

Booklet Code: B

Q-13

Hall Ticket Number:

Department of Animal Biology
M. Sc. Animal Biology & Biotechnology
ENTRANCE EXAMINATION June 2018

Time: 2 hours

Maximum Marks: 100

INSTRUCTIONS: PLEASE READ BEFORE ANSWERING!

- Enter your hall ticket number on this sheet and the answer (OMR) sheet.
- Answers have to be marked on the OMR answer sheet following the instructions provided there upon. Make sure that you have clearly mentioned the Booklet Code (A or B or C) on your OMR sheet.
- Hand over OMR answer sheet at the end of the examination.
- All questions carry one mark each. Answer all, or as many as you can.
- 0.33 mark will be deducted for every wrong answer.
- There are a total of 12 pages in this question paper. Answer sheet (OMR) will be provided separately. Check this before you start answering.
- The question paper consists of Part A and Part B. The marks obtained in Part A will be taken in consideration in case of a tie i.e., when more than one student gets equal marks, to prepare the merit list.

PART "A"

1. Which of the following amino acids contain nonpolar, aliphatic R groups?
A) Phenylalanine, tyrosine and tryptophan
B) Glycine, alanine and leucine
C) Lysine, arginine and histidine
D) Serine, threonine and cysteine
2. Which one of the following hormone causes senescence and bud dormancy in plants?
A) Ethylene
B) Abscicic acid
C) Cytokinin
D) Indole acetic acid
3. Which of the following are the major components of chloroplast membrane of plants and are absent from animal cells?
A) Glycolipids
B) Phospholipids
C) Ether lipids
D) Triacylglycerols

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4. Which one of the following wave properties is proportional to energy for the electromagnetic radiation?

- A) Velocity
- B) Wave number
- C) Wavelength
- D) Amplitude

5. A structure important for movement and balance is

- A) Thalamus
- B) Cerebrum
- C) Parietal lobe
- D) Cerebellum

6. Cluster of polar flagella is called

- A) Lophotrichous
- B) Amphitrichous
- C) Monotrichous
- D) Petritrichous

7. A hydrazone will result from reaction of hydrazine with a

- A) Phenol
- B) Aldehyde
- C) Alcohol
- D) Acid

8. The vapour density of pure ozone is

- A) 48
- B) 32
- C) 24
- D) 16

9. Contact dependent cell signaling is known as

- A) Juxtacrine
- B) Paracrine
- C) Autocrine
- D) Exocrine

10. Brownian motion is property

- A) Electrical
- B) Mechanical
- C) Optical
- D) Colligative

11. Chromosomes measurements are generally taken during

- A) Interphase
- B) Prophase
- C) Anaphase
- D) Metaphase

12. A solution of pH=5 is times more acidic than solution of pH=7

- A) 2
- B) 5
- C) 10
- D) 100

13. An example of homeothermic ectotherm is a

- A) Deep sea fish
- B) Frog
- C) Fresh water fish
- D) Toad

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14. Two crosses between the same type of genotypes or phenotypes in which the sources of the gametes is reversed in one cross is known as

- A) Test cross
B) Reciprocal cross
C) Dihybrid cross
D) Back cross

15. 10 ml of 0.1M solution of weak acid was mixed with 4 ml 0.1M solution of strong base NaOH. pH of the solution measured was 5.12. If $\log(0.4/0.6) = -0.18$, pKa of the weak acid will be

- A) 4.3
B) 3.7
C) 5.3
D) 5.12

16. The cell organelle that can be considered as a best indicator of cellular injury is

- A) Mitochondria
B) Peroxisomes
C) Lysosomes
D) Golgi complex

17. Mole fraction of urea in an aqueous solution containing 10% urea by mass of solution is

- A) 0.032
B) 0.968
C) 0.90
D) 0.10

18. Digestive system is not found in

- A) Ascaris
B) Taenia
C) Earthworm
D) Hook worm

19. What is the possible number of optical isomers for a compound containing 2 dissimilar asymmetric carbon atoms?

- A) 2
B) 4
C) 6
D) 8

20. Cnidarians and Ctenophores lack

- A) Endoderm
B) Mesoderm
C) Ectoderm
D) Endoderm and mesoderm

21. The number of ATPs generated following oxidation of one molecule of NADPH₂ during electron transport is

- A) 2
B) 4
C) 3
D) 6

22. Which of the following is least soluble in aqueous solution?

- A) Sucrose
B) KCl
C) Oxaloacetic acid
D) Palmitic acid

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23. Ketones react with Grignard reagents to form an addition product which on hydrolysis gives a

