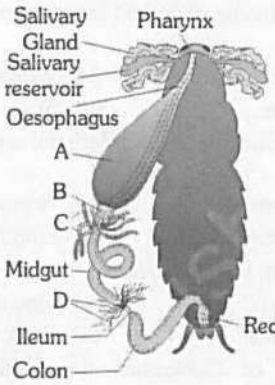
74. Male and female Cockroaches can be distinguished externally through **[CBSE PMT 1991; Pb. PMT 1994, 97; RPMT 1995, 98, 2001; CPMT 1996, 98; Kerala PMT 2007; Odisha JEE 2012; NEET (Karnataka) 2013]**
(a) Anal styles in male
(b) Anal cerci in female
(c) Anal style and antennae in females
(d) Both (a) and (c)

75. *Periplaneta* shows **[RPMT 1995; AFMC 2002]**
(a) Complete metamorphosis
(b) Incomplete metamorphosis
(c) No metamorphosis
(d) Gradual metamorphosis

76. Housefly feeds on sugar by
(a) Crushing its crystals and then sucking the power
(b) Crushing and eating
(c) Sucking
(d) Dissolving in saliva and sucking

77. Metamorphosis of insects is regulated through hormone **[CBSE PMT 1991; BHU 1998, 2001; RPMT 1998; Pb. PMT 1999]**
(a) Pheromone (b) Thyroxine
(c) Ecdysone (d) All the above

78. See the following figure and identify structure A, B, C and D **[NCERT]**



	A	B	C	D
(a)	Gizzard	Crop	Malpighian tubules	Hepatic caecae
(b)	Crop	Gizzard	Malpighian tubules	Hepatic caecae
(c)	Crop	Gizzard	Hepatic caecae	Malpighian tubules
(d)	Gizzard	Crop	Hepatic caecae	Malpighian tubules

79. In Cockroach, the number of ganglia are **[AFMC 1993]**
(a) Two pairs thoracic and four pairs abdominal
(b) Three pairs thoracic and six pairs abdominal
(c) Three pairs thoracic and five pairs abdominal
(d) Two pairs thoracic and six pairs abdominal

80. Mouth part present in female *Anopheles* but absent in male is
(a) Maxillae (b) Antennae
(c) Proboscis (d) Mandibles

81. An insect regarded as greatest mechanical carrier of disease is **[CBSE PMT 1991]**
(a) *Pediculus* (b) *Cimex*
(c) *Musca* (d) *Xenopsylla*

82. Which insect is called 'Horn Beetle' **[CPMT 2005]**
(a) *Tribolium* (b) *Corcyra*
(c) *Trogoderma* (d) None of these

83. Which of the following is an *r* – strategist **[DUMET 2010]**
(a) Human (b) Insect
(c) Rhinoceros (d) Whale

84. The major excretory product of arthropods is **[NCERT; Bihar MDAT 1994]**
(a) Ammonia (b) Urea
(c) Uric acid (d) Trimethylamine oxide

85. Common feature between housefly and honey bee is **[Pb. PMT 2004]**
(a) Head (b) Mouthparts
(c) Abdomen (d) Three pairs of jointed legs

86. Adult *Culex* and *Anopheles* can be distinguished with the help of **[CBSE PMT 1992, 93; KCET 1998]**
(a) Mouth parts/colour (b) Sitting posture
(c) Antennae/wings (d) Feeding habits

87. A larval stage occurs in the life history of all members of the group **[CBSE PMT 1993]**
(a) Frog, Lizard and Cockroach
(b) Ascaris, Housefly and Frog
(c) Housefly, Earthworm and Mosquito
(d) Butterfly, frog and Mosquito

88. Difference between male and female *Anopheles* occurs in **[CBSE PMT 1993]**
(a) Proboscis (b) Wings
(c) Antennae (d) Size

89. Tracheae of Cockroach and Mammal are similar in having **[CBSE PMT 1993]**
(a) Paired nature (b) Noncollapsible walls
(c) Ciliated inner lining (d) Origin from head

90. Pupa occurs in the life cycle of **[CPMT 1994]**
(a) Cockroach (b) Housefly
(c) Honey Bee (d) Both (b) and (c)

91. Which part of Cockroach has both exoskeleton and endoskeleton **[RPMT 1995]**
(a) Head (b) Thorax
(c) Abdomen (d) All the above

92. In Cockroach, wings are absent from **[NCERT; RPMT 1995]**
(a) Prothorax (b) Mesothorax
(c) Metathorax (d) None of the above

93. The first animals to fly were **[RPMT 1995]**
(a) Mammals (b) Lizards
(c) Birds (d) Insects

94. Which is nonpoisonous **[MP PMT 1995]**
(a) Scorpion (b) Centipede
(c) Crab (d) Spider

95. Which one is a tracheate group **[MP PMT 1995]**
(a) King Crab – scorpion – Housefly
(b) Crab – Centipede – Cockroach
(c) Spider – Peripatus - Mosquito
(d) Bed Bug – Sandfly – Silkworm

96. In Cockroach, metamorphosis requires **[RPMT 1996]**
(a) Three weeks (b) 40-70 days
(c) 10-30 days (d) 5-13 days

97. Male cockroach can be distinguished from female cockroach through **[RPMT 1996]**
(a) Longer antennae (b) Longer abdomen
(c) Wingless body (d) All the above

98. Cockroach blood does not contain respiratory pigment. It means **[RPMT 1996; AFMC 1998]**
(a) It does not respire
(b) Cockroach respires anaerobically
(c) Oxygen passes to all the tissues through diffusion
(d) Oxygen reaches tissue through tracheoles

99. Which is common amongst Fly, Mosquito and Cockroach **[CPMT 1996]**
(a) Open excretory system (b) Two pairs of wings
(c) All belong to class insecta (d) 13-chambered heart

100. *Periplaneta* differs from *Blatta* in **[CPMT 1996]**
(a) Reduced wings in *Blatta* and developed wings in *Periplaneta*
(b) Reverse of (a)
(c) Anal styles
(d) Anal cerci

101. Which is characteristic of Cockroach **[NCERT; BHU 1996, 98, 2001; CPMT 1996, 2009; HP PMT 2005]**
(a) 13-chambered heart (b) Reduced wings
(c) Cocoon formation (d) Segmented body

102. Arrhenotoky is parthenogenetic development found in **[AIIMS 1996]**
(a) All insects
(b) Mosquitoes
(c) Butterflies
(d) Honey bees, Wasps and Ants

103. Sandfly is **[Bihar MDAT 1996]**
(a) *Ancyclostoma* (b) *Musca*
(c) *Phlebotomus* (d) *Drosophila*

104. In Cockroach the longest podomere is **[Bihar MDAT 1996]**
(a) Coxa (b) Trochanter of Femur
(c) Tibia (d) Tarsus

105. Tick the correct matching **[DPMT 1996]**
(a) Arachnida — Ticks, Mites
(b) Prototheria — Scaly Anteater
(c) Prokaryotes — Green Algae
(d) Annelida — *Ascaris, Taenia*

106. Which one possess larval stages **[DPMT 1996]**
(a) Cockroach and Housefly
(b) Housefly and Butterfly
(c) Cockroach and Honey Bee
(d) Grasshopper and Dragonfly

107. In Butterfly, long coiled siphoning tubes is formed from **[APMEE 1996]**
(a) Labrum (b) Maxilla
(c) Labium (d) Mandibles

108. If juvenile hormone is absent when silkworm moults, it will **[CBSE PMT 1997]**
(a) Moult into another larval stage
(b) Moult into pupa
(c) Moult into adult
(d) Die

109. Which is absent in arthropoda **[JIPMER 1997]**
(a) Compound eye
(b) Chitinous exoskeleton
(c) Closed blood vascular system
(d) Malpighian tubules

110. Swarming is found in **[MP PMT 1998]**
(a) Houseflies (b) Mosquitoes
(c) Locusts (d) *Pyrilla*

111. Complete metamorphosis present in **[CPMT 2002; RPMT 2006]**
(a) House fly and mosquito
(b) House fly and cockroach
(c) Mosquito and cockroach
(d) None of the above

112. Pseudotrachea of Housefly is formed by **[CPMT 1998]**
(a) Labella (b) Rostrum
(c) Haustellum (d) Basiproboscis

113. Spiracles of Cockroach which are larger and always kept open are **[RPMT 1998]**
(a) First and second pairs (b) First and third pairs
(c) First and tenth pairs (d) Second and third pairs

114. Corpora allata are removed from a nymph. It will **[RPMT 1998]**
(a) Remain nymph for life
(b) Become adult
(c) Change to next nymph immediately but will remain in that state
(d) Die after some time

115. *Aedes* is vector of **[RPMT 1998]**
(a) Plague (b) Malaria
(c) Filaria (d) Encephalitis and Dengue

116. Antennae of Cockroach have **[RPMT 1998]**
(a) Gustatory receptors
(b) Auditory receptors
(c) Tactile receptors
(d) Tactile and olfactory receptors

117. Which is wrong for an insect **[RPMT 1998]**
(a) Cephalization and unjointed appendages
(b) Chitinous exoskeleton and wings
(c) Cephalisation and complete metamorphosis
(d) Well developed sensory organs and haemocoel

118. Millipede (*Julus*) and Centipede (*Scolopendra*) are both included under **[RPMT 1998]**
(a) Arachnida (b) Myriapoda
(c) Scaphopoda (d) Pelecypoda

119. Spider prepares the web with the help of **[JIPMER 1999]**
(a) Legs (b) Mouth
(c) Spinnerets (d) Salivary glands

120. Open circulatory system is not of physiological hindrance in Cockroach because **[AIIMS 1999]**
(a) Heart is simple but chambered
(b) Blood is colourless
(c) Circulatory and respiratory systems are not connected
(d) Excretion occurs through malpighian tubules

121. In cockroaches, digestive juice is secreted by the **[NCERT; Kerala PMT 2012]**
(a) Gizzard (b) Malpighian tubules
(c) Crop (d) Oesophagus
(e) Hepatic caeca

122. Number of fertilized eggs in ootheca of Cockroach is **[NCERT; BHU 1999; Kerala PMT 2000; Manipal 2001]**
(a) 16 pairs in two rows (b) 16 in two rows
(c) 10 in one rows (d) 8 in two rows

123. In Cockroach, ootheca is produced by secretion of **[APMEE 1999]**
(a) Conglobate gland (b) Phallic gland
(c) Collaterial gland (d) Mushroom gland

124. Hard exoskeleton cephalothorax and gills for respiration are characteristics of **[AFMC 2000]**
(a) Insecta (b) Myriapoda
(c) Polychaeta (d) Crustacea

125. *Palaeomon* (Prawn) is a **[J & K CMEE 2000]**
(a) Insect (b) Crustacean
(c) Soft shelled mollusc (d) Fish

126. Arachnida contains **[J & K CMEE 2000]**
(a) Wasps (b) Insects
(c) Spiders (d) Beetles

127. *Ascaris* and Cockroach resemble each other in **[CBSE PMT 2000]**
(a) Pseudocoel (b) Sexual dimorphism
(c) Nephridia (d) Dorsal tubular nerve cord

128. Which among the following is a social insect **[CPMT 2000]**
(a) White Ants (b) Locusts
(c) Bed Bugs (d) Mosquitoes

129. *Periplaneta* belongs to phylum **[NCERT; Odisha JEE 2012]**
(a) Annelida (b) Mollusca
(c) Echinodermata (d) Arthropoda

130. Select the correct statement from the ones given below with respect to *Periplaneta americana* **[CBSE PMT (Pre.) 2012]**
(a) Nervous system located dorsally, consists of segmentally arranged ganglia joined by a pair of longitudinal connectives
(b) Males bear a pair of short thread like anal styles
(c) There are 16 very long Malpighian tubules present at the junctions of midgut and hindgut
(d) Grinding of food is carried out only by the mouth parts

131. A female *Anopheles* mosquito can be recognized by **[WB JEE 2011]**
(a) Proboscis and palpi are long and more or less of equal length
(b) Proboscis long and palpi short
(c) Proboscis short and palpi long
(d) Both proboscis and palpi are short

132. The open circulatory system is found in **[Odisha JEE 2011]**
(a) Earthworm (b) Cockroach
(c) Snail (d) Both (b) and (c)

133. Holometaboly is found in **[Kerala PMT 2000]**
(a) Lady Bird Beetle (b) Bed Bug
(c) Cockroach (d) Grass Hopper
(e) Silver Fish

134. Number of malpighian tubules present in Cockroach is **[RPMT 2000]**
(a) 50-60 (b) 80-90
(c) 100-150 (d) 200-250

135. Arthropoda is differentiated from annelids by **[BHU 2000]**
(a) Segmented body (b) Absence of nephridia
(c) Eyes (d) None of the above

136. An arthropod belonging to onychophora which possesses nephridia is **[BHU 2001]**
(a) *Limulus* (b) *Peripatus*
(c) *Daphnia* (d) *Lepisma*

137. Paurometaboly is **[KCET 2001]**
(a) Complete metamorphosis
(b) Gradual metamorphosis
(c) Incomplete metamorphosis
(d) Complete metabolism

138. About how many times does the nymph of the *Periplaneta americana* undergo moulting before becoming an adult **[NCERT; Kerala PMT 2011]**
(a) 4 (b) 2
(c) 17 (d) 3
(e) 13

139. Number of moults undergones by caterpillar of *Bombyx mori* is **[APMEE 2001]**
(a) 2 (b) 4
(c) 6 (d) 8

140. Tripedal locomotion occurs in **[APMEE 2001]**
(a) Kangaroo (b) Cockroach
(c) Snail (d) Earthworm

141. Which one of the following sets of animals shows a close taxonomic relationship **[MP PMT 2001]**
(a) Jelly fish, Cuttle fish, Cat fish
(b) Honey bee, Crayfish, Spider
(c) Alligator, Nautilus, Turtle
(d) Kangaroo, Octopus, Salamander

142. Class crustacea have which of the following feature **[AIIMS 2001]**
(a) Cephalothorax, biramous appendages and gills
(b) Cephalothorax, book lungs and chitinous exoskeleton
(c) Head and thorax, book lungs and chitinous exoskeleton
(d) Head and thorax, biramous appendages and book lungs

143. To which of the following class Limulus belongs **[CPMT 2000; BVP 2001]**
(a) Chilopoda (b) Arachnida
(c) Crustacea (d) Merostomata

144. Which of the following belongs to Phylum *Arthropoda*/insecta **[RPMT 2001; DPMT 2004; NEET 2013]**
(a) Star fish (b) Gold fish
(c) Silver fish (d) Cuttle fish

145. Caterpillar and maggot are **[CPMT 2001]**
(a) Larvae (b) Nymphs
(c) Adults (d) Pupa

146. The larva of Housefly lacks **[BVP 2001]**
(a) Eyes (b) Wings
(c) Spiracles (d) All of the above

147. Mouth parts of housefly are called as **[BVP 2001; DPMT 2006]**
(a) Biting & sucking type (b) Sponging & sucking type
(c) Biting & chewing type (d) None of these

148. Which one of the following is not a correct pair **[RPMT 2001]**
(a) Trochophore-Annelida (b) Bipinnaria-Echinodermata
(c) Tornaria-Arthropoda (d) Planula-Coelenterata

149. Crustacean fishery involves **[MH CET 2002]**
(a) Lobster and Prawn (b) Shells of Cuttle fish
(c) Mussels and Squids (d) Oysters and Crab

150. Wriggler is the larva of **[JIPMER 2002]**
(a) Cockroach (b) Mosquito
(c) Butterfly (d) Housefly

151. Superficial meroblastic cleavage occurs in **[AFMC 2006]**
(a) Reptiles (b) Birds
(c) Mammals (d) Insects

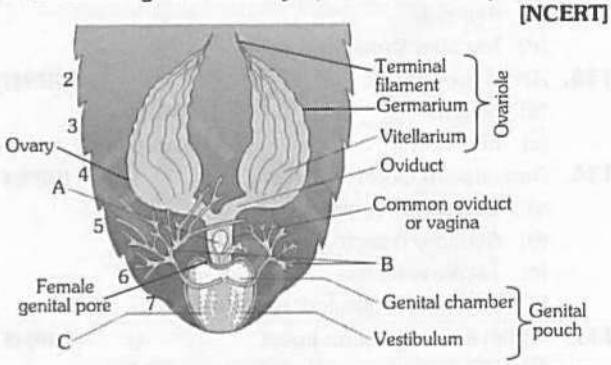
152. Which of the following respires by gills **[J & K CET 2002, 05]**
(a) Prawn (b) Frog
(c) Crocodile (d) Whale

153. Chitin is found in **[J & K CET 2002]**
(a) Mollusca (b) Arthropoda
(c) Echinodermata (d) Coelenterata

154. What distinguishes an insect from crustacean **[J & K CET 2002, 05]**
(a) Number of eyes
(b) Arrangement of nerve cords
(c) Number of appendages
(d) Presence of wings

155. Common feature in earthworm and cockroach is **[NCERT; CPMT 2002]**
(a) Cuticle (Exoskeleton)
(b) Solid and ventral nerve cord
(c) Nephridia
(d) Malpighian tubules

156. The given figure is of repr. System of femal cockroach. The correct labellings indicated by A, B and C are respectively **[NCERT]**



(a) A – Spermatheca, B – Collaterial glands, C – Tegmina
(b) A – Spermatheca, B – Seminal vesicle, C – Gonapophyses
(c) A – Phallic gland, B – Collaterial glands, C – Gonapophyses
(d) A – Spermatheca, B – Collaterial glands, C – Gonapophyses

157. Organ of mastication in cockroach is **[NCERT; CPMT 2002; RPMT 2005; KCET 2012]**
(a) Labrum (b) Labium
(c) Mandibles (d) Maxilla

158. Which of the following is an insect **[CPMT 2002; RPMT 2005]**
(a) Moth (b) Mites
(c) Prawn (d) Scorpion

159. In cockroaches during the digestion of food, the enzyme cellulase in synthesised by **[HP PMT 2005]**
(a) Saliva
(b) Lining cells of midgut
(c) Bacteria in the midgut
(d) Cellulase is never synthesised

160. In crustaceans, respiration takes place by **[RPMT 2002]**
(a) Gills (b) Book lungs
(c) Ctenidia (d) Trachea

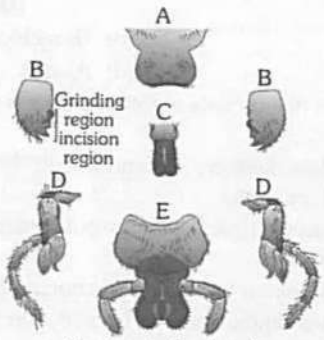
161. Which of the following is correctly stated as happens in the common cockroach **[CBSE PMT (Pre.) 2011]**
(a) The food in ground by mandibles an gizzard
(b) Malpighian tubules are excretory organ projecting out from the colon
(c) Oxygen is transported by haemoglobin blood
(d) Nitrogenous excretory product is urea

162. Cray Fish belongs to **[BHU 1998; AMU (Med.) 2002]**
(a) Pisces (b) Mollusca
(c) Arthropoda (d) Anthozoa

163. Which one does not occur in Cockroach leg **[DPMT 2002]**
(a) Tibia (b) Femur
(c) Fibula (d) Coxa

164. Hind wings of mosquitoes are termed as **[CPMT 1999; BHU 2002]**
(a) Coxa (b) Elytra
(c) Halteres (d) Tentorium

165. The given figures are related with mouth parts of cockroach. Identify A to E



Mouthparts of cockroach

[NCERT]

	A	B	C	D	E
(a)	Labium	Hypopharynx	Labrum	Maxilla	Mandible
(b)	Labrum	Mandible	Hypopharynx	Maxilla	Labium
(c)	Mandible	Labium	Maxilla	Labrum	Hypopharynx
(d)	Maxilla	Hypopharynx	Labium	Mandible	Labrum

166. Match the columns and choose the exact combination

(A)	Ommatidia	(*i*)	Articulation with thorax
(B)	Trochanter	(*ii*)	For vision
(C)	Coxa	(*iii*)	Forming exoskeleton
(D)	Sclerites	(*iv*)	Fused with large and stout femur

[Manipal 2002]
(a) A—(*iv*), B—(*iii*), C—(*i*), D—(*ii*)
(b) A—(*i*), B—(*ii*), C—(*iii*), D—(*iv*)
(c) A—(*ii*), B—(*iv*), C—(*i*), D—(*iii*)
(d) A—(*iii*), B—(*i*), C—(*ii*), D—(*iv*)

167. Ommatidia serve the purpose of photoreception in **[CBSE PMT 2003; BHU 2012]**
(a) Sunflower (b) Cockroach
(c) Frog (d) Humans

168. Mouth part of mosquito is **[CPMT 2002; MH CET 2003; RPMT 2005]**
(a) Sucking and piercing type (b) Sponging type
(c) Biting and chewing type (d) None of these

169. Vision in cockroach is **[BVP 2003]**
(a) Monocular (b) Binocular
(c) Ultrasonic (d) Mosaic

170. Which one of the following is a matching pair of an animal and a certain phenomenon it exhibits **[CBSE PMT 2003]**
(a) Taenia – Polymorphism
(b) Pheretima – Sexual dimorphism
(c) Musca – Complete metamorphosis
(d) Chamaeleon – Parthenogenesis

171. Haemocoel is found in **[CPMT 1999; DPMT 2004; Odisha JEE 2011]**
(a) *Hydra* and *Aurelia*
(b) *Taenia* and *Ascaris*
(c) *Balanoglossus* and *Herdmania*
(d) Cockroach and *Pila*

172. Universal character of insect is **[MP PMT 2002; MH CET 2004; AFMC 2005; Odisha JEE 2008]**
(a) Two pair of wings (b) Compound eyes
(c) Three pair of legs (d) Both (b) and (c)

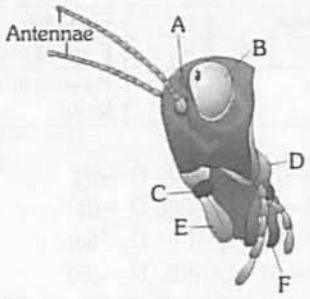
173. Larvae of beetles are known as **[Kerala PMT 2004]**
(a) Caterpillars (b) Grubs
(c) Maggots (d) Naids

174. Scorpion belongs to a class to which one of the following also belong **[DPMT 2003; BVP 2004]**
(a) Ticks (b) Crab
(c) Barnacles (d) Cockroach

175. Blood of which of the following is colourless **[HPMT 2005]**
(a) Earthworm (b) Leech
(c) Cockroch (d) Frog

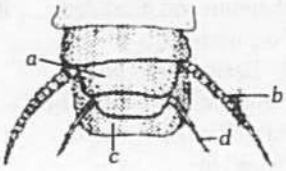
176. In Arthropoda, head and thorax are often fused to form cepalothorax, but one of the following classes is the body divide into head, thorax and abdomen **[CBSE PMT 2004]**
(a) Crustacea
(b) Arachnida and Crustachea
(c) Insecta
(d) Myriapoda

177. The given figure is associated with head region of cockroach. Identify A to F **[NCERT]**



	A	B	C	D	E	F
(a)	Ocellus	Compound eye	Maxilla	Mandible	Labium	Labrum
(b)	Ocellus	Compound eye	Mandible	Maxilla	Labium	Labrum
(c)	Ocellus	Compound eye	Mandible	Maxilla	Labrum	Labium
(d)	Compound eye	Ocellus	Maxilla	Mandible	Labrum	Labium

178. The diagram represents the reproductive organs of male cockroach. Choose the correct combination of labelling. **[Kerala CET 2005]**



(a) *a*-8th sternum, *b*-anal cercus, *c*-10th tergum, *d*-anal style
(b) *a*-10th tergum, *b*-anal cercus, *c*- anal style, *d*-8th sternum
(c) *a*-anal style, *b*-anal cercus, *c*-10th tergum, *d*-8th sternum
(d) *a*-8th sternum, *b*-anal style, *c*-10th tergum, *d*-anal cercus
(e) *a*-anal cercus, *b*-8th sternum, *c*-10th tergum, *d*-anal style

179. What is common between an earthworm, a cockroach and a centipede **[AIEEE Pharmacy 2004]**
(a) Sexual dimorphism (b) Metamorphism
(c) Chitinous exoskeleton (d) Haemocoel

180. What is common between a moth, a frog and a mosquito **[AIEEE Pharmacy 2004]**
(a) The body is clearly differentiated into head, thorax and abdomen
(b) The life history is carried out in water
(c) The skin acts as the main respiratory organ
(d) Their larvae feed on a food different from that of the adult

181. The peculiar pungent smell of cockroach is produced by the secretions of **[CPMT 2004]**
(a) Pheromones (b) Flame cells
(c) Abdominal glands (d) Cervical glands

182. The cockroach of genus *Blatta* is also called **[CPMT 2004]**
(a) German cockroach (b) Australian cockroach
(c) Orient cockroach (d) American cockroach

183. The young one of cockroach is called **[NCERT; KCET 2004]**
(a) Caterpillar (b) Nymph
(c) Fingerling (d) Maggot

184. Which one of following feature is possessed by crustaceans and not by insects **[CPMT 2005]**
(a) Paired limbs (b) Two pairs of antenna
(c) Chitinous exoskeleton (d) Bilateral symmetry

185. The head of cockroach lacks **[CPMT 2010]**
(a) Cardo (b) Gena
(c) Trochanter (d) Frons

186. The adhesive pads (soft-pads) present in legs of cockroach are **[AFMC 2005; KCET 2010]**
(a) Galea (b) Lacinea
(c) Glossa (d) Plantulae

187. Which of the following are examples of arthropoda **[Odisha JEE 2010; NEET 2013]**
(a) Silver fish, star fish, prawn
(b) Clam worm, apple snail, honeybee
(c) Sea star, tongue worm, scorpion
(d) Cockroach, scorpion, prawn

188. Insects are **[HPMT 2005; MP PMT 2006]**
(a) Amminotelic (b) Ammonotelic
(c) Ureotelic (d) Uricotelic

189. Gizzard of cockroach is a part of **[HPMT 2005]**
(a) Respiratory system (b) Digestive system
(c) Immune system (d) Circulatory system

190. Which one of the following features is common in silverfish, scorpion, dragonfly and prawn **[AIIMS 2005]**
(a) Three pairs of legs and segmented body
(b) Chitinous cuticle and two pairs of antennae
(c) Jointed appendages and chitinous exoskeleton
(d) Cephalothorax and tracheae

191. From the following statements select the wrong one **[CBSE PMT 2005]**
(a) Prawn has two pairs of antennae
(b) Nematocysts are characteristics of the phylum cnidaria.
(c) Millepedes have two pairs of appendages in each segment of the body
(d) Animals belonging to phylum porifera are exclusively marine

192. Which structure of man is similar to the spiracle of cockroach **[Odisha JEE 2005]**
(a) Nostril (b) Bronchiole
(c) Lungs (d) Alveoli

193. How do you differentiate a butterfly from a moth **[KCET 2010]**
(a) Moth has feathery antennae but butterfly has club shaped antennae
(b) Moth has one pair of wings but butterfly has two pairs of wings
(c) Moth is diurnal but butterfly is nocturnal
(d) Moth has simple eyes but butterfly has compound eyes

194. Tubular heart of cockroach has how many chambers **[AFMC 2005]**
(a) 10 (b) 13
(c) 12 (d) 11

195. Which of the following animal belongs to class crustacea **[WB JEE 2010]**
(a) Cockroach (b) Cyclops
(c) Grasshopper (d) Mosquito

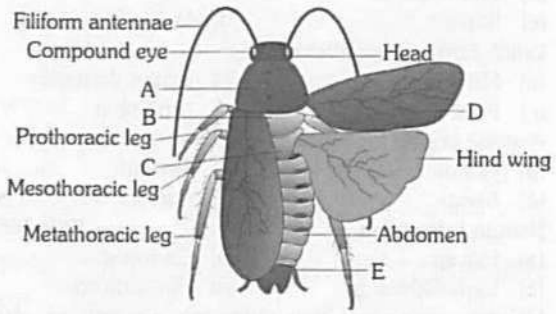
196. Which of the following statements is correct regarding cockroach **[CPMT 2010]**
(a) Ventral nerve cord is present
(b) Spiracles help in excretion
(c) Phallomere is present in female cockroach
(d) Compound eye is also called as ocellus

197. Mushroom gland is a part of **[CPMT 2010]**
(a) Male reproductive system of cockroach
(b) Female reproductive system of cockroach
(c) Male reproductive system of rabbit
(d) Female reproductive system of rabbit

198. What external changes are visible after the last moult of a cockroach nymph **[NEET 2013]**
(a) Labium develops
(b) Mandibles become harder
(c) Anal cerci develop
(d) Both fore wings with hind wings develop

199. Which one of the following is one of the paths followed by air/O_2 during respiration in an adult male *Periplaneta americana* as it enters the animal body **[NEET (Karnataka) 2013]**
(a) Spiracle in metathorax, trachea, tracheoles, oxygen diffuses into cells
(b) Mouth, bronchial tube, trachea, oxygen enters cells
(c) Spiracles in prothorax, tracheoles, trachea, oxygen diffuses into cells
(d) Hypopharynx, mouth, pharynx, trachea, tissues

200. See the following figure and identify A to E **[NCERT]**



	A	B	C	D	E
(a)	Pronotum	Mesothorax	Metathorax	Tegmina	Anal style
(b)	Pronotum	Mesothorax	Metathorax	Tegmina	Anal cerci
(c)	Pronotum	Mesothorax	Metathorax	Tegmina	Sternum
(d)	Pronotum	Mesothorax	Metathorax	Tegmina	Pleura

201. Match **Column-I** with **Column-II** for housefly classification and select the correct option using the codes given below **[NEET (Phase-II) 2016]**

Column-I	Column-II
(A) Family	(i) Diptera
(B) Order	(ii) Arthropoda
(C) Class	(iii) Muscidae
(D) Phylum	(iv) Insecta

Codes	(A)	(B)	(C)	(D)
(a)	(iv)	(ii)	(i)	(iii)
(b)	(iii)	(i)	(iv)	(ii)
(c)	(iii)	(ii)	(iv)	(i)
(d)	(iv)	(iii)	(ii)	(i)

202. In male cockroaches, sperms are stored in which part of the reproductive system **[NEET (Phase-II) 2016]**
(a) Vas deferens (b) Seminal vesicles
(c) Mushroom glands (d) Testes

Phylum-Mollusca

1. Which one of the following is not used in organic farming **[BHU 2006; AMU (Med.) 2006; CBSE PMT (Pre.) 2010]**
(a) Snail (b) *Glomus*
(c) Earthworm (d) *Oscillatoria*

2. The devil fish and sea hare are **[NCERT; J & K CET 2008; AMU (Med.) 2012]**
(a) Molluscs (b) Crustaceans
(c) Coelenterates (d) Marine fish and mammal

3. Which one of the following phyla is correctly matched with its two general characteristics **[CBSE PMT 2008]**
(a) Echinodermata – Pentamerous radial symmetry and mostly internal fertilization
(b) Mollusca – Normally oviparous and development through a trochophore or veligerlarva
(c) Arthropoda – Body divided into head, thorax and abdomen and respiration by tracheae
(d) Chordata – Notochord at some stage and separate anal and urinary opening to the outside

4. Foot is displaced to the neighbourhood of mouth and divided into arms in **[AIIMS 1999]**
(a) *Ostrea* (b) *Pila*
(c) *Sepia* (d) *Chiton*

