

Seat No.

Total No. of Pages : 24

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

Day and Date : Thursday, 16-05-2024**Total Marks : 100****Time : 03:30 pm to 05:00 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.of the following is homo polysaccharide.

- a) Starch
- b) Glycogen
- c) Chitin
- d) all of the above

2. Two amino acids in a protein are linked to each other by.....

- a) Phosphodiester bond
- b) Peptide bond
- c) Glycosidic bond
- d) Hydrogen bond

3. Plasmid in bacterial cell is.....
 - a) extra chromosomal DNA which cannot replicate
 - b) extra DNA associated with genome
 - c) extra chromosomal DNA which can self replicate
 - d) extra DNA associated with genome but can not replicate

4. During electrophoresis DNA will
 - a) move towards positive terminal
 - b) stay on the place of application
 - c) move towards negative terminal
 - d) move forward

5. Bacteria used in production of insulin by genetic engineering is.....
 - a) Saccharomyces
 - b) Mycobacterium
 - c) Rhizobium
 - d) Escherichia

6. MS medium was originally formulated by
 - a) Gottlieb Haberlandt
 - b) Nehemiah Grew
 - c) Murashige and Skoog
 - d) Mendel

7. What is plant tissue culture?
- a) The technique of in vitro maintaining and growing plant cells
 - b) The technique of in vivo growing plant cells
 - c) The technique of growing plants in gardens
 - d) The technique of cutting plants
8. Cybrids are produced by.....
- a) The nucleus of one species but cytoplasm from both the parent species
 - b) The fusion of two same nuclei from the same species
 - c) The fusion of two different nuclei from different species
 - d) None of the above
9. What is Callus?
- a) Tissues that grow to form an embryoid
 - b) An unorganised actively dividing the mass of cells maintained in a culture
 - c) An insoluble carbohydrate
 - d) A tissue that grows from an embryo
10. The pair of hormones required for a callus to differentiate are
- a) Ethylene and Auxin
 - b) Auxin and cytokinin
 - c) Auxin and Abscisic acid
 - d) Cytokinin and gibberellin.

11. Concentration of carbon dioxide required for culturing animal cells is
- a) 15-20%
 - b) 25-50%
 - c) 1-10%
 - d) 2-8%
12. At the time of disaggregation of the tissue, which type of cells generally more easily get dissociated?
- a) Epithelial cells.
 - b) Endothelial cells
 - c) Mesenchymal cells
 - d) All of the above
13. Animal cell cultures are widely used for the production of.....
- a) MABS
 - b) Insulin
 - c) Somatostatin
 - d) Thyroxine
14. Most of the cell lines proliferate in medium with a pH
- a) 6.4
 - b) 7.4
 - c) 6.8
 - d) 7.8
15. Stem cells are.....
- a) Differentiated
 - b) Undifferentiated
 - c) Specialized
 - d) Only embryonic
16. 5-bromouracil is an analogue of.....
- a) Uracil
 - b) Thymine
 - c) Adenine
 - d) Guanine

17. Nucleosome is made up of.
- a) DNA, histone core protein
 - b) DNA, histone core protein, linker H1
 - c) RNA, histone core protein
 - d) RNA, histone core protein, linker H1
18. Which of the following types of the DNA is right handed helix?
- a) A & Z
 - b) B & Z
 - c) A & B
 - d) Z & H
19. Non- coding sequence in DNA is known as.....
- a) Template
 - b) Non-template
 - c) Intron
 - d) Exon
20. How many bases are there in per turn of the B form of DNA?
- a) 10.2 bp
 - b) 10.4 bp
 - c) 10.6 bp
 - d) 10.8 bp
21. is a liquid column chromatographic method of separating solute molecules according to differences in molecular size.
- a) Thin layer chromatography (TLC)
 - b) Ion exchange chromatography
 - c) Gel filtration
 - d) Affinity chromatography

22. The polymerase chain reaction is used for.....
- a) Amplifying gene of interest
 - b) Constructing RAPD maps
 - c) Detecting the presence of the transgene in an organism
 - d) All of the above
23. Who deduced the double-helical structure of DNA?
- a) Watson and Francis Crick
 - b) Frederick Sanger
 - c) Anton van Leeuwenhoek
 - d) Mendel
24. Which of the following amino acid is abundantly found in collagen?
- a) Tryptophan
 - b) Alanine
 - c) Glycine
 - d) Serine
25. Which of the following is true about the Z-DNA helix?
- a) It has fewer base pairs per turn than B-DNA
 - b) It tends to be found at the 3' end of the genes
 - c) It has alternating GC sequences
 - d) It is a permanent conformation of DNA

