

C.S.E. ZOOLOGY (PRELIMINARY) - 2005

Two Hours

Maximum Marks: 300

- 1. Which of the following are the characteristics of prokaryotes?**
- (a) Single chromosome made up of nucleic acid complexed with histone and 70 S ribosome comprised of 30 S and 50 S.
 - (b) Single chromosome made up of naked nucleic acid and 70 S ribosome comprised of 30 S and 50 S.
 - (c) Single chromosome made up of nucleic acid complexed with histone and 80 S ribosome comprised of 40 S and 50 S.
 - (d) Single chromosome made up of naked nucleic acid and 80 S ribosome comprised of 30 S and 50 S.
- 2. The amount of DNA in G1 phase of cell cycle is**
- (a) Same as found in G2 phase
 - (b) Half the amount found in G2 phase
 - (c) Double the amount found in G2 phase
 - (d) Four times the amount found in G2 phase
- 3. Consider the following statements:**
- 1. Friedrich Miescher first isolated nucleic acids from pus cells.
 - 2. Hershey and Chase showed through experiment that genetic material was DNA and not protein.
 - 3. Meselson and Stahl proved the semi-conservative replication of DNA.
- Which of the statements given above are correct?
- (a) 1 and 2
 - (b) 2 and 3
 - (c) 1 and 3
 - (d) 1, 2 and 3
- 4. The nucleolar organiser is located on the chromosome in the region of**
- (a) Primary constriction
 - (b) Secondary constriction
 - (c) Kinetochore
 - (d) Telomere
- 5. During cell cycle the duration of which of the following phases is the shortest?**
- (a) Mitosis
 - (b) G₁ phase
 - (c) S phase
 - (d) G₂ phase
- 6. Prions are disease causing agents composed of**
- (a) DNA and protein.
 - (b) DNA
 - (c) RNA
 - (d) Protein
- 7. Consider the following statements:**
- 1. In the lampbrush chromosomes of amphibian oocytes, the loops are engaged in the transcription.
 - 2. In polytene chromosomes, the puffs are the sites of mRNA formation.
- Which of the statements given above is/are correct?
- (a) 1 only
 - (b) 2 only
 - (c) Both 1 and 2
 - (d) Neither 1 nor 2

8. Which one among the following has the largest number of chromosomes?
- (a) Cat (c) Man
(b) Chicken (d) Rat

9. Consider the following statements regarding a DNA segment 1000 base pair long:

1. It measures 3400 Å.
2. It has 10 complete turns.
3. It has 100 nucleotides.
4. The RNA synthesized from it carries 1000 nucleotides.

Which of the statements given above are correct?

- (a) I and 2 (b) 3 and 4
(c) I and 4 (d) 1, 3 and 4
10. Which types of specialized sequences are carried at both ends of linear chromosomes for faithful DNA replication, aging and maintaining polarity?
- (a) Satellites (b) Telomeres
(c) Organisers (d) Repetitive sequences

11. Match List I (Theory) with List II (Scientist) and select the correct answer using the code given below the lists :

List I			List II		
A. Germ Plasm theory			1. Jean Baptiste Lamarck		
B. Inheritance of Acquired Characters			2. Hugo De Vries		
C. Mutation theory			3. Louis Pasteur		
			4. August Weismann		

	A	B	C		A	B	C
(a)	3	1	2	(b)	4	1	2
(c)	4	2	1	(d)	3	2	1

12. Which one of the following combinations of structural features are expected to be present in a secretory cell?

- (a) Well developed rough endoplasmic reticulum and prominent Golgi bodies
(b) Abundant lysosomes and secretory granules
(c) Enlarged nucleus and well developed rough endoplasmic reticulum
(d) Well developed smooth endoplasmic reticulum and secretory granules

13. A couple with normal vision had colour blind father each. What is the percentage of probability that the daughter of the couple is colour blind?

