

Seat No.

Total No. of Pages : 26

M.Sc. Entrance Examination, 2024
Biochemistry/ Biotechnology/Medical Information
Management
Subject Code : 58725

Day and Date : Monday, 29-07-2024**Total Marks : 100****Time : 12.30 pm to 02.00 pm**

Instructions :

- 1) All questions are compulsory.
 - 2) Each question carries 1 mark.
 - 3) Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
 - 4) Follow the instructions given on OMR sheet.
 - 5) Rough work shall be done on the sheet provided at the end of question paper.
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1. Which among the following is a Noble Gas?
 - a) Nitrogen
 - b) Hydrogen
 - c) Oxygen
 - d) Helium

2. What is the bond angle between H₂O molecule?
 - a) 90°
 - b) 104.5°
 - c) 122°
 - d) 180°

3. The inorganic benzene is
- a) xenon tetrafluoride
 - b) borazine
 - c) diborane
 - d) xenon trioxide
4. $[\text{Fe}(\text{CN})_6]^{-3}$ is
- a) paramagnetic
 - b) diamagnetic
 - c) terromagnetic
 - d) ferromagnetic
5. is called as caustic soda.
- a) NaOH
 - b) KOH
 - c) NH_4OH
 - d) $\text{Ca}(\text{OH})_2$
6. The phenolphthalein indicator turns. in alkaline medium.
- a) yellow
 - b) colorless
 - c) pink
 - d) blue

7. Which of the following solutions cannot conduct electricity?
- a) Sugar in water
 - b) NaCl in water
 - c) MgCl_2 in water
 - d) KCl in water
8. Two or more compounds that have the same chemical formula, but different arrangement of atoms are called
- a) isotopes
 - b) isotones
 - c) isomers
 - d) allotropes
9. Which among the following is most electronegative element?
- a) Chlorine
 - b) Fluorine
 - c) Bromine
 - d) All of them have same electronegativity
10. When formaldehyde and potassium hydroxide are heated, we get
- a) Acetylene
 - b) Methyl alcohol
 - c) Methane
 - d) Ethyl formate

11. Scanner is an device.
- a) Input
 - b) Output
 - c) Storage
 - d) Memory
12. ICs were used in generation of computers.
- a) First
 - b) Second
 - c) Third
 - d) Fourth
13. The long form of HTTP is.....
- a) Hyper Text Transfer Protocol
 - b) Higher Text Transfer Protocol
 - c) Hyper Term Transfer Process
 - d) None of the above
14. language is a set of instructions coded with 'zero' and 'one'.
- a) BASIC
 - b) Machine
 - c) COBOL
 - d) ForTran
15. Among following is not part of CPU.
- a) Arithmetic Unit
 - b) logic Unit
 - c) Hard Disk
 - d) None of the above

16. Among following term used to define all input and output devices in a computer system.
- a) Software
 - b) Hardware
 - c) Shared resources
 - d) Monitor
17. programme is written in high-level language.
- a) Office
 - b) Source
 - c) Perl
 - d) AWK
18. Statistical and Mathematical operations are performed with the help of.
- a) Microsoft word
 - b) Microsoft PowerPoint
 - c) Microsoft excel.
 - d) None of these
19. Human Genome project was completed in.....
- a) April 2000
 - b) March 1998
 - c) December 2006
 - d) April 2003

20. Following among is a nucleotide sequence database.
- a) Swiss-Port
 - b) PubMed
 - c) DDBJ
 - d) PDB
21. is a hereditary disease?
- a) Rabies
 - b) Colour blindness.
 - c) Polio
 - d) Small pox
22.is a viral disease.
- a) Alzheimer
 - b) Diabetes
 - c) Heart attack
 - d) Influenza
23. The condition in which the platelet count of an individual is drastically reduced is called as
- a) Leucopenia
 - b) Thrombocytopenia
 - c) leukaemia
 - d) AIDS

