S/SO/2013/10
ZOOLOGY

Roll No.						BOOKLET NO.	10006

Candidate should write his/her Roll No. in the box above. ↑

Total No. of Questions : **150**

Time : **2** Hours]	No. of Printed Pages : **32**	[Total Marks : **300**

INSTRUCTIONS FOR CANDIDATES

1. *All* questions are compulsory.
2. *All* questions carry equal marks.
3. The question paper contains **150** questions. The examinee should verify that the requisite number of questions are printed in the question paper, otherwise he should ask for another question paper.
4. The cover page indicates the number of printed pages in the question paper. The examinee should verify that the requisite number of pages are attached in the question paper, otherwise he should ask for another question paper.
5. Read carefully the instructions given on the answer sheet supplied and indicate your answers accordingly.
6. Kindly make necessary entries on the answer sheet only at the places indicated and nowhere else.
7. Examinees should specially pay attention that 2 marks will be awarded for correct answer.
8. Examinees should do all rough work on the space meant for rough work on the last page of the question paper and nowhere else, not even on the answer sheet.

1. The most numerous, heterogenous and versatile macromolecules of cells are :

(A) Proteins (B) Lipids

(C) Carbohydrates (D) All of these

2. Heparin, the natural anticoagulant, is an example of :

(A) Structural polysaccharides (B) Conjugated protein

(C) Mucopolysaccharides (D) Storage polysaccharides

3. According to "Template Theory", amino acids first combine with :

(A) DNA (B) *t*RNA

(C) *m*RNA (D) Proteins

4. Transcription is a process in which :

(A) *m*RNA is formed from DNA

(B) Lysosomes digest the cell

(C) Mitochondria are formed

(D) Protein is synthesised at ribosomes

5. Genetic code "characteristics" :

(A) The code is a triplet codon (B) The code is non-overlapping

(C) The code is commaless (D) All of these

6. Enormous diversity of protein molecules is mainly due to diversity of :

(A) Amino acid sequences within the protein molecules

(B) Amino groups of amino acids

(C) R group of amino acids

(D) Peptide bonds

7. Which one is *not* a phospholipid ?

(A) Cephalins (B) Cerebrosides

(C) Lecithins (D) Plasmalogens

8. The most common phospholipids in biomembrane is :

(A) Cephalins (B) Cardiolipins

(C) Plasmalogens (D) Cephalins and Lecithins

9. Interacting compounds preventing increase or decrease in pH of body fluids are called :

(A) Buffer system (B) Metabolic regulator

(C) Enzyme system (D) Immune system

10. The most important buffers in the body are :

(A) Bicarbonate-CO_2 buffer system

(B) Phosphate buffer system

(C) Protein buffer system

(D) Lipid buffer system

11. Biochemical mutations resulting important diseases in man is :

(A) Albinism (B) Alkaptonuria

(C) Phenylketonuria (D) All of these

12. Which one is most suitable for microbial genetics ?

(A) *Paramoecium* (B) *Drosophila*

(C) *Neurospora* (D) All of these

13. Which is *not* a Macrophage ?

(A) Monocyte (B) Kupffer cell

(C) Neuron (D) Lymphocyte

14. During glycolysis, ATP and the co-enzyme Mg^{++} help the enzymatic activity of :

(A) Phosphohexose isomerase (B) Glucokinase

(C) Pyruvic acid kinase (D) Enolase

15. If the sequence of bases in DNA is ATTCGATG, base sequence in its transcript will be :

(A) GUAGCUUA (B) UAAGCUAC

(C) CAUCGAAU (D) AUUCGAUG

16. How many mitotic divisions must occur in a cell to form 128 cells ?

(A) 7 (B) 64

(C) 127 (D) 128

17. The *correct* sequence of stages in cell cycle is :

(A) G1, S, G2, M (B) G1, G2, S, M

(C) M, S, G1, G2 (D) G2, G1, M, S

18. Chromosome-replication occurs in :

(A) Prophase (B) Metaphase

(C) Telophase (D) Interphase

19. Cristae of mitochondria help in :

(A) Photo-oxidation (B) Photosynthesis

(C) Respiration (D) Transpiration

20. Which cell organelle is *not* bound by 2 membranes ?

