

Code No.

R – 2104

**Entrance Examination for Admission to the P.G. Courses in the
Teaching Departments, 2023**

CSS

BIOCHEMISTRY

General Instructions

1. The Question Paper is having 100 Objective Questions, each carrying one mark.
2. The answers are to be (✓) 'tick marked' **only** in the "**Response Sheet**" provided.
3. **Negative marking** : **0.25 marks** will be deducted for each wrong answer .

Time : 2 Hours

Max. Marks : 100

To be filled in by the Candidate									
Register Number	in Figures								
	in words								

Choose appropriate answer from the options in the questions.

(100 × 1 = 100 marks)

1. All the following lipids are present in cell membranes except
 - a) Lecithin
 - b) Cholesterol
 - c) Sphingomyelin
 - d) Triacyl glycerd

DO NOT WRITE HERE

2. All are essential aminoacids except

- | | |
|-------------|------------------|
| a) Tyrosine | b) Lysine |
| c) Valine | d) Phenylalanine |

3. Denatured proteins are

- | | |
|------------------------------|-----------------------------|
| a) Are soluble | b) Are difficult to digest |
| c) Are biologically inactive | d) Peptide bonds are broken |

4. In enzyme kinetics, V_{max} denotes
- a) The amount of an active enzyme
 - b) Substrate concentration
 - c) Half the substrate concentration
 - d) Quantity of the enzyme substrate complex
5. Which contains a betaglycosidic linkage
- a) Heparin
 - b) Glycogen
 - c) Cellulose
 - d) Starch
6. The nitrogenous base present in lecithin is
- a) choline
 - b) ethanolamine
 - c) serine
 - d) sphingosine
7. Fatty liver may be prevented by the following except
- a) Ethanol
 - b) Choline
 - c) Methionine
 - d) Lecithin
8. All are useful substances produced from cholesterol except
- a) Vitamin D
 - b) Bile salts
 - c) Bile Pigments
 - d) Cortisol
9. Which aminoacid is oxidatively deaminated in the liver
- a) Aspartic acid
 - b) Alanine
 - c) Glutamic acid
 - d) Valine
10. The osmotic pressure of a solution increases with the rise in
- a) Humidity
 - b) Temperature
 - c) Cold
 - d) Concentration of solute

11. The pH of blood is 7.4, then the ratio of $[\text{NaHCO}_3]$ and $[\text{H}_2\text{CO}_3]$ will be
- a) 4:1
 - b) 10:1
 - c) 15:1
 - d) 20:1
12. During diffusion, the movement of solute particle depends on:
- a) From lower concentration to higher concentration
 - b) From higher concentration to lower concentration
 - c) In both directions
 - d) None of the above
13. The quickest method for separation of proteins
- a) Electrophoresis
 - b) High performance liquid chromatography
 - c) Ion exchange chromatography
 - d) Thin layer chromatography
14. The carbohydrate reserve in human body is
- a) Starch
 - b) Cellulose
 - c) Glucose
 - d) Glycogen
15. Mucic acid is produced by the oxidation of
- a) Glucose
 - b) Galactose
 - c) Fructose
 - d) Mannose
16. A fatty acid which is not synthesized in the human body and has to be supplied in the diet:
- a) Palmitic acid
 - b) Oleic acid
 - c) Linoleic acid
 - d) Stearic acid

17. In protein structure, the α -helix and β -pleated sheet are examples of
- a) Primary structure
 - b) Secondary Structure
 - c) Tertiary Structure
 - d) quaternary Structure
18. Complete hydrolysis of nucleic acids will not yield
- a) Guanosine
 - b) Ribose
 - c) Deoxyribose
 - d) Phosphoric acid
19. RNA does not contain
- a) Uracil
 - b) Adenine
 - c) Hydroxymethyl Cytosine
 - d) Ribose
20. Cell membrane in animals is composed mainly of the molecules of
- a) Lipids
 - b) Proteins
 - c) Lipids and proteins
 - d) Carbohydrates
21. The most abundant chemical substance of cell wall is
- a) Chitin
 - b) Cutin
 - c) Pectin
 - d) Cellulose
22. An Example of lyase is:
- a) Glutamine Synthetase
 - b) Fumerase
 - c) Cholineesterase
 - d) Amylase
23. Digestive enzymes belong to the class of
- a) Hydrolases
 - b) Ligases
 - c) Lyases
 - d) Oxido reductases