5. Most mollusc are **[BVP 2003]**
(a) Terrestrial (b) Fresh water
(c) Marine (d) None of these

6. The elephant tusk shell is **[RPMT 1999]**
(a) *Dentalium* (b) *Nautilus*
(c) *Limax* (d) *Octopus*

7. Cilia of gills of bivalve molluscs help in **[DPMT 2006]**
(a) Feeding (b) Digestion
(c) Reproduction (d) Excretion

8. Which among the following is not a class of phylum mollusca **[JIPMER 1993; AFMC 1997]**
(a) Gastropoda (b) Trematoda
(c) Decapoda (d) Both (b) and (c)

9. Which one is not correctly matched **[Odisha JEE 2005]**
(a) Mollusca – Pseudocoel
(b) Cnidaria – Nematocyst
(c) Annelida – Chloragogen cells
(d) Echinodermata – Water vascular system

10. Ospharidium is meant for **[CPMT 2005]**
(a) Excretion
(b) Nutrition
(c) Selection and rejection of food
(d) Grinding of food

11. Which one belongs to the class of sea hare **[MP PMT 1995]**
Or
Which of the following belongs to the class gastropoda **[J & K CET 2012]**
(a) Sea cow (b) Sea squirt
(c) Snail (d) Sepia

12. Asymmetry in gastropoda is due to **[MH CET 2003]**
(a) Torsion (b) Coiling
(c) Twisting (d) Abdomen

13. The mollusc which is considered to be a living fossil and also shows characters of annelids like nephridia and internal segmentation is **[AIIMS 1993]**
(a) *Pinctada vulgaris* (b) Nautilus
(c) *Neopilina galatheca* (d) None of these

14. Pila is the example of which class **[RPMT 2001]**
(a) Gastropoda (b) Pelecypoda
(c) Cephalopoda (d) Scaphopoda

15. In which one of the following, the genus name, its two characters and its phylum are not correctly matched, whereas the remaining three are correct
[NCERT; CBSE PMT (Pre.) 2012]

	Genus Name		Two characters	Phylum
(a)	*Pila*	(a)	Body Segmented	Mollusca
		(b)	Mouth with Radula	
(b)	*Asterias*	(a)	Spiny Skinned	Echinodermata
		(b)	Water vascular system	
(c)	*Sycon*	(a)	Pore bearing	Porifera
		(b)	Canal system	
(d)	*Periplaneta*	(a)	Jointed appendages	Arthropoda
		(b)	Chitinous exoskeleton	

16. Visceral mass undergo torsion in
[DPMT 2003; AMU (Med.) 2010]
(a) Gastropoda (b) Cephalopoda
(c) Palacopoda (d) None of these

17. Cephalopoda is a class of animals in which **[MP PMT 1994]**
(a) Notochord extends upto head
(b) Foot is located on head
(c) Head is located on foot
(d) Head is fused with thorax

18. In mollusca, eye is present over a stalk called
[CPMT 2000; BHU 2006]
(a) Ostracum (b) Operculum
(c) Osphradium (d) Ommatophores

19. "Shell of mollusc is produced by its **[BHU 2000; MH CET 2003]**
(a) Radula (b) Thorax
(c) Mantle (d) Abdomen

20. Which set is correct **[CPMT 1998]**
(a) Euglena--cilia (b) *Paramecium*-Flagella
(c) Snail-Foot (d) *Amoeba*-Foot

21. Which of the following is the oldest living fossil
[CMC Vellore 1993]
(a) Architeuthis (b) Neopilina
(c) Nautilus (d) Limulus

22. Which of the following is correct **[AIIMS 2001]**
(a) Mollusca - bivalvia-pila
(b) Annelida - hirudinea - silver fish
(c) Mollusca - cephalopoda - octopus
(d) Arthropoda - arachnida – grasshopper

23. Phylum mollusca can be distinguished from other invertebrates by the presence of **[RPMT 1998; DUMET 2010]**
(a) Bilateral symmetry and exoskeleton
(b) A mantle and gills
(c) Shell and non-segmented body
(d) A mantle and non-segmented body

24. As per classification which of the following is correct
[MP PMT 2003]
(a) Ascaris, Pheretima, Grasshopper
(b) Hydra, Pterido, Leucosolenia
(c) Starfish, Grasshopper, Solen
(d) Pila, Dentalium, Octopus

25. Mantle, foot and shell are the character of **[BHU 2003]**

Or

Which of the following is a living fossil **[MP PMT 2013]**
(a) Nautilus (b) Echinus
(c) Limulus (d) Euplectella

26. Match the columns and choose the correct combination.

A.	Polychaeta	*p.*	Scorpion
B.	Trematoda	*q.*	Pila
C.	Arachnida	*r.*	Liver Fluke
D.	Gastropoda	*s.*	Nereis
		t.	Star Fish

[KCET 2003]
(a) A–*s*, B–*r*, C–*p*, D–*q* (b) A–*q*, B–*s*, C–*t*, D–*p*
(c) A–*r*, B–*s*, C–*p*, D–*t* (d) A–*t*, B–*q*, C–*s*, D– *r*

27. Which of the following mollusc is formed by a larva which have torsion **[RPMT 2002]**
(a) Lamelledens (b) *Pila*
(c) Sepia (d) Octopus

28. Cuttle Fish is a member of
(a) Mollusca (b) Echinodermata
(c) Pisces (d) Amphibia

29. A wood boring mollusca/Shipworm is
(a) *Chiton* (b) *Teredo*
(c) *Limax* (d) *Patella*

30. Radula is found in **[WB JEE 2010]**
(a) Pila sp (b) Chiton sp
(c) Lamellidens sp (d) Pinctada sp

31. Haemocyanin, the blue colouring pigment of molluscan blood contains
(a) Iron (b) Magnesium
(c) Copper (d) Manganese

32. Filter feeding occurs in
(a) *Dentalium* (b) *Unio*
(c) *Pila* (d) *Amoeba*

33. An animal without segmentation is
(a) Tapeworm (b) Earthworm
(c) Glow Worm (d) Shipworm

34. Closed circulatory system occurs in **[CBSE PMT 1994]**
(a) Snail (b) Cockroach
(c) Cuttle Fish (d) All the above

35. *Pila* shows summer **[APMEE 1995]**
(a) Hibernation (b) Aestivation
(c) Emigration (d) Immigration

36. *Octopus*, Squid and Cuttle Fish belong to class
[BHU 1998; RPMT 2001; AFMC 2001]
(a) Cephalopoda (b) Apoda
(c) Decapoda (d) Scaphopoda

37. Which one occurs in mollouscs but not in echinoderms [AFMC 2001; DUMET 2010]
(a) Flame cells (b) Malpighian tubules
(c) Kidney (d) None of the above

38. In which of the following group of animals the trochophore larva becomes the veliger larva [MP PMT 2013]
(a) Mollusca (b) Arthropoda
(c) Annelida (d) Platyhelminthes

39. Shell is internal in [Pb. PMT 1999]
(a) *Loligo* (b) *Chiton*
(c) *Dentalium* (d) *Unio*

40. Sepia and Octopus swim swiftly by means of [MP PMT 2013]
(a) Arms
(b) Lateral fins
(c) Suckers
(d) Jet propulsion through siphon

41. Ammonites are fossil shell remains of [CPMT 2000]
(a) Pelecypods (b) Cephalopods
(c) Gastropods (d) Scaphopods

42. Scaphopoda are commonly called [CPMT 2000]
(a) Whelks (b) Periwinkles
(c) Oysters (d) Tusk shells

Phylum-Echinodermata

1. Aristotle's lantern is found in [JIPMER 1993; RPMT 1999, 2000; AFMC 2001; AIIMS 2001]
(a) Jelly fish (b) Sea anemone
(c) Sea lily (d) Sea urchin

2. Secondary radial symmetry is found in [MP PMT 2009]
(a) Cnidaria (b) Jelly fish
(c) Echinodermata (d) Hemichordata

3. Which trait is not the characteristic of echinodermata [Odisha JEE 2009]
(a) Water vascular system
(b) Trochophore larva
(c) Aristotle's lantern
(d) Radial and indeterminate cleavage

4. Main function of pedicellariae in Asterias is [CPMT 1999]
(a) Digestion
(b) Excretion
(c) Respiration
(d) Capture of prey and removal of debris

5. Sea lilies are the members of class [CBSE PMT 1993]
(a) Ophiuroidea (b) Asteroidea
(c) Crinoidea (d) Echinoidea

6. In Ophiuroidea, branched arms are seen in [EAMCET 2009]
(a) *Gorgonocephalus* (b) *Clypeaster*
(c) *Salmacis* (d) *Gorgonia*

7. The Presence of tube feet is the characteristic feature of phylum [NCERT; Kerala PMT 2009; AMU (Med.) 2010]
(a) Arthropoda (b) Annelida
(c) Nemathelminthes (d) Echinodermata
(e) Mollusca

8. In which phylum is water vascular system found [NCERT; MP PMT 1999, 2011; BHU 2008; WB JEE 2008, 10]
(a) Protozoa
(b) Arthropoda
(c) Porifera
(d) Echinodermata (Sea-cucumber)

9. Starfish belongs to class [KCET 1998; BHU 2000, 02; CBSE PMT 2002; MP PMT 2012]
(a) Pisces (b) Cephalopoda
(c) Asteroidea (d) Ophiuroidea

10. Ambulacral grooves are absent in the living forms of the class [Pb. PMT 1999; AIIMS 2002]
(a) Crinoidea (b) Ophiuroidea
(c) Asteroidea (d) Echinodermata

11. Aristotle's lantern is a characteristic of the following class of echinodermata [KCET 1998; BVP 2001]
(a) Echinoidea (b) Ophiuroidea
(c) Holothuroidea (d) Asteroidea

12. A special feature of Evisceretion (Autoformy) is found in [CPMT 1998]
(a) Chordata (b) Echinodermata
(c) Annelida (d) Coelentrata

13. Enterocoelic type of coelom is present in the [CPMT 1999; Pb. PMT 2004]
(a) Echinodermata (b) Mollusca
(c) Arthropoda (d) Chordata

14. Animals of which group are not fresh water [RPMT 1999; DPMT 2003]
(a) Crustacea (b) Insecta
(c) Echinodermata (d) Sponge

15. Which phylum belongs to *Duterostomia* [EAMCET 1998; CPMT 1999; BHU 2001; CBSE PMT 2001]
(a) Echinodermata (b) Mollusca
(c) Arthropoda (d) Annelida

16. An animal that transforms from bilateral to radial symmetry in its life history is [KCET 1998; HP PMT 2005; Kerala CET 2005; Odisha JEE 2012]
(a) Hydra (b) Obelia
(c) Starfish (d) Sponge

17. Absence of excretory organs, great power of regeneration and exclusively marine animals belong to the phylum [NCERT; AIIMS 1993; BVP 2004; AIEEE Pharmacy 2004; Odisha JEE 2012]
(a) Mollusca (b) Echinodermata
(c) Fishes (d) Arthropoda

18. The pentaradial symmetry is seen in [Odisha JEE 2011]
(a) Echinodermata (b) Arthropoda
(c) Mollusca (d) Annelida

19. Mark the correct one [CPMT 1996]

	Phylum	Class	Example
(a)	Annelida	Oligochaeta	*Nereis*
(b)	Mollusca	Pelecypoda	Cuttle fish
(c)	Reptillia	Ophidia	Lizard
(d)	Echinodermata	Holothuroidea	Cucumaria

20. Which one of the following pairs of animals is correctly matched with the kind of their body symmetry [AIEEE Pharmacy 2003]
(a) *Hydra* and shark - Bilateral symmetry
(b) Tapeworm and octopus - Radial symmetry
(c) *Amoeba* and sea urchin - Asymmetry
(d) Jellyfish and starfish - Radial symmetry

21. Absence of head, unsegmented body and endoskeleton of dermal calcareous plate are the characters of [J & K CET 2005]
(a) Mollusca (b) Arthropoda
(c) Echinodermata (d) None of these

22. An animal phylum having radially symmetrical adults but bilateral symmetrical larvae is **[NCERT; BVP 2001; DPMT 2004; CBSE PMT 2004; Kerala PMT 2008; KCET 2012]**
(a) Porifera (b) Coelenterata
(c) Echinodermata (d) Annelida

23. Cephalization is absent in
(a) Molluscs (b) Arthropods
(c) Both (a) and (b) (d) Echinoderms

24. Which is unrelated **[RPMT 1996]**
(a) Sea Cucumber (b) Sea Star
(c) Sea Urchin (d) Sea Squid

25. Echinodermata is a group of animals which are **[MP PMT 2004]**
(a) Coelomate, horny, marine
(b) Coelomate, spiny, marine
(c) Acoelomate, spiny, fresh water
(d) Joint legged, marine

26. Aristotle's lantern is connected with **[AIIMS 1999; APMEE 2002]**
(a) Respiration (b) Mastication
(c) Excretion (d) Support

27. Echinoderms are headless, brainless and heartless. Yet they are placed at the top of invertebrates because of presence of **[MP PMT 2000]**
(a) Enterocoel
(b) Exclusive marine forms
(c) High power of regeneration
(d) Great power of reproduction

28. Tube feet are the characteristic structures of **[CBSE PMT 2000; MHCET 2001; BHU 2005; CPMT 2009; Odisha JEE 2010]**
(a) Jellyfish (b) Cuttlefish
(c) Starfish (Echinodermata) (d) Crayfish

29. Match the animals list with names under Column-I with the animals listed with regular zoological name given under Column-II; choose the answer which gives the correct combination of the alphabets of the two columns

	Column-I Animals with common name		Column-II Animals with zoological name
A.	Starfish	p.	Sepia
B.	Jellyfish	q.	Astropecten
C.	Devilfish	r.	Aurelia
D.	Cuttlefish	s.	Octopus

[KCET 2000, 09]
(a) A = r, B = s, C = p, D = q
(b) A = r, B = p, C = s, D = q
(c) A = q, B = r, C = s, D = p
(d) A = q, B = p, C = s, D = r

30. *Antedon* belongs to the class **[AIIMS 2000]**
(a) Crinoidea (b) Asteroidea
(c) Ophiuroidea (d) Echinoidea

31. Basket star belongs to class **[AIIMS 1999; AFMC 2000]**
(a) Ophiuroidea (b) Echinoidea
(c) Asteroidea (d) Crinoidea

32. Box like calcareous test occurs in **[HPMT 2001]**
(a) Sea Lily (b) Sea Star
(c) Sand Dollar (d) Sea Cucumber

33. In which class of echinodermata stalk is found for attachment with substratum **[RPMT 2001]**
(a) Asteroidea (b) Echinoidea
(c) Ophiuroidea (d) Crinoidea

34. Bipinnaria is the larva of **[BHU 2001; Odisha JEE 2004]**
(a) Pila (b) Lemellidens
(c) Sepia (d) Star fish (Asteroidea)

35. Which one of the following statement is true about an organism and its classification **[AIEEE Pharmacy 2004; AMU (Med.) 2005]**
(a) Blue green alga is kind of fungus
(b) Sea horse is closely related to dolphin
(c) Maiden hair tree is a kind of angiosperm
(d) Sea lily is a kind of echninoderm

36. In echinodermata, tube feet are related with **[BVP 2003]**
(a) Excretory system (b) Ambulacral system
(c) Reproductive system (d) Respiratory system

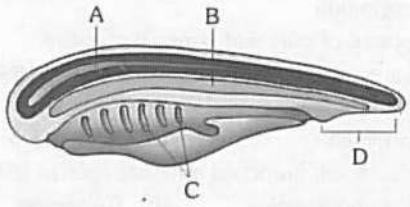
Phylum-Chordata

1. Which one of the following pairs of animals comprises 'jawless fishes' **[NCERT; CBSE PMT 2009]**
(a) Lampreys and eels (b) Mackerals and Rohu
(c) Lampreys and hag fishes (d) Guppies and hag fishes

2. The number of gills present in Osteichthyes is **[Kerala PMT 2008]**
(a) 2 pairs (b) 6 – 15 pairs
(c) 5 pairs (d) 4 pairs
(e) 12 pairs

3. At retrogressive metamorphosis the urochordate larva **[AFMC 2006]**
(a) Loss notochord
(b) Loss tail
(c) Experience reduction of nervous system to a visceral genglion
(d) All of the above

4. Animals belonging to phylum Chordata are fundamentally characterized by the presence of structure noted as A, B, C and D. Identify the names of A, B, C and D **[NCERT]**



(a) A – Nerve cord, B – Gill slits, C – Notochord, D – Post-anal part
(b) A – Nerve cord, B – Notochord, C – Post-anal part, D – Gill slits
(c) A – Nerve cord, B – Notochord, C – Gill slits, D – Post-anal part
(d) A – Notochord, B – Nerve Cord, C – Gill Slits, D – Post-anal part

5. In which of the following jaws are found **[RPMT 1999]**
(a) Herdmania (b) Fish
(c) Petromyzon (d) Amphioxus

6. Temperature changes in the environment affect most of the animals which are **[CBSE PMT 1999; CPMT 2001]**
(a) Aquatic (b) Desert living
(c) Poikilothermic (d) Homoiothermic

7. The animal who possesses notochord throughout life is **[EAMCET 1998; CPMT 1999; CBSE PMT 2000; MH CET 2003; BHU 2005; Odisha JEE 2010]**
Or
Which of the following animals is not a vertebrate **[NCERT]**
(a) Fish (b) *Amphioxus*
(c) Bird (d) Snake

8. Which of the following statements is / are not true
A. In Urochordata, notochord is present only in larval tail.
B. In Cephalochordata, notochord extends from head to tail region.
C. Branchiostoma belongs to Hemichordata
D. Only one Class of living members, Class Cyclostomata represents the Super Class Agnatha **[NCERT; Kerala PMT 2006]**
(a) A, B and D only (b) C, D and A only
(c) C only (d) A and D only
(e) C and D only

9. Blood vascular system in hemichordata is **[AFMC 2006]**
(a) Open (b) Reduced
(c) Closed (d) Absent

10. The most important distinctive character of chordata is the presence of **[CBSE PMT 1991]**
(a) Vertebral column (b) Hairy skin
(c) Notochord (d) All the above

11. Retrogressive metamorphosis is found in **[RPMT 1999, 2006; WB JEE 2010]**
(a) *Balanoglossus* (b) *Branchiostoma*
(c) *Herdmania* (Urochordata) (d) All of these

12. The lamprey (*Petromyzon*) is included in the same taxonomic class as the
(a) Chamaeleon (*Anolis*) (b) Hag fish (*Myxine*)
(c) Salamander (*Ambystoma*) (d) Lung fish (*Neoceratodus*)

13. The portal system seen in all vertebrates is **[JIPMER 1993]**
(a) Hepatic (b) Renal
(c) Both (a) and (b) (d) Pulmonary

14. Which one of the following is not a characteristic feature of the sub phylum vertebrata **[NCERT; Kerala PMT 2007]**
(a) Dorsal tubular nerve cord
(b) Ventral muscular heart
(c) Presence of notochord in the adult
(d) Presence of kidneys
(e) Two pairs of lateral appendages, fins or limbs

15. Notochord is restricted to the anterior part of body proboscis in animals of which group **[RPMT 1995]**
(a) Hemichordata (b) Urochordata
(c) Cephalochordata (d) Chordata

16. Animals having a built-in thermostat to maintain constant body temperature are known as **[KCET 1999; CPMT 2003; BHU 2006; AFMC 2012]**
(a) Biothermic (b) Poikilothermic
(c) Oligothermic (d) Homoeothermic

17. Which of the following groups has no member having gliding or flying appendages
(a) Arthropoda (b) Cyclostomata
(c) Mammals (d) Fishes

18. In some chordates, the notochord is modified as the vertebral column. Such animals are called vertebrates. Which one of the following statements make sense **[NCERT; KCET 2003, 11]**
(a) All chordates are vertebrates but all vertebrates are not chordates
(b) All vertebrates are chordates and all chordates are vertebrates
(c) All vertebrates are chordates but all chordates are not vertebrates
(d) Chordates are not vertebrates and vertebrates are not chordates

19. *Petromyzon* belongs to **[MH CET 2004]**
(a) Agnatha (b) Gnathostomata
(c) Protochordata (d) Euchordata

20. The echinoderms, hemichordates and chordates had which of the following larva as common ancestral form **[APMEE 1996; BHU 1999; CBSE PMT 2001]**
(a) Tornaria (b) Trochophore
(c) Dipleurula (d) Bipinnaria

21. Which among the following is the only vertebrate osmoconformer **[DPMT 2004]**
(a) Rabbit (b) Hagfish
(c) Bird (d) None of these

22. Which one of the following feature is found in chordates but not in non-chordates **[KCET 2007]**
(a) Gills (b) Spiracles
(c) Post anal tail (d) Chitinous exoskeleton

23. Which of the following show relationship of echinoderms and chordates **[DPMT 1993]**
(a) Balanoglossus (b) Archaeopteryx
(c) Peripatus (d) None of these

24. Crocodile and penguin are similar to Whale and Dogfish in which one of the following features **[NCERT; CBSE PMT (Mains) 2010]**
(a) Possess a solid single stranded central nervous system
(b) Lay eggs and guard them till they hatch
(c) Possess bony skeleton
(d) Have gill slits at some stage

25. Which of the following sets of animals belong to class cyclostomata **[NCERT; DPMT 1993; BHU 2000; J & K CET 2008]**
(a) Herdmania and petromyzon
(b) Petromyzon and myxine
(c) Amphioxus and balanoglossus
(d) Herdmania and myxine

26. The jawless vertebrate is **[Kerala PMT 2004]**
Or
A jawless fish, which lays eggs in fresh water and whose ammocoetes larvae after metamorphosis return to the ocean, is **[AIPMT 2015]**
(a) Crocodile (b) *Loris*
(c) *Hyla* (d) Fox
(e) *Petromyzon*

27. *Herdmania* belongs to which subphyla **[DPMT 2004]**
(a) Cephalochordata (b) Hemichordata
(c) Urochordata (d) Protochordata

28. All chordates at one or the other stage possess **[MP PMT 2004]**

(a) Vertebral column
(b) Pharyngeal gills-slits
(c) Two pairs of pentadactyle limb
(d) A movable jaw

29. Which one feature is common to Amphioxus, frog, sea horse and crocodile **[AIEEE Pharmacy 2003]**

(a) Pharyngeal gill slits, at least in the developmental stages
(b) A three-chambered heart
(c) Dorsal solid nerve chord
(d) Skeleton formed of cartilage and bones

30. Larva of *Balanoglossus* is

(a) Tornaria (b) Muller's larva
(c) Kentrogen larva (d) Tadpole

31. Which of the following is a distinct character **[Wardha 2005]**

(a) Chorda dorsalis (b) Cephalization
(c) Claws (d) Pharyngotomy

32. Vertebral column is derived from

(a) Notochord (b) Dorsal nerve cord
(c) Ventral nerve cord (d) Outgrowth of cranium

33. Match items in column I with those give in column II

	Column I		Column II
(A)	Limbless reptile	(i)	Lamprey
(B)	Jawless vertebrate	(ii)	Salamander
(C)	Amphibian	(iii)	Snake
(D)	Cartilaginous fish	(iv)	Shark
(E)	Flightless bird	(v)	Ostrich

[Kerala CET 2005]

(a) (A) – (i), (B) – (ii), (C) – (iii), (D) – (iv), (E) – (v)
(b) (A) – (ii), (B) – (i), (C) – (iii), (D) – (iv), (E) – (v)
(c) (A) – (iii), (B) – (i), (C) – (ii), (D) – (iv), (E) – (v)
(d) (A) – (v), (B) – (ii), (C) – (iii), (D) – (iv), (E) – (i)

34. Common characteristic of all vertebrates without exception is **[CBSE PMT 1994]**

(a) Exoskeleton
(b) Presence of well developed skull
(c) Two pairs of functional apendages
(d) Division of body into head, neck, trunk and tail

35. Which of the following is the smallest taxonomic group of animals having a cranium, vertebral column, ventral heart, pulmonary respiration and two pairs of limbs **[AFMC 1998]**

(a) Gnathostomata (b) Tetrapoda
(c) Vertebrata (d) Chordata

36. The vertebrate does not have **[Odisha JEE 2011]**

(a) Epidermal scale (b) Claw
(c) Tail (d) Cnidoblast

37. Ancestors of cyclostomes are **[BHU 1993]**

(a) Myxinoides (b) Arthropods
(c) Ostracoderms (d) Urochordates

38. See the following diagram and identify the name of the animal and the phylum to which it belong correctly **[NCERT]**

(a) *Nereis*, Annelida
(b) *Balanoglossus*, Urochordata
(c) *Balanoglossus*, Cephalochordata
(d) *Balanoglossus*, Hemichordata

39. Birds and mammals have **[NCERT; MH CET 2000]**

(a) Three chambered heart
(b) Four chambered heart
(c) Six chambered heart
(d) None of the above

40. Homeothermic animals is **[MH CET 2000]**

(a) Toad (b) Lizard
(c) Rabbit (d) Frog

41. Which of the following are Anamniotes **[RPMT 2001]**

(a) Chondrichthyes, Osteichthyes, Amphibia
(b) Reptilia, Aves, Amphibia
(c) Amphibia, Aves, Mammals
(d) Reptilia, Mammals, Aves

42. In Urochordata notochord is found in **[RPMT 2001]**

(a) Head of adult (b) Tail of adult
(c) Tail of larva (d) Test of adult

43. In which of the following notochord is absent **[RPMT 2001]**

(a) Adult *Herdmania* and *Balanoglossus*
(b) Adult *Herdmania* and adult *Branchiostoma*
(c) Larva of *Herdmania* and *Branchiostoma*
(d) Larva of *Herdmania* and *Balanoglossus*

44. The correct classification of *Balanoglossus* is **[RPMT 2001]**

(a) Chordata → Vertebrata → Enteropneusta
(b) Chordata → Vertebrata → Pterobranchia
(c) Chordata → Hemichordata → Pterobranchia
(d) Chordata → Hemichordata → Enteropneusta

45. In which of the following the notochord is present in embryonic stage **[CBSE PMT 2002]**

(a) Vertebrates (b) Some chordates
(c) All chordates (d) Non-chordates

46. Which of the following is not a character of Chordata **[NCERT; MH CET 2002; CPMT 2010]**

(a) Dorsal tubular nerve cord
(b) Pharyngeal gill slits
(c) Presence of notochord
(d) Presence of spinal cord

47. Which animal is "Non-chordate-protochordata" **[RPMT 2002; CPMT 2010]**

Or

Which of the following is a hemichordate **[Odisha JEE 2010]**

(a) Herdmania (b) Balanoglossus
(c) Branchiostoma (d) Botryllus

48. Mode of feeding in tunicates is **[EAMCET 2002]**

(a) Parasitic (b) Macrophagus
(c) Ciliary filter (d) Myxotrophic

49. Which one of the following statements is totally wrong about the occurrence of notochord, while the other three are correct **[NCERT; CBSE PMT (Mains) 2011]**

(a) It is absent throughout life in humans from the very beginning
(b) It is present throughout life in *Amphioxus*
(c) It is present only in larval tail in Ascidians
(d) It is replaced by a vertebral column in adult frog

50. Match the following and select the correct option

A.	Cyclostomes	1.	Hemichordata
B.	Aves	2.	Urochordata
C.	Tunicates	3.	Agnatha
D.	*Balanoglossus*	4.	Pisces
E.	Osteichthyes	5.	Tetrapod

[Kerala PMT 2011]

(a) A–1, B–2, C–3, D–4, E–5
(b) A–2, B–3, C–4, D–1, E–5
(c) A–3, B–5, C–2, D–1, E–4
(d) A–3, B–1, C–5, D–2, E–4
(e) A–5, B–3, C–2, D–1, E–4

51. *Echidna* and *Ornithorhynchus* are the connecting links between **[AIIMS 2009]**

(a) Amphibians and aves
(b) Mammals and amphibians
(c) Reptiles and mammals
(d) Reptiles and amphibians

52. Column I contains larval stages and column II contains the groups to which they belong. Match them correctly and choose the right answer

	Column I		Column II
A.	Planula	1.	Annelida
B.	Tornaria	2.	Mollusca
C.	Trochophore	3.	Arthropoda
D.	Bipinnaria	4.	Chordata
E.	Glochidium	5.	Echinodermata
		6.	Coelenterata

[KCET 2011]

(a) A – 6, B – 4, C – 1, D – 5, E – 2
(b) A – 2, B – 5, C – 1, D – 4, E – 6
(c) A – 5, B – 4, C – 3, D – 2, E – 1
(d) A – 4, B – 3, C – 2, D – 1, E – 5

53. Stomochord is found in **[Odisha JEE 2011]**

(a) Urochordata (b) Hemichordata
(c) Cephalochordata (d) Both (a) and (b)

54. Match the name of the animal (**column I**), with one characteristics (**column II**), and the phylum/class (**column III**) to which it belongs **[NEET 2013]**

	Column I	Column II	Column III
(a)	*Adamsia*	Radially symmetrical	Porifera
(b)	*Petromyzon*	Ectoparasite	Cyclostomata
(c)	*Ichthyophis*	Terrestrial	Reptilia
(d)	*Limulus*	Body covered by chitinous exoskeleton	Pisces

Super Class-Pisces

1. Lateral line system is present in **[BHU 1995; Wardha 2005]**

(a) Fish (b) Frog
(c) Reptiles (d) Man

2. Which one of the following is a cartilaginous fish

(a) Silver fish (b) Dog fish
(c) Cray fish (d) Star fish

3. Which of the following has a cartilagenous endoskeleton **[RPMT 1995]**

(a) Elasmobranch (b) Dipnoi
(c) Mollusca (d) Bony fishes

4. Electric organs are found in **[MP PMT 1995; EAMCET 1998; BHU 1999; MH CET 2000; BVP 2003]**

(a) Sharks (b) Porpoises
(c) Goldfish (d) Rays (Torpedo)

5. A fish is characterised by the presence of

(a) Dermal scales (b) Paired fins
(c) Pharyngeal gills (d) All the above

6. Which one of the following is an example of a lung-fish **[AIEEE Pharmacy 2003]**

(a) Scoliodon (b) Coelacanth
(c) Labeo (d) Protopterus

7. Which one of the following is exotic Indian fish **[CBSE PMT 1996]**

(a) *Clarias* (b) *Labeo*
(c) *Cypris* (d) *Dephnia*

8. Which of the following represents the correct combination without any exception **[AIPMT (Cancelled) 2015]**

	Characteristics	Class
(a)	Mouth ventral; gills without operculum; skin with placoid scales; persistent notochord	Chondrichthyes
(b)	Sucking and circular mouth; jaws absent, integument without scales; paired appendages	Cyclostomata
(c)	Body covered with feather; skin moist and glandular; fore-limbs form wings; lungs form wings; lungs with air sacs	Aves
(d)	Mammary gland; hair on body; pinnae; two pairs of limbs	Mammalia

9. In sharks, one of the following is absent **[NCERT; J & K CET 2008]**

(a) Claspers
(b) Placoid scales
(c) Cartilaginous endoskeleton
(d) Air bladder

10. Which of the following fish first injures its prey **[AFMC 2008]**

(a) Clarius (b) Gambusia
(c) Heteropneustes (d) Solea

11. Which of the following animals is a fish **[Odisha JEE 2009]**

(a) Shark (b) Star fish
(c) Silver fish (d) Jelly fish

12. *Pristis* belongs to the class **[JIPMER 1994]**

(a) Dipnoi (b) Telostomi
(c) Elasmobranchii (d) Holocephali

13. Bony plates and scutes are found in addition to scales in

(a) Hag fish (b) Eel
(c) Flying fish (d) Sea horse

14. Which one of the following pairs of animals are similar to each other pertaining to the feature stated against them **[NCERT; CBSE PMT (Mains) 2012]**