24. Which one of the following is not a function of kidney?
- a) Removal of metabolic wastes from body
 - b) Regulation of blood pH
 - c) Regulation of osmotic pressure of blood
 - d) Production of antibodies
25. What is the approximate time required for a heart-beat?
- a) 0.8 second
 - b) 0.6 second
 - c) 0.5 second
 - d) 0.7 second
26. Which of the following is not a step involved in gel filtration?
- a) Gel preparation
 - b) Precipitation
 - c) Sample application
 - d) Elution of the sample
27. Which class of the following enzymes catalyzes Hydrolysis reactions?
- a) Hydrolase
 - b) Oxidoreductase
 - c) Isomerase
 - d) Ligase

32. Arrangement of nucleotides in DNA can be seen using which of the following instruments?
- a) Electron microscope
 - b) Light microscope
 - c) X-Ray crystallography
 - d) Ultracentrifuge
33. Which of the following membrane lipids have a direct glycosidic linkage between the head-group sugar and the backbone glycerol?
- a) Ether lipids
 - b) Sphingolipids
 - c) Glycolipids
 - d) Phospholipids
34. Which of the following is the first amino group entering into urea cycle?
- a) Argininosuccinate
 - b) Citrulline
 - c) Carbamoyl phosphate
 - d) Ornithine
35. Which one of the following is the source of electrons in photosynthesis?
- a) NADH
 - b) Water
 - c) Carbohydrates
 - d) CO₂

36. Which of the following has beads on a string structure?
- a) Nucleosomes.
 - b) Chromosomes
 - c) Heterochromatin
 - d) Chromatin
37. Enzymes which have different molecular structure but has same function are called as
- a) Coenzymes
 - b) Abyzyme
 - c) Isoenzymes
 - d) Apoenzyme
38. Which of the following statement is Incorrect about SnRNA?
- a) It is small nuclear RNA
 - b) It helps in RNA splicing
 - c) It is also called as snurps
 - d) It functions in RNA editing
39. When a system is at equilibrium, what will be the value of ΔG ,?
- a) $\Delta G = 0$
 - b) $\Delta G = 1$
 - c) $\Delta G = -1$
 - d) $\Delta G = \Delta G^0$

40. Law of thermodynamics which states that energy can neither be created nor be destroyed is the.....
- a) Second law of thermodynamics
 - b) Third law of thermodynamics
 - c) First law of thermodynamics
 - d) Zero-order kinetics
41. The primary structure of DNA and RNA proceeds in which direction?
- a) 3'----> 5'
 - b) 5'----> 3'
 - c) 4' ---->6'
 - d) 3'---->6'
42. Which of the following is the correct sequence for the movement of electrons during the light-dependent reactions of plants?
- a) P680, water, P700, NADP+
 - b) Water, P680, P700, NADP+
 - c) P700, P680, NADP+, water
 - d) Water, P700, NADP+, P680
43. Long-chain fatty acids are oxidized step-wise in one-carbon unit starting from.....
- a) Aliphatic end
 - b) Carboxyl end
 - c) a and b
 - d) None of the above

44. Whenever the cell's ATP supply is depleted, which of the following enzyme's activity is increased?
- a) Pyruvate kinase
 - b) Phosphofructokinase-1
 - c) Hexokinase
 - d) Glucokinase
45. Which of the following is not a flavoprotein?
- a) NADH dehydrogenase-Q reductase
 - b) Succinate dehydrogenase
 - c) Xanthine oxidase
 - d) Cytochrome c
46. Which of the following is a genetically modified crop?
- a) Bt-cotton
 - b) Bt-brinjal
 - c) Golden rice
 - d) All of the above
47. PCR technique was invented by
- | | |
|-----------------|----------|
| a) Karry Mullis | b) Boyer |
| c) Sanger | d) Cohn |

48. During electrophoresis DNA will
- a) move towards positive terminal
 - b) stay on the place of application
 - c) move towards negative terminal
 - d) move forward
49. The first human hormone produced by recombinant DNA technology is.....
- a) Thyroxine
 - b) Estrogen
 - c) Insulin
 - d) Progesterone
50. Which of the following is a water soluble vitamin?
- a) Vitamin B
 - b) Vitamin A
 - c) Vitamin D
 - d) Vitamin K
51. Which of the ribosome subunit NOT present in prokaryotes?
- a) 50s
 - b) 30s
 - c) 60s
 - d) None of the above

