61114

ROLL No. | | | | | |

TEST BOOKLET No. 76

TEST FOR POST GRADUATE PROGRAMMES

LIFE SCIENCES

Time: 2 Hours

Maximum Marks: 450

INSTRUCTIONS TO CANDIDATES

1. You are provided with a Test Booklet and an Optical Mark Reader (OMR) Answer Sheet to mark your responses. Do not soil the Answer Sheet. Read carefully all the instructions given on the Answer Sheet.

2. Write your Roll Number in the space provided on the top of **this page**.

3. Also write your Roll Number, Test Code, and Test Subject in the columns provided for the same on the **Answer Sheet**. Darken the appropriate bubbles with a **Ball Point Pen.**

4. The paper consists of 150 objective type questions. All questions carry equal marks.

5. Each question has four alternative responses marked **A, B, C** and **D** and you have to **darken** the bubble fully by a **Ball Point Pen** corresponding to the correct response as indicated in the example shown on the Answer Sheet.

6. Each correct answer carries **3** marks and each wrong answer carries **1** minus mark.

7. Space for rough work is provided at the end of this Test Booklet.

8. You should return the Answer Sheet to the Invigilator before you leave the examination hall. However, you can retain the Test Booklet.

9. Every precaution has been taken to avoid errors in the Test Booklet. In the event of any such unforeseen happenings, the same may be brought to the notice of the Observer/Chief Superintendent in writing. Suitable remedial measures will be taken at the time of evaluation, if necessary.

SEAL

61114

LIFE SCIENCES

1. The phenomenon whose heterozygotes have the phenotype that is more than either homozygous genotype is called

   (A) over dominance
   (B) dominance hypothesis
   (C) hybrid vigor
   (D) Hardy-Weinberg law

2. The sharing of functional viral gene products by viruses having mutations in different genes is referred to as

   (A) multiplicity reaction
   (B) cross reaction
   (C) recombination
   (D) complementation

3. The organism responsible for adding large quantities of nitrogen to the marine ecosystem is

   (A) *cyanobacteria*
   (B) photobacterium
   (C) *Zooglea ramigera*
   (D) *Thiobacillus species*

4. Snapping division, a distinctive type of binary fission resulting in an angular or a palisade arrangement of cells is characteristic of the genus

   (A) *Enterobacter*
   (B) *Klebsiella* sp.
   (C) *Salmonella* sp.
   (D) *Corynebacterium*

5. The function of the catabolite activator protein (CAP) in the cell is to

   (A) bind a catabolite and prevent repressor from attaching to the promoter region
   (B) bind cyclic AMP and attach to the promoter region
   (C) bind a catabolite and prevent RNA polymerase from binding to the promoter region
   (D) bind the sigma subunit of RNA polymerase

6. Feedback (end product) inhibition usually

(A) regulates the activity of all enzymes of a particular biosynthetic pathway
(B) regulates the activity of the first enzyme of biosynthetic pathway
(C) regulates the synthesis of mRNA
(D) requires a significant time lag before expression

7. The analogue of thymine that can pair with guanine is

(A) 5-bromouracil
(B) hydroxylamine
(C) xanthine
(D) 2-aminopurine

8. The procedure used for analysing transgenic mice for the presence of a transgene is

(A) Tail blot
(B) Southern blotting
(C) Sangar (dideoxy or chanin termination) procedure
(D) SI mapping

9. The electron donor in the cyanobacteria is

(A) cytochrome c
(B) ferredoxin
(C) water
(D) organic compound

10. The complete oxidation of an organic compound yields

(A) H_2O and O_2
(B) H_2O and ADP
(C) H_2O and CO_2
(D) Organic acids

11. The polymer of fructose found in plants is called

(A) chitin
(B) lignin
(C) inulin
(D) hemicellulose

12. The primary lesion of syphilis is called a

(A) granulomas
(B) chancre
(C) condylomas
(D) gumma

13. The lesions produced by animal viruses on embryonic membranes are called

(A) pocks
(B) mumps
(C) measles
(D) infectious mononucleosis

14. The cytoplasmic inclusion body composed of the enzyme ribulose 1, 5 – disphosphate is called a

(A) ribosome
(B) protoplast
(C) gas vacuoles
(D) carboxysome

15. The Wasserman reaction is based on the measurement of

(A) TPI antibodies
(B) Reagenic antibodies
(C) Agglutinating antibodies
(D) Protective antibodies

16. Certain molecules or structures in the cell are used to quench the over production of oxygen during photosynthesis and are called

(A) phycobiliproteins
(B) isoprenoids
(C) carboxysomes
(D) phycobilisomes

17. Which of the following white blood cells is involved in allergic or hypersensitive responses?

(A) eosonophil
(B) neutrophil
(C) basophil
(D) macrophage

18. The precursor for guanylic and adenylic acid is

(A) inosinic acid
(B) aspartate
(C) α- ketoglutarate
(D) carbomyl phosphate

19. The pathway whose purpose is to replenish intermediates drained in other pathways are called

(A) fermentation
(B) glycolysis
(C) gluconeogenesis
(D) anaplerotic pathway

20. A glycoprotein found in low concentration in blood, appears to be the main defence mechanism against viral infection is

(A) Interferon
(B) Antibody
(C) Immunoglobulin
(D) Lactoferrin

21. If a woman had measles, her infant will be immune to the disease for the first

(A) 6 months
(B) 1 year
(C) 2 years
(D) 3-4 years

22. Regarding dengue fever

(A) the usual incubation period is 2-3 weeks
(B) the fever may have a diphasic course ("saddle-back" form)
(C) absolute bradycardia is seen early
(D) the backache and pains in the muscles and joints are mild

23. The mode of transmission of viral hepatitis type A is

(A) predominantly fecal-oral
(B) predominantly parenteral
(C) by an insect vector
(D) by contact with infected animal