26. Which of the following is an example of epimers?
- a) Mannose & Glucose b) Glucose & Ribose
c) Galactose & Mannose d) Glucose & Galactose
27. Which of the following is not a flavoprotein?
- a) NADH dehydrogenase-Q reductase
b) Succinate dehydrogenase
c) Xanthine oxidase
d) Cytochrome c
28. 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
29. The substances that decreases the activity of enzyme is called as...
- a) Isoenzymes b) Inhibitors
c) Activators d) None of the above
30.proposed Lock and Key mechanism for enzyme catalysis.
- a) Louis Pasteur b) Koshland
c) Emil Fischer d) Sanger

31. Law of thermodynamics which states that energy can neither be created nor be destroyed is....
- a) The second law of thermodynamics
 - b) Third law of thermodynamics
 - c) First law of thermodynamics
 - d) Zero-order kinetics
32. Identify the lowest density lipoprotein among the following?
- a) HDL
 - b) LDL
 - c) VLDL
 - d) Chylomicrons
33. Molecules which play the key role in the transfer of genetic information during protein synthesis are.....
- a) DNA
 - b) RNA
 - c) Nucleic acids
 - d) Lipids
34. What is the value of ΔG , when a system is at equilibrium?
- a) 0
 - b) 1
 - c) -1
 - d) -2
35. 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

36. 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
37. Electrophoresis is not used for.....
- a) Separation of proteins
 - b) Separation of amino acids
 - c) Separation of Lipids
 - d) Separation of nucleic acids
38. Polymerase used for PCR is extracted from.....
- a) Homo sapiens
 - b) *Thermus aquaticus*
 - c) *Escherichia coli*
 - d) *Saccharomyces cerevisiae*
39. Primers used for the process of polymerase chain reaction are.....
- a) Single-stranded RNA oligonucleotide
 - b) Single-stranded DNA oligonucleotide
 - c) Double-stranded RNA oligonucleotide
 - d) Double-stranded DNA oligonucleotide

40. Which of the following is true for asymmetric PCR?
- a) Used for generating double-stranded copies for DNA sequence
 - b) Used for generating single-stranded copies for DNA sequence
 - c) Both a and b
 - d) None of the above
41. Which of the following RNA molecule serves as an adaptor in protein synthesis?
- a) rRNA
 - b) mRNA
 - c) siRNA
 - d) tRNA
42. Transposable element is considered as a
- a) Hybrid DNA
 - b) Satellite DNA
 - c) Selfish DNA
 - d) cDNA
43. Name the part of a chromosome where t-loop is found.
- a) Acromere
 - b) Tetraplex
 - c) Centromere
 - d) Telomere
44. Linking number is the sum of which geometric components?
- a) Twist and writhe
 - b) Toroid and writhe
 - c) Twist and wrap
 - d) Twist and crossover

45. The codon is a.....
- a) Singlet
 - b) Duplet
 - c) Triplet
 - d) Quadruplet
46. Which of the following cells of the immune system do not perform phagocytosis?
- a) Macrophage
 - b) Neutrophil
 - c) Eosinophil
 - d) Basophil
47. Which of the following cells is involved in cell-mediated immunity?
- a) Leukaemia
 - b) T cells
 - c) Mast cells
 - d) Thrombocytes
48. Which of the following protects our body against disease-causing pathogens?
- a) Immune system
 - b) Respiratory system
 - c) Digestive system
 - d) Respiratory system
49. Which of the following is a secondary lymphoid organ?
- a) Bone marrow
 - b) Hypothalamus
 - c) Spleen
 - d) Thymus

50. Which of the following immunity is obtained during a lifetime?
- a) Acquired immunity
 - b) Active immunity
 - c) Passive immunity
 - d) None of the above
51. Which of the following bacteria is predominantly present as normal flora in urine?
- a) Escherichia coli
 - b) Staphylococcus epidermidis
 - c) Staphylococcus aureus
 - d) Streptococcus pyogenes
52. Which of the following statement is incorrect about the important properties of Coronavirus?
- a) Non-Enveloped RNA virus
 - b) Enveloped RNA virus
 - c) Distributed around the world
 - d) Can spread from person to person
53. Which of the following organisms have thick peptidoglycan in their cell wall?
- a) Gram-negative bacteria
 - b) Gram-positive bacteria
 - c) Yeast
 - d) Molds
54. The basic and first choice of taxonomists for the classification of bacteria is.....
- a) Microbial Type Culture Collection
 - b) Bergey's Manual of Systematic Bacteriology
 - c) International Collection of Microorganisms from Plants
 - d) American Type Culture Collection