- A) Primary alcohol
- B) Tertiary alcohol
- C) Secondary alcohol
- D) Ketal

24. Tools of stone and bones were used in age

- A) Mesolithic
- B) Bronze
- C) Neolithic
- D) Paleolithic

25. Which of the following bonds is responsible for the primary structure of the protein?

- A) Ionic bonds
- B) Hydrogen bonds
- C) Covalent bonds
- D) Hydrophobic bonds

PART "B"

26. The enzyme that was first obtained in crystalline form is

- A) Zymase
- B) Urease
- C) Lipase
- D) Nitrogenase

27. Why do trans isomers of alkenes have lower boiling points than cis isomers?

- A) Trans isomers have better symmetry
- B) Cis isomers have better symmetry
- C) Trans isomers are less polar
- D) Cis isomers are less polar

28. The shaft of long bone is called

- A) Epiphysis
- B) Hypophysis
- C) Neurophysis
- D) Diaphysis

29. Oil of chenopodium is effective against

- A) Malaria
- B) Typhoid
- C) Tuberculosis
- D) Ascariasis

30. Following cells participate in blood brain barrier

- A) Neuron
- B) Astrocytes
- C) Purkinjee neurons
- D) Interneurons

31. The people surrounding Japan's Minamata Bay are linked to toxicity to one of the following elements

- A) Rg
- B) Hg
- C) Ag
- D) Mg

32. Primary lymphoid organs include

- A) Thymus and spleen
- B) Thymus and bone marrow
- C) Thymus, bone marrow and spleen
- D) Thymus, bone marrow and lymphnodes

33. Kalakkad Mundanthurai Tiger Reserve is situated in

- A) Kerala
- B) Tamil Nadu
- C) Andhra Pradesh
- D) Karnataka

34. Following genetically engineered bacteria is successfully used in bioremediation of oil spills and soil pesticide contamination

- A) *Pseudomonas*
- B) *Azotobactor*
- C) *Xanthomonas*
- D) *Nirtosomonas*

35. Which one of the following is correct ecological environment for Annelids?

- A) Exclusively terrestrial
- B) Exclusively marine
- C) Marine and freshwater
- D) Terrestrial, marine and freshwater

36. An algae rich in proteins and used for making neutraceutical formulations is

- A) Chlorella
- B) Ulothrix
- C) Oscillatoria
- D) Spirogyra

37. Following is not a social behaviour displayed by animals

- A) Parental care
- B) Communal nesting
- C) Channel surfing
- D) Cooperatoin in brood care between parents

38. Which of the following is an endotoxin?

- A) Lipopolysaccharide
- B) Enterobactin
- C) Hemolysins
- D) Lipoteichoic acid

39. Star fish is an example for

- A) Echinoderm
- B) Pisces
- C) Mollusc
- D) Crustacean

40. Which of the following pigments occurs in the haemolymph of crustaceans?

- A) Hemoglobin
- B) Haemocyanin
- C) Hemerythrin
- D) Chlorocruorin

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41. The X-ray diffraction studies conducted by were key to the discovery of the structure of DNA

- A) McClintock
- B) Franklin
- C) Meselson and Stahl
- D) Chargaff

42. One of the following cell type secretes luteinizing hormone

- A) Chief cells
- B) Gonadotrophs
- C) Corticotrophs
- D) Leydig cells

43. Fatty acids are

- A) Unsaturated dicarboxylic acids
- B) Long-chain alkanolic acids
- C) Aromatic carboxylic acids
- D) Aromatic dicarboxylic acid

44. Uptake of plasmid DNA into bacterial cell is facilitated in the presence of all except

- A) NaCl
- B) CaCl₂
- C) KCl
- D) MgCl

45. A test cross distinguishes between

- A) Two homozygous forms
- B) A homozygous dominant and a heterozygous form
- C) Two heterozygous forms
- D) A homozygous recessive and a heterozygous form

46. The headquarters for International Union for Conservation of Nature and Natural Resources is located in

- A) USA
- B) France
- C) Sweden
- D) Switzerland

47. Which one of the following is an uncoupler of electron transport and oxidative phosphorylation?

- A) Rotenone
- B) Amytal
- C) 2,4 dinitrophenol
- D) Antimycin A1

48. Osphradium is an olfactory organ found in

- A) Echinoderms
- B) Molluscs
- C) Amphibians
- D) Whales

49. Hardy-Weinberg equilibrium generally assumes all the following except

- A) A large population
- B) Absence of selection
- C) Absence of migration
- D) Genetic drift