- (a) 100% (b) 50%
(c) 25% (d) 0

14. How many molecules of ATP would be synthesised if one pyruvate molecule passes through the oxidative steps?

- (a) 12 (b) 14
(c) 24 (d) 28

15. Match List I (Membrane model) with List II (Scientist) and select the correct answer using the code given below the lists:

List I

- | | |
|--------------------------------------------|------------------------|
| A. Protein-lipid-protein or sandwich model | 1. Robertson |
| B. Unit membrane model | 2. Singer and Nicolson |
| C. Fluid-mosaic model | 3. Davson and Danielli |

- | | | | |
|-----|---|---|---|
| | A | B | C |
| (a) | I | 3 | 2 |
| (c) | 3 | I | 2 |

- | | | | |
|-----|---|---|---|
| | A | B | C |
| (b) | 2 | I | 3 |
| (d) | 3 | 2 | I |

16. Consider the following statements:

1. Peroxisomes contain amino acid oxidases, urate oxidases and catalases.
2. In mitochondria, the Krebs-cycle reactions occur in the outer mitochondrial membrane.

Which of the statements given above is/are correct?

- | | |
|------------------|---------------------|
| (a) I only | (b) 2 only |
| (c) Both I and 2 | (d) Neither 1 nor 2 |

17. Sickle cell anemia is due to the substitution of

- (a) Glutamic acid for valine at 6th position in beta-chain
- (b) Valine for glutamic acid at 6th position in beta-chain
- (c) Valine for glutamic acid at 5th position in beta-chain
- (d) Glutamic acid for valine at 5th position in beta-chain

18. Consider the following pairs:

- | | | |
|---------------------|---|-------------------|
| 1. Ribosomes | : | Protein synthesis |
| 2. Okazaki fragment | : | RNA synthesis |
| 3. Ligase | : | DNA synthesis |

Which of the above pairs is/are correctly matched?

- | | |
|--------------|----------------|
| (a) 1 only | (b) 2 and 3 |
| (c) I and 3' | (d) 1, 2 and 3 |

19. Philadelphia chromosome refers to the translocation between the long arms of

- (a) Chromosomes 8 and 18
- (b) Chromosomes 9 and 18
- (c) Chromosomes 9 and 22
- (d) Chromosomes 6 and 22

20. Consider the following statements with reference to prokaryotic translation:

1. Charged tRNA carries amino acid at 5' end.
2. Charged tRNA enters the ribosome through A site during elongation of polypeptides.
3. Ribosomes can accommodate 3 mRNA codons at a time.
4. mRNA is translated from 5' → 3' direction.

Which of the statements given above are correct?

- | | |
|-------------|-------------|
| (a) 1 and 2 | (b) 3 and 4 |
| (c) 1 and 3 | (d) 2 and 4 |

21. A form of chromosomal aberration that involves the fusion of long arms of acrocentric chromosomes at the centromere is known as

- (a) Reciprocal translocation (b) Isochromosome
(c) Robertsonian translocation (d) Centromeric fusion

22. Match List I (Organism) with List II (Mode of locomotion) and select the correct answer using the code given below the lists:

- | List I | | | List II | | |
|-----------------|--|--|------------------------------------------|--|--|
| A. Mastigophora | | | 1. Locomotion by pseudopodia | | |
| B. Sarcodina | | | 2. Locomotion by flagella | | |
| C. Sporozoa | | | 3. Parasites having no locomotory organs | | |

- | | A | B | C | | A | B | C |
|-----|---|---|---|-----|---|---|---|
| (a) | 1 | 2 | 3 | (b) | 2 | 3 | 1 |
| (c) | 3 | 1 | 2 | (d) | 2 | 1 | 3 |

23. Consider the following characteristics of coelomates:

1. Radial symmetry
2. Asymmetry
3. Origin of mouth
4. Embryonic cleavage pattern
5. Coelom formation

If basic differences are to be found between protostome coelomates and deuterostome coelomates, consideration of which of the above characteristics will suffice?