(a) *Pteropus* and *Ornithorhyncus*-Viviparity
(b) Garden lizard and Crocodile-Three chambered heart
(c) *Ascaris* and *Ancylostoma*-Metameric segmentation
(d) Sea horse and Flying fish-Cold blooded (poikilothermal)

15. Ampullae of Lorenzini are present in **[DUMET 2009]**

(a) Fish (b) Lizard
(c) Frog (d) Rabbit

16. True fishes possess gills and fins. Which of the following is not a true fish **[DPMT 1993; MP PMT 1994]**

(a) Silver fish (Lepisma)
(b) Gold fish (Carassius)
(c) Silver carp (Hythalamictyes)
(d) Sea horse (Hippocampus)

17. Which of following is a true fish **[Bihar MDAT 1995; JIPMER (Med.) 2002]**

(a) Dog fish (b) Cat fish
(c) Both (a) and (b) (d) Whale

18. Which of the following is a viviparous fish **[DUMET 2009]**

(a) *Exocoetus* (b) *Gambusia*
(c) *Clarias* (d) *Labeo*

19. Heart of fishes is **[Kerala PMT 2009]**

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

20. *Hippocampus* (Sea Horse) belongs to the class **[HP PMT 2005]**

(a) Agnatha (b) Chondrichtyes
(c) Osteichthyes (d) Mammalia

21. Fishes are **[RPMT 1999]**

(a) Homoiothermic (b) Poikilothermic
(c) Both (a) and (b) (d) None of these

22. Which of the following is characteristic feature of fishes **[KCET 2001; CBSE PMT 2002; Pb. PMT 2004; Odisha JEE 2012]**

(a) Tail and venous heart (b) Venous heart and gills
(c) Epidermal scales and tail (d) Epidermal scales and gills

23. Sea horse is **[NCERT; RPMT 1995; CPMT 2003]**

(a) Fish (b) Reptile
(c) Mammal (d) Bird

24. Placoid scales are found in **[BHU 2008]**

(a) Reptiles (b) Bony fishes
(c) Cartilaginous fishes (d) Amphibians

25. Swim bladder is present in **[BHU 2008]**

(a) Scoliodon (b) Labeo
(c) Chimaera (d) Trygon

26. Connecting link between cartilaginous and bony fishes is **[BHU 2008]**

(a) Catla (b) Chimaera
(c) Protopterus (d) Torpedo

27. With respect to mode of excretion, which type of organism bony fishes are **[GUJCET 2007]**
(a) Osmoconformers (b) Ammonotelic
(c) Uricotelic (d) Uriotelic

28. Which fins are paired in fishes **[BHU 2001]**
(a) Dorsal fin and anal fin (b) Pelvic fin and ventral fin
(c) Pectoral fin and pelvic fin (d) Caudal fin and dorsal fin

29. Salmon is **[DPMT 2004]**
(a) Anadromous fish (b) Catadromous fish
(c) Mollusca (d) Insect

30. Choose the cat fish from the following **[KCET 2004]**
(a) *Cirrhina mrigala* (b) *Wallago attu*
(c) *Labeo rohita* (d) *Catla catla*

31. At present, the Dipnoans are distributed over **[Manipal 2003]**
(a) Europe and North America
(b) Latin America and Australia
(c) Europe and Latin America
(d) North America and Australia

32. One of the world's most poisonous fish toxins is released by **[AIIMS 2012]**
(a) Clown fish (b) Sword fish
(c) Eel fish (d) Puffer fish

33. *Hemicyclaspsis* belongs to the class **[EAMCET 2003]**
(a) Pisces (b) Ostracodermi
(c) Cyclostomata (d) Gnathostomata

34. Association between suckerfish (Remora) and shark is
(a) Symbiosis (b) Commensalism
(c) Parasitism (d) Predation

35. Which one is a true fish
(a) Whale (b) Cuttlefish
(c) Silverfish (d) Flying fish

36. Anadromous fishes move **[CBSE PMT 1992]**
(a) From sea to freshwater (b) From sea to estuary
(c) From river to sea (d) From estuary to sea

37. Cartilaginous fishes do not have **[CBSE PMT 1992]**
(a) Operculum (b) Scales
(c) Gill stits (d) Pelvic fins

38. Which is viviparous **[JIPMER 1998]**
(a) Bony fish (b) Lung fish
(c) Frog (d) Shark

39. Common name of fish Anguilla is **[MP PMT 1994; AFMC 2009]**
(a) Eel (b) Rohu
(c) Hilsa (d) Bombay duck

40. In fishes the kidney is **[AFMC 1993]**
(a) Pronephros (b) Mesonephros
(c) Metanephros (d) Holonephros

41. In one of the following fishes, the dorsal fin is modified into suckers **[EAMCET 1999]**
(a) *Torpedo* (b) *Echeneis*
(c) *Hippocampus* (d) *Neoceratodus*

42. Presence of claspers is an important character in **[EAMCET 1999]**
(a) *Sphyrna* (b) *Echeneis*
(c) *Hippocampus* (d) *Exocoetus*

43. Freshwater bony fishes maintain water balance by **[BHU 2002]**
(a) Excreting hypotonic urine
(b) Excreting salt across their gills
(c) Drinking small amount of water
(d) Excreting waste in the form of uric acid

44. Salmon belongs to the group of **[BHU 1998; AMU (Med.) 2002]**
(a) Bony fishes (b) Cartilaginous fishes
(c) Cod fishes (d) Trout fishes

45. One of the following is known as 'oil sardine' **[EAMCET 1999]**
(a) *Atropus surtensis* (b) *Harpodon recherius*
(c) *Sardinella longiceps* (d) *Rastrelliger kanegunta*

46. Which of the following is a migratory fish **[AFMC 2001]**
(a) Shark (b) Salmon
(c) Carp (d) Ribbon fish

47. Similarity between fish and tadpole is **[BVP 2001]**
(a) Legs (b) Fins
(c) Lateral line (d) Scales

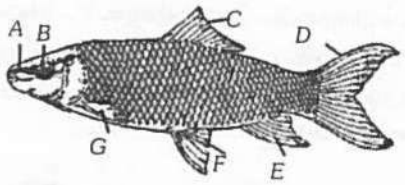
48. Which of the following is known as living fossil **[MP PMT 2001, 03]**
(a) *Lepidosiren* (b) *Lepidosteus*
(c) *Latimeria* (d) *Neoceratodus*

49. The aquatic organism with prehensile tail is **[EAMCET 2002]**
(a) *Macaca* (b) *Chameleon*
(c) *Exocoetus* (d) *Hippocampus*

50. Cartilaginous fishes belong to the class **[NCERT; HP PMT 2005]**
(a) Chondrichthyes (b) Osteichthyes
(c) Agnatha (d) None of these

51. Which of the following is a catadromous fish **[WB JEE 2010]**
(a) *Hilsa sp* (b) *Mystus sp*
(c) *Anguilla sp* (d) *Channa sp*

52. The diagram of *labeo rohita* is given below. Identify the parts labelled A, B, C, D, E, F, G **[KCET 2010]**



	A	B	C	D	E	F	G
(a)	Stimulus	Receptor	Sensory nerve	Motor nerve	Effector	Pectoral fin	Pelvic fin
(b)	Nostril	Eye	Anal fin	Caudal fin	Dorsal fin	Pectoral fin	Pelvic fin
(c)	Nostril	Eye	Dorsal fin	Caudal fin	Anal fin	Pelvic fin	Pecto ral fin
(d)	Nostril	Eye	Dorsal fin	Caudal fin	Pectoral fin	Anal fin	Pelvic fin

53. Which one of the following groups of animals is correctly matched with its one characteristic feature without even a single exception **[NCERT; CBSE PMT (Pre.) 2011]**

(a) *Mammalia* : give birth to young ones

(b) *Reptilia* : possess 3-chambered heart with one incompletely divided ventricle

(c) *Chordata* : possess a mouth provided with an upper and a lowar jaw

(d) *Chondrichthyes* : possess cartilaginous endoskeleton

54. What will you look for to identify the sex of the following **[NCERT; CBSE PMT (Pre.) 2011]**

(a) Male shark – Claspers borne on pelvic fins

(b) Female Ascaris – Sharply curved posterior end

(c) Male frog – A copulatory pad on the first digit of the hind limb

(d) Female cockroach – Anal cerci

55. Scientific name of rohu is **[Odisha JEE 2011]**

(a) *Anabas testudineus* (b) *Catla catla*

(c) *Labeo rohita* (d) *Naja naja*

56. Air bladder is present in **[DUMET 2010]**

(a) Chondricthyes (b) Star fishes

(c) Actinopterygii (d) Flying fishes

57. Jaw of shark contains **[AMU (Med.) 2012]**

(a) Thecodont teeth (b) Acrodont teeth

(c) Pleurodont teeth (d) None of these

58. See the following figures and click the correct option with their respective classes **[NCERT]**

(A) *Petromyzon*

(B) *Scoliodon*

(C) *Pristis*

(a) A – *Osteichthyes*, B – *Chondrichthyes*, C – *Cyclostomata*

(b) A – *Osteichthyes*, B – *Chondrichthyes*, C – *Osteichthyes*

(c) A – *Osteichthyes*, B – *Chondrichthyes*, C – *Chondrichthyes*

(d) A – *Cyclostomata*, B – *Chondrichthyes*, C – *Chondrichthyes*

59. See the following figures and select the right option with their respective classes **[NCERT]**

(A) *Hippocampus*

(B) *Catla*

(a) A – Cartilage fish, B – Hag fish

(b) A – Cartilage fish, B – Cartilage fish

(c) A – Bony fish, B – Cartilage fish

(d) A – Bony fish, B – Bony fish

60. The marine fish among the following varieties is **[MHCET 2015]**

(a) Stromateus (b) Labeo

(c) Cirrhina (d) Catla

61. Among the following edible fishes which one is a marine fish having rich source of omega-3 fatty acids **[NEET (Phase-II) 2016]**

(a) Mackerel (b) Mystus

(c) Mangur (d) Mrigala

62. Choose the correct statement **[NEET (Phase-II) 2016]**

(a) All pisces have gills covered by an operculum

(b) All mammals are viviparous

(c) All cyclostomes do not possess jaws and paired fins

(d) All reptiles have a three-chambered heart

Class-Amphibia

1. The pair of Amphibians found in Indian peninsula is **[EAMCET 2009]**

(a) *Amphiuma* and *Anguis*

(b) *Tylototriton and Ichthyophis*

(c) *Hyla* and *Ambystoma*

(d) *Psittacus* and *Apteryx*

2. Ovoviviparity is seen in this caecilsian **[EAMCET 2009]**

(a) *Wuchereria* (b) *Typhlonectus*

(c) *Ichthyophis* (d) *Uraeotyphlus*

3. Select the correct order of classification of Rana tigrina upto genus **[Kerala PMT 2008]**

(a) Chordata, craniata, amphibia, gnathostomata, rana

(b) Chordata, craniata, gnathostomata, amphibia, rana

(c) Chordata, amphibia, gnathostomata, craniata, tigrina

(d) Chordata, craniata, amphibia, gnathostomata, tigrina

(e) Gnathostomata, craniata, Chordata, rana, tigrina

4. Which one of the following is not a true amphibian animal

(a) Frog (b) Tortoise

(c) Salamander (d) Toad

5. The common name of necturus is

(a) Cave salamander (b) Congo eel

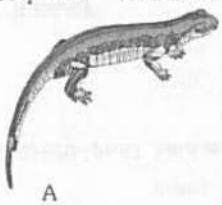
(c) Hell bender (d) Mud puppy

6. Salamander belongs to the class **[J & K CET 2002]**

(a) Reptilia (b) Amphibia

(c) Aves (d) Mammalia

7. Identify the names of the following animals with their respective classes from the given options **[NCERT]**



A

B

C

(a) A – *Salamandra*, Urochordata; B – *Chelone*, Cephalochordata; C – *Chameleon*, Hemichordata

(b) A – *Salamandra*, Amphibia; B – *Chelone*, Amphibia; C – *Chameleon*, Amphibia

(c) A – *Salamandra*, Reptilia; B – *Chelone*, Reptilia; C – *Chameleon*, Reptilia

(d) A – *Salamandra*, Amphibia; B – *Chelone*, Reptilia; C – *Chameleon*, Reptilia

8. *Ichthyophis* belongs to [DPMT 2006]
(a) Mammalia (b) Reptilia
(c) Amphibia (d) Aves

9. Capacity of amphibians to change colour is called
(a) Metachrosis (b) Metachronous
(c) Synchronous (d) None of these

10. The name of flying frog is [EAMCET 1998]
(a) *Rhacophorus* (b) *Bufo*
(c) *Phyllobates* (d) *Necturus*

11. Frog which lives on the trees [NCERT; RPMT 1999]
(a) *Alytes* (b) *Bufo*
(c) *Hyla* (d) *Rana*

12. The functional kidney of frog tadpole is [CBSE PMT 1995]
(a) Pronephros (b) Mesonephros
(c) Metanephros (d) Archinephros

13. Axolotl larva of *Ambyostoma* normally fails to metamorphose due to [KCET 1994; AFMC 2006]
(a) Lack of *Ca* and *Mg* ions in water
(b) Absence of phosphorus in water
(c) Lack of iodine in water or diet
(d) High concentration of iodine in body

14. Which of the following is a limbless amphibian [NCERT; MP PMT 1993, 2002; Kerala CET 2002; Kerala PMT 2010]
(a) Salamander (b) Ichthyophis
(c) Amphioxus (d) Balanoglossus

15. Limbless amphibians belong to the order [MHCET 2000; BHU 2001; CPMT 2001]
(a) Anura (b) Urodela
(c) Gymnophiona (d) Squamata

16. Which animal is surinam toad [RPMT 2000]
(a) Pipa (b) *Bufo*
(c) Bombinator (d) *Alytes*

17. Caecilians belong to the order [JIPMER 1999]
(a) Sirenia (b) Squamata
(c) Neognathae (d) Gymnophiona

18. Fire-belied toad is
(a) *Amphiuma* (b) *Necturus*
(c) *Salamandra* (d) *Bombinator*

19. Neoteny is found in [RPMT 1995]
(a) Tadpole (b) Salamander
(c) Hyla (d) Axolotl

20. The skull of frog is [Kerala CET 2005]
(a) Tricondylic (b) Monocondylic
(c) Dicondylic (d) Noncondylic
(e) Polycondylic

21. *Rana Tigrinum* is the zoological name of [Odisha JEE 2004]
(a) Frog (b) Garden lizard
(c) Tiger (d) Krait

22. Common Indian bull frog is [NCERT; CBSE PMT 1992; KCET 1998; JIPMER 1999]
(a) *Rana tigrina* (b) *Rana esculenta*
(c) *Rana silvatica* (d) *Rana cyanophlyctis*

23. Retention of larval characters even after sexual maturity is called [BHU 1993; Kerala CET 2005]
(a) Ontogenesis (b) Parthenogenesis
(c) Neoteny (d) Phyllogenesis

24. Axolotl larva belongs to the order [EAMCET 1994]
(a) Urodela (b) Anura
(c) Apoda (d) Stegocephalia

25. Frog is [NCERT; CPMT 1994]
(a) Aminotelic (b) Ammonotelic
(c) Ureotelic (d) Uricotelic

Class-Reptilia

1. Classification of reptilia is based on
(a) Scales (b) Type of brain
(c) Vaccuties (d) None of these

2. Typhlop is a [BHU 2001]
(a) True snake (b) False snake
(c) True worm (d) Shark

3. Only poisonous lizard of the world is [AMU (Med.) 2006; AFMC 2009]
(a) *Draco* (b) *Heloderma*
(c) *Sphenodon* (d) *Varanus*

4. Venom of which of the following snakes is proteolytic [AFMC 2012]
(a) Viper (b) Krait
(c) Cobra (d) Ajgar

5. Which of the following is primarily an ectotherm [Odisha JEE 2009]
(a) Pigeon (b) Camel
(c) Lizard (d) Rabbit

6. Egg of reptiles and birds are [CPMT 2009]
(a) Mesolecithal (b) Telolecithal
(c) Polylecithal (d) Alecithal

7. Members of class Reptilia are
(a) Homoiothermic and amniotic
(b) Homoiothermic and anamniotic
(c) Poikilothermic and amniotic
(d) Poikilothermic and anamniotic

8. Zoological name of common Indian Krait is [Odisha JEE 2005]
(a) *Bungarus coeruleus* (b) *Ophiopagus hannah*
(c) *Viper russeli* (d) *Naja naja*

9. Carapace is present in [CPMT 1999; BHU 2005]
(a) Toad (b) Bird
(c) Frog (d) Tortoise

10. Which is a poisonous snake [EAMCET 1998]
(a) *Enhydrina* (b) *Typhlops*
(c) *Python* (d) *Eryx*

11. The important character of Cobra is [Odisha JEE 1996; BVP 2000]
(a) Presence of hood (b) Small scales on head
(c) Rounded tail (d) None of these

12. Animals have the innate ability to escape from predation. Examples for the same are given below. Select the incorrect example. **[CBSE PMT 2005]**
(a) Colour change in chameleon
(b) Enlargement of body size by swallowing air in puffer fish
(c) Poison fangs in snakes
(d) Melanism in moths

13. Poison glands of snake are modified **[EAMCET 1995; MHCET 2004]**
(a) Sebaceous glands (b) Ceruminous glands
(c) Salivary glands (d) Endocrine glands

14. Snakes receive sound vibrations by **[RPMT 1999]**
(a) Tympanum (b) Body
(c) Internal ear (d) Earth

15. To which of the following category dinosaurs belong **[HP PMT 2005]**
(a) Reptiles (b) Amphibians
(c) Mammals (d) Birds

16. Whose skin colour does not change **[MP PMT 1995]**
(a) *Chameleon* (b) Horse
(c) Garden lizard (d) Two of the above

17. Which of the following feature is not common between *Newt* & *Hemidactylus* **[CPMT 2005, 09]**
(a) Body is divisible into head, neck, trunk and tail
(b) Head with pair of eyes and tympanic membrane
(c) Trunk has 2 pairs of limb for locomotion
(d) Heart is 3-chambered

18. Which type of respiratory organs are present in spiders and scorpions **[AFMC 2006]**
(a) Book lungs (b) Gills
(c) Gill books (d) Lungs

19. Which one of the following is a matching pair of an animal and its a one of the characteristics **[AIEEE Pharmacy 2004]**
(a) *Chamaelon* - binocular vision
(b) *Heloderma* - poison gland
(c) *Varanus* - prehensile tail
(d) House lizard- 4 chambered heart

20. Some reptiles show autotomy which means
(a) Voluntary breaking tail to confuse enemy
(b) Signal for charging
(c) Signal for courtship
(d) State of starvation prior to death

21. Which among these is not a homoiotherm **[Kerala PMT 2012]**
(a) Aptenodytes (b) Testudo
(c) Delphinus (d) Neophron
(e) Ornithorhynchus

22. The truly land animals are **[J & K CET 2010]**
(a) Newts (b) Lung-fishes
(c) Salamanders (d) *Calotes*

23. The injection of serum of horse which has been repeatedly injected by cobra venom into a person bitten by cobra results in
(a) No immunity (b) Natural immunity
(c) Active immunity (d) Passive immunity

24. Teeth conducting poison in a snake are called
(a) Incisors (b) Canines
(c) Heterodont (d) Fangs

25. The reptile which glides in the air is
(a) *Draco* (b) *Phrynosoma*
(c) *Anguis* (d) *Calotes*

26. Poisonous fangs of a snake are modified
(a) Mandible (b) Maxillary teeth
(c) Canines (d) Nasals

27. Which of the followig is a marine snake
(a) *Enhydrina* (b) *Typhlops*
(c) *Bungarus* (d) *Naja*

28. Snake moulting consists of
(a) Epidermis (b) Dermis
(c) Cornified cells (d) Stratum germinativum

29. Pear-shaped head, sharply separated from rest of the body and coverd with small scales is a feature of
(a) *Pythons* (b) Vipers
(c) Kraits (d) Cobras

30. Large size scales fully extended from side to side on the belly are characteristics of
(a) Krait and sea snake (b) Cobra and *python*
(c) Rat snake and Cobra (d) *Python* and Krait

31. Gavial or gharial is found in **[HPMT 1993]**
(a) Freshwater (b) Sea water
(c) Brackish water (d) Terrestrial habitats

32. Name a nonpoisonous snake
(a) Cobra (b) Krait
(c) Viper (d) Rat snake

33. A stumpy laterally compressed tail is characteristic of
(a) Tree snake (b) Sea snake
(c) Rat snake (d) Rattle snake

34. Order Squamata consists of **[CBSE PMT 1991]**
(a) Bats (b) Crocodiles
(c) Turtles and pangolin (d) Lizards and snakes

35. Which is correct for Indian snakes **[MP PMT 1992]**
(a) Only sea snakes are non-poisonous
(b) Only sea snakes are poisonous
(c) All water snakes are poisonous
(d) All sea snakes are poisonous

36. Besides mammals, diaphragm also occurs in **[JKCMEE 1992]**
(a) Birds (b) Crocodiles
(c) Fishes (d) Toads

37. The vestiges of girdles are found in **[AMU (Med.) 2010]**
(a) Cobra (b) Krait
(c) Rattle snake (d) Python

38. In suborder ophidia, the vertebrae are **[EAMCET 1998; BHU 1999]**
(a) Amphicoelus (b) Acoelus
(c) Heterocoelus (d) Procoelus

39. Gila Monster Heloderma occurs in **[MP PMT 2004]**
(a) Africa (b) America
(c) Central Asia (d) China

40. When the tail is cylindrical and ventral scales do not extend the entire width of the belly, the snake is **[BHU 1994]**
(a) Non-poisonous
(b) Either poisonous or non-poisonous
(c) Definitely poisonous
(d) Deadly poisonous

41. Cleidoic eggs are found in **[BHU 1994]**
(a) Fishes (b) Amphibia
(c) Reptiles (d) None of these

42. Even ventricles of reptiles are partitioned but there is mixing of blood **[AIIMS 1996]**
(a) Due to common ejection and entrance of blood in lungs
(b) Auricles are non-partitioned
(c) Heart is partially four-chambered
(d) None of these

43. *Calotes versicolor* is a **[Odisha JEE 1997]**
(a) House lizard (b) Garden lizard
(c) Flying lizard (d) Rock lizard

44. Animal which can move the upper jaw **[Kerala PMT 1997]**
(a) Elephant (b) Crocodile
(c) Clarius (d) Frog

45. Foramen of Panizzae is found in the heart of **[BVP 2003]**
(a) Rabbit (b) Crocodile
(c) Pigeon (d) Frog

46. *Typhlops* is **[BHU 2001]**
(a) Sea snake (b) Grass snake
(c) Glass snake (d) Blind snake

47. The snake having head shield and elongated hexagonal vertebrals is **[EAMCET 2000]**
(a) *Naja* (b) *Eryx*
(c) *Bungarus* (d) *Ptyas*

48. Which of the following is a poisonous snake **[CBSE PMT 2000]**
(a) Eryx (b) Natrix
(c) Tree snake (d) Russel's viper

49. Which of the following snake has hind legs **[CPMT 2000]**
(a) Python (b) Bungarus
(c) Typhlops (d) King cobra

50. The reptile which lacks penis belongs to **[EAMCET 2000]**
(a) Ophidia (b) Crocodilia
(c) Gymnophiona (d) Rhynchocephalia

51. Snake has **[MHCET 2000; Pb. PMT 2004]**
(a) Movable eyelids (b) No eyelids
(c) Immovable eyelids (d) Eyelids placed in pouches

52. Most favourable land adaptation for reptile is **[CBSE PMT 2001]**
(a) Moist skin (b) Scales on body
(c) Pulmonary respiration (d) None of these

53. Post anal tail is present in **[CBSE PMT 2001]**
(a) Cobra (b) Earth worm
(c) Scorpion (d) Lower invertebrate

54. Diapside skull is found in the following **[MP PMT 2001]**
(a) *Natrix*, Draco and Turtle
(b) Crocodile, Turtle and *Seymouria*
(c) *Sphenodon*, Crocodile and Viper
(d) *Calotes*, Cobra and Varanosaurus

55. Antivenin injections used for snake bite are prepared at **[BCECE 2001]**
(a) IVRI, Bareilly
(b) NDRI, Karnal
(c) Haffkin's Research Institute, Mumbai
(d) IARI, New Delhi

56. Which of the following systems in man is affected by the bite of cobra **[AFMC 2001]**
(a) Digestive (b) Nervous
(c) Excretory (d) Circulatory

57. Turtles are **[KCET 2002; J & K CET 2012]**
(a) Pisces (b) Reptiles
(c) Molluscans (d) Arthropods

58. The type of dentition in Crocodile is **[MP PMT 2002]**
(a) Acrodont (b) Bunodont
(c) Pleurodont (d) Thecodont

59. Scientific name of king cobra is **[Odisha JEE 2002]**
(a) *Naja naja* (b) *Bungarus coerulus*
(c) *Naja hunnah* (d) *Vipera russelli*

60. Which of the following is incorrectly matched **[Odisha JEE 2010]**
(a) Spiny tailed lizard- *Hardwickii*
(b) Garden lizard- *Hemidactylus flaviviridis*
(c) Gila monster - *Heloderma*
(d) Monitor lizard - *Varanus*

61. The characteristics of class Reptilia are **[NCERT; NEET (Karnataka) 2013]**
(a) Body covered with moist skin which is devoid of scales, the ear is represented by a tympanum, alimentary canal, urinary and reproductive tracts open into a common cloaca
(b) Fresh water animals with bony endoskeleton, air-bladder to regulate buoyancy
(c) Marine animals with cartilaginous endoskeleton, body covered with placoid scales
(d) Body covered with dry and cornified skin, scales over the body are epidermal, they do not have external ears

Class-Aves

1. Characteristic features such as four-chambered heart, feather and pneumatic bone is applicable to the class of vertebrate **[NCERT; Odisha JEE 2002]**
(a) Cyclostomata (b) Aves
(c) Reptilia (d) Mammals

2. Quill feathers at the base of quill wings are called **[BHU 1999]**
(a) Remiges (b) Barbules
(c) Coverts (d) Down feathers

3. The pelvic girdle of birds is attached to a complex structure formed by the fusion of last thoracic, all lumbar and first five caudal vertebra. This structure is called **[MP PMT 1993; AFMC 2005]**
(a) Synsacrum (b) Symphysis
(c) Synkaryon (d) Sympelvis

4. Penguin is found in **[CBSE PMT 1990; BHU 1997]**
(a) Africa (b) Australia
(c) America (d) Antarctica

5. Flightless bird, cassowary is found in **[CBSE PMT 1996]**
(a) Australia (b) Newzealand
(c) Indonesia (d) Mauritious

6. Which animals have a beak with jaws but no teeth **[CPMT 1995]**
(a) Aves (b) Snakes
(c) Mammals (d) All the above

7. Characteristic feature of aves is **[CPMT 1995]**
(a) Presence of beak and feathers
(b) Ability to lay eggs
(c) Air spaces in lungs
(d) All the above

8. Which of the following group of animals maintain high and constant body temperature such as mammals **[AFMC 2005]**
(a) Reptiles (b) Amphibians
(c) Birds (d) Fishes

9. Only right aortic arches are present in **[Manipal 2005]**
(a) Reptilia (b) Mammals
(c) Birds (d) None of these

10. Only one ovary is present in the
(a) Aquatic reptiles (b) Terrestrial reptiles
(c) Birds (d) Egg laying mammals

11. Flightless birds belong to **[CBSE PMT 2002]**
(a) Ratitae (b) Neornithes
(c) Archaeornithes (d) None of these

12. Cleidoic egg is an adaptation for **[RPMT 2001]**
(a) Aerial life (b) Marine life
(c) Aquatic life (d) Terrestrial life

13. Pneumatic bones of birds
(a) Increase the respiratory rate
(b) Increase the heart beat rate
(c) Increase the CO_2 output
(d) Increase the buoyancy

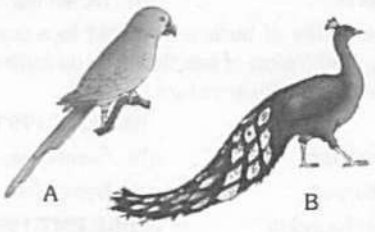
14. Which one is characteristic for birds **[NCERT; Wardha 2005]**
(a) They are flying animals
(b) They are warm blooded
(c) They are Bipedal and have feathers
(d) They are quadruped and have scales

15. The beak in birds is toothed in **[MP PMT 1993]**
(a) Ostrich (b) Kiwi
(c) Archaeopteryx (d) Pelican

16. Pneumatic bones are found in **[CBSE PMT 1996; AFMC 2000, 02]**
(a) Domestic lizard (b) Tadpole of frog
(c) Flying lizard (d) Pigeon

17. The vertebrae of birds are characteristically **[AIIMS 1999]**
(a) Heterocoelous (b) Acoelous
(c) Opisthocoelous (d) Amphicoelous

18. See the following animals and identify them **[NCERT]**



(a) *Calotes, Psittacula* (b) *Testudo, Pavo*
(c) *Pavo, Psittacula* (d) *Psittacula, Pavo*

19. The special sound producing organ in birds is **[BVP 2001]**
(a) Syrinx (b) Glottis
(c) Larynx (d) Oesophaagus

20. Who called birds are glorified reptiles **[BVP 2001]**
(a) Huxley (b) Romer
(c) Mendel (d) Robert Hooke

21. Which is not aerial adaptation of Birds **[RPMT 2001]**
(a) Single ovary (b) Pneumatic bone
(c) Gizzard (d) Keeled sternum

22. Renal portal system is absent in **[BHU 1998, 2008]**
(a) Amphibians (b) Reptiles
(c) Amphibians and reptiles (d) Birds

23. Which one of the following is a flightless bird **[AIIMS 2001; MHCET 2003; J & K CET 2010]**
(a) *Passer* (b) *Corvus*
(c) *Aptenodytes* (d) *Pavo cristatus*

24. The presence of feathers and power of flight are characteristic feature of **[NCERT; BVP 2000]**
(a) Aves (b) Reptilia
(c) Mammals (d) Amphibians

25. Birds are **[AIIMS 2000]**
(a) Cold blooded (b) Homoeothermal
(c) Poikilothermal (d) Homeopoiesis

26. Kingfisher is a bird in which the feet are
(a) Scratching type (b) Raptorial type
(c) Perching type (d) Wading type

27. Both male and female pigeons secrete milk through
(a) Mammary glands (b) Crop glands
(c) Salivary glands (d) Gizzard glands

28. Birds differ from bats in the absence of
(a) 4-chambered heart (b) Homoeothermy
(c) Diaphragm (d) Tracheae

29. The wishbone of the birds is derived from
(a) Skull (b) Pectoral girdle
(c) Pelvic girdle (d) Hindlimb

30. Birds have bipedal locomotion as it **[NCERT]**
(a) Reduces body weight
(b) Increases rate of locomotion
(c) Provides more support to the body
(d) Spares forelimbs for flight