24. The weaning age for rabbits is

(A) 42-56 days
(B) 35-40 days
(C) 25-30 days
(D) 60-70 days

25. The major histocompatibility complex in human is called

(A) ABO complex
(B) IS complex
(C) H2 complex
(D) HLA complex

26. In the structure C = O, how many pairs of electrons do carbon and oxygen share?

(A) One
(B) Two
(C) Three
(D) Four

27. Chitin is the only common constituent found in the cell wall of all

(A) Bacteria
(B) Algae
(C) Fungi
(D) Higher plants

28. A large proportion of the oxygen in the atmosphere is produced by

(A) dinoflagellates
(B) zooplankton
(C) photosynthetic bacteria
(D) marine algae

29. A chlorex solution is an example of

(A) sterilizing agent
(B) disinfectant
(C) antiseptic
(D) base analog

30. Invagination of plasma membrane inside the bacterial cell is known as

(A) chromosome
(B) chlorosome
(C) nucleosome
(D) mesosome

31. How can Saccharomyces be made to make glycerol rather than alcohol?

(A) use arabinose as carbon source
(B) grow it at 37°C
(C) add sodium bisulfate to the medium
(D) grow it in mixed culture with *Zymomonas*

32. The group of RNA viruses known to cause neoplasia in vertebrates is called

(A) cytoplasmic polyhedroses
(B) retroviruses
(C) herpes virus
(D) oncogenic viruses

33. The most efficient method of collecting blood from the mouse is

(A) Sub-orbital plemis of veins
(B) Cardiac puncture
(C) Tail-vein puncture
(D) Tail-clipping

34. The gram negative periplasmic binding proteins are involved in

(A) chemo taxis and nutrient transport
(B) protein secretion and dematuration
(C) providing adherence to various surfaces
(D) initiating cell wall morphogenesis and sporulation

35. The sulphur and nitrogen oxides in the atmosphere come primarily from

(A) volcanoes
(B) agricultural fertilization
(C) geothermal recycling
(D) burning fossil fuels

36. The lignin in the soil is broken down by

(A) bacteria
(B) protozoa
(C) fungi
(D) actinomycetes

37. In tricking filter systems, the major microbial groups that make up the biomass are

(A) bacteria and fungi
(B) bacteria and protozoa
(C) fungi and algae
(D) bacteria and algae

38. The microbial secondary metabolites usually accumulate during the period often called

(A) idiophase
(B) trophophase
(C) lag phase
(D) phase of acceleration

39. Aquatic microorganisms that are associated with inanimate particulate material are called

(A) epiphytic
(B) epilithic
(C) zooplankton
(D) phytoplankton

40. The flexibility of the TMV capsid is caused by

(A) the way in which RNA is bound to the subunits
(B) the presence of the lipid envelope
(C) the protein rod that is attached to the ends of the virus
(D) the bonding between adjacent aminoacids on one turn of the helix as well as between aminoacids on adjacent turns

41. In eukaryotic cell the organelle which is involved in modification of proteins is

(A) chloroplast
(B) golgi apparatus
(C) endoplasmic reticulum
(D) lysosome

42. Fungi that attach themselves to the plant surface by means of a hyphal bulb-like structure called as

(A) appressorium
(B) stoma
(C) haustoria
(D) stachela

43. Interferon acts primarily by inhibiting which one of the following?

(A) Antibody production
(B) Viral attachment
(C) Host messenger RNA synthesis
(D) Translation of viral proteins

44. Giant cells develop from

(A) monocytes
(B) histiocytes
(C) macrophages
(D) lymphocytes

45. Quelling reaction is a serological techniques for the demonstration of

(A) bacterial capsules
(B) Negri body
(C) Flagella
(D) virulence

46. A drug which prevents uric acid synthesis by inhibiting the enzyme xanthine oxidase is

(A) Aspirin
(B) Allopurinol
(C) Colchicine
(D) Probeneci

47. Milk is deficient in which vitamins?

(A) Vitamin C
(B) Vitamin A
(C) Vitamin B_2
(D) Vitamin K

48. A lipid bilayer is permeable to

(A) Urea
(B) Fructose
(C) Glucose
(D) Potassium

49. The pentose sugar present mainly in the heart muscle is

(A) Lyxose
(B) Ribose
(C) Arabinose
(D) Xylose

50. In humans, the number of amino acids that must be taken up in the diet is

(A) 0
(B) 20
(C) 19
(D) 9

51. The term 'paracrine signalling' refers to

(A) signalling between cells located far from one another
(B) stimulation of a cell by substances produced by the cells itself
(C) signalling between cells located close to one another
(D) signalling between parenchyma cells

52. What is the difference between neurotransmitters and neuropeptides?

(A) Neuropeptides are generated by neuronal cells but do not transmit signals
(B) Neurotransmitters are small protein molecules and neuropeptides are large ones
(C) Neurotransmitters are small synaptic molecules and neuropeptides are small proteins
(D) Some neuropeptides can act on distinct cells, where as neurotransmitters cannot

53. Chloroplasts are thought to have originated form symbiotic

(A) archaebacteria
(B) cyanobacteria
(C) green algae
(D) aerobic eubacteria

54. The distance between linked genes can be estimated by the frequency of

(A) recombination
(B) mutation
(C) meiosis
(D) transformation

55. A restriction enzyme with a four-base recognition site would cleave DNA with a statistical frequency of once every

(A) 256 base pairs
(B) 4 base pairs
(C) 4096 base pairs
(D) 65.5 kb

56. Which of the following statements about expressed sequence tags (ESTs) is false?

(A) They are sequences that are derived from an mRNA
(B) They are used in the sequencing of the protein-encoding fraction of a genome
(C) They consist of 200-300 bases
(D) They are used in the sequencing of centromeres

57. In prokaryotes, sigma factors are necessary for

(A) specific binding to certain promoters
(B) low-affinity binding upstream from promoters
(C) elongation of the RNA strand to its end
(D) All of the above

58. Which of the following is not involved in relieving transcriptional repression imposed by chromatin?

(A) Histone acetylation
(B) HMG -14
(C) Gcn5p
(D) DNA Methylation

59. Nuclear localisation signals are composed primarily of

(A) hydrophobic aminoacids
(B) acidic aminoacids
(C) basic aminoacids
(D) sulphur-containing aminoacids