- (a) 1, 3, 4 and 5 (b) 2, 3, 4 and 5
(c) 1, 3 and 4 (d) 5 only

24. In which among the given minor phyla is the alimentary canal U shaped?

- (a) Bryozoa only
(b) Chaetognatha and Phoronida
(c) Bryozoa and Phoronida
(d) Rotifera and Gastrotricha

25. Match List I (Class) with List II (Example) and select the correct answer using the codes given below the lists:

- | List I | | | | List II | | | |
|-------------------|--|--|--|--------------|--|--|--|
| A. Polyplacophora | | | | 1. Dentalium | | | |
| B. Monoplacophora | | | | 2. Chiton | | | |
| C. Cephalopoda | | | | 3. Nautilus | | | |
| D. Scaphopoda | | | | 4. Neopilina | | | |

- | | A | B | C | D | | A | B | C | D |
|-----|---|---|---|---|-----|---|---|---|---|
| (a) | 1 | 3 | 4 | 2 | (b) | 1 | 4 | 3 | 2 |
| (c) | 2 | 3 | 4 | 1 | (d) | 2 | 4 | 3 | 1 |

26. Sea lily is the stalked echinoderm of the class

- (a) Articulata (b) Asterozoa
(c) Crinoidea (d) Echinozoa

27. Which one of the following annelids is phosphorescent in the dark?

- (a) Aphrodite (b) Chaetopterus
(c) Syllis (d) Sabella

28. Which group of following animals possesses mesenchymal coelom?

- (a) Most Protostomia (b) Deuterostomia
(c) Phoronida. (d) Nemertina

29. Consider the following anatomical structures:

1. Single dorsal tubular nerve cord
2. Notochord
3. Gill slits in pharynx
4. Brain

The outstanding characteristics which distinguish chordates from other animals are

- (a) 1 and 2 (b) 1 and 4
(c) 1, 2 and 3 (d) 2, 3 and 4

30. Which one among the following undertakes the longest migration?

- (a) Arctic tern (b) Flamingo
(c) Painted stork (d) Pelican

31. Match List I (Characteristic feature) with List II (Organism) and select the correct answer using the code given below the list :

List I

- A. Thread cells
B. Kolliker's pit
C. Test
D. Typhosole

List II

1. Herdmania
2. Myxine
3. Branchiostoma
4. Petromyzon

- | | A | B | C | D | | A | B | C | D |
|-----|---|---|---|---|-----|---|---|---|---|
| (a) | 4 | 1 | 3 | 2 | (b) | 4 | 3 | 1 | 2 |
| (c) | 2 | 1 | 3 | 4 | (d) | 2 | 3 | 1 | 4 |

32. In turtle, the correct sequence of bony plates, on each side of the plastron in the antero-posterior direction is

- (a) Humeral - pectoral - gular - abdominal - femoral anal
(b) Gular - humeral - pectoral - abdominal - femoral anal
(c) Pectoral - abdominal - gular - anal
(d) Abdominal - gular - femoral - anal

33. In origin, the choanocytes, the flagellated cell present in the radial canal of sponges, are

- (a) Ectodermal (b) Mesodermal
(c) Endodermal (d) Mesenchymal

34. When does the developing embryo of Hydra drop from the body of the parent?

- (a) Soon after formation of zygote
- (b) After formation of blastula
- (c) After formation of gastrula
- (d) Only after it has developed into young Hydra

35. Metagenesis in Obelia signifies the

- (a) Alternation of generations between free swimming diploid medusoid and diploid polypoid stage
- (b) Alternation of generations between haploid gametogenetic medusa and polypoid stage
- (c) Formation of medusa on gonangium
- (d) Formation of polyp by budding

36. Which one of the following phenomena occurs during reproduction in Neanthes?

- (a) Endomixis
- (b) Epitoky
- (c) Hectocotylyzation
- (d) Metagenesis

37. Consider the following statements:

Pheretima posthuma is characterized by

- 1. true coelomic body cavity lined by coelomic epithelium.
- 2. closed circulatory system.
- 3. lateral hearts with valves.

Which of the statements given above are correct?

- (a) I and 2
- (b) 2 and 3
- (c) I and 3
- (d) I, 2 and 3.

38. Which of the following explain the functions of statocyst in Prawn?

- (a) Locomotion and touch
- (b) Smell and movement
- (c) Smell and equilibrium
- (d) Orientation and equilibrium

39. Madreporite, the circular, flat, calcareous plate in Asterias sp. is situated near the

- (a) anus on the aboral surface
- (b) mouth on the oral surface
- (c) side of the arms on the 'Oral surface
- (d) the junction of the arms on the aboral surface

40. Consider the following statements regarding Balanoglossus:

- 1. The eggs are fertilized outside the body and the development is indirect.
- 2. Full grown tornaria larva has three ciliated bands, two apical plates and a pair of pigmented eye-spots.
- 3. Tornaria larva is a free-swimming larval stage

Which of the statements given above are correct?