31. The largest egg belongs to **[CPMT 1994; MHCET 2000]**
(a) Elephant (b) Whale
(c) Dinosaur (d) Ostrich

32. Bone marrow does not occur in **[BHU 1994]**
(a) Fishes (b) Amphibians
(c) Birds (d) Reptiles

33. Preen gland occurs in **[RPMT 1995]**
(a) Pisces (b) Aves
(c) Reptilia (d) Mammalia

34. Without exception, all birds are **[CPMT 1995]**
(a) Omnivorous
(b) Have feathers and fly
(c) Forms nests and care them
(d) Have calcareous shelled egg

35. Which of the following is merrythought bone **[EAMCET 1995]**
(a) Coracoid (b) Clavicle
(c) Scapula (d) Suprascapula

36. The living wingless or flightless birds belong to the superorder **[EAMCET 1995]**
(a) Palaeognathae (b) Odontognathae
(c) Archaeornithes (d) None of these

37. Kiwi is found in **[CPMT 1996]**
(a) India (b) South America
(c) New Zealand (d) East Indies

38. Uropygial gland is associated with **[MP PMT 2013]**
(a) Lizard (b) Shark
(c) Frog (d) Pigeon

39. Flight muscles of bird are attached to **[Kerala PMT 2001]**
(a) Clavicle (b) Coracoid
(c) Keel of sternum (d) Scapula

Class-Mammalia

1. Instead of tooth, baleen (hanging horny plates in mouth) are found in **[Odisha JEE 2008]**
(a) Blue whale (b) Shark
(c) Dolphin (d) *Archaeopterix*

2. An egg laying mammal is **[NCERT; J & K CET 2008]**
(a) Didelphys (b) Macaca
(c) Ornithorhynchus (d) Macropus

3. Which one of the following animals is correctly matched with its one characteristic and the taxon **[AIIMS 2008; NEET (Karnataka) 2013]**

	Animals	Characteristic	Taxon
(a)	Millipede	Ventral nerve cord	Arachnida
(b)	Duckbilled platypus	Oviparous	Mammalian
(c)	Silver fish	Pectoral and pelvic fins	Chordate
(d)	Sea anemone	Triploblastic	Cnidaria

4. Egg-laying mammals are grouped as **[Pune CET 1998]**
(a) Eutheria (b) Prototheria
(c) Rodentia (d) Metatheria

5. Which pair of characters are found without exception in all mammals **[RPMT 2001]**
(a) Hair and viviparity
(b) Viviparity and mammary glands
(c) Viviparity and internal fertilization
(d) Mammary glands and internal fertilization

6. Which of the following animals is an example of class mammalia **[MP PMT 1998]**
(a) *Manis* (b) *Planorbis*
(c) *Hydrophis* (d) *Psittacula*

7. External ears are characteristics of **[NCERT; MP PMT 1994, 97]**
(a) Birds (b) Mammals
(c) Birds and mammals (d) Mammals and reptiles

8. Eutherian mammals are **[MP PMT 1996; BVP 2002]**
(a) Oviparous
(b) Viviparous
(c) Ovoviviparous
(d) Both oviparous and ovoviviparous

9. Which one of the following is not a mammalian character **[Kerala PMT 2010]**
(a) Presence of milk producing glands
(b) They have two pairs of limbs
(c) Skin is unique in possessing hair
(d) Presence of external ears called pinnae
(e) Homodont type of dentition

10. Which one of the following mammals is not an odd-toed ungulate **[DUMET 2009]**
(a) Rhinoceros (b) Camel
(c) Zebra (d) Horse

11. Animals belonging to the order 'rodentia' have
(a) Long incisors (b) long canines
(c) short incisors (d) long molars

12. *Tachyglossus is a connecting link between* **[DUMET 2009]**
(a) Reptiles and birds (b) Amphibians and reptiles
(c) Birds and mammals (d) Reptiles and mammals

13. Why do mammals lack mucus glands in their skin **[AIIMS 1993]**
(a) The skin is not slippery
(b) The skin is tough
(c) The epidermis has many layers of cells
(d) The skin is not respiratory

14. In which one of the following sets of animals do all the four give birth to young ones **[NCERT; CBSE PMT 2006; KCET 2009]**
(a) Shrew, Bat, Cat, Kiwi
(b) Kangaroo, Hedgehog, Dolphin, Loris
(c) Lion, Bat, Whale, Ostrich
(d) Platypus, Penguin, Bat, Hippopotamus

15. Which of the following is a connecting link between mammals and reptiles **[AFMC 2009]**
(a) *Peripatus* (b) *Balanoglossus*
(c) *Ornithorhyncus* (d) *Archaeopteryx*

16. 12 pairs of cranial nerves are present in **[AIIMS 1993]**
(a) Reptilia (b) Birds only
(c) Mammals only (d) All the above

17. Rabbit belongs to the order **[CBSE PMT 1991]**
(a) Rodentia (b) Lagomorpha
(c) Artiodactyla (d) Perissodactyla

18. Mammals have originated from which of the following **[WB JEE 2012]**
(a) Pisces (b) Amphibia
(c) Reptilia (d) Aves

19. Which one of the following is a metatherian
(a) Didelphis (b) Ornithorhynchus
(c) Tarsier (d) Hysterics

20. The mammal which possesses both the reptiles and mammalian characters **[DPMT 1993]**
(a) Marsupials (b) Monotremes
(c) Equus (d) Oryctolagus

21. Kangaroo is a member of which order **[RPMT 1995; MP PMT 2000]**
(a) Monotremata (b) Marsupilia
(c) Prototheria (d) Insectivora

22. Bat can travel with **[AFMC 1997]**
(a) Eyes open
(b) Eyes plugged and ears open
(c) Ears plugged and eyes open
(d) Ears closed and eyes plugged

23. Egg laying mammals are found in
(a) India (b) South Africa
(c) Africa (d) Australia

24. A fat called blubber could be obtained from **[Kerala PMT 2001]**
(a) Bat (b) Dolphin
(c) Shark (d) Blue whale

25. Identify the aquatic mammal(s) from the following
(A) *Balaenoptera* (B) *Equus*
(C) *Delphinus* (D) *Pterophus*
(E) *Felis*
[Kerala PMT 2010]
(a) (A) and (C) only (b) (B) and (D) only
(c) (E) only (d) (D) and (E) only
(e) (B) and (E) only

26. Which of the following four animals does not come under the same order as the other three **[BHU 2012]**
(a) Rat (b) Squirrel
(c) Porcupine (d) Rabbit

27. Ruminants belongs to order **[Manipal 2005]**
(a) Proboscida (b) Artiodactyla
(c) Marsupials (d) Edentata

28. Pouch is seen in **[J & K CET 2010]**
(a) Platypus (b) Bat
(c) Lemur (d) Marsupial

29. The biological name of 'domestic cat' is **[MP PMT 1993]**
(a) *Panthera domestica* (b) *Felis domestica*
(c) *Felis leo* (d) *Panthera indica*

30. Which one of the following characters is not typical of the class Mammalia **[CBSE PMT 2005]**
(a) Thecodont dentition (b) Alveolar lungs
(c) Ten pairs of cranial nerves (d) Seven cervical vertebrae

31. Which of the following structures is present characteristically only in mammalian brain **[MP PMT 2004]**
(a) Corpus fibrosum (b) Corpus striatum
(c) Corpus luteum (d) Corpus callosum

32. Flippers of seal are modified **[AFMC 2004]**
(a) Fins (b) Hind limb
(c) Forelimb (d) Gills

33. The feet with two toes forming cloven hoof is seen in **[Kerala PMT 2004]**
(a) Horse (b) Zebra
(c) Rhinoceros (d) Elephant
(e) Sheep

34. The zoological name of common hare found in northern India is **[MP PMT 2001; CPMT 2004]**
(a) *Oryctolagus cuniculus* (b) *Lepus ruficaudatus*
(c) *Dasypus sexcinctus* (d) *Alactaga indica*

35. The following mammal lays eggs **[KCET 1998; J & K CET 2005]**
(a) Porcupine (b) Platypus
(c) Kangaroo (d) Koala

36. Double Vagina are found in **[RPMT 1999]**
(a) Monotremata (b) Eutheria
(c) Marsupials (d) All of the above

37. Which of the following is not viviparous **[HP PMT 2005; AIPMT (Cancelled) 2015]**
(a) Mole (b) Platypus
(c) Kangaroo (d) Shrew

38. One of the following is a very unique feature of the mammalian body **[BHU 2000; RPMT 2002; CBSE PMT 2004; KCET 2006; MP PMT 2012]**
(a) Four chambered heart (b) Rib cage
(c) Homeothermy (d) Presence of diaphragm

39. Select the correct set of animals of class-mammalia **[Odisha PMT 2002]**
(a) Lion, hippopotamus, penguin, bat
(b) Lion, bat, whale, ostrich
(c) Hippopotamus, penguin, whale, kangaroo
(d) Whale, bat, kangaroo, hippopotamus

40. Which character is not same in aves and mammals **[RPMT 2002]**
(a) Single systemic arch (b) Metanephric kidney
(c) Seven cervical vertebrae (d) Homoiotherms

41. All mammals **[NCERT; AMU (Med.) 2002; Odisha JEE 2009]**
(a) Give birth to live young
(b) Have a thick coat of hair
(c) Nourish their young with milk
(d) Have a uterus

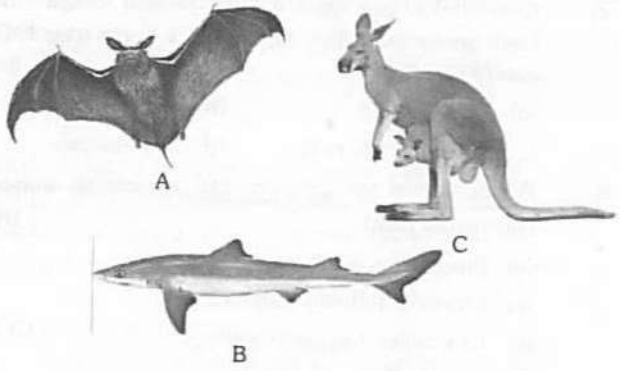
42. Most animals domesticated by man belong to the order **[BHU 2002]**
(a) Carnivora (b) Rodentia
(c) Ungulata (d) Lagomorpha

43. Which of the following is prototherian **[BHU 1999]**
(a) Platypus (b) Macropus
(c) Opposum (d) Bradypus

44. Jaw suspension characteristic of mammals is **[MP PMT 2002]**
(a) Amphistylic (b) Craniostylic
(c) Autodiastylic (d) Hyostylic

45. When embryo develops in the body of female but it does not obtain nutrients from the mother **[RPMT 1999]**
(a) Ovo-viviparous (b) Viviparous
(c) Oviparous (d) None of these

46.



Identify the names of animals A, B and C **[NCERT]**

(a) *Balaenopter, Macropus, Pteropus*
(b) *Balaenoptera, Pteropus, Macropus*
(c) *Macropus, Balaenoptera, Pteropus*
(d) *Pteropus, Balaenoptera, Macropus*

47. Which of the following is rightly matched **[CPMT 1995]**

(a) Mammalia-Human beings (b) Mollusca - Centipede
(c) Pisces - Silver fish (d) Echinoderm - Echidna

48. Consider the following four statements (A-D) about certain desert animals such as kangaroo rat

(A) They have dark colour and high rate of reproduction and excrete solid urine
(B) They do not drink water, breathe at a slow rate to conserve water and have their body covered with thick hairs
(C) They feed on dry seeds and do not require drinking water
(D) They excrete very concentrated urine and do not use water to regulate body temperature.

Which two of the above statements for such animals are true

Options **[CBSE PMT 2008]**

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

49. Considered the following four conditions (A - D) and select the correct pair of them as adaptation to environment in desert lizards.

The conditions

(A) Burrowing in soil to escape high temperature
(B) Losing heat rapidly from the body during high temperature
(C) Bask in sun when temperature is low
(D) Insulating body due to thick fatty dermis

Options **[CBSE PMT (Pre.) 2011]**

(a) (A), (B) (b) (C), (D)
(c) (A), (C) (d) (B), (D)

50. Which one of the following is categorised as a parasite in true sense **[CBSE PMT (Pre.) 2011]**

(a) The cuckoo (Koel) lays its egg in crow's nest
(b) The female Anopheles bites and sucks blood from humans
(c) Human foetus developing inside the uterus draws nourishment from the mother
(d) Head louse living on the human scalp as well as lying eggs on human hair

51. Which one of the following animals is correctly matched with its particular named taxonomic category **[NCERT; CBSE PMT (Pre.) 2011]**

(a) Housefly - *Musca*, an order
(b) Tiger - *Tigris*, the species
(c) Cuttlefish - *Mollusca*, a class
(d) Humans - *Primata*, the family

52. Pick the mammal with true placenta **[KCET 2011]**

(a) Kangaroo (b) *Echidna*
(c) Platypus (d) Mongoose

53. Which of the following is not a mammalian character **[MHCET 2002]**

(a) Hairy skin (b) Muscular diaphragm
(c) 3-chamberd heart (d) RBCs enucleated

54. Diaphragm is found in **[MH CET 2001]**

(a) Crocodile (b) Kangaroo
(c) Ostrich (d) Snake

55. Arboreal mammals have **[MH CET 2001]**

(a) Flying character (b) Burrowing character
(c) Climbing character (d) None of the above

56. Hairs occur in all mammals except those of

(a) Chiroptera (b) Rodentia
(c) Cetacea (d) Primates

57. The sweat gland are scanty in

(a) Elephant (b) Man
(c) Rabbit (d) Polar bear

58. "Sea lion" belongs to

(a) Class Reptilia (b) Subclass Prototheria
(c) Superclass Pisces (d) Order Carnivora

59. The Zoological name of 'Lion-tailed macaque' is

(a) *Macaca rhesus* (b) *Macaca silenus*
(c) *Macaca mulatta* (d) None of these

60. Locomotion in Kangaroo is

(a) Saltatorial (b) Volant
(c) Cursorial (d) Creeping

61. Pinna is absent in **[EAMCET 1994]**

(a) Sirenia (b) Primates
(c) Rodentia (d) All of these

62. Which one has a poison gland **[RPMT 1995]**

(a) Wall lizard (b) *Scoliodon*
(c) Rat snake (d) Male platypus

63. In mammals, few vertebrae join to form **[EAMCET 1995]**

(a) Humerus (b) Femur
(c) Synsacrum (d) Atlas

64. Whale is air breather but can live under water for a long time because it possesses **[CPMT 1997]**

(a) Large lungs (b) Small lungs
(c) Blubber (d) Retea mirabile

65. Only poisonous mammal or monotreme mammal is **[CBSE PMT 1992, 93; RPMT 1995; CPMT 1997; BCECE 1997; MP PMT 2002; WB JEE 2009]**

(a) *Ornithorhynchus* (b) *Echidna*
(c) Guinea pig (d) Snake

66. Which will not affect echolocation in bats **[AFMC 1997]**

(a) Covering eyes only
(b) Covering the whole head
(c) Covering the ears
(d) Covering the eyes and ears

67. Most primitive living mammals which provide an evidence of organic evolution from geographical distribution are found in **[AIIMS 1998]**
(a) Africa (b) Australia
(c) China (d) India

68. The zoological name of lion is **[MP PMT 2000]**
(a) *Felis leo* (b) *Panthera tigris*
(c) *Panthera pardus* (d) *Panthera leo persica*

69. Which of the following mammals lacks corpus callosum **[MP PMT 2000]**
(a) *Macaca* (b) *Macropus*
(c) *Balaenoptera* (d) *Ornithorhynchus*

70. Vestigial pelvic girdle and bones of hind limbs are characteristic of **[HPMT 2000]**
(a) Whales (b) Otters
(c) Rodents (d) Sharks

71. Which of the following exist in maximum number of terms of genera and species **[AFMC 2000]**
(a) Aquatic mammals (b) Carnivore mammals
(c) Herbivore mammals (d) Terrestrial mammals

72. Which of the following is largest mammals **[MHCET 2000]**
(a) Whale (b) Elephant
(c) Camel (d) Dinosaur

73. Without teats, mammary glands are found in **[EAMCET 1998; BHU 2000; MHCET 2000; CBSE PMT 2001]**
(a) Prototheria (b) Metatheria
(c) Eutheria (d) Theria

74. Bats belong to which order **[MP PMT 1994; CBSE PMT 2000; BVP 2001]**
(a) Carnivora (b) Chiroptera
(c) Dermoptera (d) Cetacea

75. A group of animals having marsupium **[MP PMT 2001; CBSE PMT 2001; MHCET 2001; BVP 2001]**
(a) Monotremata (b) Eutheria
(c) Metatheria (d) Prototheria

76. Echidna is found in **[BHU 2001]**
(a) India (b) Africa
(c) Malaysia (d) Australia

77. Which one of the following is egg-laying mammal **[RPMT 2001; MP PMT 2001]**
(a) Pangolin (b) *Tachyglossus*
(c) Porcupine (d) Bat

78. Order primata contains **[CPMT 2001]**
(a) Shrew and hedge hog (b) Bats and vampire
(c) Monkeys and man (d) Horses and zebra

79. The order insectivora comes under **[KCET 2001]**
(a) Class-mammalia (b) Class-insecta
(c) Phylum-echinodermata (d) Phylum-arthropoda

80. Which of the following represents order of 'Horse' **[NEET 2017]**
(a) *Equidae* (b) *Perissodactyla*
(c) *Caballus* (d) *Ferus*

NCERT Exemplar Questions

1. In some animal groups, the body is found divided into compartments with at least some organs/organ repeated. This characteristic feature is named **[NCERT]**
(a) Segmentation (b) Metamerism
(c) Metagenesis (d) Metamorphosis

2. Given below are types of cells present in some animals. Each one is specialized to perform a single specific function except **[NCERT]**
(a) Choanocytes (b) Interstitial cells
(c) Gastrodermal cells (d) Nematocytes

3. Which one of the following sets of animals share a four chambered heart **[NCERT]**
(a) Amphibian, Reptiles, Birds
(b) Crocodiles, Birds, Mammals
(c) Crocodiles, Lizards, Turtles
(d) Lizards, Mammals, Birds

4. Which of the following pairs of animals has non glandular skin **[NCERT]**
(a) Snake and Frog (b) Chameleon and Turtle
(c) Frog and Pigeon (d) Crocodile and Tiger

5. Birds and mammals share one of the following characteristics as a common feature **[NCERT]**
(a) Pigmented skin
(b) Alimentary canal with some modification
(c) Viviparity
(d) Warm blooded nature

6. Which one of the following sets of animals belong to a single taxonomic group (order) **[NCERT; AFMC 2012]**
(a) Cuttlefish, Jellyfish, Silverfish, Dogfish, Starfish
(b) Bat, Pigeon, Butterfly
(c) Monkey, Chimpanzee, Man, Gorilla
(d) Silkworm, Tapeworm, Earthworm

7. Which one of the following statements is incorrect **[NCERT]**
(a) Mesoglea is present in between ectoderm and endoderm in *Obelia*
(b) Radial symmetry is found in *Asterias*
(c) *Fasciola* is a pseudocoelomate animal
(d) *Taenia* is a triploblastic animal

8. Which one of the following statements is incorrect **[NCERT]**
(a) In cockroaches and prawns excretion of waste material occurs through malpighian tubules.
(b) In ctenophors, locomotion is mediated by comb plates
(c) In *Fasciola* flame cells take part in excretion
(d) Earthworms are hermaphrodites and yet cross fertilization take place among them

9. Which one of the following is oviparous **[NCERT]**
(a) Platypus (b) Flying fox (Bat)
(c) Elephant (d) Whale

10. Which one of the following is not a poisonous snake **[NCERT]**
(a) Cobra (b) Viper
(c) Python (d) Krait

11. Match the following list of animals with their level of organization

Division of Labour	Animal
A. Organ level	i *Pheritima*
B. Cellular agregate level	ii *Fasciola*
C. Tissue level	iii *Spongilla*
D. Organ system level	iv *Obelia*

Choose the correct match showing division of labour with animal example **[NCERT]**

(a) i-B, ii-C, iii-D, iv-A
(b) i-B, ii-D, iii-C, iv-A
(c) i-D, ii-A, iii-B, iv-C
(d) i-A, ii-D, iii-C, iv-B

12. Body cavity is the cavity present between body wall and gut wall. In some animals the body cavity is not lined by mesoderm. Such animals are called **[NCERT]**

(a) Acoelomate (b) Pseudocoelomate
(c) Coelomate (d) Haemocoelomate

13. Match the column A with column B and choose the correct option

Column A	Column B
A. Porifera	i. Canal system
B. Aschelminthes	ii. Water-vascular system
C. Annelida	iii. Muscular Pharynx Comb Plates
D. Arthropoda	iv. Jointed appendages
E. Echinodermata	v. Metameres

[NCERT]

(a) A-ii, B-iii, C-v, D-iv, E-i
(b) A-ii, B-v, C-iii, D-iv, E-i
(c) A-i, B-iii, C-v, D-iv, E-ii
(d) A-i, B-v, C-iii, D-iv, E-ii

Critical Thinking

Objective Questions

1. Note the following :

A. It is a fresh water, metamerically segmented protostome
B. The clitellum is absent
C. It is unisexual
D. Its larval form is Trochophore
E. The nervous system is found in the epidermis

Which of the above is true of "paddle worm" **[EAMCET 2009]**

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

2. Which of the following endoparasites of humans does show viviparity **[AIPMT (Cancelled) 2015]**

(a) *Enterobius vermicularis* (b) *Trichinella spiralis*
(c) *Ascaris lumbricoides* (d) *Ancylostoma duodenale*

3. Match the following

List-I		List-II	
(A)	Green glands	(I)	Scolopendra
(B)	Amphids and phasmids	(II)	Respiratory organ
(C)	Ctenidia	(III)	Shell protein
(D)	Poison claw	(IV)	Excretory organs
(E)	Concholin	(V)	Sense organs

The correct match is **[EAMCET 2009]**

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

4. Match list I with list II and choose the correction option

List I (Organism)		**List II** (Excretory structure)	
(A)	Cockroach	(1)	Nephridia
(B)	*Clarias*	(2)	Malpighian tubules
(C)	Earthworm	(3)	Kidneys
(D)	*Balanoglossus*	(4)	Flame cells
(E)	Flatworm	(5)	Proboscis bland

[Kerala PMT 2009]

(a) (A) — (1), (B) — (3), (C) — (2), (D) — (4), (E) — (5)
(b) (A) — (3), (B) — (1), (C) — (2), (D) — (5), (E) — (4)
(c) (A) — (2), (B) — (1), (C) — (3), (D) — (5), (E) — (4)
(d) (A) — (2), (B) — (1), (C) — (5), (D) — (3), (E) — (4)
(e) (A) — (2), (B) — (3), (C) — (1), (D) — (5), (E) — (4)

5. Coelom is cavity found between **[JIPMER 2000]**

(a) Ectoderm and Endoderm
(b) Mesoderm and Endoderm
(c) Body wall and ectoderm
(d) Mesoderm and body wall

6. In *Hydra*, both pseudopodia and flagella occur in

(a) Nutritive cells (b) Epithelio-muscular cells
(c) Sensory cells (d) Gland cells

7. Common between trichocysts of *Paramecium* and nematocysts of *Hydra* is **[CPMT 1994]**

(a) Attachment and defence (b) Defence only
(c) Sensitivity (d) Food capturing

8. In *Hydra*, egestion of undigested food and excretion of nitrogenous wastes occur through **[CBSE PMT 2001]**

(a) Mouth and tentacles (b) Mouth and body wall
(c) Mouth and mouth (d) Body wall and body wall

9. The scientific name of Asian tiger mosquito **[WB JEE 2009]**

(a) *Aedes aegypti* (b) *Aedes albopictus*
(c) *Aedes taeniorhychus* (d) *Aedes albolineatus*

10. *Taenia saginata* differs from *Taenia solium* in **[CBSE PMT 1990]**

(a) Absence of scolex hooks
(b) Absence of scolex hooks and uterine branching
(c) Absence of scolex hooks and presence of both male and female reproductive organs
(d) Presence of scolex hooks

11. Correctly matched set of phylum, class and example is **[MP PMT 2009]**

(a) Protozoa – Mastigophora – Entamoeba
(b) Mollusca – Bivalvia – *Pinactada*
(c) Arthropoda – Diplopoda – *Scolopendra*
(d) Chordata – Cyclostomata – *Phrynosoma*

12. Sites of first, second and third moulting of *Ascaris* larva are **[AIIMS 2002]**

(a) Soil, lung, intestine (b) Soil, alveoli, lung
(c) Soil, intestine, lung (d) Liver, stomach, intestine

13. Match List I with List II and select the correct option

List I		List II	
A.	Protozoa	1.	Pennatula
B.	Aschelminthes	2.	Beroe
C.	Porifera	3.	Monocystis
D.	Ctenophora	4.	Wuchereria
E.	Cnidaria	5.	Cliona

[Kerala PMT 2008]

(a) A – 3, B – 5, C – 4, D – 1, E – 2
(b) A – 4, B – 3, C – 5, D – 2, E – 1
(c) A – 3, B – 4, C – 5, D – 2, E – 1
(d) A – 2, B – 4, C – 5, D – 3, E – 1
(e) A – 3, B – 4, C – 5, D – 1, E – 2

14. Dorsal vessel of Earthworm is **[APMEE 1996; Pb. PMT 1999]**

(a) Distribution
(b) Collecting
(c) Collecting in first thirteen segments and distributing in the rest
(d) Distributing in first thirteen segments and collecting in the rest

15. Blood glands of *Pheretima* take part in **[APMEE 2001]**

(a) Formation of red blood corpuscles
(b) Formation of phagocytes
(c) Maintenance of blood volume
(d) Maintenance of blood circulation

16. Read the following statements and select the correct option

A. Circulatory system in arthropods is of closed type
B. Parapodia in annelids help in swimming
C. Phylum Mollusca is the second largest animal phylum
D. Aschelminthes are dioecious

[NCERT; Kerala PMT 2012]

(a) A and C alone are wrong
(b) A alone is wrong
(c) C alone is wrong
(d) C and D alone are wrong
(e) D alone is wrong

17. Weberian ossicles are found in **[AIIMS 1999]**

(a) Frogs (b) Snakes
(c) Fishes (d) Birds

18. Match the items in column I with column II and choose the correct option

Column I		Column II	
(A)	Ascus	(1)	*Spirulina*
(B)	Basidium	(2)	*Penicillium*
(C)	Protista	(3)	*Agaricus*
(D)	Cyanobacteria	(4)	*Euglena*
(E)	Animalia	(5)	*Sponges*

[Kerala PMT 2009]

(a) (A) — (2), (B) — (3), (C) — (4), (D) — (5), (E) — (1)
(b) (A) — (1), (B) — (2), (C) — (3), (D) — (5), (E) — (4)
(c) (A) — (2), (B) — (5), (C) — (3), (D) — (1), (E) — (4)
(d) (A) — (1), (B) — (2), (C) — (3), (D) — (4), (E) — (5)
(e) (A) — (2), (B) — (3), (C) — (4), (D) — (1), (E) — (5)

19. Which of the following group of characters is present in all chordates in some or other stage in their life

Or

Chordates differ from nonchordates in having **[Odisha JEE 2012]**

(a) Mammary glands, hair and gill slits
(b) Notochord, gill slits and dorsal tubular nervous system
(c) Notochord, scales and dorsal tubular nervous system
(d) Gill slits, vertebral column and notochord

20. What is true about Nereis, Scorpion, Cockroach and Silver fish **[CBSE PMT 2007]**

(a) They all have jointed paired appendages
(b) They all posses dorsal heart
(c) None of them is aquatic
(d) They all belong to the same phylum

21. Which of the following pairs are correctly matched

Animals			Morphological features
(A)	Crocodile	–	4-Chambered heart
(B)	Sea Urchin	–	Parapodia
(C)	Obelia	–	Metagenesis
(D)	Lemur	–	Thecodont

[CBSE PMT 2007]

(a) A, C and D (b) B, C and D
(c) Only A and D (d) Only A and B

22. Which one of the following is matching set of a phylum and its three examples **[CBSE PMT 2006]**

(a) Mollusca-*Loligo, Teredo, Octopus*
(b) Porifera-Spongilla, Euplectella, Pennatula
(c) Cnidaria-Bonellia, Physalia, Aurelia
(d) Platyhelminthes-*Planaria, Schistosoma, Enterobius*

23. Which is living fossil **[NCERT; MP PMT 2000]**

(a) Coelacanth (b) Limulus
(c) Sphenodon (d) All of these

24. The group 'amniota' includes **[EAMCET 1998; KCET 1999; Wardha 2005]**
(a) Birds and reptiles
(b) Birds and mammals
(c) Reptiles and mammals
(d) Reptiles, birds and mammals

25. The animal group, where the adults are degenerated but larvae are well developed, is **[CPMT 1999]**
(a) Agnatha (b) Tunicates
(c) Amphibians (d) Cephalo chordates

26. Which one of the following statements is incorrect **[CBSE PMT 2006]**
(a) In insects, circulating body fluids serve to distribute oxygen to tissues
(b) The principle of countercurrent flow facilitates efficient respiration in gills of fishes
(c) The residual air in lungs slightly decreases the efficiency of respiration in mammals
(d) The presence of non-respiratory air sacs, increases the efficiency of respiration in birds

27. Which of the following statement is true **[Kerala PMT 2006]**
(a) All living members of class cyclostomata are parasites on some fishes
(b) There are about 2,000 species in the class osteichthyes
(c) Ciona belongs to the subphylum cephalochordata
(d) Arthropods are diplobastic animals
(e) Ascaris lumbricoides is a flat worm

28. Heterocercal tail is found in **[RPMT 2002]**
(a) Cartilaginous fishes (b) Bony fishes
(c) Whale (d) Amphibians

29. Stenohaline fishes are represented by **[MP PMT 2002]**
(a) Fresh water fishes only
(b) Marine fishes only
(c) Those which can tolerate a narrow range of salinity in water only
(d) Those which can tolerate a wide range of salinity in water

30. Fishes having swim bladder, which do not have direct communication with the exterior and where resorbent and secretory part is not sharply separated from one another are called as **[MP PMT 2002]**
(a) Physostomes (b) Physoclists
(c) Euphysoclists (d) Paraphysoclists

31. Which one of the following combination is generally recommended for composite fish farming in India **[MP PMT 2001]**
(a) Catla, Cyprinus, Clarias
(b) Catla, Labeo, Cirrhinus
(c) Cirrhinus, Cyprinus, Channa
(d) Clarias, Chanos, Cyprinus

32. Which type of coelom is found in frog **[RPMT 2001]**
(a) Enterocoel (b) Schizocoel
(c) Pseudocoel (d) Haemocoel

33. Which of the following statements are true / false
A. In Torpedo the electric organs are capable of generating strong electric shock to paralyze the prey
B. Bony fishes use pectoral, pelvic, dorsal, anal and caudal fins in swimming
C. Amphibian skin is moist and has thick scales
D. Birds are poikilothermous animals
E. The most unique mammalian characteristic is the presence of milk producing mammary glands by which the young ones are nourished **[Kerala PMT 2006; CBSE PMT 2014]**
(a) A, B and C are true; D, E are false
(b) A, B and E are true; C and D are false
(c) A, D and E are true; B and C are false
(d) A, B and D are false; C and E are true
(e) Only D is true; A, B, C and E are false

34. Which of the following snake is not poisonous **[AIIMS 2000; CPMT 2001]**
(a) *Naja naja* (b) Python
(c) Bungarus (d) Hydrophis