60. Which of the following is not true of heterochromatin?

(A) It is highly condensed chromatin
(B) There are two forms of it, called constitutive and facultative heterochromatin
(C) It is transcriptionally active
(D) It is largely localised to the nuclear periphery

61. Human diseases caused by mutations in mitochondrial genomes

(A) are inherited from both parents
(B) are inherited from the father
(C) are inherited from the mother
(D) do not exist because the mutation is always complemented by the normal gene copy in the nucleus

62. Where is the major site of energy production in the form of ATP in human cells?

(A) The mitochondrial matrix
(B) The cytoplasm
(C) The outer mitochondrial membrane
(D) The inner mitochondrial membrane

63. Which of the following is not one of the functions of the cytoskeleton?

(A) Providing a structural frame work for the cell
(B) Cell locomotion
(C) Protein translocation into ER
(D) Intracellular movement of organells and structures

64. The approximate diameter of an actin filament is

(A) 8-12 nanometers
(B) 7 nanometers
(C) 25 nanometers
(D) 5 nanometers

65. Infection with which of the following viruses is associated with development of liver cancer in humans?

(A) Simian virus 40 (SV40)
(B) Papilloma viruses
(C) Epstein – Barr virus
(D) Hepatitis B virus

66. Inter phase is defined as

(A) the G1 and G2 phases
(B) the G1, G2 and S phases
(C) G0, the quiescent phase
(D) M phase

67. The P^{21} and P^{15} proteins are examples of

(A) Cdk inhibitors
(B) Cyclins
(C) Oncogenesis
(D) Growth factors

68. Toxoids are best described as being

(A) immunogenic and toxic
(B) non immunogenic and toxic
(C) immunogenic and non toxic
(D) non immunogenic and non toxic

69. T Cells are involved in

(A) CMI response
(B) HI response
(C) natural killing
(D) phagocytosis

70. MMR vaccine is used to induce protection against

(A) bacterial infection
(B) viral infection
(C) fungal infection
(D) protozoan infection

71. The most important antigenic system that must be evaluated for organ allotransplantation in human is

(A) Rh
(B) HLA
(C) IL 2
(D) ABO

72. A cell that does phagocytosis is

(A) Macrophage
(B) NK cell
(C) PMN
(D) Null cell

73. An uncontrolled proliferation of a malignant leukocyte is known as

(A) leukaemia
(B) leukocytepenia
(C) leukocytosis
(D) leukopenia

74. The liquid part of the clotted blood without the clotting factors is

(A) plasma
(B) serum
(C) lymph
(D) CSF

75. A chronic inflammatory bowel disease that causes severe irritation in the gastrointestinal tract is

(A) Crohns disease
(B) ulcer
(C) bowel syndrome
(D) gastroentities

76. Combination of fluorescence microscopy with electronic image is an analysis to obtain images with increased contrast and detail is

(A) Confocal microscopy
(B) Fluroscent microscopy
(C) Electron microscopy
(D) Phase contrast microscopy

77. Autophagic vacuole is also known as

(A) cytolysosome
(B) lysosome
(C) liposome
(D) cytosome

78. Polynucleated cells of the plants are known as

(A) coenocytes
(B) syncytial cells
(C) oozytes
(D) zygotes

79. Azide is an

(A) electron transport inhibitor
(B) electron transport inducer
(C) electron transport enhancer
(D) electron transport multiplicator

80. TMV was reported first by

(A) Ivanosky
(B) Beijernick
(C) Loeffler
(D) Frosch

81. Antigenic shift and drift are common in

(A) Influenza virus
(B) Baculo virus
(C) CaMV
(D) TMV

82. Which one of the following era produced few fossils?

(A) Proterozoic
(B) Paleozoic
(C) Mesozoic
(D) Cenozoic

83. The wave length of visible range of light is between

(A) 400 – 700 nm
(B) 200 – 300 nm
(C) 700 – 900 nm
(D) 100 – 200 nm

84. In pasteurisation milk is heated to

(A) 63°C - 66°C for 30 min
(B) 63°C - 66°C for 1 hour
(C) 63°C - 66°C for 2 hours
(D) 50°C for 30 min

85. PS II reaction centre has an absorbance maximum of

(A) 700 nm
(B) 680 nm
(C) 550 nm
(D) 480 nm

86. Colchicine inhibits

(A) initiation step of protein synthesis
(B) RNA polymerase
(C) ribosome assembly
(D) microtubule polymerisation

87. Biodiversity hot spots are characterised on the basis of

(A) endemic flowering and threat perception
(B) endemic flowering plants
(C) species of flowering plants
(D) threat perception

88. Most of the matured cells in adult animals are

(A) differentiated
(B) undifferentiated
(C) terminally differentiated
(D) under developed

89. A hormone that breaks the seed dormancy is

(A) auxin
(B) gibberellin
(C) cytosine
(D) cytokinin

90. Positions of leaves on stem is known as

(A) phyllotaxy
(B) plastochron
(C) phytomer
(D) trichome

91. Out breed animals are obtained by

(A) Random mating
(B) Cris-Cross mating
(C) Back-Cross mating
(D) Brother-Sister mating

92. Mammalian counterpart of the avian bursa of fabricus is

(A) bone marrow
(B) spleen
(C) thymus
(D) lymph node

93. The excellent keeping quality of soft drinks, fermented milks, sauerkraut and pickles is related to their

(A) restrictive pH
(B) oxidation-reduction potential
(C) storage conditions
(D) environmental conditions

94. Rec A protein discovered in *E.coli* promotes

(A) exchange of reciprocal single stranded DNA molecules
(B) duplex separation
(C) endonuclease nicking
(D) None of the above

95. The organism used in the production of blue cheese is

(A) *Penicillium roquefortii* (B) *Penicillium camembartii*
(C) *Saccharomyces cerevisiae* (D) *Aspergillus glaucus*

96. The condition caused by the hydrolysis of butter fat with the liberation of free fatty acids is called

(A) slimy curd (B) rancidity
(C) pinspots (D) ropiness

97. Which of the following is a group of viruses with RNA genomes that carry the enzyme reverse transcriptase and form a DNA copy of their genome during their reproductive cycle?