- (a) 1 and 2 (b) 2 and 3
(c) 1 and 3 (d) 1, 2 and 3

41. The osphradium in Pila sp. is the organ responsible for

- (a) Tactile activity (b) Equilibrium
(c) Sensing light (d) Chemoreception

42. Which of the following is a reptilian feature of a prototherian mammal?

- (a) Absence of pinna
(b) Presence of cloaca
(c) Vertebrate without epiphysis
(d) Single and uncoiled cochlea

43. Which of the following functions is served by prototrichs in Calotes?

- (a) Defence (b) Sensory
(c) Capturing prey (d) Thermoregulation

44. Which one of the following is the main constituent of Pearl?

- (a) Calcium carbonate (b) Magnesium carbonate
(c) Calcium oxide (d) Magnesium sulphate

45. Which one of the following reptiles is an edentate

- (a) Chamaeleon (b) Garter lizard
(c) Gecko (d) Turtle

46. Avian respiratory system is characterised by the presence of membranous air-sacs. Such structure is also observed as a part of respiratory system in some non-avian vertebrates. Which one of the following possesses such air-sacs?

- (a) Dolphin (b) Toad
(c) Chamaeleon (d) Pteropus

47. Consider the following

1. Endothelium of foetal blood capillaries.
2. Connective tissue surrounding foetal blood capillaries.
3. Foetal epithelium
4. Maternal epithelium.
5. Connective tissue surrounding maternal blood capillaries.
6. Endothelium of maternal blood capillaries.

In the case of humans, the placenta comprises which of the above?

- (a) 1, 2, 3, 4, 5 and 6 (b) 1, 5 and 6
(c) 1 and 2 (d) 2 and 6

48. Consider the following statements:

1. In the cranium of Rana, parietal fossa is present.
2. In the cranium of Columba, parietal foramen is absent. J Which of the statements given above is/are correct?

- (a) 1 only. (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

49. Which one of the following is not under the direct control of pituitary gland with respect to the regulation of its secretory function?

- (a) Adrenal cortex (b) Adrenal medulla
(c) Thyroid (d) Testis

50. If the glomerular capillary pressure is 60 mm Hg, the pressure in Bowman's space 10 mm Hg and osmotic pressure 30 mm Hg, what would be the effective filtration pressure?

- (a) 20 mm Hg (b) 40 mm Hg
(c) 60 mm Hg (d) 80 mm Hg

51. Which one of the following increases the uptake of sodium ions and water in the kidney with simultaneous elimination of potassium ions?

- (a) Vasopressin (b) Renin
(c) Parathormone (d) Aldosterone

52. Consider the following statements:

Parasympathetic nervous system is characterized by

1. Acetylcholine as neurotransmitter.
2. 'Fight or flight' activities.
3. Longer preganglionic fibres.
4. Longer postganglionic fibres.
5. Arising from cranio-sacral portion.

Which of the statements given above are correct?

- (a) 1, 2 and 3 (b) 2 and 4
(c) 1,3 and 5 (d) 2,3 and 5

53. Match List I (Human hormone) with List II (Target organ) and select the correct answer using the code given below the lists:

List I			List II				
A. Cholecystokinin			1. Bone marrow				
B. Erythropoietin			2. Stomach				
C. Enterogastron			3. Gall bladder				
	A	B	C				
(a)	2	I	3	(b)	I	3	2
(c)	3	2	I	(d)	3	1	2

54. Which one of the following categories of enzymes converts triglycerides into glycerol and fatty acids?

- (a) Hydrolase (b) Lyase
(c) Oxidoreductase (d) Transferase

55. Consider the following statements with reference to the only ape found in India i.e. *Hylobates hoolock*:

1. In India, it lives only in north-eastern region.
2. Its arms are more than double the length of its legs measured from hip heel.
3. It is purely herbivorous.

Which of the statements given above is/are correct?