35. Limbless lizard is **[MP PMT 2000]**
(a) Draco (b) Ophisaurus
(c) Amblyrhynchus (d) Moloch

36. Reptiles share which of the following character with birds and mammals **[Pb. PMT 2000; CBSE PMT 2002]**
(a) Amnion (b) Diaphragm
(c) Homeothermy (d) All of these

37. In which of the following subclasses of reptiles, the skull has a solid roof **[MP PMT 2002]**
(a) Anapsida (b) Diapsida
(c) Synapsida (d) Parapsida

38. Which of the following bird is viviparous **[RPMT 1999]**
(a) Penguin (b) Humming bird
(c) Albatross (d) None of these

39. Which of the following sets is of flightless birds **[NCERT; MHCET 2002; Kerala PMT 2010]**
(a) Penguin, Pecock, Fowl, Rhea, Kiwi, Moa, Ostrich
(b) Emu, Penguin, Rhea, Kiwi, Moa, Cassowary, Ostrich
(c) Albatros, Humming bird, Falcon, Hawk, Emu
(d) Ostrich, Emu, Kiwi, Falcon, Albatros

40. Which is the common character between all the mammals **[BHU 1999]**
(a) They are oviparous
(b) They are herbivorous
(c) They are carnivorous
(d) They have seven cervical vertebrae

41. Find the odd example **[KCET 2007]**
(a) Sea lily (b) Sea fan
(c) Sea cucumber (d) Sea urchin

42. Annual migration does not occur in the case of **[CBSE PMT 2006]**
(a) Salamander (b) Arctic tern
(c) Salmon (d) Siberian crane

43. Match the following

Column I		Column II	
A.	*Euplectella*	1.	Sea pen
B.	*Physalia*	2.	Pinworm
C.	*Pennatula*	3.	Venus flower basket
D.	*Enterobius*	4.	Midwife toad
E.	*Alytes*	5.	Portuguese man of war

[MP PMT 1994; BHU 2001; Kerala PMT 2007, 09]

(a) A–5, B–4, C–3, D–2, E–1
(b) A–5, B–3, C–4, D–2, E–1
(c) A–4, B–5, C–1, D–2, E–3
(d) A–3, B–5, C–1, D–2, E–4
(e) A–2, B–1, C–3, D–4, E–5

44. During its life cycle, *Fasciola hepatica* (Liver Fluke) infects its intermediate host and primary host at the following larval stages respectively **[CBSE PMT 2003]**

(a) Redia and miracidium
(b) Cercaria and redia
(c) Metacercaria and cercaria
(d) Miracidium and metacercaria

45. Sea cows are aquatic mammals included under **[MP PMT 2001]**

(a) Lagomorpha (b) Pinnipedia
(c) Cetacea (d) Sirenia

46. Given below are four matchings of an animal and its kind of respiratory organ

1. Silver Fish – trachea, 2. Scorpion - book lung, 3. Sea squirt - pharyngeal gills, 4. Dolphin – skin **[CBSE PMT 2003]**

(a) 3 and 4 (b) 1 and 4
(c) 1, 2 and 3 (d) 2 and 4

47. *Sycon* belongs to a group of animals, which are best described as **[CBSE PMT 2003]**

(a) Multicellular having tissue organization, but not body cavity
(b) Unicellular or acellular
(c) Multicellular without any tissue organization
(d) Multicellular with a gastrovascular system

48. The correct route through which Ascaris passes to complete its life cycle after infecting a fresh host is **[BHU 1999; MP PMT 2013]**

(a) Intestine → Liver → Heart → Lung → Pharynx → Gullet → Stomach → Intestine
(b) Outside → Intestine → Liver → Heart → Lung → Pharynx → Gullet → Intestine
(c) Intestine → Liver → Heart → Lung → Pharynx → Gullet → Stomach → Intestine → Outside → Intestine
(d) Outside → Intestine → Liver → Heart → Lung → Pharynx → Gullet → Stomach → Intestine → Outside

49. Cockroach and earthworm have common type of **[Pb. PMT 2004]**

(a) Heart (b) Nerve cord
(c) Nephridia (d) Spermathecae

50. Fertilization in earthworm is **[RPMT 1999]**

(a) Cross fertilization (b) Mutual fertilization
(c) Self fertilization (d) None of these

51. Choose the correct combination of the following **[CPMT 2000]**

(a) Annelida and porifera-phyla
(b) Aves and chordata-classes
(c) Mollusca and hydrozoa-classes
(d) Oligochaeta and arthropoda-phyla

52. Maximum nutritional diversity is found in the group **[CBSE PMT (Pre.) 2012]**

(a) Fungi (b) Animalia
(c) Monera (d) Plantae

53. Phylum annelida resembles mollusca in embryonic features because both have **[MP PMT 1999]**

(a) Spiral cleavage and mesoderm formation
(b) Identical conspicuous segmentation in body, muscles and nervous system
(c) Meroblastic cleavage and ectoderm formation
(d) Special type of mouth parts

54. The group that does not fit into this category **[MP PMT 1993]**

(a) Amphibia (b) Reptiles
(c) Aves (d) Mammals

55. In bioluminesence storage, energy changes into **[AFMC 2002]**

(a) Light energy (b) Radiant energy
(c) Chemical energy (d) Mechanical energy

56. The main difference between Gymnophiona (Apoda) and Urodela is that Urodela

(a) Have two auricles and one ventricle
(b) Have smooth moist skin
(c) Have a cloaca
(d) Respire by lungs in the adult stage

57. Body cavity surrounding alimentary canal but it is not lined by cellular layer in which of the following **[BHU 2003]**

(a) Nematodes (b) Platyhelminthes
(c) Annelids (d) Echinoderms

58. Match the items in column I with column II and choose the correct option

Column I		Column II	
A.	Binary fission	1.	Algae
B.	Zoospore	2.	*Amoeba*
C.	Conidium	3.	*Hydra*
D.	Budding	4.	*Penicillium*
E.	Gemmules	5.	Sponge

[Kerala PMT 2010]

(a) A-1; B-4; C-5; D-3; E-2 (b) A-2; B-1; C-4; D-3; E-5
(c) A-2; B-4; C-3; D-5; E-1 (d) A-1; B-4; C-3; D-2; E-5
(e) A-4; B-1; C-3; D-5; E-2

59. In which one of the following the genus name, its two characters and its class/phylum are correctly matched
[NCERT; CBSE PMT (Pre.) 2011]

	Genus name	Two characters		Class/ Phylum
(a)	Aurelia	(a)	Cnidoblasts	Coelenterata
		(b)	Organ level of organization	
(b)	Ascaris	(a)	Body segmented	Annelida
		(b)	Males and females distinct	
(c)	Salamandra	(a)	A tympanum represents ear	Amphibia
		(b)	Fertilization is external	
(d)	*Pteropus*	(a)	Skin possesses hair	Mammalia
		(b)	Oviparous	

60. Sinking of zooplankton during the day and rising to the surface at night is an example of **[AIIMS 2010]**
(a) Circinal rhythm (b) Circadian rhythm
(c) Tidal rhythm (d) None of these

61. Which one of the following is not correctly matched
[WB JEE 2011]
(a) Sycon – canal system (b) Star fish – radial symmetry
(c) Ascaris – flame cell (d) Prawn – haemocoel

62. Match the following and select the correct answer

Column I		Column II	
A.	Choanocytes	1.	Platyhelminthes
B.	Cnidoblasts	2.	Ctenophora
C.	Flame cells	3.	Porifera
D.	Nephridia	4.	Coelenterata
E.	Comb plates	5.	Annelida

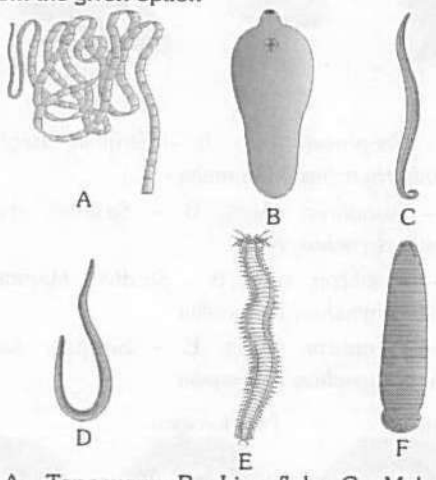
[Kerala PMT 2010]
(a) A-2, B-1, C-4, D-5, E-3 (b) A-2, B-4, C-1, D-5, E-3
(c) A-5, B-1, C-3, D-2, E-4 (d) A-3, B-4, C-1, D-5, E-2
(e) A-3, B-1, C-4, D-5, E-2

63. Which one of the following statements about all the four of Spongilla, Leech, Dolphin and Penguin is correct
[CBSE PMT (Pre.) 2010]
(a) All are bilaterally symmetrical
(b) Penguin is homoiothermic while the remaining three are poikilothermic
(c) Leech is a fresh water form while all others are marine
(d) *Spongilla* has special collared cells called choanocytes, not found in the remaining three

64. Animals possess nerve networks or nervous systems to respond to their environment. But the single celled *Amoeba* does not possesses any nerve cell, so, how it come to know whether a particle it encounters is a grain or sand and not its dinner **[AIIMS 2009]**
(a) By chemotaxis (b) By skin
(c) By hormones (d) All of these

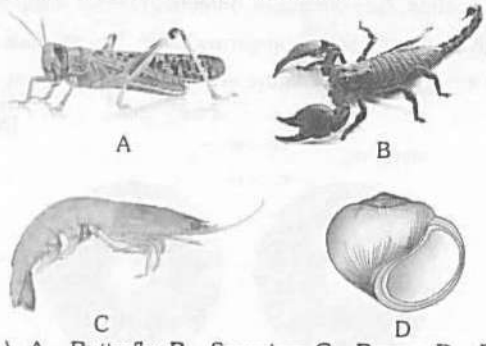
65. Retractile claws are found in **[MP PMT 2013]**
(a) Cat and Lion (b) Leopard
(c) Hyaena (d) All of the above

66. Identify the names of the following figure A, B, C, D, E and F from the given option **[NCERT]**



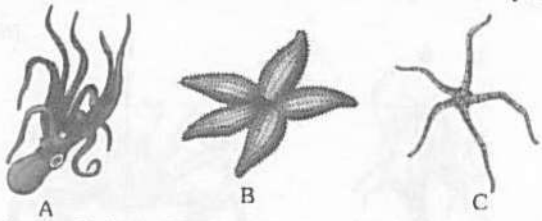
(a) A – Tape worm; B – Liver fluke; C – Male Roundworm; D – Female Roundworm; E – *Nereis;* F –*Hirudinaria*
(b) A – Tape worm; B – Liver fluke; C – Female Roundworm; D – Male Roundworm; E – *Nereis;* F –*Hirudinaria*
(c) A – Tape worm; B – Liver fluke; C – Male Roundworm; D – Female Roundworm; E – *Hirudinaria;* F – *Nereis*
(d) A – Tape worm; B – Liver fluke; C – Female Roundworm; D – Male Roundworm; E – *Hirudinaria;* F – *Nereis*

67. Identify the following figures correctly **[NCERT]**



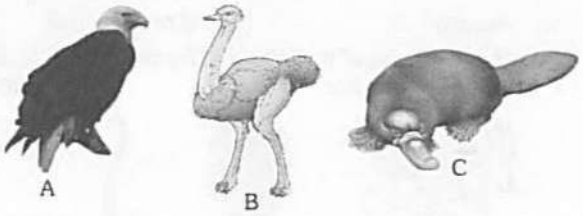
(a) A – Butterfly, B – Scorpion, C – Prawn, D – *Pila*
(b) A – Locust, B – Scorpion, C – Prawn, D – Snail
(c) A – Locust, B – Prawn, C – Scorpion, D – *Pila*
(d) A – Locust, B – Scorpion, C – Prawn, D – *Pila*

68. Identify the names of the following figure from the given option **[NCERT]**



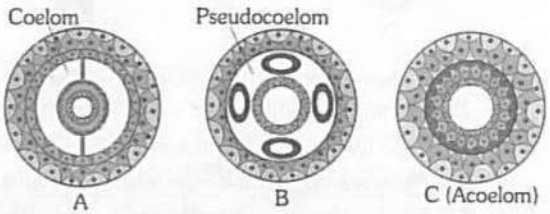
(a) A – *Ophiura*, B – *Asterias*, C – *Octopus*
(b) A – *Octopus*, B – *Asterias*, C – *Ophiura*
(c) A – *Octopus*, B – *Asterias*, C – *Ascidia*
(d) A – *Octopus*, B – *Ascidia*, C – *Ophiura*

69. Identify the name of given animals with their respective classes **[NCERT]**



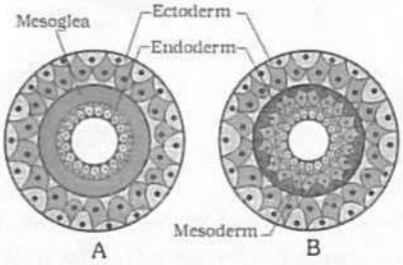
(a) A – *Neophron*, Aves, B – *Struthio*, Reptilia; C – *Ornithorhynchus*, Mammalia
(b) A – *Neophron*, Aves; B – *Struthio*, Aves; C – *Ornithorhynchus*, Aves
(c) A – *Neophron*, Aves; B – *Struthio*, Mammalia; C – *Ornithorhynchus*, Mammalia
(d) A – *Neophron*, Aves; B – *Struthio*, Aves; C – *Ornithorhynchus*, Mammalia

70.



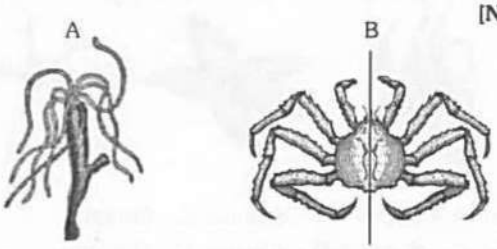
In which phylum A, B and C are found **[NCERT]**
(a) Sponges, Aschelminthes, Platyhelminthes respectively
(b) Aschelminthes, Platyhelminthes, Annelids respectively
(c) Platyhelminthes, Annelids, Aschelminthes respectively
(d) Annelids, Aschelminthes, Platyhelminthes respectively

71. The given figure shows the germs layer. The animals having structures shown in the figure are respectively known as **[NCERT]**



(a) Triploblastic, Triploblastic (b) Diploblastic, Diploblastic
(c) Triploblastic, Diploblastic (d) Diploblastic, Triploblastic

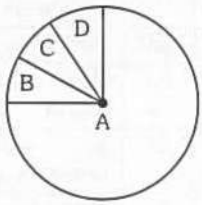
72. Identify the symmetry of animals A and B respectively **[NCERT]**



(a) Radial, Radial (b) Bilateral, Bilateral
(c) Radial, Bilateral (d) Bilateral, Asymmetrical

73. Select the Taxon mentioned that represents both marine and fresh water species **[CBSE PMT 2014]**
(a) *Cephalochordata* (b) *Cnidaria*
(c) *Echinoderms* (d) *Ctenophora*

74. Given below is the representation of the extent of global diversity of *invertebrates*. What groups the four portions (A-D) represent repectively **[CBSE PMT 2014]**



Options

	A	B	C	D
(a)	Molluscs	Other animal groups	Crustaceans	Insects
(b)	Insects	Molluscs	Crustaceans	Other animal Groups
(c)	Insects	Crustaceans	Other animal groups	Molluscs
(d)	Crustaceans	Insects	Molluscs	Other animal group

75. Which of the following characteristics is mainly responsible for diversification of insects of land **[AIPMT (Cancelled) 2015]**
(a) Bilateral symmetry (b) Exoskeleton
(c) Eyes (d) Segmentation

76. Which of the following characteristic features always holds true for the corresponding group of animals **[NEET (Phase-I) 2016]**

(a)	Cartilagious endoskeleton	Chondrichthyes
(b)	Viviparous	Mammalia
(c)	Possess a mouth with an upper and a lower jaw	Chordata
(d)	3 – chambered heart with one incompletely divided ventricle	Reptilia

77. Which one of the following characteristics is **not** shared by birds and mammals **[NEET (Phase-I) 2016]**
(a) Ossified endoskeleton (b) Breathing using lungs
(c) Viviparity (d) Warm blooded nature

78. Chitin is chemically a polymer of **[Uttaranchal PMT 2001]**

Or

The chitinous exoskeleton of arthropods is formed by the polymerisation of **[AIPMT 2015]**
(a) N-acetyl gluconic acid (b) N-acetyl glucosamine
(c) N-acetyl muramic acid (d) None of these

79. Which of the following statements(s) is/are correct about *Macropus* spp **[WB JEE 2016]**
(a) They are metatherian mammals
(b) They are only found in Austria
(c) They have true placenta
(d) External ears are present

80. An important characteristic that hemichordates share with Chordates is **[NEET 2017]**
(a) Absence of notochord (b) Ventral tubular nerve cord
(c) Pharynx with gill slits (d) Pharynx without gill slits

81. Which among these is the correct combination of aquatic mammals **[NEET 2017]**
(a) Seals, Dolphins, Sharks (b) Dolphins, Seals, *Trygon*
(c) Whales, Dolphins, Seals (d) *Trygon*, Whales, Seals

A R Assertion & Reason

Read the assertion and reason carefully to mark the correct option out of the options given below :

(a) If both the assertion and the reason are true and the reason is a correct explanation of the assertion
(b) If both the assertion and reason are true but the reason is not a correct explanation of the assertion
(c) If the assertion is true but the reason is false
(d) If both the assertion and reason are false
(e) If the assertion is false but reason is true

1. Assertion : Sponges have tissue level of organization.
Reason : Sponges are multicellular.

2. Assertion : In mollusca, circulatory system is of closed type.
Reason : The blood of mollusca contains haemoglobin **[AIIMS 1995]**

3. Assertion : *Leucosolenia* shows ascon type of canal system.
Reason : In *Leucosolenia* water passes through ostia → spongocoel → osculum.

4. Assertion : Sponges do not show any animal nature.
Reason : Sponges are sessile with no apparent way of capturing food or eliminating water.

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

6. Assertion : Tapeworm, roundworm and pinworm are endoparasites of human intestine.
Reason : Improperly cooked food is the source of all intestinal infections. **[AIIMS 2004, 08]**

7. Assertion : Coelenterates are known as Radiata.
Reason : Coelenterates are bilaterally symmetrical.

8. Assertion : *Hydra* is green coloured.
Reason : Green colour is due to the presence of chlorophyll in their body wall.

9. Assertion : Nerve cells in coelenterata have complete co-ordination in their body.
Reason : True nerve cells occur for the first time in coelenterate.

10. Assertion : King cobra is adaptive to oriental realm.
Reason : Wallace line prevents interaction of king cobra and kangaroo. **[AIIMS 2009]**

11. Assertion : Bats and whales are classified as mammals.
Reason : Bats and whales have four-chambered heart. **[AIIMS 2003, 08]**

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

13. Assertion : *Obelia* is dimorphic in nature.
Reason : *Obelia* shows polyp and gonangia form.

14. Assertion : Coelenterates show alternation of generation.
Reason : In coelenterates, asexual generation is followed by sexual generation.

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

16. Assertion : *F.hepatica* undergoes both aerobic and anaerobic respiration.
Reason : *Fasciola* respire only in absence of oxygen.

17. Assertion : *Plasmodium vivax* is responsible for malaria.
Reason : Malaria is caused by polluted water. **[AIIMS 2001]**

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

19. Assertion : A shark can stay at a desired level in water without swimming.
Reason : It has a buoyancy-regulating organ called as the swim bladder. **[AIIMS 1999]**

20. Assertion : Sponges belong to Porifera.
Reason : Sponges have canal system. **[AIIMS 1998]**

21. Assertion : There is no chance of malaria to a man on the bite of male *Anopheles* mosquito.
Reason : It carries a non-virulant strain of *Plasmodium*. **[AIIMS 1998]**

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

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

24. Assertion : The skeleton of sponges is made up of spicules.
Reason : Composition of spicules help in classification of sponges. **[AIIMS 1995]**

25. Assertion : Cephalization is advantageous to an animal.
Reason : It improves the appearance of the animal.
[AIIMS 1994]

26. Assertion : Blood is colourless in the insects.
Reason : Insect blood has no role in O_2 transport.
[AIIMS 1994]

27. Assertion : Lophodont dentition is also found in the mammals.
Reason : Lophodont type of dentition is specially for herbivore mammals.

28. Assertion : 'Calabar swelling' is caused by 'eye worm'.
Reason : *Loa loa* is called the 'eye worm'.

29. Assertion : Metamerism is the characteristic of annelida.
Reason : Metamerism is one type of body segmentation.

30. Assertion : Blood is red in annelida.
Reason : RBCs are absent in them.

31. Assertion : Baleen is an example of aquatic adapation.
Reason : Baleen is a balloon like structure present beneath the skin of mammals.

32. Assertion : Spermathecae are the main part of reproductive system of annelida.
Reason : Spermathecae help in sperm transfer.

33. Assertion : Coprophagy is the characteristic of mammal.
Reason : Coprophagy is found in all mammals.

34. Assertion : Both true ribs and floating ribs are present in mammals.
Reason : By nature, sternal ribs are true ribs as, they possess all the characters of ribs.

35. Assertion : Cutaneous glands help in regulation of body temperature.
Reason : Cutaneous glands are produced from stratum germinativum.

36. Assertion : Annelids are ureotelic.
Reason : Only excretory product of annelids is uric acid.

37. Assertion : Open circulatory system is found in most arthropods.
Reason : Arthropods contain haemolymph which directly bathes internal tissues and organ.
[AIIMS 2010]

38. Assertion : The birds can maintain a constant body temperature.
Reason : Birds possess feathers covering their body.

39. Assertion : Moulting or ecdysis occurs only in invertebrates.
Reason : In birds, moulting usually takes an average time of six weeks.

40. Assertion : Birds have no mammary gland.
Reason : Pigeons secrete 'pigeon's millk'.

41. Assertion : The fangs of snake is the maxillary teeth.
Reason : The poison apparatus in snake consists of poison gland, ducts and fangs.

42. Assertion : In reptiles, hemipenes is present.
Reason : Hemipenes is the combination of both ovary and penis.

43. Assertion : Parental care is seen in amphibians.
Reason : Amphibians have taken several method to protect their eggs and offspring.

44. Assertion : In frogs, the entire skin serves as tangoreceptors.
Reason : Tactile organs and patches are present throughout the skin of frog.

45. Assertion : "Lymph heart" is present in frog.
Reason : Lymph in frog is circulated by lymph heart.

46. Assertion : In frog, most of the absorption takes place in intestine.
Reason : The intestine in frog is the coiled structure.

47. Assertion : Amphibians are poikilothermal.
Reason : Amphibians often undergoes summer sleep.

48. Assertion : In fishes, heart is venous.
Reason : Only veins are present in the heart of fishes.

49. Assertion : Ampullae of lorenzini are found beneath the skin of head region in fishes.
Reason : Ampullae of lorenzini acts as receptors.

50. Assertion : Lateral line canal is one of the main characteristics of fishes.
Reason : Lateral line canal is a system of sense organ concerned with life in water.

51. Assertion : Characters of cyclostomes show an advance over *Amphioxus*.
Reason : Cyclostomes have some degenerated characters.

52. Assertion : *Amphioxus* has a simple organization compared to vertebrates.
Reason : Many important craniate structures are lacking in *Amphioxus*.

53. Assertion : Glochidium larva rapidly disperse to a great distance.
Reason : Glochidium is parasitic on fish.

54. Assertion : Respiration in *Amphioxus* is done by both water and blood.
Reason : *Amphioxus* is aquatic and possesses blood.

55. Assertion : Detorsion is the characteristic of mollusca.
Reason : Detorison is an arrested stage of torsion.

56. Assertion : Tube feet are characteristic organs of echinodermata.
Reason : Tube feet have an important role in respiration.

57. Assertion : Endostyle is present at the pharyngeal groove of the midventral wall of the pharynx of *Amphioxus*.
Reason : Endostyle has an important role in respiration.

58. Assertion : *Herdmania* has digestion mechanism like higher group of animals.
Reason : Liver of *Herdmania* possess several enzymes required for digestion.

59. Assertion : In *Balanoglossus* notochord is replaced by pygochord.
Reason : Pygochord supports adbominal region.

60. Assertion : Water vascular system is the characteristic of echinoderms.
Reason : Main function of water vascular system is locomotion.

61. Assertion : *Balanoglossus* is often considered as "acorn worms".
Reason : The word 'acorn worm' has no meaning.

Answers

Important terms and classification of animals

1	c	2	b	3	a	4	b	5	c
6	c	7	c	8	d	9	b	10	a
11	a	12	d	13	b	14	c	15	c
16	c	17	a	18	c	19	b	20	b
21	a	22	a	23	b	24	b	25	c
26	b	27	d	28	a	29	c	30	b
31	b	32	a	33	c	34	c	35	c
36	d	37	d	38	d	39	a	40	c
41	a	42	c	43	d	44	c	45	b

Phylum-Porifera

1	c	2	a	3	b	4	a	5	a
6	a	7	b	8	a	9	b	10	b
11	a	12	d	13	d	14	a	15	b
16	a	17	d	18	b	19	d	20	a
21	d	22	b	23	b	24	d	25	c
26	a	27	d	28	b	29	a	30	d
31	a	32	a	33	d	34	a	35	b
36	b	37	a	38	c	39	b	40	c
41	d	42	a	43	c	44	b	45	a
46	b	47	c	48	c	49	a	50	d
51	d	52	b	53	d	54	b	55	a
56	c								

Phylum-Coelenterata

1	a	2	b	3	b	4	a	5	b
6	d	7	c	8	b	9	c	10	b
11	b	12	c	13	d	14	c	15	a
16	b	17	d	18	b	19	a	20	a
21	c	22	a	23	d	24	b	25	b
26	b	27	d	28	d	29	c	30	a
31	c	32	d	33	d	34	a	35	b
36	c	37	d	38	c	39	a	40	a
41	a	42	d	43	b	44	c	45	b
46	a	47	c	48	d	49	b	50	a
51	d	52	c	53	d	54	c	55	b
56	d	57	b	58	b	59	d	60	d
61	b	62	d	63	c	64	b	65	a
66	d	67	d	68	a	69	d	70	a
71	a	72	a	73	d	74	d	75	a
76	b	77	a	78	d	79	b	80	c
81	d	82	a	83	c	84	b	85	d
86	b	87	d						

Phylum-Platyhelminthes

1	a	2	a	3	d	4	b	5	b
6	b	7	d	8	a	9	b	10	d
11	b	12	b	13	d	14	c	15	d
16	c	17	d	18	a	19	c	20	a
21	a	22	a	23	a	24	d	25	b
26	b	27	c	28	a	29	d	30	a
31	d	32	a	33	c	34	b	35	c
36	b	37	a	38	c	39	b	40	a
41	a	42	a	43	d	44	c	45	d
46	a	47	a	48	d	49	b	50	b
51	b	52	a	53	c	54	b	55	c

Phylum-Nemathelminthes

1	d	2	a	3	b	4	d	5	a
6	c	7	b	8	a	9	a	10	c
11	b	12	a	13	c	14	b	15	b
16	c	17	d	18	d	19	b	20	a
21	a	22	c	23	a	24	d	25	d
26	d	27	c	28	c	29	c	30	c
31	c	32	a	33	b	34	d	35	a
36	c	37	c	38	d	39	a	40	a
41	d	42	d	43	a	44	c	45	d

46	b	47	a	48	d	49	b	50	c
51	c	52	b	53	d	54	d	55	b
56	b								

Phylum-Annelida

1	d	2	b	3	d	4	c	5	a
6	a	7	b	8	b	9	c	10	c
11	c	12	d	13	a	14	c	15	c
16	c	17	d	18	b	19	a	20	c
21	b	22	b	23	a	24	a	25	d
26	c	27	b	28	b	29	a	30	c
31	d	32	c	33	b	34	a	35	c
36	c	37	b	38	d	39	a	40	b
41	c	42	c	43	a	44	b	45	c
46	d	47	c	48	c	49	c	50	a
51	b	52	b	53	a	54	b	55	a
56	d	57	b	58	a	59	b	60	d
61	d	62	b	63	b	64	d	65	c
66	a	67	b	68	d	69	c	70	b
71	a	72	c	73	a	74	d	75	a
76	a	77	b	78	a	79	d	80	a
81	a	82	a	83	d	84	a	85	c
86	b	87	b	88	c	89	b	90	c
91	d	92	a	93	a	94	b	95	c
96	b	97	d	98	d	99	d	100	c
101	c	102	a	103	e	104	c	105	b
106	c	107	d	108	a	109	d	110	b
111	c	112	d	113	c	114	d	115	c

Phylum-Arthropoda

1	b	2	d	3	c	4	b	5	c
6	c	7	d	8	a	9	a	10	c
11	a	12	a	13	b	14	a	15	d
16	a	17	c	18	e	19	b	20	a
21	b	22	b	23	a	24	c	25	b
26	d	27	d	28	c	29	c	30	d
31	a	32	d	33	c	34	c	35	b
36	d	37	c	38	c	39	c	40	b
41	b	42	c	43	b	44	d	45	a
46	d	47	b	48	d	49	d	50	d
51	b	52	b	53	d	54	c	55	a
56	d	57	c	58	d	59	a	60	a
61	a	62	c	63	a	64	d	65	b
66	c	67	b	68	a	69	a	70	b
71	c	72	a	73	d	74	a	75	d
76	d	77	c	78	c	79	b	80	d
81	c	82	d	83	b	84	c	85	d
86	b	87	d	88	c	89	b	90	d
91	a	92	a	93	d	94	c	95	d
96	b	97	b	98	d	99	c	100	a
101	a	102	d	103	c	104	c	105	a
106	b	107	b	108	b	109	c	110	c
111	a	112	a	113	b	114	a	115	d
116	d	117	a	118	b	119	c	120	c
121	e	122	b	123	c	124	d	125	b
126	c	127	b	128	a	129	d	130	b
131	a	132	d	133	a	134	c	135	b
136	b	137	b	138	e	139	b	140	b
141	b	142	a	143	d	144	c	145	a
146	b	147	b	148	c	149	a	150	b
151	d	152	a	153	b	154	c	155	b
156	d	157	c	158	a	159	c	160	a
161	a	162	c	163	c	164	c	165	b
166	c	167	b	168	a	169	d	170	c
171	d	172	d	173	b	174	a	175	c
176	c	177	c	178	a	179	d	180	d
181	a	182	c	183	b	184	b	185	c
186	d	187	d	188	d	189	b	190	c
191	a	192	a	193	a	194	b	195	b
196	a	197	a	198	d	199	a	200	b
201	b	202	b						

Phylum-Mollusca

1	a	2	a	3	b	4	c	5	c
6	a	7	a	8	d	9	a	10	c
11	c	12	c	13	c	14	a	15	a
16	a	17	b	18	d	19	c	20	c
21	b	22	c	23	d	24	d	25	a
26	a	27	b	28	a	29	b	30	a
31	c	32	b	33	d	34	c	35	b
36	a	37	c	38	a	39	a	40	d
41	b	42	d						

Phylum-Echinodermata

1	d	2	c	3	b	4	d	5	c
6	a	7	d	8	d	9	c	10	b
11	a	12	b	13	a	14	c	15	a

16	c	17	b	18	a	19	d	20	d
21	c	22	c	23	d	24	d	25	b
26	b	27	a	28	c	29	c	30	a
31	a	32	c	33	d	34	d	35	d
36	b								