(A) Retro viruses (B) Simplex viruses
(C) Paramyxo viruses (D) Papilloma viruses

98. This antibiotic inhibits protein synthesis but it does not induce misreading or cause phenotypic suppression as does streptomycin

(A) Kanamycin (B) Neomycin
(C) Sisomycin (D) Kasugamycin

99. Which of the following is an iron-chelating compound that aids in the transport of iron under the conditions of iron deficiency?

(A) p-aminobenzoate (B) EDTA
(C) Enterochelin (D) Menaquinone

100. The component of gram-positive cell wall that contributes to most of its electronegativity is called

(A) lipopolysaccharides (B) teichoic acid
(C) peptidoglycon (D) muramyl phosphate

101. The spikes (peplomeres) that are present on the viral lipid envelope are composed of

(A) teichoic acid
(B) lipoprotein
(C) glycoprotein
(D) lipopolysaccharide

102. The pathway that supplies reduced NADP for biosynthesis is called the

(A) hexose monophosphate shunt
(B) glycolysis
(C) respiratory chain
(D) Embden-Mayerhoff Parnas pathway

103. It is a reaction involving soluble antigens reacting with antibodies to form a large aggregate that precipitates out of solution is reffered as

(A) Immunoprecipitatin
(B) Immunoflouorescence
(C) Immunodiffusion
(D) None of the above

104. A purulent urethral discharge containing diplococcic within polymorphonuclear leukocytes suggests

(A) gonorrhea
(B) syphilis
(C) genital herpes
(D) lymphogranuloma venereum

105. The Arthus reaction is caused by

(A) delayed hypersentitivity
(B) IgM and IgG antibodies
(C) IgA antibodies
(D) IgD antibodies

106. Which of the following antimicrobial agents inhibits nucleic acid synthesis by binding to RNA?

(A) Rifampin
(B) Vancomycin
(C) Clindamycin
(D) Erythromycin

107. The phosphorylating enzymes encoded by R-plasmids provide resistance against one of the following antibiotics

(A) sulfonamides
(B) penicillin
(C) cephalosporin
(D) aminoglycosides

108. Protein toxins that directly affect the intestinal tract are

(A) hydrolytic enzymes
(B) endotoxins
(C) enterotoxins
(D) None of the above

109. The rate of growth in a batch culture can be expressed in terms of the

(A) mean generation time
(B) mean growth rate constant
(C) mean density time
(D) mean acceleration time

110. The union of haploid gamete within the parent protozoa is called

(A) syngamy
(B) conjugants
(C) autogamy
(D) fusion

111. Suppressor cells are derived from

(A) monocysts
(B) basophils
(C) eosinophils
(D) T lymphocytes

112. HDL is synthesised and secreted from

(A) Pancreas
(B) Liver
(C) Kidney
(D) Muscle

113. Compounds having the same structural formula but differing in spatial configuration are known as

(A) stereoisomers
(B) anomers
(C) optical isomers
(D) epimers

114. What is the change in free energy (delta G) for the hydrolysis of ATP to ADP and Pi in the cell?

(A) −12 Kcal/mol
(B) −1.2 Kcal/mol
(C) −7.3 Kcal/mol
(D) +12 Kcal/mol

115. Which of the following is not a Unicellular eukaryote?

(A) *Saccharomyces*
(B) *Amoeba proteus*
(C) *Archaebacteria*
(D) *Dictyosteliom discoideum*

116. The roles of an adjuvant include

(A) eliciting greater cell-mediated reactions and antibody response
(B) favouring of helper T cells
(C) maintenance of long-lasting antigen levels in tissue
(D) interference of phagocytosis

117. The summation of multiple affinities is

(A) avidity
(B) affidity
(C) antibody
(D) acidity

118. Which of the following is not a green house gas?

(A) Water vapour
(B) CO_2
(C) Methane
(D) Nitric oxide

119. Some of the following enzymes utilised in DNA replication are: (1) DNA directed RNA polymerase; (2) unwinding proteins; (3) DNA polymerase I and (4) DNA ligase. What is the correct sequence of their use in DNA synthesis?

(A) 2,3,1,4
(B) 4,1,2,3
(C) 4,2,1,3
(D) 2,1,3,4

120. The mushroom poison amanitin is an inhibitor of

(A) Protein synthesis
(B) mRNA synthesis
(C) DNA synthesis
(D) Glycoprotein synthesis

121. Which one of the following single stranded DNA molecules would be palindromic in the double stranded state?

(A) A – T – G – C – C – G – T – A
(B) A – T – G – C – T – A – C – G
(C) G – T – C – A – T – G – A – C
(D) G – T – A – T – C – T – A – T

122. Which of the following is transcribed during repression?

(A) Structural gene
(B) Promoter gene
(C) Regulator gene
(D) None of the above

123. Asexual or parasexual hybridization is also known as

(A) Gene transfer
(B) Protoplast fusion
(C) Mitosis
(D) Meiosis

124. In order to obtain plants free of viruses the following protocol is employed

(A) Shoot apex cultures
(B) Endosperm cultures
(C) Root cultures
(D) Stem cultures

125. The first work on quantitative genetics was done by

(A) Lamarck
(B) Hugo de Vries
(C) Gregore Johann Mendel
(D) Darwin

126. Chromosomes found in the salivary glands of *Drosophila* are

(A) Lampbrush
(B) Polytene
(C) Supernumenary
(D) B-chromosomes

127. The ideal stage for counting of chromosome is

(A) Early prophase
(B) Mid prophase
(C) Late Prophase
(D) Metaphase

128. In flowering plants, meiosis occurs at the time of

(A) Seed germination
(B) Endosperm formation
(C) Embryogenesis
(D) Pollen formation