52. Linking number is always a
- a) Whole number
 - b) Prime number
 - c) Integer
 - d) Even number
53. Primosome is the complex of
- a) Helicase + Topoisomerase
 - b) Ligase + Helicase
 - c) Helicase + Primase
 - d) Primase + Ligase
54. Which of the following is not a termination codon?
- a) UGA
 - b) UAC
 - c) UAG
 - d) UAA
55. Phycology is the study of.....
- a) Algae
 - b) Fungi
 - c) Bacteria
 - d) All the above

56. The alga that is exploited as a rich source of protein is.....
- a) Spirogyra
 - b) Spirulina
 - c) Chlamydomonas
 - d) Scytonema
57. Which of the following is the true statement about bryophytes?
- a) they have chloroplasts
 - b) they have archegonia
 - c) they are thalloid
 - d) all of the above
58. The plants like fern and mosses, which produce spores are grouped under.....
- a) bryophytes
 - b) cryptogams
 - c) thallophytes
 - d) sporophytes
59. In India, coniferous forests are found in.
- a) Himalayas
 - b) Western ghats
 - c) Eastern ghats
 - d) All the above

60. ICBN stands for:
- a) Indian Congress of Biological Names
 - b) International Code for Botanical Nomenclature
 - c) International Congress of Biological Names
 - d) Indian Code of Botanical Nomenclature
61. The repository of plant taxonomy and systematics is called as
- a) Red data book
 - b) Herbarium
 - c) Botanical garden
 - d) Genomic library
62. Vessels and Companion cells are characteristics of
- a) Angiosperm
 - b) Gymnosperm
 - c) Pteridophyta
 - d) Fern
63. Which of the following families is characterised by trimerous flowers, superior and trilocular ovary with axile placentation?
- a) Cucurbitaceae
 - b) Solanaceae
 - c) Liliaceae
 - d) Compositae

64. A nano biological recognition component, which is involved in interacting with the analyte molecule is called as.....
- a) biosensor
 - b) probe
 - c) nano biosensor
 - d) quantum dots
65. Nanomembranes have a pore size of.....
- a) 1nm-10nm
 - b) 10nm-100nm
 - c) 0.1 nm-1nm
 - d) 100nm-1000nm
66. The property of not having separate sexes in an organism is called as
- a) Hermaphrodite
 - b) Oogamous
 - c) Homogamous
 - d) Heterogamous
67. Arthropods excrete through
- a) Malpighian tubules
 - b) Pores
 - c) Nephridia
 - d) Kidneys

68. Salamander is an example of
- a) Reptile
 - b) Osteichthyes
 - c) Amphibians
 - d) Mammals
69. The pneumatic bones are characteristic of.
- a) Mammals
 - b) Reptiles
 - c) Aves
 - d) Lizards
70. The site of fertilization in the female mammalian reproductive system is.....
- a) Vagina
 - b) Uterus
 - c) Fallopian tube
 - d) Ovarian fimbriae
71. Which is the anti-coagulant substance in blood?
- a) Thrombin
 - b) Globin
 - c) Fibrinogen
 - d) Heparin

72. The genotypic ratio of a dihybrid cross is.....
- a) 3:1 b) 1:2:1
c) 12:3:1 d) 9:3:3:1
73. Which of the following animal is not viviparous?
- a) Whale
b) Bat
c) Elephant
d) Platypus
74. For a healthy resting adult person, the systolic/diastolic blood pressures in capillaries are
- a) 120/80 mm Hg
b) 30/10 mm Hg
c) 10/0 mm Hg
d) 160/120 mm Hg
75. Food for the developing fetus is supplied by the.
- a) Placenta
b) Allantois
c) Uterus
d) Ovary