50. A prophage is

- A) Phage DNA integrated with bacterial chromosome B) Bacterial DNA integrated with phage DNA
C) Viral DNA in early stage virus D) Viral DNA integrated with any foreign DNA

51. Introduction of recombinant DNA in to eukaryotic cells is known as

- A) Transformation B) Transfection
C) Transduction D) Conjugation

52. The nobel prize in physiology/medicine for 2017 was awarded for the discovery of

- A) Mechanisms of autophagy B) CRISPR Cas9 system for gene editing
C) Novel therapies for most devastating parasitic diseases D) Molecular mechanisms controlling circadian rhythm

53. An evolutionary change which facilitates spatial patterning and phenotypic variation in animals is called

- A) Heterotopy B) Heterotypy
C) Heterometry D) Heterochrony

54. Which one of the following virus is extensively used for insect pest management?

- A) Rotavirus B) Parvovirus
C) Cytomegalovirus D) Baculovirus

55. A group of potentially inbreeding individuals present at the same location are known as

- A) Biome B) Community
C) Metapopulation D) Population

56. Following statement holds true for melting temperature of a duplex DNA

- A) Addition of salt increases the melting temperature of duplex DNA B) Addition of salt decreases the melting temperature of duplex DNA
C) Addition of salt converts B form of DNA into Z form of DNA D) Addition of salt converts Z form of DNA into B form of DNA

57. The equipment used for determination of rate of transcription in plants is

- A) Auxometer B) Protometer
C) Photometer D) Barometer

58. Which one of the following is used as a bioplastic?

- A) Polystyrene B) Polypropylene
C) Polyhydroxybutyrate D) Dextran

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59. Thrombosis can be best related to one of the following vitamin

- A) K
- B) C
- C) H
- D) B

60. The substance whose resistance gets reduced to virtually zero at very low temperature is called

- A) Electrical conductor
- B) Hyper conductor
- C) Semiconductor
- D) Superconductor

61. Binary or shuttle vector is a type of

- A) Cosmid
- B) Plasmid
- C) BAC
- D) YAC

62. RR (red) flowered plant of *Mirabilis* is crossed with rr (white) flowered plant of *Mirabilis*. All the Rr offsprings are pink. This is an indication that the R gene is

- A) Codominant
- B) Recessive
- C) Incompletely dominant
- D) Linked

63. Bharatpur bird sanctuary is located in

- A) Gujarat
- B) Rajasthan
- C) Jharkand
- D) Bihar

64. One of the following is a common feature seen in both Arthropods and Annelids

- A) Nephridia
- B) Ommatidia
- C) Parapodia
- D) Ventral nerve cord

65. Albinos have visual problem in bright light because they lack

- A) Melanin
- B) Rods
- C) Cones
- D) Keratin

66. Which one of the following is used as a catalyst during hydrogenation of oil?

- A) Fe
- B) Ni
- C) Pt
- D) Mo

67. Which one of the following statements are true with reference to enhancer?

- A) Always present upstream of a given gene promotor
- B) Always present downstream of a given gene promotor
- C) Always present in the middle of the gene body
- D) Present at any distance from a gene promotor

68. Which of the following T cells primarily act against virus infected cells?

- A) Th1 helper cells
- B) Th2 helper cells
- C) CD8+ cytotoxic T cells
- D) CD4+ cytotoxic T cells

69. How many grams of NaCl is required to make 50 ml of 1M solution?

- A) 2.92 g
- B) 1.92 g
- C) 5.92 g
- D) 3.92 g

70. During embryonic development of animals, optic lobe of brain is derived from

- A) Telencephalon
- B) Diencephalon
- C) Mesencephalon
- D) Rhombencephalon

71. Major food crops of the world belong to the family

- A) Leguminosae
- B) Solanaceae
- C) Cruciferae
- D) Graminaceae

72. The rate of a chemical reaction generally increases rapidly even for small increase in temperature because of rapid increase in one of the following

- A) Collision frequency
- B) Fraction of molecules with energies in excess of the activation energy
- C) Activation energy
- D) Average kinetic energy of molecules

73. *Eco RI* is a

- A) Exonuclease
- B) Endonuclease
- C) Polymerase
- D) Ligase

74. Damage to one of the following structures of the brain affects processing of language

- A) Spinal cord
- B) Frontal lobe
- C) Occipital lobe
- D) Hippocampus

75. Maternal portion of the placenta is known as

- A) Endometrium
- B) Decidua
- C) Chorion
- D) Umbilical cord

76. In plant tissue culture, callus differentiation is induced by

- A) Auxin and cytokinin
- B) Auxin and jasmonic acid
- C) Auxin and ethylene
- D) Auxin and gibberellin