Phylum-Chordata

1	c	2	d	3	d	4	c	5	b
6	c	7	b	8	c	9	a	10	c
11	c	12	b	13	a	14	c	15	a
16	d	17	b	18	c	19	a	20	c
21	b	22	c	23	a	24	d	25	b
26	e	27	c	28	b	29	a	30	a
31	a	32	a	33	c	34	b	35	b
36	d	37	c	38	d	39	b	40	c
41	a	42	c	43	a	44	d	45	c
46	d	47	b	48	c	49	a	50	c
51	c	52	a	53	b	54	b		

Super Class-Pisces

1	a	2	b	3	a	4	d	5	d
6	d	7	a	8	a	9	d	10	c
11	a	12	c	13	d	14	d	15	a
16	a	17	a	18	b	19	b	20	c
21	b	22	b	23	a	24	c	25	b
26	b	27	b	28	c	29	a	30	b
31	b	32	d	33	b	34	b	35	d
36	a	37	a	38	d	39	a	40	b
41	b	42	a	43	a	44	d	45	c
46	b	47	c	48	c	49	d	50	a
51	c	52	c	53	d	54	a	55	c
56	c	57	b	58	d	59	d	60	a
61	a	62	c						

Class-Amphibia

1	b	2	b	3	b	4	b	5	d
6	b	7	d	8	c	9	a	10	a
11	c	12	a	13	c	14	b	15	c
16	a	17	d	18	d	19	d	20	c
21	a	22	a	23	c	24	a	25	c

Class-Reptilia

1	c	2	a	3	b	4	a	5	c
6	c	7	c	8	a	9	d	10	a
11	a	12	c	13	c	14	b	15	a
16	b	17	a	18	a	19	b	20	a
21	b	22	d	23	d	24	d	25	a
26	b	27	a	28	c	29	b	30	c
31	a	32	d	33	b	34	d	35	d
36	b	37	d	38	d	39	b	40	a
41	c	42	c	43	b	44	b	45	b
46	d	47	c	48	d	49	a	50	d
51	c	52	b	53	a	54	c	55	c
56	b	57	b	58	d	59	c	60	b
61	d								

Class-Aves

1	b	2	c	3	a	4	d	5	a
6	a	7	d	8	c	9	c	10	c
11	a	12	d	13	d	14	c	15	c
16	d	17	a	18	d	19	a	20	a
21	c	22	d	23	c	24	a	25	b
26	d	27	b	28	c	29	b	30	d
31	d	32	c	33	b	34	d	35	b
36	a	37	c	38	d	39	c		

Class-Mammalia

1	a	2	c	3	b	4	b	5	d
6	a	7	b	8	b	9	e	10	b
11	a	12	d	13	d	14	b	15	c
16	d	17	b	18	c	19	a	20	b
21	b	22	b	23	d	24	d	25	a
26	d	27	b	28	d	29	b	30	c
31	d	32	c	33	e	34	b	35	b
36	c	37	b	38	d	39	d	40	c
41	c	42	c	43	a	44	b	45	a
46	d	47	a	48	d	49	c	50	d
51	b	52	d	53	c	54	b	55	c
56	c	57	d	58	d	59	b	60	a
61	a	62	d	63	c	64	d	65	a
66	a	67	b	68	d	69	d	70	a
71	d	72	a	73	a	74	b	75	c
76	d	77	b	78	c	79	a	80	b

NCERT Exemplar Questions

1	b	2	b	3	b	4	c	5	d
6	c	7	a	8	a	9	a	10	c
11	c	12	b	13	c				

Critical Thinking Questions

1	c	2	b	3	a	4	e	5	a
6	a	7	b	8	b	9	b	10	a
11	b	12	c	13	c	14	d	15	a
16	b	17	c	18	e	19	b	20	b
21	a	22	a	23	d	24	d	25	b
26	a	27	a	28	a	29	c	30	b
31	b	32	a	33	b	34	b	35	b
36	a	37	a	38	d	39	b	40	d
41	b	42	a	43	d	44	d	45	d
46	c	47	c	48	c	49	d	50	a
51	a	52	b	53	a	54	a	55	a
56	b	57	a	58	b	59	c	60	b
61	c	62	d	63	d	64	a	65	d
66	a	67	d	68	b	69	d	70	d
71	d	72	c	73	b	74	b	75	b
76	a	77	c	78	b	79	ad	80	c
81	c								

Assertion and Reason

1	e	2	d	3	a	4	e	5	a
6	b	7	c	8	c	9	a	10	b
11	b	12	b	13	a	14	a	15	a
16	c	17	c	18	a	19	d	20	b
21	c	22	b	23	b	24	b	25	c
26	b	27	b	28	b	29	b	30	b
31	c	32	a	33	c	34	b	35	b
36	c	37	a	38	a	39	e	40	b
41	b	42	c	43	a	44	a	45	a
46	b	47	a	48	c	49	b	50	a
51	b	52	a	53	a	54	a	55	b
56	c	57	c	58	a	59	d	60	b
61	c								

Answers and Solutions

Important terms and classification of animals

11. (a) Echinodermates and chordates are deuterostomous animals, in which blastopore of gastrula forms anus, so anus is formed earlier than mouth.

13. (b) The cell aggregate plan is seen in simplest animals, such as sponge. This plan exhibits essentially cluster of cells with rudimentary of labour amongst them.

18. (c) Blind sac body plan is found in coelenterates and flat worms. In this type of body plan animals has a single opening that act as both mouth and anus.

22. (a) From evolutionary point of view platyhelminthes are first triploblastic animals but do not contain coelom.

23. (b) Whole animal kingdom is classified into two sub-kingdom protozoa and metazoa. Unicellular animals are placed in protozoa while multicellular are included in metazoa.

29. (c) All sponges are aquatic, mostly marine rarely fresh water (e. g. spongilla)

36. (d) True coelom is present in Annelid while platyhelminthes have pseudo (false) coelom called pseudocoelomate animals.

39. (a) In nemathelminthes or round worm, coelom is present but it is derived from blastocoel. It is not lined by peritoneum. This type of coelom is known as pseudocoelom.

41. (a) Veliger, trochophore or glochidium larva are characterstic of mollusca.

44. (c) Metamerism is a condition in which the body is composed of a linear series of similar body segments called metameres or somites. It is found in Annelida, Arthropoda and chordata.

Phylum-Porifera

7. (b) Many pores are present on the body known as ostia through which water enters into the body. Ostia correspond to mouth of other animals.

8. (a) Choanocytes or collar cells are present only in sponges.

9. (b) Sponges have a canal system and they need a continuous current of water flowing through their bodies for respiration, excretion, nutrition and reproduction.

12. (d) Food vacuole is transferred to amoebocytes and digestion is completed there.

13. (d) In *Leucosolenia*, further development results in the formation of stereogastrula or parenchymula larva.

15. (b) *Euplectella* with its imprisoned shrimps makes a good wedding gift in Japan, symbolizing the idea "till death us do part".

16. (a) Water currents produced by choanocytes because they are flagellated.

18. (b) Spongilla is known as fresh water sponge.

20. (a) The larva of *cliona* or boring sponge or sulphur sponges bores through and damages the skeleton of corals and shells of molluscs. It is harmful to pearl industry.

22. (b) Classification of sponges is primarily based on skeleton or spicules.

23. (b) Amphiblastula and stereogastrula are the larval stages of *sycon*.

24. (d) When bathsponges are dried all its cells are destroyed except spongin fibre.

25. (c) Sponges have excellent regeneration power so each piece develop into complete individual.

26. (a) Archaeocytes may be converted into other types of cells and are also called undifferentiated totipotent cells.

27. (d) The spongin fibres are secreted by cells termed spongioblasts. They are formed of protein collen and occur as a network.

28. (b) In porifera, bodywall is with outer pinacoderm (ectoderm), inner choanoderm (endoderm) and gelatinous noncellular mesenchyme in between.

29. (a) Food coming through the incoming water is ingested by choanocytes.

32. (a) The course taken by water into the canal system is.

water from outside $\xrightarrow[\text{dermal ostia}]{\text{through}}$ incurrent canals $\xrightarrow[\text{prosopyles}]{\text{through}}$ radial canals $\xrightarrow[\text{apopyles}]{\text{through}}$ spongocoel $\xrightarrow[\text{osculum}]{\text{through}}$ outside.

34. (a) The gemmules are asexual reproductive bodies found in all fresh water and a few marine sponges. They are formed as internal buds and protect the species during unfavourable conditions.

35. (b) Spongin fibres occurs in various forms in the class Demospongiae. It may occur as a cement connecting together the siliceous spicules.

36. (b) Digestion of food takes place partially in choanocytes and partially in wandering amoebocytes.

42. (a) Ascon is the simplest type of canal system, in which the body is thin-walled, bilaterally symmetrical and hollow due to the central cavity known as the spongocoel or gastrovascular cavity.

45. (a) Collar cells occur in sponges and located at the anterior end of each choanocyte.

47. (c) If carmine particles are placed close to osculum of a living sponge, these will be carried away.

49. (a) Sponges are multicellular grade organism.

50. (d) The sponges closely resemble to colonial choanoflagellates belonging to the phylum protozoa. Both possess collared and amoeboid cells.

53. (d) Sponges have numerous mouthlets(ostia) and one exit (osculum).

54. (b) Incurrent canals are communicated to outside through ostia but end blindly at their inner ends. Pinacocytes line these canals throughout.

Phylum-Coelenterata

4. (a) Metagenesis is alternation of generations found in *cnidaria* phylum eg. *Obelia*

5. (b) In class scyphozoa of phylum coelenterata, the polyp form is reduced or absent.

8. (b) *Obelia* shows alternation of asexual and sexual phase (both phase are diploid). The asexual phase is represented by the colony while the sexual phase is medusa. The two alternate in life cycle. Such an alternation between asexual and sexual phases is called metagenesis.

9. (c) Sea cucumber is the common name of *Cucumaria*. It is belong to phylum Echinodermata.

13. (d) The ctenophora is a small phylum of marine animals, which are commonly known as comb jellies or sea walnuts. The phylum takes its name from two Greek words, ketos = comb and phoros = bearing, as the animals possess eight comb like for locomotion. In Ctenophora, asexual reproduction is totally absent.

15. (a) Polyp and medusa are the asexual and sexual phase present respectively in coelenterates.

Aurelia (jelly fish) belongs to class Scyphozoa, in which medusoid phase is dominant, polypoid phase absent.

16. (b) Jelly-fishes (Aurelia) are the animals which belong to the class scyphozoa of the phylum coelenterata.

17. (d) Special type of cells called nematocytes are present in only coelenterata. These cells are used for food catching, defensive and offensive purposes.

19. (a) Nematoblast (cnidoblast) are sensory in nature and acts as a organ for offense and defence.

20. (a) In *Hydra* the exchange of oxygen and CO_2 and the excretion of waste nitrogeneous matter (chiefly ammonia) occur directly by diffusion through cell membrane to outside.

22. (a) Body cavity of hydra is called coelenteron or gastrovascular cavity. It is surrounded by the body wall. The mouth leads into this cavity.

23. (d) Pneumatophore is a gas filled chamber found in *Physalia* which helps in floating.

27. (d) Larval stage is absent in *Hydra*.

29. (c) Coelenterates are diploblastic animals i.e., derived only from two embryonic germ layers. Ectoderm and endoderm. They show radial symmetry.

32. (d) Sea pen are pen–like colonial coelenterates.

34. (a) In hydrozoa, either only polyps are found or polyps and medusae are present. Examples – *Hydra, Obelia, Physalia* etc.

36. (c) *Physalia* is commonly known as 'portuguese man of war' due to sudden appearance and disappearance like active Navy ships of portugal which is pelagic, marine swimming animal.

37. (d) Statocyst help to maintain equilibrium in larval stage (medusae) of *Obelia*.

38. (c) Ephyra is a small, medusa like stage in the life cycle of scyphozoans or jelly fish (aurelia).

40. (a) Coelenterata (coelom + enteron) or phylum Cnidaria shows both sexual and asexual reproduction. The larval stage are Planula (*Obelia*) and Ephyra (*Aurelia*).

42. (d) Cnidoblasts (nematoblast) are specialised and modified interstitial cells which are found in coelenterate animals. The cnidoblasts are organs of defence and offence.

44. (c) Choanocytes cells is a characteristic feature of sponge which are also known as collar cells.

45. (b) *Hydra* possesses a very primitive nervous system consisting of a synaptic network of bipolar and multipolar nerve cells. Thus, hydra has a nervous system but no brain.

46. (a) *Hydra* has four types of nematocysts. They are penetrants (largest). Volents (smallest) steroline glutinant (small atriechous) and streptoline glutinants (large holotrichous)

50. (a) A unicellular green alga of the genus *zoochlorellae* and *zooxanthallae* habitually lives in nutritive-muscular cells of *Hydra*.

52. (c) *Corallium rubrum* is the precious red coral of commerce. It is highly valued as it is used for making jewellery.

53. (d) A sexually mature medusa of *obelia* bears four groups of gonads situated on the middle of four radial canal.

55. (b) Stinging cells or cnidocytes having nematocysts which is found in ectoderm.

59. (d) Nematocyst plays an important role in locomotion, food capture both offence and defence.

61. (b) A mechanical stimulation of cnidocil by contact with an object is essential, but not sufficient, for discharge.

62. (d) *Gorgonia* (sea-fan) is an animal. All animal lack cell wall.

64. (b) The *hydra* has a great power of regeneration, the power of replacing lost tissues. If a living *hydra* is cut into two or more very small fragments, every fragment develops into a new individual. Basal disc is developed towards lower side and mouth, hypostome and tentacles, developed at upper side in each part whatever is required according.

65. (a) The interstitial cells become active and form germ cells by repeated multiplication which bulge out as gonads.

73. (d) Cnidoblast or nematocysts are derived from interstitial cells of epidermis.

75. (a) The medusa is strictly carnivorous. The food includes minute worms, nematods, insects, crustaceans, etc.

80. (c) In this method of locomotion of *hydra*, usually the body first extends and then bends over, so that the tentacles attach to the substratum with the help of adhesive atrichous isorhizas.

82. (a) When the body can be divided into two similar halves by one or two vertical planes only, the radial symmetry is called biradial symmetry. It is present in the sea anemone.

86. (b) Ctenophores have certain characteristics in common with the coelenterates, but there is no evidence that they were derived from the latter.

87. (d) During the development in Hydra, a solid gastrula is formed. The solid gastrula is neither ciliated nor free swimming because it is still attached to the parent body. This type of gastrula is characteristically called stereogastrula which represents the planula stage of hydrula.

Phylum-Platyhelminthes

1. (a) Flame cell or solenocyte or protonephridia and nephridia are excretory organs of phylum platyhelminthes and annelida respectively.

2. (a) Planaria (*Dugesia*) belong to class Turbellaria of phylum platyhelminthes. Mostly free living flatworms are placed in class Turbellaria.

3. (d) Self fertilization is fusion of male and female gametes (sex cells) produced by the same individual. Self-fertilization occurs in bisexual organisms, including most flowering plants, numerous protozoans, and many invertebrates.

Flukes are hermaphrodites, meaning each worm has both ovaries and testes. Probably cross fertilization is the rule, but self fertilization is certainly a possibility. In any case, it means that every individual is capable of producing fertilized eggs, certainly an advantage in species in which a high reproductive output is required.

5. (b) In cestodes digestive system is completely absent due to endoparasitic mode of life but it may be present in Trematoda and Turbellaria.

6. (b) *Schistosoma* is blood fluke.

9. (b) Onchosphere, hexacanth and cysticercus (bladder-worm) are different larval stage of *Taenia-solium*.

13. (d) Solenocytes are flame cells like structures attached within the body of nephridium. Each cell has nucleus, cytoplasm and long flagellum that runs through tubules.

14. (c) In *Fasciola*, laurer's canal is a temporary vaginal canal, which arise from oviduct during breeding season and act as fertilization tube.

17. (d) Being parasitic in mode of life, locomotory organs are totally absent in *Taenia*.

18. (a) On the basis of body shape and habitat, platyhelminthes are classified into three classes. Turbellaria, Trematoda and cestoda.

20. (a) Among invertebrates upto platyhelminthes (flatworm), they have no coelom and are called acoelomate animals.

24. (d) Planaria/Dugesia is a free living leaf like flatworm found in fresh water. It has high power of regeneration so it is used in regeneration experiments.

25. (b) Ventral surface of *Dugesia's* body is covered with fine hair like locomotory structure called cilia.

29. (d) *Taenia Solium* is a facultative anaerobe. It decomposes glycogen into CO_2 and fatty acids to liberate energy. However it is also capable of aerobic respiration and utilizes even traces of oxygen when available in host fluids.

30. (a) Platyhelminthes (liver-fluke) are first acoelomate animals, which have organ system organization and bilateral symmetry.

32. (a) Mehlis's glands of Tapeworm are associated with reproductive system. Secretory substance of mehlis's glands act as lubricant.

34. (b) *Taenia* has no digestive system, it obtain digested nutrients (like glucose, amino acid, glycerol) from small intestine of host through body surface with the help of microvilli.

36. (b) Hexacanth embryo of *Taenia* is present in ripe proglottids or gravid proglottids, which is covered by shell structure, called onchosphere.

37. (a) *Schistosoma* lives in hepatic portal system and mesenteric blood vessels of human beings, so commonly called "blood fluke".

38. (c) Fertilized egg of *Taenia solium* develops into an embryo that gets covered by a shell. The shelled embryos are called onchospheres. Secondary host acquires infection by ingesting the onchosphere, released from *Taenia*.

39. (b) *Hymenolepis nana*, belong to class cestoda and generally known as dwarf tapeworm, which length about 2-4.5 c.m. Life cycle of *Hymenolepis* is monogenetic.

40. (a) Life history of liver fluke is digenetic, primary host is liver of sheep and secondary host is snail.

41. (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 host is snail.

42. (a) Miracidium, sporocyst and cercaria are different form of larva in life history of *schistosoma*.

43. (d) Mature proglottids are in the middle having reproductive organs both male and female.

45. (d) Shelled hexacanth larva in pig muscle, absorbs a large amount of watery fluid from host tissue and grows to a spherical pea sized, sac like cyst called bladder worm or cysticercus.

46. (a) Mostly flatworms are included in class Turbellaria of phylum platyhelminthes e.g. planaria.

47. (a) Anus is absent in Fasciola hepatica. Undigested food material is probably ejected through the mouth or diffused into excretory system

49. (b) Hexacanth moves in the body and ultimately settles in the muscles of secondary host (pig). Here it forms an encysted bladderworm or cysticercus. Cysticercus remain viable for upto six months.

50. (b) Different larval stage of liver fluke are found in following sequence.

Miracidium → Sporocyst → Redia → Cercaria → Metacercaria

55. (c) *Taenia solium* (Tape worm) and *Echinococcus* (Dog Tapeworm) are endoparasite. They obtain their food from host through body surface. So lacks alimentary canal.

Phylum-Nemathelminthes

1. (d) *Enterobius vermicularis* is the human 'pin worm' or 'seat worm' and is perhaps the most common parasitic nematode of man throughout the world.

2. (a) Pineal setae is the main characteristic of male *Ascaris* and situated on the dorsal side of cloaca.

4. (d) *Ascaris* is monogenetic so it completes its life cycle in single host *i.e.*, man.

5. (a) *Taenia* is grouped into phylum platyhelminthes and is acoelomate.

6. (c) Filariform larva of *Ancylostoma* infects a new host (man) by chance contact with his skin.

7. (b) In *Ascaris* first moulting takes place in soil, second in intestine, third and fourth in lungs.

12. (a) In *Ascaris* amphids are chemoreceptor which are present on ventrolateral lips.

13. (c) Body cavity of Hookworm is pseudocoelom so it is called pseudocoelomate.

14. (b) Ascaris being an endoparasite respires anaerobically because the oxygen content in the hosts intestine is usually poor.

17. (d) The adult *Wuchereria bancrofti* live in lymph vessel and lymph glands. It is a viviparous nematode.

19. (b) *Ascaris* is monogenetic; its infection is through contaminated food and water.

23. (a) The epidermis of *Ascaris* is syncytial (coenocytic) with scattered nuclei and with out partition wall.

24. (d) Male *Ascaris* is differentiable from female *Ascaris* tail end of male *Ascaris* is characterized by the presence of numerous genital papillae on ventral surface. There are 50 pairs of preanal papillae in front of cloaca, and 5 pairs of postanal papillae behind it. Sometimes, two chitinous spiculate process of equal size are seen protruding out of the cloacal aperture. These are called peneal setae or spicules which serve to transfer sperms into female vagina during copulation.

25. (d) In *Ascaris*, female is with straight posterior end of the body.

27. (c) *Ascaris* is monogenetic parasite; so there is no intermediate host only one host is required for the development.

28. (c) *Ascaris* also secretes anti-enzyme and presence of, cuticle both protect it from hosts digestive enzymes.

30. (c) Ascariasis can be treated by antihelminthetic drugs such as Alcopar, Antipar, santonin, chenopodium oil and Tetrachloroethylene etc.

31. (c) *Dracunculus* is digenetic, intermediate host is cyclops or water fleas.

33. (b) Microfilariae are the larva of *Wuchereria* which are carried by *Culex* mosquito.

36. (c) Presence of the resistant thick cuticle is not degenerate but a specialized character with reference to parasitism.

38. (d) The sense organ of *Ascaris* are simple elevations supplied by nerve. They include various papillae, amphids and phasmids.

39. (a) The excretory pore (one) is situated midventrally, a little behind the mouth.

41. (d) Pseudocoelom developes from blastoderm i.e., between mesoderm and endoderm of embryo.

42. (d) Hookworm (*Ancylostoma duodenale*) live in the intestine of man and feed upon blood. No secondary host.

46. (b) Lifespan of *Ascaris* in the host is of 9-12 months.

47. (a) *Ascaris* has three denticulate lips, one median dorsal and two venterolateral.

50. (c) Microfilariae appear in peripheral blood circulation during night while day they disappear.

55. (b) Wuchereria is a ovoviviparous parasite which releases numerous juveniles called microfilariae.

56. (b) The embryonated egg passes into the intestine of man and second stage larva hatches out from the egg.

Phylum Annelida

3. (d) Two male genital pores lie ventrolaterally in segment 18.

4. (c) The annelids are triploblastic, *i.e.*, having three germ layers-ectoderm, mesoderm and endoderm.

5. (a) Species of *monocystis* are typically endoparasites of earthworms and occurs in their coelom and seminal vesicles.

6. (a) Pseudocoelom or false coelom is found in nematodes.

8. (b) Both annelids and arthropods possess ventral nerve cord.

14. (c) Typhlosole is a highly glandular, vascular longitudinal ridge increasing the area for absorption of digested food.

15. (c) Botryoidal tissue is found surrounding the alimentary canal of leech and is probably excretory in function.

17. (d) In 4, 5 and 6 segment red colour follicular bodies called blood glands serve for the manufacture of blood corpuscles and haemoglobin.

18. (b) Annelids like oligochaetes exhibit concentric "tube within a tube" body plan with multicellularity and bilateral symmetry.

19. (a) Earthworm is brown or clay coloured. This is because of the pigment porphyrin.

20. (c) Prof. Karm Narayan Bahl of Lucknow University published a memoir on Indian earth worm *Pheretima* in 1926. He was awarded Joy Govind law memorial gold medal in 1942 for notable research in Asiatic Zoology.

22. (b) One pair of ovary and 11 pairs of testis are found in Leech or *Hirudinea*.

24. (a) The *Aphrodite* is a marine polychaete which is commonly called the 'Sea mouse'. It belongs to the phylum Annelida.

29. (a) Clitellar region contains 2000 nephridiopores per segment, so called "forest of nephridia".

30. (c) Coelomic fluid of earthworm contains granulocytes, mucocytes, leucocytes and chloragogen cells.

32. (c) In earthworm, two pairs of genital papillae are situated ventrally on 17^{th} and 19^{th} segments. It helps in copulation.

33. (b) Flow of blood in dorsal blood vessel of earth worm is from posterior to anterior direction.

35. (c) The single female genital pore is situated in the median position on 14^{th} segments.

37. (b) Hearts of *Pheretima* are situated in the segment 7, 9 (Lateral hearts) and 12, 13 (Lateral oesophageal hearts).

38. (d) In earthworm, fertilization is external and occurs in cocoon.

39. (a) During breeding season, glandular cells of clitellum become very active and secrete a slimy substance that forms a girdle like covering around the clitellum. In air, this gradually dries and hardens to form a tough but elastic, ring-like egg capsule or cocoon.

40. (b) Earthworms are monoecious or hermaphrodites but fertilization is crossed type due to protandrous condition.

42. (c) Excretory products of earthworm are urea (about 50%), ammonia (about 40%) and traces of creatinin.

44. (b) In *pheretima posthuma*, the clitellum occurs around the segments 14, 15 and 16.

49. (c) Photoreceptors (with *L* – shaped lens or optic organelles) of earthworm occurs on dorsal surface of the skin.

52. (b) In each of the segment 7, 9, 12 and 13 is found a pair of large, thick, muscular and rhythmically contractile hearts (Total 4 pairs).

56. (d) In earthworm, blood is red in colour, respiratory pigment haemoglobin is dissolved in the blood plasma.

57. (b) In leech, a triradiate mouth is found at its bottom. The mouth is used for puncturing the skin of the host. It is also suctorial.

58. (a) A larval stage is absent in earthworm, so their is no metamorphosis.

63. (b) The common Indian earthworm is *pheretima posthuma.*

64. (d) Posterior sucker of *Hirudinaria* take part in locomotion and attachment.

67. (b) In earthworm, blood vascular system is different in first 13 segments as regards to number, arrangement and nature of blood vessels.

68. (d) Chloragogen cells are small star shaped, yellow cells concerned with storage of reserve food, deamination of proteins, formation of urea and also excretory.

74. (d) Nephridia are absent in the first three segments and the last segment. Some workers believe that all the nephridia are of micronephridia type. Other consider septal nephridia to be meganephridia.

76. (a) Trochophore larva is present during the development of archiannelida and polychaeta of the phylum annelida.

78. (a) Four pairs of spermatheca are present in earthworm which are situated a pairs in the each 6^{th}, 7^{th}, 8^{th} and 9^{th} segments. They opens outside on intersegmental grove 5/6, 6/7, 7/8, 8/9.

79. (d) In between the 26^{th} segment and the rectum intestine has a median dorsal fold projecting into the lumen. This is know as typhlosole.

80. (a) Roof of pharynx contains pharyngeal glands containing chromophil cells secreting mucus and proteases.

81. (a) Septal nephridia are the only nephridia with nephrostome or funnel.

83. (d) In earthworm, coelomic fluid works as a hydraulic skeleton, aids in locomotion.

86. (b) In earthworm, first segment or peristomium has a ventral mouth with a dorsal lobe or prostomium.

90. (c) Neurons in earthrorm are motor, sensory and adjuster (association neurons).

93. (a) In dorsal blood vessel valves are present in front of septum in each segment.

94. (b) Oxygen carrying blood pigment of earthworm is haemoglobin which is dissolved in blood plasma.

98. (d) The coelomic fluid of earthworm is milky white without haemoglobin.

102. (a) Each photoreceptor cell of earthworm has a nucleus and the cytoplasm contains an optic organelle or *L* – shaped lens or phaosome made up of a hyaline substance.

105. (b) Pharyngeal nephridia of *pheretima* are situated in the segments, 4, 5 and 6. They opens in the anterior part of alimentary canal, i.e., buccal cavity and pharynx. They are without nephrostome.

109. (d) Locomotion in earthworm is carried with the help of buccal cavity, setae and the body muscles.

Phylum Arthropoda

4. (b) Metamorphosis is a conversitonal process in which small cockroach (nymph) convert into adult due to secretion of juvenile hormone.

5. (c) Insecta is a another name of hexapoda, because they have 3 pair jointed legs on thoracic region.

6. (c) Glow-worm and fireflies belong to the insect order coleoptera. *Lampyris noctiluca* is the common European glow-worm.

9. (a) In cockroach, pigment sheath of ommatidia is non contractile so capable of only apposition or mosaic vision even during night.

10. (c) Presence of jointed legs is unique character of phylum Arthropoda.

14. (a) Arthropoda is largest phylum and includes about 80% of total animals. It includes about 9,00,000 species.

15. (d) Malpighian body is related with kidney of higher chordates animals. It consist of glomerulus and bowman capsule.

17. (c) Mandibles are totally absent in the housefly *(Musca).*

22. (b) Tegra, sterna and pleura are joined by a flexible arthrodial membrane.

24. (c) In arachnids, respiration occurs through book lungs which are connected with the outside through spiracles or stigmeta.

26. (d) The class insect has largest number of animals. It has about 7,75,000 species.

27. (d) Spider belongs to class arachnida.

30. (d) Most of the economically important species of phylum Arthropoda are found in class Insecta. It includes cockroach, bedbug, termites silkmoth, aphid, rat flea, wasp etc.

36. (d) Haemolymph is found in insect blood which is colourless.

38. (c) In some arthropodes like spiders, scorpions, mites, ticks etc., respiration occurs through book lungs or tracheae.

39. (c) The taste receptor (gustato receptors) are organs of taste, mainly confined to the tips of maxillary palps, labial palps labium and hypopharynx, in cockroach.

41. (b) *Xenopsylla* cheopis, resembles the human flea and is the chief transmitter of bubonic plague.

42. (c) White ants are found in the tropical and warm temperate countries of the world, white ants are colonial, polymorphic and social insects.

44. (d) Each compound eye of cockroach is composed of 2000 visual units called ommatidia.

45. (a) Malpighian tubules are the excretory organs of insects. It opens at the junction of midgut and hindgut (ileum) in cockroach. Malpighian tubules absorb excretory substances from haemolymph and fat bodies and pass into the proctodaum.

47. (b) The pupa of mosquito is known as tumbler. It has a life span of 2 – 7 days.

49. (d) Juvenile hormone is produced by corpora allata in insects. It favours the development of juvenile characteristics. During larval life, this hormone predominates and each moult yields another larger juvenile and keeps the larva in immature condition or maintains juvenility.

52. (b) In cockroach, an elongated, flat phalic gland or conglobate gland on the right side of ventral nerve cord and open out through a small pore close to male gonopore.

54. (c) A larval stage occurs in housefly that lives in dung and is called maggot.

55. (a) In Pheretima septa are absent in first four segments and in between 9^{th} and 10^{th} segment.

58. (d) After completion of metamorphosis housefly and mosquito will transform into an adult called 'Imago'.

59. (a) The mosquito (*Culex*, *Anopheles*, and *Aedes*) are pathogenic. The fleas (*Culex*) is also pathogen *i.e.*, ectoparasites of birds and mammals, feeding on blood and the *tse-tse* fly is pathogen for sleeping sickness.

61. (a) Moulting is controlled by a steroid hormone ecdysone produced by prothoracic glands.

62. (c) Cockroach is omnivorous, feeds on all sorts organic debris.

63. (a) Johnston's organ lies in the second segment of antennae. In male mosquito, it helps to locate females by flight tone.

65. (b) In mosquito and housefly, halteres developes from metathorax. They are balancing organs during flight and also recieve sound stimuli.

69. (a) In cockroach, a pair of many jointed structures are present on the tergite of 10^{th} segment in both sexes, called anal cerci.

70. (b) In mosquito, 5^{th} instar larva changes into a pupa (nonfeeding), it is comma – shaped.