(A) Endoplasmic reticulum (B) Nucleus

(C) Ribosome (D) Plastid

21. Autoimmune disease is :

(A) Rheumatic fever (B) Glomerulonephritis

(C) Hashimoto's disease (D) All of these

22. Humoral immunity develops due to :

(A) Invasion of parasites (B) Entry of fungi

(C) Entry of foreign tissues (D) Bacterial and viral infections

23. Cell organelles associated with secretion are :

(A) Ribosomes (B) Golgi complex

(C) Mitochondria (D) Lysosomes

24. Interferons are *not* produced by :

(A) Leucocytes (B) Fibroblast

(C) Lymphocytes (D) Platelets

25. Function of centrosome is to :

(A) Inhibit cell division (B) Initiate cell division

(C) Provide site for cell division (D) None of these

26. Cellular immunity provides protection from slowly and gradually progressing diseases like :

(A) Small pox, cholera (B) Influenza, leprosy

(C) Tuberculosis, leprosy (D) All of these

27. Spermatids develop from :

(A) Spermatogonia (B) Primary spermatocytes

(C) Primordial germ cells (D) Secondary spermatocytes

28. Optimum temperature required for the development of fertilized eggs of birds is :

(A) 25—28°C (B) 30—35°C

(C) 38—40°C (D) 40—45°C

29. When one type of tissue differentiate into another type of tissue during regeneration, it is called :

(A) Metaplasia (B) Morphogenesis

(C) Teratogenesis (D) Metamorphosis

30. Which vitamin prevents lipid oxidation of membranes and is very effective in rejuvenation of human cells ?

(A) Vitamin A (B) Vitamin B_1

(C) Vitamin E (D) Vitamin C

31. Acrosome reaction in sperms is triggered by :

(A) Release of fertilizin (B) Capaciation

(C) Release of lysin (D) Influx of Na^+ into the sperm

32. Which one accumulates in body in later stages of life ?

(A) Abnormal proteins (B) Free radicals and peroxides

(C) Lipofuchsin and chalones (D) All of these

33. The new cavity formed at the end of gastrulation is :

(A) Amnion (B) Archenteron

(C) Blastocoel (D) Coelom

34. Regeneration of limb and lens in Urodeles is the example of :

(A) Reparative regeneration (B) Morpholactic regeneration

(C) Epimorphic regeneration (D) Compensatory regeneration

35. "Colonial Theory" of the origin of metazoans was conceived by :

(A) Haeckel (B) Metschnikoff

(C) Hyman (D) Hanson

36. 'Surface Tension Theory' and 'Change of Viscosity Theory' explain :

(A) Ciliary movement (B) Flagellar movement

(C) Amoeboid movement (D) All of these

37. Aristotle's lantern of *Echinus* is used for :

(A) Respiration (B) Mastication

(C) Reproduction (D) Circulation

38. Which microscope will be used for three-dimensional topography of objects ?

(A) Transmission electron microscope

(B) Scanning electron microscope

(C) Fluorescence microscope

(D) Ultramicroscope

39. Which is used for determination of molecular weight of proteins ?

(A) Gel filtration chromatography

(B) Paper chromatography

(C) Thin layer chromatography

(D) None of the above

40. Holobranchiate, Merobranchiate, Plicate, Monopectinate and Bipectinate terms are used to classify :

(A) Gills of fishes (B) Gills of Crustaceans

(C) Ctenidia of Molluscs (D) Gills of Annelids

41. Hydrostatic skeleton is best developed in :

(A) Hirudinea (B) Polychaeta

(C) Oligochaeta (D) Echinodermata

42. Which larva represents a transitional stage in the line of emergence of bilateral groups from radial groups ?

(A) Pluteus (B) Tornaria

(C) Trochophore (D) Muller's larva

43. Nervous system of which phylum exhibits maximum diversities ?

(A) Cindaria (B) Annelida

(C) Mollusca (D) Arthropoda

44. Product of recombinant DNA technology is :

(A) Tissue plasminogen activator (B) Hepatitis B vaccine

(C) Interferon (D) All of these

45. Replacement of "a faulty gene" by a normal healthy gene is called :

(A) Transgenics (B) Gene therapy

(C) Genomics (D) Diagnosis

46. Most biodiversity-rich zones of India is :

(A) Desert (B) Western Ghats

(C) North-East (D) Both (B) and (C)