24. An enzyme that catalyses the conversion of aldose sugar to a ketose sugar would be classified as one of the:
- a) Transferases
 - b) Isomerases
 - c) Oxidoreductases
 - d) Hydrolases
25. Thiamine pyrophosphate is a coenzyme involved in
- a) Decarboxylation reaction
 - b) Carboxylation reaction
 - c) Dehydrogenation reaction
 - d) Hydration reaction
26. The immunoglobulin which is produced first by the fetus in response to infection is
- a) IgG
 - b) IgA
 - c) IgM
 - d) IgD
27. The reaction of soluble antigen with antibody is known as
- a) Agglutination
 - b) Precipitation
 - c) Flocculation
 - d) Complement fixation
28. Active immunity is not acquired by
- a) Infection
 - b) Vaccination
 - c) Immunoglobulin transfer
 - d) Subclinical infection
29. The bond that binds light chain and heavy chain in an immunoglobulin is
- a) Hydrogen bond
 - b) Hydroxyl bond
 - c) Disulphide bond
 - d) Hydrophobic interactions
30. Which is a eukaryote?
- a) Mycoplasma
 - b) Bacteria
 - c) Fungus
 - d) Chlamydia

31. Plasmids are responsible for
- a) cell metabolism
 - b) cell division
 - c) cell respiration
 - d) gene transfer
32. Glass vessels and syringes are best sterilised by
- a) Hot air oven
 - b) Autoclaving
 - c) Irradiation
 - d) Ethylene dioxide
33. The usual concentration of agar used for agar medium is
- a) 2%
 - b) 5%
 - c) 10%
 - d) 20%
34. Most drug resistance occurs due to
- a) Transduction
 - b) Translation
 - c) Mutation
 - d) Conjugation
35. The first human disease proved to have a viral cause was
- a) Small pox
 - b) Rabies
 - c) Hepatitis
 - d) Yellow fever
36. The absorption of glucose is decreased by the deficiency of
- a) Vitamin A
 - b) Vitamin D
 - c) Thiamine
 - d) Vitamin B12
37. Which of the following hormone increases the absorption of glucose from gastro intestinal tract.
- a) Insulin
 - b) Thyroid hormones
 - c) Glucagon
 - d) FSH

38. Dehydrogenases involved in HMP shunt are specific for
- a) NADP^+
 - b) NAD^+
 - c) FAD
 - d) FMN
39. The allosteric enzyme responsible for controlling the rate of TCA cycle is
- a) Malate dehydrogenase
 - b) Isocitrate dehydrogenase
 - c) Fumerase
 - d) Aconitase
40. During each cycle of β - Oxidation of fatty acids all the following compounds are generated except:
- a) NADH
 - b) H_2O
 - c) FADH_2
 - d) Acyl-CoA
41. The rate limiting step in cholesterol biosynthesis is
- a) Squalene synthetase
 - b) Mevalonate kinase
 - c) HMG -CoA synthetase
 - d) HMG -CoA reductase
42. Pancreatic juice contains all the following except:
- a) Trypsinogen
 - b) Lipase
 - c) Chole cystokinin
 - d) Chymotrypsinogen
43. Which of the following aminoacids on degradation produces a glucogenic intermediate of TCA cycle and ketone body.
- a) Glycine
 - b) Phenyl alanine
 - c) Alanine
 - d) Cysteine

44. Nicotinamide is detoxicated by
- a) Active sulphate
 - b) By methylation
 - c) By acetylation
 - d) Glucuronic acid
45. The enzyme cytochrome P-450 reductase which catalyses hydroxylation of drugs requires the coenzyme
- a) NAD^+
 - b) $\text{NADH} + \text{H}^+$
 - c) NADP^+
 - d) $\text{NADPH} + \text{H}^+$
46. Nyctalopia is due to the deficiency of
- a) Vitamin K
 - b) Vitamin D
 - c) Vitamin B12
 - d) Vitamin A
47. Beriberi is due to the deficiency of
- a) Niacin
 - b) Thiamine
 - c) Riboflavin
 - d) Vitamin B12
48. The metal present in vitamin B12 is
- a) Copper
 - b) Cobalt
 - c) Chromium
 - d) Manganese
49. In patients with renal failure all of the following are typically elevated in serum except:
- a) Urea nitrogen
 - b) Phosphate
 - c) Uric acid
 - d) Albumin
50. In which of the following conditions the plasma activities of both ALP and GGT are likely to be increased
- a) Carcinoma of prostate
 - b) Trimester of pregnancy
 - c) Osteomalacia
 - d) Alcoholic cirrhosis