76. Pair of hormones required for a callus to differentiate is
- a) Ethylene and Auxin
 - b) Auxin and cytokinin
 - c) Auxin and Absciscic acid
 - d) Cytokinin and gibberellin
77. Synthetic seeds are produced by the encapsulation of somatic embryos with.
- a) Sodium acetate
 - b) Sodium nitrate
 - c) Sodium chloride
 - d) Sodium alginate
78. Totipotency refers to.....
- a) development of fruits from flowers in a culture
 - b) development of an organ from a cell in a culture medium
 - c) flowering in a culture medium
 - d) all of the above
79. Surface sterilisation of an explant in PTC is done by.....
- a) Sodium hypochlorite
 - b) Sodium hydroxide
 - c) Sodium chloride
 - d) all of the above

80. Which of the following is best suited method for production of virus free plants?
- a) Embryo culture
 - b) Meristem culture
 - c) Ovule culture
 - d) Anther culture
81. The pH indicator in an animal tissue culture medium is
- a) HEPES
 - b) Phenol red
 - c) FBS
 - d) L-Glutamine
82. Following are the methods of sterilization except.....
- a) Dry heat sterilization
 - b) Autoclaving
 - c) Sterilization by filters
 - d) Laminar airflow
83. Which of the following cell types retain highest biotransformation ability?
- a) Continuous cell lines
 - b) Finite cell lines
 - c) Primary cells
 - d) Secondary cell lines

84. In 1955 the first ever developed chemically defined ATC medium was
- a) Ham's F12 medium
 - b) Eagle's Minimum Essential Medium
 - c) Eagle's Basal Medium
 - d) Dulbecco's Modified Eagle's Medium
85. Trypan Blue is used to check.....
- a) Cell viability
 - b) Cell imaging
 - c) Cell density counting
 - d) All of the above
86. The portion of the growth curve where a rapid growth of bacteria is observed is known as
- a) Lag phase
 - b) Logarithmic phase
 - c) Stationary phase
 - d) Decline phase
87. According to Bergey's Manual of Systematic Bacteriology, prokaryotes that lack a cell wall belong to the group?
- a) Gracilicutes
 - b) Firmicutes
 - c) Tenericutes
 - d) Mendosicutes

88. In percentage of peptidoglycan is high.
- a) Protozoa
 - b) Gram positive
 - c) Gram negative
 - d) Yeast
89. of following are the club fungi.
- a) Basidiomycota
 - b) Ascomycota
 - c) Zygomycetes
 - d) Chytridiomycota
90. Which microorganism(s) among the following perform photosynthesis by utilizing light?
- a) Cyanobacteria
 - b) Fungi
 - c) Viruses
 - d) Cyanobacteria, Fungi and Viruses
91. Which among the following are produced by the use of microorganisms?
- a) Fermented dairy products
 - b) Breads
 - c) Alcoholic beverages
 - d) All of the above

92. Which of the following media component is a rich source of B vitamins?
- a) Peptone
 - b) Yeast extract
 - c) Beef extract
 - d) Agar
93. Which of the following microorganism is the major inhabitant of the human skin?
- a) *Escherichia coli*
 - b) *Staphylococcus epidermidis*
 - c) *Staphylococcus aureus*
 - d) *Streptococcus pyogenes*.
94. Which of the following virus may not show flu-like symptoms in humans?
- a) Coronavirus
 - b) Rhinovirus
 - c) Rotavirus
 - d) Influenza virus
95. Which of the following genes is used to deduce the evolutionary relationship between the taxonomic groups?
- a) 16S rRNA
 - b) 23S rRNA
 - c) 5S rRNA
 - d) None of the above

96. Which of the following antibody gives a primary immune reaction?
 - a) IgG
 - b) IgM
 - c) IgA
 - d) IgE
97. Monocytes differentiate into which kind of phagocytic cells?
 - a) Neutrophils
 - b) B cells
 - c) Macrophages
 - d) T cells
98. Which of the following types of the DNA is right handed helix?
 - a) A & Z
 - b) B & Z
 - c) A & B
 - d) Z & H
99. The DNA replication is always.....
 - a) Conservative
 - b) Semiconservative
 - c) Non-Conservative
 - d) Dispersive
100. Which of the following regarding the basic mechanism of gene expression is correct?
 - a) DNA -> tRNA -> protein
 - b) DNA -> mRNA -> protein
 - c) RNA -> mRNA -> protein
 - d) DNA -> protein

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ROUGH WORK