129. Alkaptoneuries excrete excess of

(A) Urine
(B) Albumen
(C) Glacial acetic acid
(D) Phytic acid

130. A monosomic organism can be best represented as

(A) $2n + 1$
(B) $2n + 2$
(C) $n + 1$
(D) $2n - 1$

131. Down's syndrome is a typical case of

(A) Trisomy
(B) Nullisomy
(C) Gene mutation
(D) Monosomy

132. Which of the following is the largest cell organelle?

(A) Mitochondrion
(B) Ribosomes
(C) Golgi bodies
(D) Spherosomes

133. Allosteric enzymes have modulators for

(A) both activation and inhibition
(B) inhibition only
(C) activation only
(D) reduction in activation energy

134. In light phase of photosynthesis there is formation of

(A) ATP
(B) NADPH
(C) ATP and NADPH
(D) Carbohydrate

135. Stroma is the aqueous matrix of

(A) Lysosomes
(B) Peroxysomes
(C) Ribosomes
(D) Chloroplasts

136. The carbon dioxide acceptor in CAM plants is

(A) Malic acid
(B) Oxaloacetic acid
(C) Pyruvic acid
(D) Phosphoenol pyruvic acid

137. Kranz's anatomy is found in

(A) Stems of C_4 plants
(B) Stems of C_3 plants
(C) Leaves of C_4 plants
(D) Leaves of C_3 plants

138. Which component of electron transport chain is not a protein?

(A) Cytochrome
(B) Ubiquinone
(C) Cytochrome oxidase
(D) ATPase

139. The highest level of packaging of DNA with histones is observed during

(A) Anaphase
(B) Telophase
(C) Metaphase
(D) Prophase

140. Group of organisms of the same species that share the common attributes and are somewhat isolated from other groups are called

(A) Population
(B) Community
(C) Ecosystem
(D) Ecotype

141. Which of the following is a qualitative character of community?

(A) Density
(B) Frequency
(C) Distribution index
(D) Dominance

142. For separation of nucleic acids by adsorption chromatography, the material used is

(A) Alumina
(B) Silica gel
(C) Hydroxyapatite
(D) Activated carbon

143. An enzyme with mol. weight 56,000 is used in catalytic amount to cleave a protein of mol. weight 65,000 into fragments of mol. at 43000 and 22,000. Gel-chromatography is used to assess the results. Which proteins in which order will be eluted?

(A) 65,000 – 56,000 – 43,000 – 22,000
(B) 65,000 – 43,000 – 22,000
(C) 22,000 – 43,000 – 65,000
(D) 22,000 – 43,000 – 56,000 – 65,000

144. One among the following phytohormones promote dormancy in seeds and buds

(A) Auxins
(B) Giberellins
(C) Cytokinins
(D) Abscissic acid

145. Avena coleoptiles curvature test led to the discovery of

(A) Giberellins
(B) Cytokinins
(C) Auxins
(D) Ethylene

146. Physiologically inactive tissues of plants contain

(A) Carbohydrates
(B) Nucleic acids
(C) Proteins
(D) Tannins

147. Anther culture technique was developed by

(A) Murashige and Skoog
(B) White
(C) Guha and Maheswari
(D) Cocking

148. Deficiency of which of the following leads to interveinal chlorosis

(A) Magnesium
(B) Calcium
(C) Cobalt
(D) Nitrogen

149. Amino acid which accumulates in plants due to osmotic stress is

(A) Proline
(B) Cysteine
(C) Methionine
(D) Histidin

150. The classical red far-red photoreversible response of phytochrome was discovered by

(A) Borthwick and Handricks
(B) W. Haupt
(C) Hartman
(D) None of the above

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ZOOLOGY

1. Acellular animals are otherwise known as

(A) Sponges
(B) Coelenterate
(C) Protozoa
(D) Metazoan

2. Malarial parasite belongs to the order

(A) Haemosporidia
(B) Sarcodina
(C) Metacercaria
(D) Heleozoa

3. Process of ingestion in amoeba is

(A) Autophagus
(B) Circumvallation
(C) Ciliary action
(D) Encystation

4. Choanocytes are flagellate cells found in

(A) Flat worms
(B) Insects
(C) Sponges
(D) Annelids

5. Amphiblastula is the larva of

(A) Amphioxus
(B) Obelia
(C) Sponges
(D) Amphineura

6. Ephyra larva has

(A) Eight tentacles
(B) Five tentacles
(C) Ten tentacles
(D) No tentacles

7. Larva of a coelenterate is known as

(A) Bipinnaria
(B) Glochidium
(C) Planula
(D) Actinitrocha

8. Polymorphism in coelenterates is highly developed in

(A) Corals
(B) Halistemma
(C) Obelia
(D) Jelly fish

9. Symbiotic algae associated with corals are known as

(A) Volvocales
(B) Euglena
(C) Spyrogyra
(D) Zoozanthellae

10. Succession of larvae occurs in

(A) Liver fluke
(B) Sponges
(C) Echinoderms
(D) Aphids

11. Extra intestinal migration occurs in the life cycle of

(A) *Taenia solium*
(B) *Ascaris lumbricoides*
(C) *Faciola hepatica*
(D) *Enterobiuos vermicularis*