51. Decreased T_4 and decreased T_3 uptake together suggest the likelihood of
- a) Hyperthyroidism
 - b) Hypothyroidism
 - c) Increased TBG
 - d) Decreased TBG
52. All the following compounds are intermediates of TCA cycle except:
- a) Malate
 - b) Pyruvate
 - c) Oxaloacetate
 - d) Fumarate
53. An essentials for converting glucose to glycogen in liver is
- a) Lactic acid
 - b) GTP
 - c) CTP
 - d) UTP
54. Which of the following pathways is considered as amphibolic in nature?
- a) Glycogenesis
 - b) Glycolysis
 - c) Lipolysis
 - d) TCA cycle
55. Von Gierke's disease is characterized by the deficiency of which enzyme?
- a) Glucokinase
 - b) Glucose-6-phosphatase
 - c) Glycogen synthase
 - d) (1,6) glucosidase
56. Phenylketonuria is an inherited disorder due to deficiency of the enzyme:
- a) Transaminase
 - b) Homogentisate oxidase
 - c) Phenylalanine hydroxylase
 - d) Isomerase
57. At isoelectric pH, the aminoacids and proteins show:
- a) Maximum net charge
 - b) maximum mobility in electric field
 - c) maximum precipitability
 - d) Minimum buffering action

58. A pair of sugars differing from each other in the functional group is called:
- a) Anomers
 - b) Epimers
 - c) Racemers
 - d) Stereoisomers
59. Cholesterol contains how many carbon atoms
- a) 6
 - b) 12
 - c) 27
 - d) 30
60. Bilirubin in serum can be measured by
- a) Vanden Bergh reaction
 - b) Ehrlich's reaction
 - c) Schlesingers reaction
 - d) Fouchet's reaction
61. The normal fasting plasma glucose level is
- a) 40-60 mg/100 ml
 - b) 70-110 mg/100 ml
 - c) 120-150 mg/100 ml
 - d) 160-180 mg/100 ml
62. Electron transport chain is located in the
- a) Outer mitochondrial membrane
 - b) Inner mitochondrial membrane
 - c) mitochondrial matrix
 - d) Nucleus
63. Which of the following is not a high energy compound?
- a) Creatine phosphate
 - b) 1,3 biphosphoglycerate
 - c) Phosphoenol pyruvate
 - d) Glucose - 6 - phosphate
64. Which of the electron carriers is soluble and mobile.
- a) Coenzyme Q
 - b) Cytochrome C
 - c) Cytochrome A
 - d) Cytochrome B

65. Oxidative phosphorylation is inhibited by the following except:
- a) Oligomycin
 - b) Carbon monoxide
 - c) Hydrogen cyanide
 - d) Pyrophosphate
66. The chief product of catabolism of purines in human beings is:
- a) Urea
 - b) Uric acid
 - c) Hypoxanthine
 - d) Beta aminobutyric acid
67. The drug of choice for primary gout is
- a) Allopurinol
 - b) Aspirin
 - c) Colchicine
 - d) Probenecid
68. Which nucleotide is found in DNA?
- a) Pseudouridine
 - b) Dihydrouridine
 - c) Deoxythymidine
 - d) Inosine
69. All the bases are found in mRNA except
- a) Adenine
 - b) Guanine
 - c) Uracil
 - d) Thymine
70. Post translational modifications include all the following except:
- a) Glycosylation
 - b) Hydroxylation
 - c) Decarboxylation
 - d) Phosphorylation
71. Which enzyme is used for preparing a recombinant DNA molecule
- a) Restriction endonuclease
 - b) RNA polymerase
 - c) DNA polymerase
 - d) Topoisomerase

72. The CDNA is prepared by using the enzyme
- a) RNA polymerase
 - b) DNA polymerase
 - c) Reverse transcriptase
 - d) Restriction endonuclease
73. DNA finger printing is based on unique
- a) Coding sequences
 - b) Tandem repeats
 - c) Mutant genes
 - d) Duplication of genes
74. A Specific DNA sequence can be identified in tissues by
- a) Western blotting
 - b) Fluorescent in situ hybridization
 - c) Real time PCR
 - d) Autoradiography
75. Deficiency of folic acid leads to
- a) Night blindness
 - b) Rickets
 - c) Macrocytic anemia
 - d) Microcytic anemia
76. Which is not true regarding genetic code?
- a) Degenerate
 - b) Ambiguous
 - c) Non over lapping
 - d) Universal
77. Which of the following is an example of Homology and similarity tool?
- a) BLAST
 - b) Rasmol
 - c) EMBOSS
 - d) PROSPECT
78. In which year did the SWISSPORT protein sequence database begin?
- a) 1988
 - b) 1985
 - c) 1986
 - d) 1987