47. Mastax is a peculiar apparatus characteristic of the phylum :

(A) Entoprocta (B) Ectoprocta

(C) Rotifera (D) Phoronida

48. One of these is *not* a lophophorate coelomate :

(A) Phoronida (B) Brachiopoda

(C) Ectoprocta (D) Entoprocta

49. Brachiopods resemble molluscs in having :

(A) Bivalved shell (B) Mantle lobes

(C) Trochophore like larva (D) All of these

50. Jet propulsion mechanism of locomotion is found in :

(A) Cephalopoda (B) Cephalochordata

(C) Arthropoda (D) Echinodermata

51. Which of the following processes helps in nutrient conservation ?

(A) Nitrification (B) Mineralisation

(C) Immobilization (D) Leaching

52. A free living nitrogen fixing bacteria present in soil is :

(A) *Azotobacter* (B) *Rhizobium*

(C) *Nitrosomonas* (D) *Pseudomonas*

53. Organ of Bojanus is found in :

(A) *Lamellidens* inside pericardium

(B) *Palaemon* inside pericardium

(C) *Pila* inside pulmonary sac

(D) *Hirudinaria* inside crop

54. Polyembryony is seen in :

(A) Annelida (B) Mollusca

(C) *Fasciola* (D) *Taenia*

55. Keber's organ in *Unio* is regarded as an organ for :

(A) Digestion (B) Excretion

(C) Respiration (D) None of these

56. When huge amount of sewage is dumped into a river, the BOD will :

(A) Increase (B) Slight decrease

(C) Decrease (D) Remain unchanged

57. D.D.T. is a :

(A) Biodegradable pollutant (B) Non-biodegradable pollutant

(C) Chemosterilant (D) Fumigant

58. The factor responsible for the depletion of protective ozone layers of stratosphere is :

(A) Acid rain (B) Chlorofluorocarbon

(C) CO_2 (D) SO_2

59. Polyzoa and Bryozoa are the other name of :

(A) Endoprocta (B) Ectoprocta

(C) Phoronida (D) Brachiopoda

60. Specialised excretory organ is *not* found in :

(A) Echinodermata (B) Onychophora

(C) Nematoda (D) Platyhelminthes

61. Larval forms of Echinoderms show that they have arisen from bilaterally symmetrical ancestor and radial symmetry is a secondary acquisition. This proves :

(A) Adaptation (B) Biogenetic law

(C) Convergent evolution (D) Divergent evolution

62. The entire bucco-pharyngeal region is everted out during feeding in :

(A) Leech (B) *Asterias*

(C) *Nereis* (D) *Pila*

63. Intracellular as well as extracellular digestion occurs in :

(A) Protozoans (B) Annelida

(C) *Planaria* (D) Arthropoda

64. The most stable ecosystem is :

(A) Desert (B) Forest

(C) Mountains (D) Ocean

65. Hypothesis of ecological pyramid was presented by :

(A) Elton (B) Odum

(C) Darwin (D) Malthus

66. Filter feeding mechanism is found in :

(A) Brachiopoda (B) Rotifera

(C) Bivalve molluscs (D) All of these

67. For ingesting a motile food particles like ciliates and flagellates, *Amoeba* will employ which method of ingestion ?

(A) Circumvallation (B) Circumfluence

(C) Invagination (D) Import

68. Systole and diastole are found in the working of :

(A) Heart

(B) Contractile vacuoles of *Amoeba*

(C) Kidney

(D) Both (A) and (B)