- (a) 1 only (b) 1 and 2
(c) 2 and 3 (d) 1, 2 and 3

56. Which one of the following pairs is not correctly matched?

Wildlife Sanctuary	State
(a) Eturnagaram	- Tamil Nadu
(b) Bhagvan Mahavir	- Goa
(c) Nandini	- Jammu & Kashmir
(d) Narayan Sarovar	- Gujarat

57. The sequence of transfer of electrons during biological oxidation of a substrate in mitochondrion is

- (a) $\text{NAD} \rightarrow \text{Cytochrome a} \rightarrow \text{Cytochrome c} \rightarrow \text{O}_2$,
(b) $\text{FAD} \rightarrow \text{Cytochrome c} \rightarrow \text{Cytochrome b} \rightarrow \text{NAD} \rightarrow \text{O}_2$
(c) $\text{NAD} \rightarrow \text{FAD} \rightarrow \text{Cytochrome b} \rightarrow \text{Cytochrome c} \rightarrow \text{Cytochrome a}_3 \rightarrow \text{O}_2$
(d) $\text{FAD} \rightarrow \text{NAD} \rightarrow \text{Cytochrome c} \rightarrow \text{Cytochrome a}_3 \rightarrow \text{O}_2$

58. Consider the following statements:

Vitamin A deficiency in humans can lead to

1. atrophy of epithelial cells.
2. damage to intestinal mucosa.
3. defects in the dentine of teeth.

Which of the statements given is / are correct?

- (a) 1 only (b) 1 and 2
(c) 2 and 3 (d) 1, 2 and 3

59. Which one of the following is a non-essential amino acid in the case of human beings?

- (a) Arginine (b) Histidine
(c) Leucine (d) Serine

60. Which one of the following is the most fundamental characteristic of the excitatory postsynaptic potential?

- (a) Decreasing sodium ions
(b) Increased permeability to ions
(c) Polarisation of membrane
(d) Increased loss of potassium ions

Consider the following statements:

1. Adenosine triphosphate is made up of base adenine, sugar xylose and three phosphate groups.
2. Adenosine triphosphate has three ionizable protons in its condensed phosphate groups.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

62. Hypoprothrombinemia is due to the deficiency of

- (a) Vitamine A
- (b) Vitamine B complex
- (c) Vitamine E
- (d) Vitamine K

63. Consider the following:

- 1. Malate.
- 2. Succinate
- 3. Fumarate

What is the correct sequence of the above metabolites in citric acid cycle?

- (a) 1 - 2 - 3
- (b) 2 - 1 - 3
- (c) 3 - 2 - 1
- (d) 2 - 3 - 1

64. The hormones response are responsible for the "fight-or-flight"

- (a) Cortisol and aldosterone
- (b) Corticosterone and aldosterone
- (c) Aldosterone and nor-adrenalin
- (d) Adrenalin and nor-adrenalin

65. Consider the following statements: .

- 1. Chymotrypsinogen is converted into chymotrypsin by trypsin.
- 2. Cholecystokinin is secreted by stomach.
- 3. Pepsin acts on peptide linkage in which tyrosine and phenylalanine are involved.

Which of the statements given above are correct?

- (a) I and 2
- (b) 2 and 3
- (c) I and 3
- (d) I, 2 and 3

66. In glycolysis, which' one of the following is the substrate I for the enzyme enolase?

- (a) Fructose 1-6 biphosphate
- (b) 3-phosphoglyceraldehyde
- (c) I, 3-biphosphoglyce ic acid
- (d) 2-phosphoglyceric acid

67. Consider the following hormones:

- 1. Thyrotrophin releasing hormone (TRH)
- 2. Thyroid stimulating hormone (TSH)
- 3. Thyroxine (T_4)

68. What is the correct sequence of the release of these hormones?

- (a) I - 2 - 3
- (b) 2 - I - 3
- (c) 2 - 3 - I
- (d) I - 3 - 2

68. How many fused hydrocarbon rings does the steroid nucleus consist of?

- (a) Two
- (b) Three
- (c) Four
- (d) Six

69. Which one of the following statements is correct?

- (a) Perilymph is positively charged and endolymph is negatively charged.
- (b) Perilymph and endolymph are positively charged.
- (c) Perilymph is negatively charged and endolymph is positively charged.
- (d) Perilymph and endolymph are negatively charged.

