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ENT-04

Total No. of Pages : 16

Biochemistry/ Biotechnology
M. Sc. Entrance Examination, 2026
Subject Code : 58725

Day and Date : Tuesday, 12-05-2026

Total Marks : 100

Time : 01.00 p.m. to 02.30 p.m.

Instructions

- i. All Questions are compulsory
 - ii. Each Question is of One Mark
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01. Which of the following is not a strong acid?
 - a) H_2SO_4
 - b) CH_3COOH
 - c) HCl
 - d) HBr
02. The codon is a
 - a) Singlet
 - b) Duplet
 - c) Triplet
 - d) Quadruplet
03. Electrophoresis is not used for
 - a) Separation of proteins
 - b) Separation of amino acids
 - c) Separation of Lipids
 - d) Separation of nucleic acids
04. Stem cells are
 - a) Differentiated
 - b) Undifferentiated
 - c) Specialized
 - d) Only embryonic
05. 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

06. The enzyme that converts glucose to ethyl alcohol is
- a) Maltase
 - b) Zymase
 - c) Diastase
 - d) Invertase
07. Fossils are most commonly preserved in
- a) Metamorphic rocks
 - b) Igneous rocks
 - c) Sedimentary rocks
 - d) Any type of rock
08. 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
09. 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
10. 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
11. The pressure exerted by the swelling protoplast on the walls of the cell is.....
- a) Wall pressure
 - b) Osmotic pressure
 - c) Suction pressure
 - d) Turgor pressure
12. Which of the following reptile has four chambered heart?
- a) Turtle
 - b) King cobra
 - c) Crocodile
 - d) Sphenodon

13. 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
14. 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
15. Which of the following acts both as oxidizing and reducing agent?
- a) nitric acid
 - b) ammonia
 - c) nitrous acid
 - d) nitrogen peroxide
16. 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
17. Hemoglobin is a.....
- a) Fat
 - b) Vitamin
 - c) Carbohydrate
 - d) Protein
18. Mulberry silkworm is.....
- a) *Bombax mori*
 - b) *Anthraea mylitta*
 - c) *Anthraea assamensis*
 - d) *Attacus atlas*
19. Carbon, Diamond and Graphite are together called
- a) Isomers
 - b) Isotopes
 - c) Allotropes
 - d) Isomorphs

20. 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
21. Animal cell cultures are widely used for the production of.....
- a) MABS
 - b) Insulin
 - c) Somatostatin
 - d) Thyroxine
22. Two amino acids in a protein are linked to each other by.....
- a) Phosphodiester bond
 - b) Peptide bond
 - c) Glycosidic bond
 - d) Hydrogen bond
23. Which of the following is not a flavoprotein?
- a) NADH dehydrogenase-Q reductase
 - b) Succinate dehydrogenase
 - c) Xanthine oxidase
 - d) Cytochrome c
24. 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
25. Concentration of carbon dioxide required for culturing animal cells is
- a) 15-20%
 - b) 25-50%
 - c) 1-10%
 - d) 2-8%
26. Transposable element is considered as a
- a) Hybrid DNA
 - b) Satellite DNA
 - c) Selfish DNA
 - d) cDNA

27. Which of the following is a secondary lymphoid organ?
- a) Bone marrow
 - b) Hypothalamus
 - c) Spleen
 - d) Thymus
28. Which of the following is used to preserve specimens in the biology laboratory?
- a) Phenol
 - b) Benzaldehyde
 - c) Formaldehyde
 - d) Acetic acid
29. The genotypic ratio of a monohybrid cross is.....
- a) 3:1
 - b) 1:2:1
 - c) 2:1:1
 - d) 9:3:3:1
30. 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
31. Vessels and Companion cells are characteristics of
- a) Angiosperm
 - b) Gymnosperm
 - c) Pteridophyta
 - d) Fern
32. The protective covering over radical during the germination of seeds is
- a) Coleoptile
 - b) Epithelium
 - c) Suspensor
 - d) Coleorhiza
33. 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