69. Pigment sheaths in the ommatidia of cockroach are non-contractile and hence capable of :

(A) Mosaic vision only (B) Superposition image only

(C) Both (A) and (B) (D) None of these

70. Most of the contraceptive pills have :

(A) Estrogen and LH (B) Progesterone and LH

(C) FSH and LH (D) Estrogen and Progesterone

71. Venous heart is found in :

(A) Amphibians (B) Fishes

(C) Reptiles (D) Birds

72. Respiratory function of embryo is performed by :

(A) Amnion (B) Chorion

(C) Allantois (D) Yolk sac

73. Discoidal meroblastic cleavage occurs in :

(A) Amphibians (B) Birds

(C) Insects (D) Eutherians

74. Macromolecules especially proteins, nucleotides, nucleic acids, etc. are separated by :

(A) Thin layer chromatography (B) Paper chromatography

(C) Electrophoresis (D) All of these

75. The path of energy flow in an ecosystem is :

(A) Herbivores → Producers → Carnivores → Decomposers

(B) Herbivores → Carnivores → Producers → Decomposers

(C) Producers → Carnivores → Herbivores → Decomposers

(D) Producers → Herbivores → Carnivores → Decomposers

76. Which larva shows common ancestry of Echinodermata and Hemichordata ?

(A) Dipleurula larva (B) Muller's larva

(C) Tornaria larva (D) Auricularia larva

77. Parental care is seen in :

(A) Social insects (B) *Alytes*

(C) *Syngnathus* (D) All of these

78. Aggressive behaviour is correlated with changes in :

(A) Blood level of adrenalin (B) Level of sex hormones

(C) Limbic system (D) All of these

79. Most primitive type of nervous system without brain is found in :

(A) Porifera (B) Platyhelminthes

(C) Coelenterata (D) Nematoda

80. Anadromous migration is seen in :

(A) *Anguilla* (B) *Protopterus*

(C) *Salmon* (D) None of these

81. Most toxic excretory product is :

(A) CO_2 (B) Urea

(C) Uric acid (D) Ammonia

82. Prokaryotes and Eukaryotes originated in :

(A) Archaeozoic era (B) Proterozoic era

(C) Precambrian era (D) Combrian period

83. Which period is called "Age of fishes" ?

(A) Devonian (B) Permian

(C) Triassic (D) Silurian

84. Which one came just before "Peking man" in the evolution of man ?

(A) Australopithecus (B) Java ape man

(C) Neanderthal man (D) Cro-magnon man

85. What happens during germination of castor seeds ?

(A) Proteins are converted into carbohydrates

(B) Fats are converted into carbohydrates

(C) Carbohydrates are converted into proteins

(D) Carbohydrates are converted into fats

86. Transgenic animals show :

(A) Efficiency in utilizing feed (B) Ability to grow faster

(C) Resistance to certain diseases (D) All of these

87. Which genes have been transferred in cow to get transgenic cow ?

(A) LAt PA (B) BPV, Lactoferrin

(C) ALV, REV (D) mMT/hGH, hMT/hGH

88. Transgenic plants have been produced showing :

(A) Herbicide resistance (B) Insect resistance

(C) Resistance against viruses (D) All of the above

89. Lysozyme is found in :

(A) Saliva (B) Sweat

(C) Tear (D) All of these

90. The hybrid variety of cow produced at NDRI Karnal is :

(A) Sahiwal (B) Sunandani

(C) Karanswiss (D) Ayrshire

91. Technique employed for improving the breed of cattles is :

(A) Superovulation (B) Surrogate mother

(C) Embryotransplantation (D) All of these

92. The main functions of free antibodies are :

(A) Agglutination of particular matter

(B) Opsonisation

(C) Neutralisation of toxins

(D) All of the above

93. Breast cancer is an example of :

(A) Metastasis (B) Leukemia

(C) Sarcoma (D) Carcinoma

94. Synthesized vaccines are also known as :

(A) First generation vaccines (B) Second generation vaccines

(C) Third generation vaccines (D) None of these

95. In which zone of Biosphere Reserves, human activity is *not* permitted ?

(A) Buffer zone (B) Core zone

(C) Manipulation zone (D) Restoration zone

96. According to IUCN, which species should be protected first ?

(A) Endangered sp. (B) Rare sp.

(C) Vulnerable sp. (D) Threatened sp.