12. Nerve cord in leeches is found in the

(A) Dorsal channel
(B) Ventral channel
(C) Lateral channel
(D) around intestine

13. In Annelida, nephridia open into the coelom through

(A) Nephridiapore
(B) Nephrostome
(C) Gonads
(D) None of the above

14. Compound eyes of insects are composed of several

(A) Pigmented cells
(B) Separate eyes
(C) Complex eyes
(D) Omamatidia

15. The common name of Apterygota insect found among stored books is

(A) Gold fish
(B) Silver fish
(C) Damsel flies
(D) Ear wig

16. Cypris is the larva of

(A) Ostracoda
(B) Cladocera
(C) Cirripedia
(D) Palaemon

17. Function of Malphigian tubules in insects is

(A) Respiratory
(B) Excretory
(C) Digestive
(D) Reproductive

18. *Limulus* is a

(A) living legend
(B) living fossil
(C) living scorpion
(D) crustacean

19. The wood boring mollusca is

(A) *Pila*
(B) *Patella*
(C) *Teredo*
(D) *Sepia*

20. Eviceration takes place in

(A) Star fish
(B) Sea-lily
(C) Sea-cucumber
(D) Sea-urchin

21. Tornaria is the larva of

(A) Phoronis
(B) Enteropneust worm
(C) Ascidian
(D) Amphioxus

22. Nerve cord of vertebrates is

(A) Solid ventral
(B) Ventral tubular
(C) Dorsal tubular
(D) Solid dorsal

23. Tadpole larva is the larva of

(A) Frog
(B) Toad
(C) Ascidian
(D) Amphioxus

24. Whale shark, *Rhynodon typus* is a

(A) Carnivore
(B) Herbivore
(C) Omnivore
(D) Plankton feeder

25. Eggs of the following fish develop in the brood pouch of the male in

(A) Salmon
(B) Hippocampus
(C) Gobids
(D) Stickle back

26. Leptocephalus is the larva of

(A) *Ophiocephalus*
(B) *Saccobranchus*
(C) *Anguilla*
(D) *Anabas*

27. Axolotle is the larval form of

(A) Anura
(B) Apoda
(C) Urodela
(D) Dipnoi

28. Heart in Anura (Amphibia) is

(A) Mono-chambered
(B) Di-chambered
(C) Tri-chambered
(D) Tetra–chambered

29. Air space connecting pneumatic bones to lungs are found in

(A) Amphibians
(B) Reptiles
(C) Birds
(D) Mammals

30. Urine of birds consists of

(A) Uric acid
(B) Urea
(C) Salts
(D) Liquids

31. Platypus belongs to

(A) Prototheria
(B) Metatheria
(C) Eutheria
(D) None of the above

32. Blubber is found in

(A) Kangaroo
(B) Ox
(C) Whale
(D) Otter

33. Mammary glands of higher mammals are modified

(A) Sweat glands
(B) Endocrine glands
(C) Spleen
(D) Sebaceous glands

34. Bundle of fibrous tissues connecting bone to bone are

(A) Connective tissue
(B) Tendon
(C) Ligament
(D) Synovial membrane

35. Tusks of elephant are modified

(A) Incisors
(B) Canines
(C) Pre-molars
(D) Molars

36. Respiratory pigment containing copper is known as

(A) haemoglobin
(B) haemocyanin
(C) copper oxide
(D) copper sulphate

37. Eggs having very little quantity of yolk are known as

(A) alecithal
(B) microlecithal
(C) megalecithal
(D) telolecithal

38. Buccal diverticulam acts as notochord in

(A) amphioxus
(B) doliolids
(C) enteropneust worms
(D) tadpole larva

39. Sea cow (dugong) belongs to order

(A) Cetacea
(B) Sirenia
(C) Proboscidae
(D) Ungulate

40. Animal cell differs from plant cell mainly due to the absence of

(A) Cell wall
(B) Cytoplasm
(C) Nucleus
(D) Nucleolus

41. Power house of a cell is

(A) Ribosomes
(B) Lysosomes
(C) Centriole
(D) Mitochondria

42. Both the sex chromosomes are of the same (XX) type in

(A) Gynandromorph
(B) Sterile
(C) Male
(D) Female

43. Development of ovum without fertilization is known as

(A) Asexual reproduction
(B) Parthenogenesis
(C) Metagenesis
(D) Sexual reproduction