34. 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
35. Which of the following cells is involved in cell-mediated immunity?
- a) Leukaemia
 - b) T cells
 - c) Mast cells
 - d) Thrombocytes
36. 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
37. Bacteria used in production of insulin by genetic engineering is.....
- a) Saccharomyces
 - b) Mycobacterium
 - c) Rhizobium
 - d) Escherichia
38. 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
39. Who deduced the double-helical structure of DNA?
- a) Watson and Francis Crick
 - b) Frederick Sanger
 - c) Anton van Leeuwenhoek
 - d) Mendel
40. What is the value of ΔG , when a system is at equilibrium?
- a) 0
 - b) 1
 - c) -1
 - d) -2

41. During electrophoresis DNA will.....
- a) move towards positive terminal
 - b) stay on the place of application
 - c) move towards negative terminal
 - d) move forward
42. 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
43. Non-coding sequence in DNA is known as
- a) Template
 - b) Non-template
 - c) Intron
 - d) Exon
44. Which of the following immunity is obtained during a lifetime?
- a) Acquired immunity
 - b) Active immunity
 - c) Passive immunity
 - d) None of the above
45. Cell wall less bacteria are called
- a) Protozoa
 - b) Viruses
 - c) Yeast
 - d) Micoplasma
46. Molar mass of HNO_3 ?
- a) 63 g/mol
 - b) 53 g/mol
 - c) 48 g/mol
 - d) 52 g/mol
47. Uric acid is the chief nitrogenous waste in.....
- a) Fish
 - b) Birds
 - c) Mankind
 - d) Frogs

48.among following is a nucleotide sequence database.
- a) Swiss-Port
 - b) PubMed
 - c) DDBJ
 - d) PDB
49. A plant tissue that does not contain lignin is
- a) Sclerenchyma
 - b) Parenchyma
 - c) Collenchyma
 - d) Chlorenchymal
50. The stalk of Datura flower at its base is known as
- a) Corolla
 - b) Pedicel
 - c) Sepals
 - d) Thalamus
51. Among following is not part of CPU.
- a) Arithmetic Unit
 - b) logic Unit
 - c) Hard Disk
 - d) None of the above
52. 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
53. Which is the best definition of activation energy?
- a) the energy required to break the bonds of reactant molecules.
 - b) the energy required to end a chemical reaction
 - c) the energy required to bind a substrate to an active site
 - d) the energy required to re-form bonds in product molecules.
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. Name the part of a chromosome where t-loop is found.
- Acromere
 - Tetraplex
 - Centromere
 - Telomere
56. Polymerase used for PCR is extracted from.....
- Homo sapiens
 - Thermus aquaticus
 - Escherichia coli
 - Saccharomyces cerevisiae
57. Whenever the cell's ATP supply is depleted, which of the following enzyme's activity is increased?
- Pyruvate kinase
 - Phosphofructokinase-1
 - Hexokinase
 - Glucokinase
58. is a liquid column chromatographic method of separating solute molecules according to differences in molecular size.
- Thin layer chromatography (TLC)
 - Ion exchange chromatography
 - Gel filtration
 - Affinity chromatography
59.proposed Lock and Key mechanism for enzyme catalysis.
- Louis Pasteur
 - Koshland
 - Emil Fischer
 - Sanger
60. Which of the following is true for asymmetric PCR?
- Used for generating double-stranded copies for DNA sequence
 - Used for generating single-stranded copies for DNA sequence
 - Both a and b
 - None of the above
61. The pair of hormones required for a callus to differentiate are
- Ethylene and Auxin
 - Auxin and cytokinin
 - Auxin and Abscisic acid
 - Cytokinin and gibberellin

62. 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) 11 bp
63. Which of the following organisms have thick peptidoglycan in their cell wall?
a) Gram-negative bacteria
b) Gram-positive bacteria
c) Yeast
d) Molds
64. The chemical name of table sugar is.....
a) glucose
b) maltose
c) lactose
d) sucrose
65. Silver Mirror test is given by which one of the following compounds?
a) Benzophenone
b) Acetic acid
c) Acetone
d) Formaldehyde
66. The viral envelope is made up of
a) Proteins
b) Glycoproteins
c) Lipids and Proteins
d) All of the above
67. Electrons from the excited chlorophyll molecules of PS-II are first accepted by
a) Pheophytin
b) Ferredoxin
c) Cytochrome f
d) Cytochrome b
68. Dominant generation in pteridophytes is.....
a) Haploid
b) Gametophytic
c) Diploid
d) Triploid