55. Cell wall less bacteria are called.....
- a) Protozoa
 - b) Viruses
 - c) Yeast
 - d) Micoplasma
56. The rectified spirit contains.....
- a) 95.6% ethanol & 4.4% water
 - b) 55.6% ethanol & 44.4% water
 - c) 85.6% ethanol & 14.4% water
 - d) 90.6% ethanol & 9.4% water
57. The chemical name of table sugar is.....
- a) glucose
 - b) maltose
 - c) lactose
 - d) sucrose
58. The homogenous mixture of two or more chemical compounds is known as.....
- a) solute
 - b) solvent
 - c) solution
 - d) eutectic mixture
59. The chemical composition of stainless steel is...
- a) Fe with 12-15% Cr, 0% C
 - b) Fe with 12-15% Cr, 0.3% C
 - c) Fe with 12-15% Cr, 3% C
 - d) Fe with 12-15% Cr, 0.03% C

60. The chemical nature of biocatalyst is.....
- a) carbohydrate
 - b) protein
 - c) fatty acid
 - d) vitamin
61. Which of the following enzyme is a sensitive marker of alcoholic liver disease?
- a) Alanine transaminase
 - b) Aspartate transaminase
 - c) Alkaline phosphatase
 - d) Gamma-Glutamyltransferase
62. Which of the following disorder is an example of point mutation?
- a) Sickle cell anaemia
 - b) Down's syndrome
 - c) Night blindness
 - d) Thalassemia
63. The viral envelope is made up of.
- a) Proteins
 - b) Glycoproteins
 - c) Lipids and Proteins
 - d) All of the above
64. HTML stands for.....
- a) Hyper text Machine Language
 - b) Hyper Text Mark-up Language
 - c) Higher text up Mark Language
 - d) Hypertext up Mark Language

65. The octal number system has eight base digits including.....
- a) 0 and 8
 - b) 0 to 7
 - c) 1 to 7
 - d) 1 to 8
66. If a frequency distribution is presented by means of adjacent rectangles then it is called.....
- a) histogram
 - b) pie diagram
 - c) ogive curve
 - d) none of these
67.among following is a nucleotide sequence database.
- a) Swiss-Port
 - b) PubMed
 - c) DDBJ
 - d) PDB
68. Among following... ..is not part of CPU.
- a) Arithmetic Unit
 - b) logic Unit
 - c) Hard Disk
 - d) None of the above
69. Which of the following are applications of quantum dots?
- a) Live imaging
 - b) Drug delivery
 - c) As tags for other drug carries
 - d) All the above

87. Which equation is an example of a synthesis reaction?
- a) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
 b) $\text{Na} + \text{Cl} \rightarrow \text{NaCl}$
 c) $\text{HA} + \text{BOH} \rightarrow \text{H}_2\text{O} + \text{BA}$
 d) $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{NaNO}_3 + \text{AgCl}$
88. Which of the following acts both as oxidizing and reducing agent?
- a) nitric acid
 b) ammonia
 c) nitrous acid
 d) nitrogen peroxide
89. Silver Mirror test is given by which one of the following compounds?
- a) Benzophenone
 b) Acetic acid
 c) Acetone
 d) Formaldehyde
90. The enzyme that converts glucose to ethyl alcohol is.....
- a) Maltase
 b) Zymase
 c) Diastase
 d) Invertase
91. Pituitary gland is located in.....
- a) Intestine
 b) Liver
 c) Kidney
 d) Brain
92. Which of the following reptile has four chambered heart?
- a) Turtle
 b) King cobra
 c) Crocodile
 d) Sphenodon

93. Which of the following statements is true?
- a) Invertebrates possesses a tubular nerve cord
 - b) Non-chordates have a vertebral column
 - c) All chordates are vertebrates
 - d) All vertebrates are chordates
94. Fossils are most commonly preserved in.....
- a) Metamorphic rocks
 - b) Igneous rocks
 - c) Sedimentary rocks
 - d) Any type of rock
95. Animal cell differs from plant cell in possessing.....
- a) Plastid
 - b) Golgi bodies
 - c) Vacuole
 - d) Centrosome
96. The genotypic ratio of a monohybrid cross is.....
- a) 3:1
 - b) 1:2:1
 - c) 2:1:1
 - d) 9:3:3:1
97. Mulberry silkworm is.....
- a) *Bombax mori*
 - b) *Anthraea mylitta*
 - c) *Anthraea assamensis*
 - d) *Attacus altas*

Rough Work

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