44. The part of the sperm that pierces the covering of the ovum is

(A) Tail
(B) Middle piece
(C) Head
(D) Acrosome

45. The country in oriental realm of zoogeographical distribution is

(A) Australia
(B) India
(C) Green Land
(D) South America

46. One of the following is NOT amniotic

(A) Crocodile
(B) Rabbit
(C) Penguin
(D) Frog

47. Respiratory tree is found in

(A) Asteroids
(B) Crenoids
(C) Holothuroids
(D) Echinoid

48. Ornithology is the study of

(A) Fish
(B) Amphibia
(C) Reptilia
(D) Birds

49. *Bellostoma* is an aquatic

(A) Reptile
(B) Annelid
(C) Insect
(D) Snake

50. Duck billed Platypus is a

(A) Duck
(B) Marine mammal
(C) Egg laying mammal
(D) Egg laying reptile

51. A core of nucleic acid surrounded by a protein shell is found in

(A) Nucleus
(B) Bacteria
(C) Cell
(D) Virus

52. 'Origin of Species' was written by

(A) Wallace
(B) Darwin
(C) Collins
(D) Bates

53. Theory of "Ontogeny recapitulates phylogeny" was proposed by

(A) T.H. Huxley
(B) H. Spencer
(C) E. Haeckel
(D) F. Galton

54. Doliolum is a

(A) Hemichordate
(B) Urochordate
(C) Cephalochordate
(D) Chordate

55. Function of contractile vacuole in Protozoa is

(A) Digestion
(B) Respiration
(C) Osmo-regulation
(D) Reproduction

56. Respiration in tape worms is

(A) Cutaneous
(B) Pulmanery
(C) Aerobic
(D) Anaerobic

57. Jawless fishes are known as

(A) Sharks
(B) Eels
(C) Agnatha
(D) Prognatha

58. Fairy shrimp (*Streptocephalus* sp.) belongs to

(A) Copepoda
(B) Ostracoda
(C) Branchiopoda
(D) Cirripedia

59. Pectoralis major in birds is

(A) Calf muscle
(B) Wing muscle
(C) Cardiac muscle
(D) Flight muscle

60. In human eye, the rods and cones are found in the

(A) Cornea
(B) Retina
(C) Eye lense
(D) Optic nerve

61. Symmetry in star fish is

(A) Radial
(B) Bi-lateral
(C) Oblong
(D) Flattened

62. Entry of more sperms into an ovum is known as

(A) Monospermy
(B) Polyspermy
(C) Di-spermy
(D) Polyembryoni

63. Proboscis in butterflies is the modification of

(A) First maxilla
(B) Second maxilla
(C) Antenna
(D) Mandible

64. Primitive streak of chick embryo is homologous to

(A) Blastopore
(B) Atriopore
(C) Nerve cord
(D) Alimentary canal

65. A notochord is a derivative of

(A) Ectoderm
(B) Endoderm
(C) Mesoderm
(D) Cuticle

66. A well represented example of social life in insects is in

(A) Orthoptera
(B) Tardigrada
(C) Isoptera
(D) Diptera

67. *Cephalodiscus* is a sessile and sedentary

(A) Boring mollusk
(B) Enterpneusta
(C) Echinoderm
(D) Cephalochordata

68. The migration of Salmon fish into rivers is described as

(A) Anadromous
(B) Catadromous
(C) Polydromous
(D) None of the above

69. Main function of tube feet in star fish is

(A) Respiratory
(B) Feeding
(C) Locomotion
(D) Sensory

70. Parasitic castration in crabs is caused by

(A) Sacculina
(B) Cyclops
(C) Balanus
(D) Phyllosoma

71. The number of chromosomes in a fertilized egg is

(A) Haploid
(B) Diploid
(C) Polyploid
(D) Triploid

72. Number of gill slits in Holocephalii are

(A) Five
(B) More than five
(C) Less than five
(D) None of the above

73. True segmentation is found in

(A) Centipedes
(B) Tape worms
(C) Earth worms
(D) Prawns

74. Teeth in sharks are modified

(A) Endoderm
(B) Mesoderm
(C) Ctenoid scales
(D) Placoid scales

75. Larva of fresh water mussel is

(A) Glochidium
(B) Planula
(C) Tornaria
(D) Pluteus

76. Pig is an intermediate host of the parasite

(A) *Faciola hepatica*
(B) *Taenia solium*
(C) *Schistosoma haematobium*
(D) *Ascaris lumbricoides*

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77. Skeleton in birds is

(A) Pneumatic
(B) Heavy
(C) Short
(D) Long

78. State bird of Kerala is

(A) Malabar Trogon
(B) Malabar Whistling Thrush
(C) Great Indian Hornbill
(D) Pea Fowl

79. Pollen basket is present in

(A) Butterfly
(B) Humming bird
(C) Moths
(D) Honey bee

80. Trilobite larva is the larva of

(A) Tiger prawn
(B) Mud crab
(C) *Limulus* sp.
(D) *Lingula* sp.

81. Picnogonid is a

(A) Marine mollusc
(B) Marine copepoda
(C) Marine arachnid
(D) Marine crab

82. In fish, protogynism involves

(A) Maturation of ovaries earlier to testes
(B) Decaying of infected testes
(C) Maturation of testes earlier to ovaries
(D) Decaying of infected ovaries

83. The intermediate host causing filarial infection is

(A) *Anapheles* mosquito
(B) *Culex* mosquito
(C) Parasitic mite
(D) Cyclops

84. Function of intestinal caecum in rabbit is

(A) Digestion of food
(B) Assimilation
(C) Aids digestion of cellulose
(D) Vestigial

85. The trunk of an elephant is

(A) Extension of nose
(B) Extension of upper lip
(C) Modification of lips
(D) Fused upper lip and nose

86. Tailed amphibians are described as

(A) Gymnophiona
(B) Urodela
(C) Anura
(D) Sphenodon

87. Metagenesis occurs in the life-history of

(A) Hydra
(B) Obelia
(C) Euglena
(D) Sea anemone

88. The type specimen of a new species is designated as

(A) Holotype
(B) Paratype
(C) Allotype
(D) Syntype

89. Ostrich is a

(A) Antarctic bird
(B) Flightless bird
(C) Arctic bird
(D) Bird of paradise

90. Canine teeth are characteristic of

(A) Rodentia
(B) Logomorpha
(C) Ungulata
(D) Carnivora

91. Accessory respiratory organ is found in

(A) Ophiocephalus
(B) Eels
(C) Pomfrets
(D) Catla

92. Dodo is

(A) An extinct bird
(B) An aquatic bird
(C) Bird of prey
(D) An Antarctic bird

93. *Noctiluca* belongs to

(A) Rhizopoda
(B) Ciliata
(C) Dinoflagellata
(D) Radiallaria

94. Whales and dolphins belong to

(A) Sirenia
(B) Cetacea
(C) Pinnepedia
(D) Proboscidae

95. One of the following is an Archiannelid

(A) Neries
(B) Leech
(C) Polygordius
(D) Spirorbis

96. Chaetopterus lives in

(A) Sand burrows
(B) Sandy tubes
(C) 'U' shaped tube
(D) rocky crevices

97. The hereditary substance in a cell is found in

(A) Golgi bodies
(B) Vacuoles
(C) Chromosomes
(D) Cytoplasm

98. Dinosaurs existed during the period from

(A) Precambrian to Ordovician
(B) Silurian to Carboniferous
(C) Triassic to Cretaceous
(D) Miocene to Pliocene

99. The alimentary canal of *Salpa* sp. (Thaliacea) is

(A) Stomach
(B) Gizzard
(C) Endostyle
(D) Nucleus

100. Placenta in duck billed Platypus is

(A) Yolk sac placenta
(B) Allontonic placenta
(C) Deciduate placenta
(D) Placenta is absent

101. Penguin is a

(A) Flightless bird
(B) Arctic bird
(C) Antarctic bird
(D) Bird of prey

102. Nautilus is a

(A) Cephalopod
(B) Gastropod
(C) Scaphopod
(D) Lamellibranch

103. Book lungs are respiratory organs of

(A) Daphnia
(B) Scorpions
(C) Cockroaches
(D) Peripatus

104. Mandibles are not jointed in front by ligaments in

(A) Veranus
(B) Iguana
(C) Tortoises
(D) Snakes

105. Microfilaria lives in

(A) Circulatory system
(B) Lymphatic system
(C) Urinary tracts
(D) Reproductive tracts