97. "Secondary immune response" is stimulated by :

(A) IgA (B) IgG

(C) IgD (D) IgM

98. Passive immunity was discovered by :

(A) Edward Jenner (B) Emil Von Behring

(C) Robert Koch (D) Louis Pasteur

99. Which is used to study the location of colour perception centres in human brain ?

(A) CT scanning (B) Ultrasound imaging

(C) PET scanning (D) NMR imaging

100. Epilepsy can be detected by :

(A) CT scan (B) EEG

(C) ECT (D) Echo-encephalography

101. Colostrum secreted by mammary glands contains :

(A) Antigens (B) Antibodies

(C) Bacteria (D) Both (A) and (B)

102. Ranikhet disease of poultry is caused by :

(A) Bacteria (B) Virus

(C) Fungus (D) Protozoan

103. Maximum number of antigens present in human blood is :

(A) 2 (B) 4

(C) 5 (D) 6

104. Cytoplasmic inheritance is represented by :

(A) Inheritance of plastids in 4 O'clock plant

(B) Kappa particles in *Paramoecium*

(C) Breast tumour in mice

(D) All of the above

105. Alleles producing independent effects in their heterozygous condition are called :

(A) Complementary (B) Codominant

(C) Epistatic (D) Supplementary

106. Skin colour in man is an example of :

(A) Blending inheritance (B) Grading inheritance

(C) Quantitative inheritance (D) All of these

107. Polymorphonuclear leucocytes are :

(A) Basophils (B) Eosinophils

(C) Lymphocytes (D) Neutrophils

108. In mammalian heart, conducting system includes :

(A) Bundle of His (B) Purkinje fibres

(C) S-A node and A-V node (D) All of these

109. Which type of lungs are found in man ?

(A) Water lung

(B) Book lung

(C) Negative pressure type ventilated lung

(D) Positive pressure type ventilated lung

110. The dorsal wall of the cerebrum in mammals is very thick and is known as :

(A) Corpus callosum (B) Neopallium

(C) Epithalmus (D) Hypophysis

111. Which one increases the surface area of intestine for absorption in mammals ?

(A) Valvulae conniventes

(B) True villi

(C) Microvilli of brush border of absorptive cells

(D) All of the above

112. Which set of cranial nerves are purely sensory ?

(A) I, II IV (B) I, V, VII

(C) I, II, VIII (D) None of these

113. The function of parasympathetic nervous system in mammals is :

(A) Constriction of pupil

(B) Acceleration of heart beat

(C) Stimulation of sweat glands

(D) Contraction of arrector pilorum

114. Mammalian tactile receptors are :

(A) Pacian corpuscles (B) Merkel's discs

(C) Meissner's corpuscles (D) All of these

115. Due to deficiency of ADH, rate of micturition :

(A) Decreases (B) Increases

(C) Remains the same (D) None of these

116. In Ornithine cycle, which of the following wastes are removed from blood ?

(A) NH_3 and Urea (B) CO_2 and Urea

(C) CO_2 and NH_3 (D) Urea and sodium salts

117. Reabsorption of useful substances back into the blood from the filtrate in a nephron occurs in :

(A) Collecting duct (B) Loop of Henle

(C) Proximal convoluted tubule (D) Distal convoluted tubule

118. Enzymes present in human gastric juice are :

(A) Rennin and trypsin (B) Pepsin and rennin

(C) HCl and pepsin (D) Trypsin and invertase

119. Thermoregulatory centre is situated in :

(A) Cerebrum (B) Cerebellum

(C) Hypothalamus (D) Medulla oblongata

120. According to immunity theory of ageing, ageing starts with gradual atrophy and disappearance of :

(A) Thyroid (B) Thymus

(C) Islets of Langerhans (D) Pineal body

121. Which set of hormones of adenohypophysis are required in reproduction ?

(A) PRL, FSH, LH (B) GH, FSH, LH

(C) HCG, ICSH, PRL (D) PZ, GH, PRL

122. Gonadotropic hormones are secreted due to hypothalmic-release factor initiated by :

(A) Genetic biological clock located in hypothalmus

(B) Clock of menstrual cycle

(C) Both (A) and (B)