70. Consider the following statements:

The tertiary structure of proteins is stabilized by

- 1. disulphide linkage
- 2. hydrogen bonding
- 3. electrostatic bonds between positively and negatively charged groups

Which 'of the statements give!1 above are correct?

- (a) I and 2
- (b) 2 and 3
- (c) 1 and 3
- (d) 1, 2 and 3

71. Consider the following statements:

Pheromones help in

- 1. communication within species.
- 2. marking the territory.
- 3. defence mechanism.

Which of the statements given above are correct?

- (a) I and 2
- (b) 2 and 3.
- (c) 1 and 3
- (d) 1, 2 and 3

72. The axial filament of a mammalian sperm consists of

- (a) 9 double peripheral and 2 single central microtubules
- (b) 9 single peripheral and 2 double central microtubules
- (c) 2 single peripheral and 9 double central microtubules
- (d) 2 double peripheral and 9 single central microtubules

73. Which one of the following is not applicable to the retrogressive metamorphosis of Ascidian tadpole?

- (a) Reduction of size of the pharynx
- (b) Dwindling of notochord
- (c) Development of sessile character
- (d) Shortening of tail

74. Which one of the following sets is of ectodermal derivative?

- (a) Brain, spinal cord, pituitary, thyroid
- (b) Brain, spinal cord, liver, pancreas
- (c) Brain, spinal cord, pituitary, pineal
- (d) Heart, eye, dentine, skeleton

- 75. Regarding the appearance of the given organs in a tadpole of frog, which one of the following is the correct sequence?**
- (a) Mouth, external gill, fore limb, hind limb
 - (b) Mouth, external gill, hind limb, fore limb
 - (c) External gill, mouth, hind limb, fore limb
 - (d) External gill, mouth, fore limb, hind limb
- 76. The chorion, originates from**
- (a) Ectoderm
 - (b) Endoderm
 - (c) Extra-embryonic ectoderm
 - (d) Somatic mesoderm
- 77. The third cleavage in the development of frog is**
- (a) Holoblastic and equatorial
 - (b) Holoblastic and un equatorial
 - (c) Vertical and equatorial
 - (d) Meroblastic and vertical
- 78. In mammals, the extra-embryonic structure is composed of**
- (a) Chorioallantois and trophoblast
 - (b) Amnion and allantois
 - (c) Yolk
 - (d) Yolk and amnion
- 79. In which among the following is bidiscoidal placenta present?**
- (a) Cat
 - (b) Dog
 - (c) Human
 - (d) Monkey
- 80. The placenta in mammals secretes**
- (a) Progesterone only
 - (b) Estradiol only
 - (c) Relaxin and estradiol
 - (d) Progesterone, estradiol and relaxin
- 81. Which one of the following studies strongly supports Neo-Darwinism theory?**
- (a) Molecular genetics
 - (b) Paleontology
 - (c) Comparative anatomy
 - (d) Functional morphology
- 82. Expansion of which one of the following regions of brain during evolution is responsible for the greater intelligence of man?**
- (a) Allocortex
 - (b) Neocortex
 - (c) Cerebellum
 - (d) Juxtallocortex
- 83. What Was the principal missing element in Darwin's concept of evolution?**
- (a) Knowledge of heredity and variation
 - (b) Concept of missing links
 - (c) Convincing fossil records
 - (d) Concrete evidence for the operation of Natural Selection

84. The ineffectiveness of many antibiotics to bacteria today is most closely associated with

- (a) F-plasmid (b) R-plasmid
(c) Catabolite repression (d) Bacterial transformations

85. The direct evidence on the evolution of horse is provided by the study of

- (a) Recapitulation (b) Geographic distribution
(c) Fossils (d) Homology of the limbs

86. Match List I (Animal) with List II (Geological period) and select the correct answer using the code given below the lists:

List I

- A. First reptiles
B. First amphibians
C. First dinosaurs
D. First fishes

List II

1. Ordovician
2. Devonian
3. Pennsylvanian
4. Jurassic
5. Cretaceous
6. Triassic

- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 6 | 4 | 3 | 1 |
| (c) | 6 | 2 | 3 | 5 |