69. Nanomembranes have a pore size of
- 1nm-10nm
 - 10nm-100nm
 - 0.1 nm-1nm
 - 100nm-1000nm
70. Animal cell differs from plant cell in possessing
- Plastid
 - Golgi bodies
 - Vacuole
 - Centrosome
71. Which equation is an example of a synthesis reaction?
- $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
 - $\text{Na} + \text{Cl} \rightarrow \text{NaCl}$
 - $\text{HA} + \text{BOH} \rightarrow \text{H}_2\text{O} + \text{BA}$
 - $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{NaNO}_3 + \text{AgCl}$
72. The rectified spirit contains
- 95.6% ethanol & 4.4% water
 - 55.6% ethanol & 44.4% water
 - 85.6% ethanol & 14.4% water
 - 90.6% ethanol & 9.4% water
73. Linking number is the sum of which geometric components?
- Twist and writhe
 - Toroid and writhe
 - Twist and wrap
 - Twist and crossover
74. 5-bromouracil is an analogue of
- Uracil
 - Thymine
 - Adenine
 - Guanine
75. MS medium was originally formulated by
- Gottlieb Haberlandt
 - Nehemiah Grew
 - Murashige and Skoog
 - Mendel

76. Identify the lowest density lipoprotein among the following?
- a) HDL
 - b) LDL
 - c) VLDL
 - d) Chylomicrons
77. Which of the following amino acid is abundantly found in collagen?
- a) Tryptophan
 - b) Alanine
 - c) Glycine
 - d) Serine
78. Which of the following is an example of epimers?
- a) Mannose & Glucose
 - b) Glucose & Ribose
 - c) Galactose & Mannose
 - d) Glucose & Galactose
79. The substances that decreases the activity of enzyme is called as
- a) Isoenzymes
 - b) Inhibitors
 - c) Activators
 - d) None of the above
80. 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
81. of the following is homo polysaccharide.
- a) Starch
 - b) Glycogen
 - c) Chitin
 - d) all of the above
82. 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

83. 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
84. 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
85. Most of the cell lines proliferate in medium with a pH?
- a) 6.4
 - b) 7.4
 - c) 6.8
 - d) 7.8
86. Which of the following types of the DNA is right handed helix?
- a) A & Z
 - b) B & Z
 - c) A & B
 - d) Z & H
87. Which of the following RNA molecule serves as an adaptor in protein synthesis?
- a) rRNA
 - b) mRNA
 - c) siRNA
 - d) tRNA
88. Which of the following cells of the immune system do not perform phagocytosis?
- a) Macrophage
 - b) Neutrophil
 - c) Eosinophil
 - d) Basophil
89. Which of the following protects our body against disease-causing pathogens?
- a) Immune system
 - b) Respiratory system
 - c) Digestive system
 - d) Respiratory system

90. 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
91. The homogenous mixture of two or more chemical compounds is known as.....
- a) solute
 - b) solvent
 - c) solution
 - d) eutectic mixture.
92. The chemical nature of biocatalyst is
- a) carbohydrate
 - b) protein
 - c) fatty acid
 - d) vitamin
93. Which of the following elements is a metal?
- a) Se
 - b) I
 - c) Zn
 - d) S
94. Pituitary gland is located in.....
- a) Intestine
 - b) Liver
 - c) Kidney
 - d) Brain
95. Which of the following is tapeworm?
- a) Schistosoma
 - b) Fasciola
 - c) Enterobius
 - d) Taenia
96. Which of the following disorder is an example of point mutation?
- a) Sickle cell anaemia
 - b) Down's syndrome.
 - c) Night blindness
 - d) Thalassemia

97. 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
98. of the following is the characteristic of collenchyma
- a) Elongated cells with thickened corners
 - b) Isodiametric cells with thickened walls.
 - c) Elongated cells with deposits of cellulose and pectin
 - d) Isodiametric cells with deposits of cellulose and pectin
99. Kranz anatomy is found in the leaves of
- a) Wheat
 - b) Mustard
 - c) Potato
 - d) Sugarcane
100. If the endosperm cell of a dicot plant contains 30 chromosomes, find the number of chromosomes present in the root cells of the plant.
- a) 40
 - b) 10
 - c) 20
 - d) 15



- Rough Work -