(D) None of the above

123. The term "synapse" was coined by :

(A) Sherrington (B) McLennan

(C) Pavlov (D) Sengar

124. A substance present in the small intestine and inhibiting gastric secretion is :

(A) Enterocrinin (B) Secretin

(C) Enterogasterone (D) Gastrin

125. Deficiency of vitamin 'C' causes :

(A) Beri-beri (B) Pellagra

(C) Pernicious anaemia (D) Scurvy

126. Histochemical method for detecting lipids is :

(A) Biuret test (B) Sudan Black-B method

(C) Vidal test (D) T-test

127. Which set includes all viral diseases ?

(A) AIDS, Influenza, Rabies, Hepatitis-B

(B) AIDS, Yellow Fever, Leprosy, Influenza

(C) AIDS, Tetanus, Typhoid, Meningitis

(D) Hepatitis-A, Rabies, Typhoid, Diphtheria

128. Intraspecific competition is seen in :

(A) Herbivores (B) Carnivores

(C) Cannibals (D) Scavangers

129. Most migratory birds perform :

(A) Alimental migration (B) Climatic migration

(C) Diurnal migration (D) Gametic migration

130. Tse Tse fly Glossina palpalis the host of Trypanosoma gambiense is called :

(A) Reservoir host (B) Vector

(C) Primary host (D) All of these

131. One of the following is a hyperparasite :

(A) *Leishmania* (B) *Nosema notabilis*

(C) Trypanosoma (D) *Ancylostoma*

132. The restoration of contaminated soil and groundwater by microorganisms is called :

(A) Biomagnification (B) Bioremediation

(C) Encapsulation (D) Chemical treatment

133. Multicellular eukaryotes with cell wall and tissues, cell organelles including plastids are classified into kingdom :

(A) Protista (B) Plantae

(C) Fungi (D) Animalia

134. Presence of post-anal tail is one of the characteristic features of :

(A) Invertebrates (B) Arthropods

(C) Metazoans (D) Chordates

135. All non-flowering plants are included into :

(A) Cryptogamae (B) Phanerogamme

(C) Spermatophytes (D) Gymnosperms

136. When all the observations of any experiment are arranged in order of magnitude either ascending or descending, the middle observation is known as :

(A) Mean (B) Median

(C) Mode (D) None of these

137. The fertilization process found in *Taenia solium* is called :

(A) Self-fertilization (B) Cross-fertilization

(C) Incestuosus (D) All of these

138. Digenetic and Viviparous parasite of man is :

(A) *Schistosoma* (B) *Wuchereria*

(C) *Ancylostoma* (D) *Echinococcus*

139. Which causes great damage to sugarcane crop ?

(A) *Leptocorisa varicornis* (B) *Pyrilla perpusilla*

(C) *Heliothis armigera* (D) *Raphidopalpa foveicollis*

140. A man has 'A' blood group and his sister with 'B' blood group. Which will not be possible genotype of their parent ?

(A) AO × BO (B) OO × AA

(C) AB × OO (D) AB × AB

141. Real product of apiculture is :

(A) Honey (B) Wax

(C) Silk (D) Both honey and wax

142. Haplo-diploidy mechanism of sex determination is found in :

(A) Insects (B) Birds

(C) Fishes (D) Bees, wasps and ants

143. Phase contrast microscope is used to study live cells for :

(A) Cell division (B) Cell permeability

(C) Endocytosis (D) All of these

144. "Project Tiger" was launched at :

(A) Corbett National Park (B) Sundarbans National Park

(C) Ranthambhor National Park (D) Manas National Park

145. Which has the largest population of elephants ?

(A) Manas National Park (B) Dudhwa National Park

(C) Kanha National Park (D) Bandipur National Park

146. MRI is used to detect :

(A) Minute cancerous tumors (B) Joint injuries

(C) Slipped disc (D) All of these

147. Which of the following syndromes shows trisomy ?

(A) Down's syndrome (B) Edward's syndrome

(C) Patau's syndrome (D) All of these

148. Which one is never found in wild state ?

(A) *Bombyx mori* (B) *Apis florea*

(C) *Tachardia lacca* (D) None of these

149. Amniota includes :

(A) Agnatha and Gnathostomata (B) Agnatha, Pisces and Amphibia

(C) Pisces and Tetrapoda (D) Reptilia, Aves and Mammalia

150. Which phylum is classified chiefly on the basis of skeleton ?

(A) Mollusca (B) Porifera

(C) Annelida (D) Echinodermata