106. *Tomopteris* is a

(A) tubicolous polychaete
(B) burrowing polychaete
(C) planktonic polychaete
(D) benthic polychaete

107. *Branchiostoma lanceolatum* is a

(A) Hemichordate
(B) Cephalochordate
(C) Tunicate
(D) Fish

108. Heart of crocodile is

(A) Single chambered
(B) Double chambered
(C) triple chambered
(D) Four chambered

109. *Peripatus* belongs to

(A) Trilobita
(B) Ostracoda
(C) Onychophora
(D) Brachiopoda

110. Muscin is a mixture of

(A) Carbohydrates
(B) Proteins
(C) Fatty acids
(D) Lipids

111. Hormone Insulin is secreted by

(A) Gastric glands
(B) Pancreatic glands
(C) Islets of Langerhans
(D) Cystic lobes of liver

112. The mammalian heart is enclosed in a protective covering known as

(A) Epicardium
(B) Myocardium
(C) Mesocardium
(D) Pericardium

113. Veins carrying oxygenated blood are

(A) Pulmonary veins
(B) Caudal veins
(C) Caval veins
(D) Aorta

114. Which of the following branch is common for zoology and geology?

(A) Physiology
(B) Entomology
(C) Cnidology
(D) Paleontology

115. Fossils of *Archaepterix* have been discovered from

(A) Britain
(B) France
(C) Germany
(D) USA

116. Neoteny is

(A) Retention of rudimentary organs
(B) Retention of larval characters in adults
(C) Reproduction in larval forms
(D) Metamorphosis

117. Branch of zoology related with classification is

(A) Ecology
(B) Parasitology
(C) Genetics
(D) Taxonomy

118. Absence of metamorphosis in the development of insects is known as

(A) Ametabolous
(B) Holometabolous
(C) Hemimetabolous
(D) Parthanogenesis

119. An animal having a mixture of male and female sex organs is

(A) Bi-sexual
(B) Hermaphrodite
(C) Gynandromorph
(D) Normal

120. Coelacanth is

(A) An Antarctic seal
(B) Arctic snow bear
(C) A bony fish
(D) A cartilaginous fish

121. Bioluminescence is caused by the oxidation of

(A) Luciferin
(B) Luciferase
(C) Oxytocin
(D) Pectin

122. Prehensile tail in monkeys and chameleon is used for

(A) balancing on trees
(B) encircling branches
(C) to help young ones to follow
(D) Just to hang

123. The most reliable evidence available to prove organic evolution is from

(A) Osteology (B) Petrology
(C) Palaeontology (D) Morphology

124. All baleen whales, while feeding, use

(A) Baleen teeth (B) Baleen plates
(C) Blow hole (D) Throat grooves

125. The vector of Plasmodium is

(A) Monkey (B) Rat
(C) Mosquito (D) Bird

126. Animals of Phylum Porifera are characterized by

(A) Coelome (B) Enterocoel
(C) Canal system (D) Haemal system

127. Respiratory pigment in Limulus is

(A) Haemoglobin (B) Haemocyanin
(C) Haemoerythrin (D) Haemolycin

128. One of the Proteins found in hair is

(A) Nicotine (B) Caffeine
(C) Metamine (D) Carotene

129. Which of the following is an egg laying mammal?

(A) Cat
(B) Echidna
(C) Rabbit
(D) Cow

130. Man belongs to which type of symmetry

(A) Bilateral symmetry
(B) Asymmetry
(C) Radial symmetry
(D) Biradial symmetry

131. Intestinal villi are mainly concerned with

(A) Assimilation
(B) Digestion
(C) Absorption
(D) Secretion

132. Torsion is the characteristics of

(A) Gastropoda
(B) Scaphopoda
(C) Palecypoda
(D) Aplacophora

133. Swim bladder is absent in

(A) Teleosts
(B) Acanthodians
(C) Placoderms
(D) Elasmobranches

134. The larva of the Echinodermata shows

(A) Bilateral symmetry
(B) Biradial symmetry
(C) Pentamerous radial symmetry
(D) Radial symmetry

135. Which of the following comes under prostomia?

(A) Annelida
(B) Echinodermata
(C) Chordata
(D) All the above

136. The kind of vision found in compound eye is

(A) Binocular vision
(B) Monocular vision
(C) Mosaic vision
(D) None of these

137. Which of the following animals is true coelomate?

(A) Round worm
(B) Tape worm
(C) Hook worm
(D) Earth worm

138. Stinging cells are characteristically found in the members of the phylum

(A) Protozoa
(B) Porifera
(C) Coelenterata
(D) Nematoda

139. Corbett tiger reserve is located in

(A) Madhya Pradesh
(B) Rajasthan
(C) Bihar
(D) Uttar Pradesh

140. Acid rains occurs in

(A) Urban areas
(B) Rural areas
(C) Highly industrialised regions of the world
(D) All of the above

141. The Wild Life Protection Act was passed in

(A) 1952
(B) 1972
(C) 1982
(D) 1942

142. EIA is the abbreviated form of

(A) Environmental Impact Assessment
(B) Ecosystem International Agency
(C) Ecosystem Input Area
(D) Environmental Intelligence Agency

143. CFCs are widely used in

(A) Propellant (B) Heaters
(C) Coolants (D) Conductors

144. India's Biodiversity Act was passed in

(A) 1992 (B) 2002
(C) 2004 (D) 2010

145. Which of the following is cold blooded animal?

(A) Camel (B) Pigeon
(C) Bat (D) Snake

146. Which of the following bird cannot fly?

(A) Peacock (B) Duck
(C) Emu (D) Stork

147. National bird of India is

(A) Pigeon (B) Parrot
(C) Peacock (D) Swan

148. The skin of frog is characterised by the absence of

(A) Mucous gland (B) Chromatophores
(C) Epidermis (D) Scales

149. Nail hoofs and horns are example of

(A) Connective tissue (B) Epidermal derivatives
(C) Modified hair follicles (D) None of the above

150. Herdmania is

(A) Mud feeder (B) Ciliary of filter feeder
(C) Insectivorous (D) Carnivorous

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