79. The identification of drugs through the genomic study is called _____
- a) Genomics
 - b) Pharmacogenomics
 - c) Pharmacogenetics
 - d) Cheminformatics
80. The stepwise method for solving problems in computer science is called
- a) Flow chart
 - b) Algoritham
 - c) Procedure
 - d) Sequential design
81. The computer simulation refers to
- a) Dry lab
 - b) Invitro
 - c) Insilico
 - d) Wet lab
82. The term Bioinformatics was coined by
- a) JD Watson
 - b) Pauline Hogweg
 - c) Margaret Dayhoff
 - d) Frederic sanger
83. Photosynthesis occurs is
- a) Chloroplast
 - b) Golgibody
 - c) Endoplasmic reticulam
 - d) Nucleus
84. The first product of C₄ pathway is
- a) PGA
 - b) DHAP
 - c) Oxaloacetate
 - d) Phosphoenolpyruvate
85. The first acceptor of CO₂ in C₄ plants is
- a) Aspartic acid
 - b) Malic acid
 - c) Oxaloacetic acid
 - d) Phosphoenol pyruvate
86. Where does the light reaction takes place?
- a) Grana
 - b) Stroma
 - c) Cytoplasm
 - d) Endoplasmic reticulam

87. The water soluble photosynthetic pigment is
- a) Chlorophyll a
 - b) Xanthophyll
 - c) Anthocyanin
 - d) Chlorophyll b
88. Which of the following is not required for clot formation,
- a) Vitamin K
 - b) Calcium
 - c) Plasmin
 - d) Fibrinogen
89. What of blood is responsible for fighting infections
- a) Red blood cells
 - b) White blood cells
 - c) Platelets
 - d) Plasma
90. Which of the following plasma protein is not involved in iron homeostasis
- a) Haptoglobin
 - b) Transferrin
 - c) Ferritin
 - d) Ceruloplasmin
91. Gaseous exchange is held by
- a) Osmosis
 - b) Simple diffusion
 - c) Facilitated diffusion
 - d) Co-Transport
92. Solubility of carbondioxide is _____ than oxygen
- a) More
 - b) Less
 - c) 50 times more
 - d) Equal
93. Where cardiac muscle is found?
- a) Skin
 - b) Lungs
 - c) Bones
 - d) Heart
94. What makes the muscles to be strong?
- a) Diet
 - b) Exercise
 - c) Proteins
 - d) Vitamins

95. How many bones are there in our body?
- a) 33
 - b) 206
 - c) 639
 - d) It varies by individual
96. Which bone protects the brain?
- a) Calcium
 - b) The cranium
 - c) The cerebrum
 - d) The cerebellum
97. What makes bones so strong?
- a) Silica
 - b) Cartilage
 - c) Blood and bone marrow
 - d) Calcium and phosphorus
98. Name the gland which is present-above our kidneys?
- a) Adrenal
 - b) Pituitary
 - c) Gonads
 - d) Salivary
99. ATP synthase is a marker enzyme present in:
- a) Cytoplasm
 - b) Mitochondria
 - c) Lysosomes
 - d) Golgi complex
100. Which of the following statements is true about the collection of data?
- a) The problem of doubtful confusion arises in the case of an indirect oral investigation
 - b) The problem of doubtful confusion takes place when the information is accessed through correspondents.
 - c) The problem of doubtful confusion occurs when the researcher obtains data through mailed questionnaires
 - d) The problem of doubtful confusing happens in the case of direct personal interviews.

ANSWER SHEET

1	A	B	C	D	E
2	A	B	C	D	E
3	A	B	C	D	E
4	A	B	C	D	E
5	A	B	C	D	E
6	A	B	C	D	E
7	A	B	C	D	E
8	A	B	C	D	E
9	A	B	C	D	E
10	A	B	C	D	E
11	A	B	C	D	E
12	A	B	C	D	E
13	A	B	C	D	E
14	A	B	C	D	E
15	A	B	C	D	E
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25	A	B	C	D	E
26	A	B	C	D	E
27	A	B	C	D	E
28	A	B	C	D	E
29	A	B	C	D	E
30	A	B	C	D	E
31	A	B	C	D	E
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45	A	B	C	D	E
46	A	B	C	D	E
47	A	B	C	D	E
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96	A	B	C	D	E
97	A	B	C	D	E
98	A	B	C	D	E
99	A	B	C	D	E
100	A	B	C	D	E

ROUGH WORK

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