- | | A | B | C | D |
|-----|---|---|---|---|
| (b) | 3 | 2 | 6 | 1 |
| (d) | 3 | 4 | 6 | 5 |

87. Which one of the following is the vector of Trypanosomiasis?

- (a) Tsetse fly (b) Phlebotomus fly.
(c) White fly (d) Fire fly

88. Which part of the world is regarded as the most probable place of origin of ancestor of humans?

- (a) Java-Sumatra (b) China
(c) South Asia (d) South Africa

89. In the case of frog, the structure known as 'grey crescent' is found in

- (a) Fertilized egg (b) Unfertilized egg
(c) Brain (d) Eye

90. Consider the following pairs:

1. Bombyx mori - Lepidoptera
2. Tachardia lacca - Hemiptera
3. Apis indica - Hymenoptera

Which of the above pairs is/are correctly matched?

- (a) only (b) 1 and 2
(c) 2 and 3 (d) 1, 2 and 3

91. Consider the following statements:

1. India is one of the twelve mega-biodiversity countries of the world.
2. The Gulf of Mannar has been recognised on the World Network of Biosphere Reserves by UNESCO.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

92. Amensalism is a type of population interaction in which

- (a) Both the populations are inhibited.
(b) One population is benefited and the other inhibited
(c) One population is inhibited and the other unaffected
(d) Both the populations are benefited

93. Which one of the following statements is not correct?

- (a) The vipers have movable upper jaws.
(b) The vipers are viviparous.
(c) The krait has a rounded tail with undivided subcaudals.
(d) In India, six species of cobra are found.

94. Consider the following Indian fauna:

1. *Elephas maximus*
2. *Equus hemionus khur*
3. *Panthera uncia*

Which of the above is/are endangered?

- (a) 1 and 2 (b) 2 and 3
(c) 3 only (d) 1, 2 and 3

95. The major component of 'biological clock' in higher vertebrates is

- (a) Pituitary gland (b) Cerebral cortex
(c) Hypothalamus (d) Medulla oblongata

96. Which one of the following is the correct sequence of ecosystems in the order of decreasing productivity?

- (a) Oceans, lakes, grasslands, mangroves
(b) Mangroves, oceans, grasslands, lakes
(c) Mangroves, grasslands, lakes, oceans
(d) Oceans, mangroves, lakes, grasslands

97. Histones are rich in

- (a) Histidine and alanine
(b) Arginine and lysine
(c) Glutamine and glutamic acid
(d) Alanine and phenylalanine

98. Match List I (Animal) with List II (Scientific name) and select the correct answer using the code given below the lists:

List I

- A. Indian fox
B. Jackal
C. Jungle cat

List II

1. *Canis aureus*
2. *Felis chaus*
3. *Vulpes bengalensis*

- | | A | B | C |
|-----|---|---|---|
| (a) | 3 | 1 | 2 |
| (c) | 2 | 1 | 3 |

- | | A | B | C |
|-----|---|---|---|
| (b) | 3 | 2 | 1 |
| (d) | 1 | 3 | 2 |

99. The lakes with a reduced profundal zone and a highly productive littoral and sublittoral zones are termed as

- (a) Oligotrophic (b) Dystrophic
(c) Eutrophic (d) Mesotrophic

100. Consider the following statements:

1. The Grizzled Giant Squirrel (*Ratufa macroura*) is found in the forest hill ranges of west and north India.
2. At present, there are no flying squirrels in Indian wildlife.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

101. Consider the following statements:

1. The secretions of adrenal cortex include estrogens.
2. Progesterone enhances breast development pregnancy

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

102. Consider the following statements:

1. The Sambar is the largest of all Indian deer.
2. The biggest bovid of India is the gaur.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

103. Which one among the following is the most important factor in Speciation?

- (a) Geographic isolation (b) Reproductive isolation
(c) Ethological isolation (d) Ecological isolation

104. 'Competitive exclusion' refers to

- (a) Struggle between two species
(b) Vanishing of one species from a habitat
(c) Vanishing of all the species from a habitat,
(d) One species managing resources in one way and the other in another way