71. (c) Different stages in the life history of housefly are – Egg – Larva (Maggot) – pupa – Imago (adult).

73. (d) Corpora allata is attached to the brain. It is secrets juvenile horme (Prolongs larval period).

74. (a) Cockroach is unisexual and exhibit sexual dimorphism. In male's ninth segment bears a pair of anal styles ventrally.

75. (d) Metamorphosis in cockroach is incomplete or paurometabolous type. Incomplete metamorphosis is also called gradual metamorphosis.

76. (d) If food material of housefly is solid, such as a sugar crystal, the fly first pours a little saliva or regurgitates droplets of liquid from its crop to liquify it and then sucks the liquid which fills the tubular pseudo-trachaeae by capillary action.

77. (c) Metamorphosis of insects is controlled by a steroid hormone ecdyson produced by pro-thoracic.

79. (b) The total number of ganglia in ventral nerve cord of cockroach is nine pairs, i.e. three pairs thoracic and six pairs adbominal.

80. (d) In male *anopheles*, mandibles are totally absent because it is feed on nector and have only sucking mouth parts.

84. (c) The major excretory product of insects is uric acid, so they are uricotelic.

88. (c) *Anopheles* shows sexual dimorphism. Sex differentiation can be done on the basis of antennae and maxillary palps.

89. (b) In cockroach, the trachea is lived with spiral thickning of cuticle called intima which prevents the tracheal tubes from collapsing (Trachea of rabbits is also non collapsible).

92. (a) Cockroach has two pairs of wings. The first pair (mesothoracic) are thick, hard and leathery, protective in function called tegmina or elytra second pair (metathoracic) are thin, soft and membranous.

95. (d) Bed bug, sand fly, silk worm are placed in tracheate group of Arthropoda because they have trachae for respiration. Embryonic development of echinoderms shows a number of similarities with those of chordates.

97. (b) In female cockroach, abdomen is broader than in male.

98. (d) All body tissue receive oxygen directly through tracheoles.

100. (a) In *periplaneta*, wings are well developed and in female of *Blatta*, the tegmina are very short, hind wing absent.

101. (a) The heart of cockroach is formed of 13 chambers each chamber (except the last one) has a pair of small lateral apertures called ostia which open into the pericardial sinus.

102. (d) Haploid parthenogenesis is called arrhenotoky. In it, development of egg into adult organism without fertilization. Example Honey bees, wasps and ants.

104. (c) The longest podomere or segment of cockroach is tibia.

106. (b) Housefly and butterfly possess larval stage. Their larval forms are maggot and caterpillar respectively.

107. (b) In butterfly, proboscis is long and is formed by galea of maxillae.

110. (c) Locusts is herbivorous in diet and gregarious in nature, migrating or swarming in great number.

112. (a) The labellae are traversed by a series of channels known pseudobracheae, because of their resemble once to tracheae in appearance.

113. (b) In cockroach, the tracheal system opens outside by ten pairs of spiracles. The first and third pairs spiracles remain open all the times.

114. (a) In insects, juvenile hormone or neotinin is produced by the corpora allata. It favours the development of juvenile characteristics. During larval life, this hormone predominates and each moult yield another larger juvenile.

116. (d) Antennae of cockroach bears tactile and olfactory receptors and are sensitive to touch and smell.

119. (c) Spider bears spinnerets or spinning organ just anterior to the terminal anus. These produce silken threads for construction of spider-web.

122. (b) Ootheca of cockroach contains sixteen fertilized egg in two rows.

123. (c) Ootheca of cockroach if formed of a protein secreted by collaterial gland.

125. (b) Palaemon is commonly called as prawn. It is an aquatic animal. It belongs to class crustacea of the phylum arthropoda.

127. (b) Sexual dimorphism is found in both *Ascaris* and cockroach.

128. (a) White ants are social and polymorphic insects, living in large, well organised colonies.

133. (a) Holometabolous or complete metamorphosis, includes four developmental stages – egg, larva, pupa and adult. Example – Lady Bird beetle *(coccinella)*.

134. (c) Malpighian tubules of cockroach are concerned with homeostasis, osmoregulation and excretion. These are between 60 to 150 in number and are arranged in 6 – 8 bundles.

135. (b) Nephridia are absent in arthropoda.

136. (b) *Peripatus* belong to onychophora. In *peripatus*, excretory organs are nephridia.

137. (b) In case of gradual metamorphosis, the newly hatched creature resembles an adult in general body form, but lacks wings and external genital appendages. It is also called paurometabolous development.

139. (b) Caterpillar of *bombyx mori* after 4 or 5 days, stops feeding and become inactive; Moulting or ecdysis then taken place. The larva repeats this process four times.

142. (a) Crustacean are the dominant arthropods of sea, with cephalothorax, biramous appendages, and respiration by gills. Common example are prawn, lobsters and crabs.

143. (d) *Limulus* or king crab belong to the sub class xiphosure and class merostomata of sub phylum chelicerata of phylum arthropoda. It is a living member of very ancient primitive chelicerates and hence called a "living fossil."

144. (c) Silver fish *(Lepisma)* is a primitive wingless insect without metamorphosis. It is belong to the phylum arthropoda.

145. (a) Caterpillar and maggot are the larva of respectively butterfly and housefly.

147. (b) Mouth parts of housefly are sponging type. These are adapted for sucking liquid or semiliquid.

148. (c) Tornaria larva is larva of Balanoglossus.

150. (b) The larva of mosquito is also known as 'wriggler'.

151. (d) The amount of yolk determine the type of cleavage in the egg. In superficial meroblastic cleavage, the cleavage remains restricted to the peripheral portion of the egg. This cleavage occur in arthropods especially insects.

153. (b) Exoskeleton of arthropod is light weight, tough and composed of structural polysaccharide chitin.

155. (b) In earthworm as well as cockroach, a ventral nerve cord extends back along the midventral axis from the sub pharyngeal ganglion.

157. (c) Abductor and adductor muscles associated with the mandibles move these in horizontal plane to cut and chew the food particles that are brought in between the mandibles by the first maxillae.

161. (a) In cockroach the food is grinded by mandibles and gizzard. In insects there is no oxygen transporting pigment and nitrogenous excretory product is uric acid.

162. (c) Cray fish *(Astacus)* is the phylum arthropoda.

163. (c) Leg of cockroach is five segmented, segments from base are-coxa, trochanter, femur, tibia and tarsus.

164. (c) In mosquito, metathoracic or hind wings are modified into halteres which are balancing and sound producing structures.

167. (b) Arthropoda have a compound eyes. Each compound eye is made of a large number of independent visual elements, called ommatidia. It helps in photoreception.

168. (a) The mouth parts of male mosquito are of sucking type while those of female mosquitoes are of piercing and sucking type.

169. (d) In cockroach, pigment sheath of ommatidia is non contractile so capable of only mosaic vision even during night.

170. (c) *Musca domestica* shows a complete metamorphosis (holometabolous type).

171. (d) Haemocoel is the body cavity of arthropods and molluscs, containing blood.

174 (a) Scorpion and ticks belong to the class arachnida of the phylum arthropoda.

181. (a) Pheromones are the secretion of small amount of chemical substance leading to specific physiological or behaviour responses in other members of the same species. Pheromones are also used to induce mating.

183. (b) In cockroach, newly hatched young one is called nymph. It resembles the adult in general structure but lacks the wings and mature reproductive organs.

195. (b) Class crustacea includes *cyclops* other options are from class insecta.

Phylum-Mollusca

4. (c) In *sepia*, the foot is modified into oral arms and siphon.

6. (a) Dentalium is commonly known as 'elephant's tusk-shell'.

7. (a) In bivalve molluscs (*Unio*) the gills are formed by fusion of successive branchial or gill filaments. These are surfaced with cilia. The beating of lateral cilia of gill filaments draw water into the infra branchial chamber of mantle cavity through the incurrent siphon. The water contain food material of *Unio*.

8. (d) Decapoda is not a class of phylum mollusca. It is order of phylum Arthropoda.

11. (c) Sea hare (*Aplysia punctata*) and snail (*Helix*) belong to same class gastropoda of phylum mollusca.

12. (c) Twisting of visceral mass in the snails through an angle of 180° due to which snails become asymmetrical.

13. (c) *Neopilina* is a most primitive mollusca having characters of annelida i.e., internal metameric segmentation, 5 pair of nephridia etc. There is no common name of this mollusc which is truly a living fossils and connecting link between annelids and molluscs.

17. (b) Cephalopoda word is composed of two words *cephalo* and *poda* which in Greek language means head and foot respectively *i.e.*foot present on head.

18. (d) The head of snail bears a pair of short, fleshy and stump-like optic stalk or ommatophores, one on either side behind 2nd pair of tentacles each ommatophore bears a small, black and some what circular eye, slightly below its tip on the other side.

19. (c) Mantle secrets a calcareous shell which is generally external but may be internal an supportive or absent.

20. (c) Snail moves with the creeping activity of the muscular sole of its foot.

22. (c) *Octopus* belong to the class cephalopoda of phylum mollusca.

25. (a) Mantle, foot and shell are characteristics of a mollusc. Out of the given options *Nautilus* is a mollusc, it is a tetrabranch cephalopod.

28. (a) *Loligo* is a commonly known as "cuttle-fish". It is belong to phylum mollusca.

29. (b) *Teredo* is commonly known as 'shipworm'. It is a highly specialized marine bivalve which is very destructive to wood in sea water. The body is long and slender with a small anterior shell. The shell is used for burrowing in the wood of ships or wharves.

30. (a) Radula is found in gastropods.

31. (c) In mollusca, blood has amoebocytes and often a copper containing blue respiratory pigment called haemocyanin.

32. (b) *Unio* display filter-feeding that involves straining food from large quantities of water.

35. (b) Snail may tide over long periods of drought by remaining torpid with the shell aperture tightly closed. It is then said to be in summer sleep or aestivation.

36. (d) *Octopus* belongs to the class cephalopoda of phylum Mollusca.

37. (c) In mollusca, excretion occurs through paired sac like kidneys (or metanephridia) but in echinodermata kidneys are absent and excretion occurs partly by diffusion through body surface and partly by amoeboid coelomocytes.

39. (a) Shell is internal *sepia*, *Loligo*.

41. (b) Ammonites belong to subclass ammonoidea of class cephalopoda. It is the largest subclass of extinct mesozoic cephalopods.

42. (d) Scaphopoda commonly called tusk shell, body within a tubular shell open at both ends.

Phylum-Echinodermata

1. (d) Aristotle's lantern is a five teeth masticatory apparatus which is present surrounding to the mouth. It is used by sea urchin for feeding. Presence of Aristotles lantern is characteristic of class Echinoidea.

4. (d) Pedicellariae of Asterias are minute, whitish jaw like structure, found on both the body surface, in association with spine. It's help in the capture of prey and removal of debris.

5. (c) The members of class crinoidea, are commonly called feather star or sea lilies because of their lily flower like appearance.

9. (c) Star fish belong to class Asteroidea of phylum echinodermata.

10. (b) In class ophiuroidea, Ambulacral grooves are absent or covered by ossicles.

12. (b) When irritated or when subjected to unfavorable conditions, many species of sea cucumbers cast out a part of their viscera by a strong muscular contraction that may either rupture the body wall or evert its contents through the anus or sometime mouth. The lost part regenerate again.

14. (c) Echinoderms are exclusively marine most members are bottom dwellers or banthonic some are pelagic while a few are sedentary.

16. (c) Adult echinodermata (Star fish) show pentamerouradial symmetry while larvae are show bilateral symmetry.

23. (d) Cephalization is a process of Brain formation. In echinodermata brain is absent, nervous system is consist only nerve ring and radial nerve cords.

24. (d) Sea squid *(loligo)* belong to class cephalopoda of phylum mollusca.

27. (a) Echinodermats are true enterocoelic animals, which is formed from enteron of gastrula like chordata.

28. (c) Tube feet act as locomotory organ in star fish.

30. (a) Antedon belong to class crinoidea of phylum echinodermata. It is a living fossil and commonly known as feather star.

31. (a) *Gorgonocephalus* (Basket-star) belong to ophiuroidea. The body of *Gorgonocephalus* is consist of large pentagonal disc and five elongated and much branched arms.

33. (d) Sea lilies are member of crinoidea having long stalk.

35. (d) Sea lily belong to class crinoidea of phylum echinodermata. Echinoderms possess both exoskeleton and endoskeleton. The endoskeleton consist of calcareous plates or ossicles while exoskeleton consist of spines and pedicellariae.

Phylum-Chordata

3. (d) The larva (tadpole) undergo retrogressive metamorphosis *i.e.*, change from better developed larva to less developed adult *e.g.*, *Herdmania*. The notochord is only present in the tail of larva and diasppear in adult.

5. (b) On the basis of presence or absence of jaw subphylum vertebrate is classified into Agnathostomata and Gnathostomata. In gnathostomata all that animals are included in which jaw is present.

6. (c) In poikilothermal (cold blooded) animals, body temperature varies according to the temperature of the environment.

7. (b) Amphioxus (Branchiostoma) is placed in subphylum cephalopoda, in which notochord is present throughout life along entire length of the body.

9. (a) The blood vascular system in hemichordates is simple and open type. It includes a dorsal heart and two longitudinal vessels (one dorsal and one ventral).

In chordates, closed circulatory system is found except in hemichordata or stomochordata (*e.g.*, *Herdmania*) where, open circulatory system occurs.

11. (c) This type of metamorphosis shows retrogression or degeneration from larva to adult.

12. (b) Both are included in class cyclostomata.

16. (d) Homeothermic or warm blooded animals are able to maintain constant body temperature. *e.g.* Aves and Mammals.

22. (c) A post anal tail occurs in most chordates atleast in embryonic stage. In majority of the chordates it helps in balancing. Tail provides protection to genital and anal regions.

24. (d) Crocodile, Penguin, Whale and Dogfish all are chordates. So, all have gill slits at some stage of development.

25. (b) In cyclostomata, body is eel shaped with scales jaw and lateral fins. Mouth rounded and suctorial. *e.g.* Petromyzon and myxine.

32. (a) In vertebrata, notochord is replaced partly or fully by a jointed vertebral column (back bone) *i.e.* vertebral column is derived from notochord.

34. (b) Presence of well developed skull or cranium is important dignostic feature of chordata.

37. (c) Ostracoderms are earliest known primitive fish like extinct vertebrate. These along with cyclostomes constitute the Agnatha.

40. (c) Homeothermous animals are also known as warmblooded or endothermal animals. With constant body temperature, body heat is produced by the metabolic reaction taking place within the body. *e.g.* Aves and mammals.

41. (a) In fishes and amphibian, amnion is absent and called Anamniota.

42. (c) In urochordata, notochord and nerve cord is found only tail region in tadpole like larva.

45. (c) Notochord is the prime diagnostic feature of phylum chordata. Chordates possess notochord either throughout whole life or during early embryonic period.

48. (c) Tunicates are ciliary or filter feeder animals, which obtain their food from diatoms, desmids, protozoans and others pelagic microscopic organism, suspended in sea water, by the ciliary movement of wheel organ.

Class-Pisces

1. (a) Lateral line system is found in fishes. It serves to detect waves in water current, thereby helps in swimming process by perceiving the distance of surrounding objects.

2. (b) Elasmobranchii (dog fish) is an alternative name for cartilaginous fish or chondrichthyes. The name refers to the fact that the gill–slits are exposed and not covered by an operculum.

4. (d) *Torpedo* (*Astrope*) is the electric ray. Their electric organs are highly modified masses of muscles cells.

6. (d) Protopterus is the member of Dipnoi, which shows double breathing through gills as well as lungs.

8. (a) Cyclostomes lack paired appendages.
Aves have dry skin, without glands, only preen gland at base of tail present. Whale lack body hairs and hind limbs.

13. (d) Sea horse (*Hippocampus*) has bony plates/scutes in addition to scales.

16. (a) Silver fish (*Lepisma*) is an arthropod.

17. (a) Dog fish or scoliodon is a true fish whereas silver fish, star fish and whale are arthropod, echinoderm, and mammal respectively. Catfish is a true fish. It has sensory barbels without scales.

19. (b) One auricle and one ventricle.

20. (c) Sea horse (Hippocampus) belongs to the class osteichthyes (due to bony skeleton) of super class pisces.

21. (b) Pisces, amphibia and reptiles are unable to maintain constant body temperature hence, called poikilothermic or cold blooded animal.

22. (b) Fishes have two chambered heart one auricle and one ventricle, which receive only venous blood and pump it to gills for purification.

23. (a) Sea horse or hippocampus is a fish.

30. (b) *Wallago attu* is commonly known as catfish. It possess very small eyes and well developed sensory barbels by which they make a good vision and find their way.

33. (b) *Hemicyclaspsis* is a genus of fossil, primitive, jawless fish like animals belonging to the class ostracodermi.

34. (b) Sucker fish attached to shark, feeds on the left over of shark's prey. The relationship is that of commensalism or ectocommensalism.

35. (d) Whale-mammals, cuttlefish-cephalopod and silver fish-Insect.

36. (a) Anadromous fishes move from sea to fresh water for breeding *e.g. salmon.*

39. (a) *Anguilla* is commonly known as freshwater eel. Eel is the name for a number of smooth snake like fishes with continuous dorsal anal and tail fins and without peluic fins. *Anguilla anguilla* the European eel is born in the Sargasso sea.

41. (b) *Echeneis* is commonly known as sucker fish. Its upper surface bears a large, flat oval adhesive disc or sucker. Sucker represents modified anterior dorsal fin.

42. (a) Claspers are intromittent organs found on the pelvic fins of male cartilaginous fishes like sharks. Sphyrna is commonly known as 'hammer-headed shark'.

47. (c) Lateral line system in a fish and some aquatic larvae (Tadpole) is made up of neuromast organs. It detects vibrations and pressure changes in water.

48. (c) *Latimeria* is called living fossil as it has remained unchanged for several million years.

50. (a) Cartilagenous fishes belong to the class chondrichthyes due to cartilagenous endoskeleton of superclass pisces.

51. (c) *Anguilla sp* (Eel) is a catadromous fish that lives in fresh water and breeds in sea.

53. (d) All chondrichthyes possess cartilaginous endoskeleton without exception.

54. (a) In class chondrichthyes males possess claspers on the plevic fins.

61. (a) Mackerel is a marine fish having rich source of omega-3 fatty acids

Class-Amphibia

4. (b) Tortoise is a reptile belonging to the order chelonia.

5. (d) Mud puppy is an aquatic salamander of genus *Necturus* with persistant gills. It is found in North America.

6. (b) Salamander is a semiterrestrial lizard-like tailed carnivorous and nocturnal amphibian.

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

9. (a) Ability to change colour as in amphibians by expansion and contraction of pigment cells is called metachrosis.

10. (a) *Rhacophorus* has characteristic large webs developed between the much elongated digits. Webs and flattened body serve as a parachute in gliding from higher elevation to a lower ones, so they are designated 'flying frogs'.

11. (c) *Hyla* is also known as tree frog.

12. (a) The functional kidney of a frog tadpole is pronephros (head kidney) developed from nephrostomes in the anterior region.

13. (c) Environmental factors affect metamorphosis in several ways. Abundence of food, cold temperature or insufficient iodine (component of thyroxin hormone) may cause failure of metamorphosis and retention of larval features.

Calcium, magnesium, phosphorus are not found to play any role in metamorphosis in animals. Larva of *Ambystoma* is known as axolotl. It is found in USA (North America) and Maxico. It show neoteny or paedogenesis.

14. (b) Ichthyophis is a limbless amphibian showing parental care. It has no tongue.

16. (a) *Pipa americana* is commonly known as surinam toad.

17. (d) Caecilians or limbless amphibians belong to the order Gymnophiona or Apoda. They are sometimes called blindworms.

18. (d) *Bombinator* is a small sized amphibian found in Europe. It is commonly known as Fire-belied toad.

25. (c) Frog is ureotelic because nitrogenous excretory product is usually urea.

Class-Reptilia

1. (c) Classification of reptiles is based on temporal fossa (vaccuties) on skull.

2. (a) Typhlopidae includes burrowing snakes having a vestigeal pelvic girdle and having reduced eyes covered by scales; found in almost all parts of the world except New Zealand.

3. (b) *Heloderma* (Gila monster) is the only poisonous lizard in the world. It is also called 'Beaded lizard' because its scales resemble beads.

7. (c) Reptiles have body temperature which varies with that of its surroundings and embryos have amnion, chorion and allantois.

9. (d) Body of Tortoise is enclosed in two shell plates, dorsal carapace and ventral plastron.

11. (a) Cobra is characterized by hood supported by ribs bearing spectacle mark dorsally. The third supralabial shield of upper lip touches eye and nasal shield.

13. (c) Poison glands of snake are modified salivary glands (Superior labial or parotid glands).

14. (b) A snake has no middle ear. It perceives sound through skin from earth.

16. (b) Colour changing power is present in pisces, amphibians and reptiles but absent in aves and mammals.

18. (a) In scorpion and spiders the respiratory organs are book lungs. They are named so because their folds resemble the leaves in a book. In this the exchange of gases takes place between the air of interlamelar spaces and the venous blood through the thin membranous walls of the lamellae.

20. (a) The tail of most lizard is easily broken off when threatened or seized by a predator. This ability is known as autotomy. Autotomy is voluntary breaking tail to confuse enemy.

24. (d) In poisonous snakes, two maxillary teeth are enlarged, grooved or tubular. They are called poison fangs and are concerned with injecting poison.

25. (a) *Draco* is a lizard which glides with the help of patagium, it is called 'flying dragon'.

27. (a) Two common marine poisonous snakes are *Enhydrina* and *Hydrophis*.

28. (c) Snakes shed scaly epidermis of skin periodically usually in one piece. This process is termed moulting of ecdysis of cornified cells of skin.

29. (b) A viper can be easily identified by its triangular, pearshaped head bearing small cephalic scales.

31. (a) Gavial or gharial, *Gavialis gangeticus* is found in freshwater. It lives in Gangas and Brahmputra rivers and grows to 8 metres.

36. (b) The lung cavity of crocodile is separated from rest of the body cavity by a muscular diaphragm.

39. (b) There are two species of *Heloderma*, *H.Suspectum* and *H. horridum*. Both are found in America.

41. (c) Shelled eggs are found in reptiles and birds are known as cleidoic eggs.

43. (b) *Calotes versicolor* is commonly known as Garden lizard. It is quite common in hedges, garden and jungles.

45. (b) Foramen of panizzae is a aperture in the heart of lizards and crocodiles. It is located at the point where right and left aortae cross each other and are in contact.

49. (a) *Python* and Boa have vestigeal pelvic girdle and hind limbs.

50. (d) In some reptiles, cloacle aperture is transverse and male is without copulatory sacs (Penis) *e.g. sphenodon*. They are includes in order Rhynchocephalia.

51. (c) Eyelids of snake are immovable, nictiting membrane is absent.

52. (b) The loss of water from body is prevented by dry cornified scales on the body of reptiles. It is a favourable land adaptation.

55. (c) In India, antivenin injections are prepared at Haffkin's Institute, mumbai and central Research Institute, Kausuali (Shimla).

56. (b) Poison of cobra is most virulent. It is a neurotoxin attacking nerve centres and causing paralysis of muscles, especially those of respiratory muscles.

58. (d) Crocodile is a carnivorous and feeds on fish, aquatic birds and mammals. It has thecodont teeth.

Class-Aves

2. (c) Coverts are small feathers similar to quills meant for filling gaps on the wings and tail.

3. (a) A synsacrum is formed by fusion of posterior thoracic, lumbar, sacral and anterior caudal vertebrae.

4. (d) Penguin is a flightless bird occurs in flocks in the Antarctic region and some islands of south Africa.

5. (a) The flightless bird cassowary occurs in N.E. Australia and New Guinea.

10. (c) Presence of a single functional ovary of the left side in the female bird leads to reduction of weight which is so essential for flight.

11. (a) Ratitae are the flightless birds which are grouped under super order paleognathae.

15. (c) Archaeopteryx possessed prolonged jaws or beak. However, it contained teeth.

17. (a) Heterocoelous is a term used to denote a vertebra whose centrum has one face convex and the other concave.

19. (a) The syrinx or sound producing organ lies at or near the junction of trachea and bronchi.

20. (a) Huxley has called birds to be glorified reptiles.

25. (b) Birds are homoeothermal or capable of keeping their body temperature constant.

27. (b) Pigeon are noted for their unique ability to produce 'pigeon milk' by crop glands. It is formed by the degenration of the epithelial cells lining the crop. The milk is produced by both sexes.

29. (b) The clavicle and interclavicles are fused to form a v-shaped bone, called furcula or wishbone or merry thought bone which help in flying.

30. (d) Birds have bipedal locomotion because fore limbs are modified into wings.

31. (d) Egg of ostrich weights nearly 1.5 Kg. and requires about 50 minutes to boil it. It is the largest egg among the animals.

32. (c) Bones of birds are pneumatic or hollow and have no bone marrow.

33. (b) In birds, only one gland is present in the skin at the base of short tail or uropygium. It is known as oil or preen gland.

37. (c) Kiwi is the smallest living flightless bird. It is found in New Zealand.

Class-Mammalia

4. (b) Prototherians are primitive, egg laying mammals, oviparous mammals, reptile like mammals, confined to Australian region.

5. (d) Most important character of mammals is the presence of mammary gland and internal fertilization.

6. (a) *Manis* (Pangolin or scaly anteater) belong to the order pholidota of the class mammalia.

8. (b) Eutheria includes viviparous placental mammals.

11. (a) Animals belonging to the order rodentia have each jaw with one pair of long rootless chisel-like incisors growing throughout life.

13. (d) Mucous makes skin moist. Moist skin is helpful in respiration.

17. (b) Rabbit belongs to the order lagomorpha of the class mammalia.

19. (a) *Didelphis* (opossum) is a tree dwelling which is found in America. It is belong to the metatheria.

20. (b) Monotremes is a group showing peculiar characteristics as a mixture of reptilian and mammalian features.

21. (b) Kangaroo (*Macropus*) found in Australian region which is belong to the order marsupilia or metatheria.

31. (d) Most unique character of mammalian brain is presence of corpus callosum. It connect the two cerebral hemispheres internally.

34. (b) The zoological name of common north indian hare is *Lepus ruficaudatus.*

36. (c) Double vagina is main character of marsupilia.

40. (c) Except a few, only mammals possess seven cervical (neck) vertebrae.

42. (c) Ungulata comprises large sized hoofed mammals such as pig, horse, ass, camel, deer, sheep, goat, cow, buffalo *etc.* These animals are domesticated by man for centuries.

49. (c) The adaptations in desert lizard are
(i) Burrowing in soil to escape high temperature
(ii) Bask is sun when temperature is low

50. (d) Head louse living on the human scalp as well as laying eggs on human hair is a parasite in true sense. Female mosquito is not considered as a parasite, though it needs human blood for reproduction. Koel that lays in crow's nest is just a brood parasite.

51. (b) The zoological name of tiger is *Panthera tigris* in which *Panthera* is genus and *tigris* is species.

53. (c) 3-chamberd Heart is found in only members of class Amphibia and Reptilia.

54. (b) Diaphragm is commonly found in only mammals (kangaroo) except crocodile.

58. (d) Sea lion (*Zalophus*) is a larged-eared seal. It is belong to the order carnivora.

62. (d) In male platypus a grooved erectile poison spine is present on the tarsus which is served by a poison gland in the thigh. The poison is used to immobilize a female during coition.

64. (d) In whale, Retea mirabilia are present which store extra oxygen and help the animal to remain under water for some time.

69. (d) Brain of prototherian relatively small, simple and without corpus callosum.

73. (a) In prototherian, mammary glands are modified sudorific glands and they lack the nipples or teats.

75. (c) Marsupium or marsupial pouch is the main characteristic of metatherian (mammals).

76. (d) *Echidna* (*Tachyglossus*) is found in Australia, New Guinea and Tasmania.

77. (b) Members of order Monotremata of sub class prototheria are oviparous. i.e. egg laying mammals. *e.g. Echidna* (*Tachyglossus*), Ornitho-*rhynchus* (Duck billed platypus).

78. (c) Order Primata includes lemurs, loris, tarsiers, monkeys, apes and man.

79. (a) Order Insectivora comes under sub class Theria of class Mammalia.

Critical Thinking Questions

2. (b) *Trichinella spiralis* shows viviparity.

6. (a) Nutritive muscular cells bear both flagella and pseudopodia.

7. (b) Trichocysts of *Paramecium* and nematocysts of *Hydra* are the organ cells of offence and defence.

8. (b) In Hydra, undigested residues are egested from coelenteron through mouth and body wall.

10. (a) *Taenia saginata* is also 'unarmed tapeworm' because the scolex does not possess hooks.

14. (d) Dorsal blood vessel is collecting blood vessel in the segments 14 onwards and distributing blood vessel in segments 1 to 13.

15. (a) Blood glands of *Pheretima* serve for the manufacture of blood corpuscles and haemoglobin.

17. (c) Weberian ossicles refer to a paired chain of three or four small bones in certain fishes *e.g.* Carps and cat fishes. It connects the air bladder with auditory capsule.

19. (b) Presence of notochord, Dorsal tubular nerve cord, Pharyngeal gill clefts, post anal tail, RBCs and hepatic portal system is distinguising feature of chordates.

21. (a) Crocodile is an exceptional case of reptile having 4 chamber in heart while other reptile shows 3 or 3½ chambered heart.

23. (d) All these (coelacanth, limulus and sphenodon) are representative of its own kind hence called living fossil.

24. (d) The characteristic feature of amniota is the development of amnion and other foetal membranes during development. Amnion and other foetal membranes are developed in reptiles, birds and mammals.

25. (b) Tunicates (Herdmania) shows retrogressive metamorphosis which results in the degeneration in adult.

28. (a) In mostly cartilagenous fishes caudal fins (Tail fins) forms two unequal lobe, which act as steering organ in locomotion.

29. (c) Stenohaline fishes have only a narrow range of salinity tolerance and hence remain restricted to either fresh or salt water.

30. (b) Two type of air bladders are known. In the more generalized groups of teleosts, the air bladder retains connection with the gut via a pneumatic duct, just as in ganoids and dipnoi. Such an open air bladder is called physostomous. In the teleost Erythrinus the air bladder has a lateral attachment to gut. Such a closed or ductless air bladder is called physoclistous.

31. (b) Catla, Labeo and cirrhinus are fresh water fishes. These are important cultiable species in india.

32. (a) Enterocoelic coelom is found in echinoderm to chordates.

34. (b) Python captures its prey and directly engulfs it by creating suction pressure inside its mouth.

35. (b) Ophisaurus is a limbless lizard also known as glass snake.

36. (a) Pisces and amphibia are anamniotic while reptiles, aves and mammals are amniotic.

37. (a) Anapsida has a solid roof due to the absence of any temporal vacuties on skull.

39. (b) All flightless birds belong to the super order Ratitae *e.g.* Emu, Panguin, Rhea, Kiwi, Moa, Cassowary.

40. (d) The presence of seven cervical vertebrae is common feature of mammals.

45. (d) Sea cows (Rhytina) belong to order Sirenia of mammals. Presence of blubber and few hairs are characters of order sirenia.

46. (c) Silver fish belong to insecta in which respiratory organ is trachae, scorpion belong to Arachnid which respiratory organ is book lung sea squirt (Herdmania) belong to urochordata, which respiratory organ is pharyngeal gills.

47. (c) Sponges "multicellular grade" organism but exhibit cellular level of organization.