77. The relative strength of the different bonds/interactions, from weakest to strongest, that exist in protein structural levels is

- A) Hydrophobic interaction < hydrogen bond < ionic bond < covalent bond
- B) Hydrophobic interactions < ionic bond < hydrogen bond < covalent bond
- C) Ionic bond < hydrogen bond < hydrophobic interactions < covalent bond
- D) Ionic bond < hydrophobic interactions < hydrogen bond < covalent bond

- 78. Which one of the following best explains the process of evolution?**
A) Natural selection
B) Horizontal gene transfer
C) Comparative genomics
D) Darwinism
- 79. Which of the following metabolites are not directly produced in the hexose monophosphate pathway?**
A) Fructose-6-phosphate
B) Dihydroxyacetone phosphate
C) Erythrose-4-phosphate
D) Gluconolactone-6-phosphate
- 80. The order of stability of carbonium ions is**
A) Tertiary>secondary>primary
B) Secondary>tertiary>primary
C) Primary>secondary>tertiary
D) Primary>tertiary>secondary
- 81. Which one of the following is not an ectodermal derivative?**
A) Brain
B) Spinal cord
C) Mammary gland
D) Thyroid gland
- 82. In liquids, one of the following properties increases with rise in temperature**
A) Viscosity
B) Surface tension
C) Vapour pressure
D) Density
- 83. Peptidoglycan accounts for percentage of the dry weight of cell wall in gram positive bacteria**
A) 50%
B) 10%
C) 20%
D) 1%
- 84. Which one of the following molecular/genetic techniques is used to identify protein-protein interactions?**
A) Yeast two hybrid system
B) Southern hybridization
C) Northern hybridization
D) Fluorescence *in-situ* hybridization
- 85. Humoral immunity was discovered by**
A) Robert Koch
B) Paul Ehrlich
C) Jules Bordet
D) Edward Jenner
- 86. Which one of the following amino acid does not contribute to the fluorescence?**
A) Tryptophan
B) Tyrosine
C) Cysteine
D) Phenylalanine
- 87. Maximum biodiversity is found in**
A) Mangrooves
B) Temperate Rain forest
C) Coral reefs
D) Taiga

88. The hormone produced during gestation and parturition that triggers lactation is

- A) Estrogen
- B) Progesterone
- C) Prolactin
- D) Oxytocin

89. The major compound formed from the incomplete combustion of a hydrocarbon in air is

- A) Carbon dioxide
- B) Carbon monoxide
- C) Water
- D) Alkyl chains

90. The word "chromothripsis" is related to one of the following phenomenon

- A) Metamorphosis
- B) Stem cell differentiation
- C) Carcinogenesis
- D) Gastrulation

91. As per Stanley L. Miller's theory, one of the following substances was absent in the atmosphere at the time of origin of life

- A) NH_3
- B) H_2
- C) O_2
- D) CH_4

92. Nematocyst of cnidarians play a role in

- A) Locomotion
- B) Respiration
- C) Feeding
- D) Excretion

93. Specific conductance has units

- A) Ohm-cm
- B) Ohm^{-1}cm
- C) $\text{Ohm}^{-1}\text{cm}^{-1}$
- D) Ohm cm^{-1}

94. Genes do not occur in pairs in

- A) Somatic cells
- B) Follicular cells
- C) Sperms
- D) Zygote

95. The contractile vacuole in *Paramecium* helps in

- A) Nutrition
- B) Osmoregulation
- C) Locomotion
- D) Reproduction

96. The fungal cell walls are reinforced with

- A) Chitin
- B) Silica
- C) Lignin
- D) Collagen

97. Semiochemicals released by animals which benefit the receiver but are disadvantageous to the producer are known as

- A) Pheromones
- B) Kairomones
- C) Allomones
- D) Synomones

98. Which one of the following compounds will react with ammonical silver nitrate?

- A) 1-Butene
- B) 1-Butyne
- C) 2-Butene
- D) 2-Butyne

99. Oxytocin is synthesized by and secreted at

- A) Hypothalamus and adenohipophysis
- B) Hypothalamus and neurohypophysis
- C) Thalamus and neurohypophysis
- D) Telencephalon and adenohipophysis

100. Which of the following chromosomal changes is not responsible for position -effect variegation of a gene?

- A) Transposition
- B) Translocation
- C) Inversion
- D) Polyploidization

For rough work