105. Which one of the following insects is to be found in flour mills?

- (a) *Trogoderma* (b) *Tribolium*
(c) *Plodia* (d) *Callosobruchus*

106. Match List I (Type of silkworm) with List II (Host plant) and select the correct answer using the code given below:

List I

- A. Bombyx mori
- B. Attacus ricini
- C. Antheraea assama
- D. Antheraea mylitta

A B C D

- (a) 2 I 4 3
- (c) 3 4 1 2

List II

- 1. Ricinus communis
- 2. Terminalia tomentosa
- 3. Morus alba
- 4. Machilus

A B C D

- (b) 3. 1 4 2
- (d) 2 4 1 3

107. Which one of the following is the transparent covering over the eye of snakes?

- (a) Nictitating membrane
- (b) Brille
- (c) Eye lid
- (d) Cornea

108. The chief functions of the queen bee substance (oxodecenoic acid) secreted by the mandibular glands of the queen bee are to

- (a) Induce the larvae to develop into queens and to stimulate the drones during the queen's nuptial flight
- (b) Promote the transformation of nymphs into drones and to serve as a nutritive material for the workers
- (c) Stimulate ovarian development and ovulation in the queen.
- (d) Inhibit ovarian development in workers and to stimulate the drones during the queen's nuptial flight

109. The true pearl oyster, producing pearls of high quality belongs to the genus :

- (a) Placuna
- (b) Pinctada
- (c) Mytilus
- (d) Haliotis

110. The toxic substance discharged by the blister beetles contains

- (a) Oxides of nitrogen
- (b) Sulphurous compounds
- (c) Cantharidine
- (d) Cyanic acid

111. The mechanism of sex determination in male honey bee is

- (a) By the presence of one X-chromosome and two sets of autosomes
- (b) By the presence of one Z-chromosome and two sets of autosomes
- (c) By the ratio of X-chromosomes to haploid set of chromosomes
- (d) By the asexual process of embryonic development

112. Match List I (Disease) with List II (Description) and select the correct answer using the code given below the lists:

List I			List II				
A.	Down's syndrome		1.	Congenital absence of tyrosinase			
B.	Albinism		2.	Lack of amino acid decarboxylase			
C.	Maple syrup urine disease		3.	Trisomy of chromosome			
	A	B	C	A	B	C	
(a)	1	3	2	(b)	3	1	2
(c)	2	1	3	(d)	3	2	1

113. The Gangetic dolphin differs from the marine dolphin by having

- (a) A toothed beak
- (b) A well developed eye-sight
- (c) Miniature flippers
- (d) A paired dorsal fin

114. The silk moth, Bombyx sp. overcomes the extremes of ambient temperature by undergoing

- (a) Encystment
- (b) Hibernation
- (c) Diapause
- (d) Aestivation

115. In forensic study, DNA fingerprinting process is used to determine whether or not an individual is the parent of a child by

- (a) VNTR loci analysis
- (b) RFLP analysis
- (c) Degenerate oligonucleotides assay
- (d) c-DNA analysis

116. Chloragogen tissue found in earthworms surrounds the

- (a) Intestine
- (b) Gonad
- (c) Clitellum
- (d) Integument

Directions: The following four (4) items consist of two statements, one labelled as the 'Assertion (A)' and the other as 'Reason (R)'. You are to examine these two statements carefully and select the answers to these items using the code given below:

- (a) Both A and R are individually true and R is the correct explanation of A
- (b) Both A and R are individually true but R is not the correct explanation of A
- (c) A is true but R is false
- (d) A is false but R is true

117. Assertion (A) : Mitochondrion contains one double stranded circular DNA.

Reason (R) : DNA carries genes for all the proteins needed for its functioning,

118. Assertion (A) : A nucleus taken from a somatic cell and implanted into an enucleated egg cell of a frog often gives rise to an adult individual.

Reason (R) : Differentiated donor nucleus could be totipotent.

119. Assertion (A) : Spontaneous mutation involves base pair substitutions during DNA replication.

- Reason (R)** : It is a temperature sensitive mutation and changes the base pair.
- 120. Assertion (A)** : Using recombinant DNA technology, desired genes can be implanted into a bacterium for amplification and expression.
- Reason (R)** : Any bacterium can carry expression vector.

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