48. (c) Embryonated eggs → Mouth → Intestine → Liver → (2^{nd} stage larva)
Heart → Lungs → trachea → Pharynx → Intestine.
(4^{th} Stage larva)

49. (d) Cockroach and earthworm have common type of spermatheca. The spermathecae receive and store sperm cells during copulation.

50. (a) Earthworm is a bisexual or hermaphrodite but always shows cross-fertilization due to protandrous conditions.

54. (a) Reptiles, aves and mammals are amniotes while amphibia is an anamniote.

55. (a) Bioluminescence is a method of light producing by living organisms in which usally certain protein called luciferins in the presence of oxygen and an enzyme luciferase, are converted to oxyluciferins with the libration of light.

56. (b) In some gymnophiona, dermal scales are embedded in dermis. Skin shows transverse wrinkles.

57. (a) Pseudocoelom formed by blastocoel surrounds the alimentary canal in Nematodes (*Ascaris*).

59. (c) *Salamandra* is a tailed amphibian, has tymphanum which represents ear.

60. (b) Circadian rhythm or diurnal rhythm is any 24 hour periodicity in the behaviour or physiology of animals or plants. Examples are the sleep/activity cycle in many animals and the growth movements of plants. Circadian rhythms are generally controlled by biological clocks

64. (a) Although the *Amoeba* has no sense organs, it responds to chemical stimuli. It makes this determination by chemotaxis, a kind of chemical sense. This is the same response mechanism that our white blood use when they encounter and phagocytize a pathogen.

73. (b) Members of *ctenophora*, *cephalochordate* and echinodermata are exclusively marine.

74. (b) A – Insects
B – Molluscs
C – Crustaceans
D – Other animal groups.

75. (b) Exoskeleton is mainly responsible for diversification of insects on land.

Assertion and Reason

1. (e) Sponges are the lowest multicellular animal but they have simple structures. Organs and tissues are absent. The constitution cells perform their functions more or less independently exhibiting division of labour performing specialized functions. Hence, they possess cellular level of organization.

2. (d) In Mollusca, circulatory system is of open type with a heart made up of two auricles and a ventricle. The blood has haemocyanin.

3. (a) Leucosolenia shows simplest (ascon) type of canal system. In this, surrounding water enter the canal system through ostia. This water of sea enters into the spongocoel and pushed out readily through osculum. Course taken by the water current in the body of sponge may be shown as under.

$$\text{Ingressing} \xrightarrow[\text{Ostia}]{\text{Through}} \text{Spongocoel} \xrightarrow[\text{Osculum}]{\text{Through}} \text{To outside}$$

4. (e) Robert Grant (1857) was the first to recognise and prove the true animal nature of sponges. The animal nature of sponges was well established on the following grounds-

(i) Sponges feed on inwafted solid particles. Their mode of nutrition is truely holozoic.

(ii) Sponge cells are devoid of cellulose cell walls.

(iii) Life cycle of sponges include swimming ciliated larval stages resembling those of other marine animals. Sponges are sessile and digestion is very simple without any apparent way of capturing food or eliminating wastes.

5. (a) The duck billed platypus and the spiny anteater are primitive oviparous, reptiles like mammals and these are included in subclass prototheria of class mammalia. Both of them have 12 pairs of cranial nerves and 7 pairs of cervical nerves.

6. (b) Tape worm belonging to phylum platyhelminthes, pinworms and roundworm belonging to phylum nematoda, are all endoparasites. They all are intestinal parasites. In case of *Taenia solium* man gets infection by uncooked or improperly cooked measly pork. Cysticercus becomes active on reaching the intestine.Proscolex everts or evaginates in the intestinal wall. *Ascaris*, being an endoparasite inhabits the small intestine of man, more frequently of children than of adults. Man gets infection by consuming contaminated or uncooked food and water. *Enterobius vermicularis* or pinworm live in caecum, appendix and at the junction of large and small intestine. They are also transmitted in the same way like *Taenia* and *Ascaris*.

7. (c) Coelenterata is the phylum of acoelomate and radially symmetrical lower invertebrates. Due to their radial body symmetry they are also known as radiata. Bilateral symmetry starts from the phylum platyhelminthes.

8. (c) H. viridis is green in colour. Its bright green colour is not because of chlorophyll containing chloroplasts, but due to the presence of symbiotic zoochlorallae, *Chlorella vulgaris*, a unicellular green alga, that lives in its gastrodermal cells.

9. (a) Coelenterates possess a very primitive type of nervous system. This system is composed of many nerve cells. In coelenterates, the separate mechanisms for digestion, respiration and excretion, reproduction etc evolved for the first time. Thus there is a constant need to maintain coordination between these systems. Nerve cells are developed for this purpose, for the first time in coelenterates. Nerve in Hydra is the beginning in the evolution for nervous system.

10. (b) Realm is a large landscape (generally subcontinental) having its unique biodiversity. South Asia (including India) occurs in oriental realm; king cobra is endemic here and kangaroo is found in Australian realm. Wallace line is the imaginary line separating oriental and Australian realms.

11. (b) Bats and whales are the members of class Mammalia (L. *Mamma* = breast). The bats are the only mammals which have wings can realy fly while whales are the largest animals in existence. Both bats and whales have four chambered heart but birds and crocodiles also have four chambered heart.

12. (b) The birds are the most beautiful among the animals. They show court ship, nest building, parental care, migration and territorial behaviour. Koel (*Eudynamis*) does not make any nest but lays eggs in the crow nest. In this way koel is nest parasite.

13. (a) Hydroid colony of Obelia is dimorphic, exhibiting two types of individuals or zooids which differ both morphologically as well as physiologically. These two zooids are-

(i) Polyps – the nutritive zooid of the colony

(ii) Gonangium – the reproductive zooid.

14. (a) Alternation of generations may be defined as a phenomenon whereby, in the life history of an organism, a diploid asexual phase and a haploid sexual phase regularly alternates with each other. This type of true alternation of generations is also called metagenesis. In coelenterates, an asexual polypoid generation appears to alternate regularly with a sexual medusoid generation.

15. (a) Lateral line system of fishes and aquatic larval amphibians whose receptors are group of sensory cells derived from ectoderm.

16. (c) *F. hepatica* undergoes both aerobic and anaerobic respiration depending on the availability of oxygen. Oxygen content in bile being extremely low, respiration in *F. hepatica* is anaerobic or anoxybiotic. This is an exothermic reaction involving release of energy (heat). If free oxygen is available, aerobic respiration takes place.

17. (c) *Plasmodium vivax* is responsible for malaria. It spreads by bite of female *Anopheles*. Its spread does not have any relation with polluted water.

18. (a) Birds have many adaptations for flight. They have pneumatic bones and only one ovary which reduces the body weight.

19. (d) Shark is a cartilagenous fish and lack buoyancy regulating organ called Swim bladder. These fishes swim constantly or will sink to the bottom. They cannot stay at a desired level in water without swimming.

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

21. (c) Malaria can not be transmitted by the bite of male *Anopheles* mosquito it does not carry active stage of *Plasmodium*.

22. (b) In cold blooded animals, there is no fat layer below skin and their temperature varies with the environment. These animals use their body fat during hibernation to carry out.

23. (b) Acraniata includes marine forms without head or cranium. They lack jaws, vertebral column, paired appendages.

24. (b) Spicules help in making skeleton of sponges. These are made up of silica, calcium or spongin substances. The structure of spicules also help in classification of sponges.

25. (c) Cephalization is the differentiation of head at anterior end. This does not play any role in appearance of animal but it may involve in accumulation of nervous tissue and sense organs in head.

26. (b) Insects blood is colourless. The blood also does not play any role in transport of oxygen. Insects have tracheal respiration.

27. (b) In lophodont condition, found in elephants, there is an intricate folding of enamel and dentine. Cresentic enamel cusps are connected by several transverse ridges called lophos. A single large lophodont molar, 30 *cm* by 10 *cm*, is present at one time in each half of each jaw. These are adapted to grind all sorts of plants, including grasses.

28. (b) One of the important human filaria is the African eye-worm *Loa loa*, transmitted by mangofly chiefly found in Africa. They commonly invade subcutaneous tissue and during their migration may pass across the eye-ball, hence the name eyeworm.

Loa microfilariae is very injurious and fatal when they penetrate brain and spinal cord and perhaps carry neurotropic viruses. During their migration, they cause itense itching and swelling. They also cause swelling and pain in eyes, known as "calabar swellings".

29. (b) The body of annelids is divided into segments called metameres, externally ring like grooves (annuli) and internally by vertical partitions called septa. The external segmentation corresponds to internal segmentation. This phenomenon is called metamere or metameric segmentation. Phylum annelida represents the first group of metazoan animals developing a true coelom with metameric segmentation.

30. (b) In annelida, blood is red due to the presence of haemoglobin or erythrocruorin dissoved in plasma. *RBCs* are absent in them. Blood corpuscles are colourless. Instead of blood, leeches posses reddish haemocoelomic fluid that flows in haemocoelomic channels.

31. (c) In whale bone whales, teeth are absent. Instead, the upper jaw carries two transverse rows of numerous triangular fringed horny plates of baleen or whale bone. This serves as the effective sieve for straining plankton (mostly krill) which forms their chief food.

32. (a) In annelida four pairs of flask shaped sacs, each with a diverticulum for storage of sperms and large ampulla for their nourishment is present. Spermathecae occur in 6-9 segments. They receive sperm during copulation. As cross fertilization occurs in earthworm, the sperms of one worm are transferred to spermathecae of the other.

33. (c) Coprophagy is found in certain mammals (e.g. Rabbits). This is the process by which many rodents form a special kind of faeces from the contents of the caecum and these are reingested, so that the food passes through the digestive system second time. Rabbit is coprophagus in habit, eating its own faeces in order to get maximum amount of nutrient from its food. Faeces produced during night alone are eaten up which are soft and moist due to incompletely digested cellulose. Thus passing through the gut once more, the faeces are subjected once again to digestion and absorption.

34. (b) All the sternal parts of the thoracic ribs except the last five, attached the sternum below by hyaline cartilage. Therefore, they are called as true ribs. Actually last two pairs of ribs (11^{th} and 12^{th} pair) provided with the sternal parts and they are not connected with the sternum and hence, known as floating ribs. Floating ribs protect the kidney.

35. (b) Sweat glands produced from stratum germinativum, plays an important role in the regulation of body temperature. When the body temperature rises too much, the sweat glands are stimulated to take up water from blood vessels and to pour out their secretion on the general surface of the skin. Evaporation of sweat from the body surface uses up latent heat of vaporization from the skin, thus the extra heat of the body is used up and the body cools down reducing the temperature.

36. (c) Aquatic annelids excrete ammonia, and terrestrial species (earthworm) excrete urea. However, earthworms are less ureotelic than other terrestrial animals. Excretory fluid contains 40% urea, 20% ammonia and 40% amino acids and other nitrogenous compounds, but no uric acid or urate.

37. (a) Most arthropods certain molluscs and tunicates contain open circulatory system. In them, a fluid composed of blood mixed with tissue fluid bathes with internal tissues and organs directly. It oozes through spaces or cavities that surround the organs, this mixture of fluid is usually referred to as haemolymph.

38. (a) Birds have a constant body temperature which commonly remains in between 104° to 112°*F*, even in subzero weather. Thus they are called homoiothermal. The feathers serve the most important function of retention of heat. Because the plumage forms an efficient, non-conduction covering with its innumerable dead air spaces, useful as insulation. In cold weather, the heat loss is reduced to minimum by fluffing out the feathers, which increases the depth of insulating material by adding to the air spaces within the feathery layers. In warm weather, the feathers are often held close to the body to allow some escape of body heat.

39. (e) Moulting or ecdysis occurs not only in invertebrates, but in birds also. In birds, shedding and replacement of feathers is moulting or ecdysis which takes place gradually, moulting usually takes an average time of six weeks. At the base of each feather follicle, a dermal papilla persists from which new feathers will form. Thus there is a continuous replacement of feather throughout life. The replacement of feathers is seasonal in some birds such as peacock, while in other birds such as pigeon it is gradual throughout the year.

40. (b) Though pigeons have no mammary glands, (as they belong to class aves not to mammals), milk is secreted by them. The pigeons are oviparous, the eggs are laid in the nest and are incubated by the warmth of the parent's body and hatching occurs after a fortnight. The immature, helpless and featherless young ones are nourished by parents by a fatty curdy secretion, the pigeons milk which is secreted in their crop. The parental care and homing instinct are well developed in pigeons.

41. (b) The poison apparatus of snake consists of a pair of poison glands, their ducts and a pair of fangs. The poison glands are situated one on either side of the upper jaw. The poison glands are possibly the superior labial glands or parotid glands. The fangs are sharply pointed and are enlarged maxillary teeth.

42. (c) The hemipenes are the copulatory organs found in *Uromastix* and some other reptiles. These are two eversible hollow sacs lying under the skin behind the cloacal aperture at the base of the tail. Proximally, the hemipenes communicate with the urodaeum of the cloaca. During copulation, only one hemipenes, is inserted into the cloaca of the female. Erection of the hemipenes is due to the muscular action and filling with blood, then they are everted and become cylindrical and project beyond the cloaca.

43. (a) Parental care is clearly seen in amphibians. They protect their eggs by keeping them –
(i) In enclosures in the water, (ii) In holes near water, (iii) In nests, on trees or on rocks, overhanging water, (iv) In transparent gelatinous bag in the water, (v) On trees or in moss, away from water. They also show direct nursing by the parent. The examples are -
(i) Tadpoles transported from one place to another by males, (ii) Eggs protected by male who covers with his body, (iii) Eggs carried round the legs by the female, on the back of the female etc.

44. (a) The entire skin of frog serves as organs of touch as it is abundantly supplied with sensory nerve endings situated in the spaces between the cells. Thus the skin is called tangoreceptor. At places, groups of epidermal cells-tactile organs and patches are present. These are very much sensitive to touch and also to temperature. The tactile organs make the skin of frog sensitive to touch, heat, cold and the effects of the chemicals.

45. (a) From the diffused lymphatic system lymph is pumped back into veins by two pairs of lymph hearts. One of which is situated just behind the transverse processes of the third vertebra opening into the sub scapular veins, the second pair of lymph hearts is found on either side at the end of the urostyle. They open into the femoral vein.

46. (b) In frog, most of the absorption takes place in intestine. The intestine of frog is so formed, that it gives the greater surface area. The intestine is the longest part of the alimentary canal where the absorption of the digested food materials take place.
To increase the absorptive surface of the intestine, the internal lining of the intestine forms transverse folds in the duodenum and longitudinal folds in the region of the ileum and rectum.

47. (a) Amphibia is cold blooded or ectothermal animal as its body temperature does not remain constant but fluctuates with that of environment. Thus it is called poikilothermal animal. In winter the temperature of the body activities ceases down. In this condition it can not live more on the land, so it takes winter sleep or hibernation in underground. Similarly during the summer it once again goes underground to sleep as its all body activities are slowed down due to high temperature. This is known as summer sleep.

48. (c) In fishes, the heart is mainly two chambered one auricle and one ventricle. Heart of *Scoliodon* receives only deoxygenated or venous blood, hence named as venous heart. The auricle opens to the ventricle through atrioventricular aperture. Mainly the impure blood passes from the heart to the gills only once. Therefore, they have single circulation only.

49. (b) The ampullae of Lorenzini are found in clusters on the dorsal and ventral surfaces of the head embeded below the skin but opening externally on the surface of the skin. The ampullae of Lorenzini were formerly regarded as neuromast organs but Sand (1938) has proved that these are thermoreceptor organs. The change in the temperature of water is carried to the brain through the ampullary receptors.

50. (a) A faint line runs on either side of the body extending from the head to the posterior end of the tail, this is called lateral line (also called neuromast system). It marks the position of an underlying canal which runs along side of the body and contains special receptor organs. The lateral line canal extends anteriorly into the head, where it branches into several canals; at intervals these canals opens to the exterior through the pores. These canals contain neuromast organs like rheoreceptors or current receptors. The latter can perceive vibration of very low frequency and detect disturbances in water.

51. (b) Following are the characters of cyclostomes showing an advance over *Amphioxus*. A distinct head, however may be secondary, a so-called cranium, a more advanced brain, pro and mesonephric kidneys, secondary notochord, vertebrae introduced (lampreys) etc. Cyclostomes also have some particular specialization like tongue apparatus, sucking mouth with horny teeth, sac-like gill pouches, separate branchial sac with branchial basket etc.

The degenerated characters of cyclostomes are –

(i) tongue apparatus (ii) rudimentary paired eyes in hagfishes (iii) lack of exoskeleton (iv) reduced liver and lack of gall bladder and bile duct in adult lamprey.

52. (a) *Amphioxus* is devoid of heart, head, kidneys and paired limbs. Paired sense organs are absent here receptors are of primitive types. A complete notochord is persistant with no vertebral column. This shows that it has a simple organization compared to vertebrates because many important craniate structures are lacking in it. But it is definitely a simple chordate having a large number of primitive characters such as a notochord, dorsal hollow nerve cord, and gill clefts.

53. (a) The life cycle of fresh water mussel, including a parasitic glochidium larva on a fish host has many advantages. Besides affording protection and a means of nourishment, it ensures a far wide and more rapid dispersal of the species. A fish may carry these tiny parasites to great distances before they drop off. Considering the sluggish habits and poor locomotory ability of the mussels, this is probably the only way to ensure their proper distribution.

54. (a) In *Amphioxus*, some exchange of O_2 and CO_2 occurs between the water current and blood through the gill-clefts, but this appears doubtful since the blood contains no respiratory pigment. The pharyngeal wall of *Branchiostoma* is richly vascular and the water current entering the pharyngeal cavity brings O_2. The blood flows so close to the surface that some exchange between CO_2 of blood and O_2 of water can easily occur. It appears more probable that an exchange of gases occurs over the whole surface of the body and particularly in the walls of atrium.

55. (b) Torsion or twisting is a process during larval development of gastropods, which rotates the viscero-pallium anticlockwise brought 180° from its initial position, so that mantle cavity, with its pallial complex, is through in front of the body in adult. Changes occuring in torsion are to certain extent reversible. This reversion is known as detorsion and it is a very characteristic of the whole group of the euthyneura. Formerly, this condition was looked upon as an arrested stage in the torsion, but there is the same reduction of the paired parts of the pallial complex as in the specialized streptoneura. Total detorsion, as shown by the typical opisthobranchia is accompained by the reduction of disappearance of the shell.

56. (c) Each ambulacral groove of echinoderms contains two double rows of short, tubular retractile projections, called as podia or tube feet, that end in suckers. Tube feet are characteristic organs of echinoderms serving variously for locomotion, capturing of food, respiration etc.

57. (c) In the mid ventral wall of pharynx is a shallow groove called endostyle. The endostyle is lined with gland cells which secrets mucus. The larval endostyle is lost during metamorphosis of lamprey, it contributes to the formation of a thyroid gland in the adult. Like thyroid it concentrates radioactive iodine in itself. Similar endostyle is found in urochordate and the ammocoete larva of lampreys.

58. (a) Digestive mechanism of *Herdmania* is similar to that of higher group of animals due to possessing several enzymes used in digestion. In *Herdmania*, the liver secretes a yellowish-brown digestive fluid into the stomach, it has many enzymes, an amylase which splits carbohydrates into maltose, a protease which breaks down proteins and a weak lipase which probably acts on fats. And also secretion of pyloric gland probably has an accessory digestive function similar to that of pancreas.

59. (d) Pygochord is longitudinal rod like structure extending from the ventral side of the intestine to the body wall, in the post hepatic region of the trunk. Its cells are vacuolated. It supports the post hepatic region of the body but probably also performs some other functions not yet understood.

60. (b) Water vascular system or ambulacral system is a unique system of echinoderms which helps mainly in locomotion. It is infact a modified part of coelom consisting of a system of canals containing sea water and amoeboid corpuscles. It helps in locomotion by providing a hydraulic pressure mechanism of tube feet may serve for respiratory exchange of gases. Tube feet also help in anchoring the body to substratum and in capturing and handling the food.

61. (c) Balanoglossus belong to class enteropneusta. In certain cases, the proboscis pore does not communicate with the proboscis coelom, but terminate blindly, and may send off a narrow tubular diverticulum which opens into the neurocoel. The proboscis sits in the collar somewhat like an acorn in its cup, a character that has given the name "acorn worm" to the group.

Animal Kingdom

SET Self Evaluation Test

1. Select incorrect pair **[MP PMT 2009]**
(a) Porifera–choanocytes (b) Coelenterata-nematocysts
(c) Annelida – segmentation (d) Monera – eukaryote

2. Which of the following is a chordate feature, not shared by the non-chordates **[AIIMS 2001; CBSE PMT 2002; CPMT 2005]**
(a) Metamerism (b) Axiate organization
(c) Bilateral symmetry (d) Pharyngeal gill slits

3. Which one of the following invertebrates is a deuterostome and enterocoelous coelomate **[MP PMT 2000]**
(a) Pila (b) Ascaris
(c) Aphrodite (d) Asterias

4. Helically coiled shaped "X" organ is found in **[Odisha JEE 2008]**
(a) Crustacea (b) Porifera
(c) Insecta (d) Amphibia

5. *Scoliodon* is called dogfish due to one of its following characteristics **[MP PMT 2000]**
(a) Mouth (b) Gait
(c) Carnivorous (d) Power of smell

6. The stages between larval moults in an insects are called **[Odisha JEE 2008; J & K CET 2012]**
(a) Instar (b) Morula
(c) Pupa (d) Larva

7. Scales in chondrichthyes are **[AIIMS 2000; MP PMT 2011]**
(a) Placoid (b) Ganoid
(c) Cycloid (d) Sesamoid

8. Which one of the animal of amphibia has no tongue
(a) Amphiuma (b) Ichthyophis
(c) Necturus (d) Salamander

9. Comb plates are found in **[J & K CET 2008]**
(a) Adamsia (b) Aurelia
(c) Nereis (d) Pleurobrachia

10. Sharks and dogfishes differ from skates and rays by **[NEET (Karnataka) 2013]**
(a) Gill slits are ventrally placed
(b) Head and trunk are widened considerably
(c) Distinct demarcation between body and tail
(d) Their pectorals fins distinctly marked off from cylindrical bodies

11. Which of the following is not found in birds **[CBSE PMT 1999]**
(a) Hind limb (b) Fore limb
(c) Pelvic girdle (d) Pectoral girdle

12. Biradial symmetry is found in **[Odisha JEE 2010]**
(a) Beroe (b) Hydra
(c) Sponges (d) Labeo

13. Paired appendages are not found in **[AFMC 2008]**
(a) Hemichordates (b) Urochordates
(c) Cephalochordates (d) All of these

14. Which of the following group is Deuterostome **[Kerala PMT 2000; RPMT 2001]**
(a) Annelida, Arthropoda, Mollusca
(b) Echinodermata, Hemichordata, Chordata
(c) Annelida, Mollusca. Chordata
(d) Arthropoda, Mollusca, Echinodermata

15. Discoblastula found in **[MP PMT 2011]**
(a) Echinoderms and amphioxus
(b) Reptiles, birds and fishes
(c) Annelids, molluscs and nemertens
(d) Insects

16. Which is not a bird **[MP PMT 2011]**
(a) *Columba* (b) *Testudo*
(c) *Pavo* (d) *Struthio*

17. The paralysing toxin in nematocyst is **[RPMT 1999; AIIMS 2000; CPMT 2001; MH CET 2002; Pb. PMT 2004]**
(a) Glutathione (b) Heparin
(c) Histamine (d) Hypnotoxin

18. Dropping of gravid proglottids by cestodes is called **[MP PMT 2000]**
(a) Apolysis (b) Autotomy
(c) Paedogenesis (d) Autophagy

19. *Calotes versicolor* belongs to class **[Odisha JEE 2009]**
(a) Osteichthyes (b) Amphibia
(c) Reptiles (d) Aves

20. Chloragogen cells of earthworm are similar to the organ of vertebrate's **[CPMT 1999, 2004; MH CET 2002]**
(a) Liver (b) Lung
(c) Kidney (d) Spleen

21. Interstitial fluid resembles **[Odisha JEE 2009]**
(a) Sea water (b) Fresh water
(c) Ground water (d) None of these

22. The modification of second pair of wings into halteres or balancers is the characteristic of **[MP PMT 2001]**
(a) Lepidoptera (b) Orthoptera
(c) Diptera (d) Hemiptera

23. Mesoglia is seen in between **[NCERT; WB JEE 2008]**
(a) Ectoderm and endoderm
(b) Ectoderm and mesoderm
(c) Mesoderm and endoderm
(d) Just below mesoderm

24. Flagellated collar cells (choanocytes) is the characteristics of **[MP PMT 2011]**
(a) Cnidaria (b) Arthropoda
(c) Porifera (d) None of the above

25. In which one of the following groups an animals are hermaphrodite **[MP PMT 2001]**
(a) Hydra, Ascaris, Pheretima
(b) Hydra, Homo sapiens, Leech
(c) Tapeworm, Toad,Starfish
(d) Hydra, Leech, Tapeworm

26. Which of the following is a correct sequence of decreasing order of number of species **[BHU 2008]**
(a) Aves, pisces, reptiles, amphibians, mammals
(b) Pisces, aves, reptiles, mammals, amphibians
(c) Pisces, mammals, reptiles, amphibians, aves
(d) Amphibians, aves, pisces, mammals, reptiles

27. In *Hydra*, digestion is **[BHU 1999; CPMT 1999]**
(a) Extracellular
(b) Intracellular
(c) First extracellular and then intracellular
(d) First intracellular and then extracellular

28. Infective stage of *Ascaris* is **[CBSE PMT 1997; KCET 1998; RPMT 1999, 2002; BHU 2002; WB JEE 2008]**
(a) Adult worm (b) Second juvenile
(c) Fourth juvenile (d) Egg

29. How are annelida advanced over nematoda **[Pb. PMT 1999]**
(a) Closed circulation (b) True coelom
(c) Metameric segmentation (d) All of these

30. Two pairs of antennae are found in class **[EAMCET 1998]**
(a) Myriapoda (b) Crustacea
(c) Insecta (d) Arachnida

31. Which is the correct order of evolution **[CPMT 1998]**
(a) *Leucosolenia – Hydra – Amoeba – Ascaris*
(b) *Ascaris – Amoeba – Leucosolenia – Hydra*
(c) *Amoeba – Leucosolenia – Hydra – Ascaris*
(d) None of these

32. Which one of the following is correctly paired **[Kerala PMT 2007]**
(a) *Trygon* - Monitor
(b) *Ichthyophis* - Crow
(c) *Varanus* - Stingray
(d) *Corvus* - Limbless amphibian
(e) *Pristis* - Sawfish

33. Which is vivipary **[BVP 2003; Bihar CECE 2006]**
(a) Whale, rabbit (b) Frog, kangaroo
(c) Snake, lizard (d) Cockroach, aves

34. Antennary glands of crustaceans are meant for **[DPMT 2006]**
(a) Excretion (b) Respiration
(c) Digestion (d) Circulation

35. Pancreas is absent in which group of vertebrates **[DPMT 2006]**
(a) Reptiles (b) Cyclostomates
(c) Birds (d) Mammals

36. Praying mantis is a good example of **[CBSE PMT 2006]**
(a) Social insects (b) Camouflage
(c) Mullerian mimicry (d) Warning colouration

37. Biradial symmetry and lack of cnidoblasts are the characteristics of **[CBSE PMT 2006]**
(a) *Aurelia* and *Paramecium* (b) *Hydra* and starfish
(c) Starfish and sea anemone (d) Cteno phora and *Beroe*

38. What is common between parrot, platypus and kangaroo **[CBSE PMT 2007]**
(a) Homoeothermy (b) Toothless jaws
(c) Functional post-anal tail (d) Ovoparity

39. Which one of the following is a matching pair of a body feature and the animal possessing it **[CBSE PMT 2007]**
(a) Post-anal tail – Octopus
(b) Ventral Central nervous system – Leech
(c) Pharyngeal gill slits absent in embryo – Chameleon
(d) Ventral heart – Scorpion

40. Axis vertebra is identified by **[MP PMT 2009]**
(a) Sigmoid notch (b) Deltoid ridge
(c) Odontoid process (d) Centrum

41. The most primitive vertebrates are **[MP PMT 2009]**

(a) Ostracoderms (b) Cephalochordates

(c) Placoderms (d) Cyclostomes

42. In anura group of frog, caudal vertebra fused to form **[Odisha JEE 2008]**

(a) Coccyx (b) Urostyle

(c) Pygostyle (d) Prehensile tail

43. The extinct reptiles without temporal fossae belong to **[EAMCET 2009]**

(a) Chelonia (b) Synaptosauria

(c) Ichthyopterygia (d) Cotylosauria

Answers and Solutions

1	d	2	d	3	d	4	a	5	d
6	a	7	a	8	b	9	d	10	d
11	b	12	a	13	d	14	b	15	b
16	b	17	d	18	a	19	c	20	a
21	a	22	c	23	a	24	c	25	d
26	b	27	c	28	b	29	d	30	b
31	c	32	e	33	a	34	a	35	b
36	b	37	d	38	a	39	b	40	c
41	a	42	b	43	d				

2. (d) Chordates show the presence of nerve cord, Notochord and pharyngeal gill slits.

3. (d) Echinodermata and all chordates are deuterostome and enterocoelous.

5. (d) In scoliodon, olfactory organs are characteristically large in elasmobranchs correlated with a highly developed sense of smell for perception of chemical substances dissolved in water.

7. (a) Placoid scale has a disc like basal plate. It resembles a tooth. These scales are found in cartilagenous fishes (chondricthyes).

8. (b) Icthyophis is a limbless amphibian showing parental care. It has no tongue.

10. (d) Sharks and dogfishes have cylindrical body while skates and rays have flattened body with winglike pectoral fins which are not distinct from body.

11. (b) In birds, forelimbs are modified as wings for flying. Therefore, the forelimb is not found in birds.

14. (b) Deuterostomes includes Echinodermata, Hemichordata and chordata. The mouth is derived away from the blastopore.

17. (d) Hypnotoxin is secreted by nematocyst cell of tentacles of hydra to paralyse the active prey for easy engulfing.

18. (a) Loss of gravid proglottids from posterior end of body is called apolysis.

20. (a) Because they are supposed to be associated with the function of excretion just like liver.

22. (c) In diptera, hindwings are greatly reduced to drumstick shaped structures, called halters. These carry sense organs and serve as balancing organ during flight.

25. (d) An individual with both male and female reproductive organs called hermaphrodite.

28. (b) The second stage of juvenile is infective stage of *Ascaris* which is also called embryonated egg.

29. (d) Annelids are first animals in which closed circular system, metamerism segmentation and true coelom is evolved. On the basis of these comments annelids are advanced over nematoda.

30. (b) Presence of two pair antennae is character of class crustacea. Antennae are sensory and help in searching food and shelter.

34. (a) The excretory system of crustacea (*Palaemon*) consists of a pair of antenary or green glands, a pair of lateral ducts and an unpaired renal or nephroperitoneal sac coxa of each antenna encloses an antennary gland.

35. (b) Pancreas is absent in cyclostomates, a class of Agnatha.

The pancreas is derived from the endoderm of embryo. It lies inferior to the stomach in a bend of the duodenum. It is both an exocrine and endocrine gland.

38. (a) All these three animals are Homeiothermic; although platypus is incomplete homeiothermic.

39. (b) In invertebrates nerve cord is found in ventral position that is a part of CNS.