

Code No.

N – 3567

Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2022

CSS

BIOCHEMISTRY

General Instructions

1. The Question Paper is having two Parts — Part 'A' Objective type (60%) & Part 'B' Descriptive type (40%).
2. Objective type questions which carry 1 mark each are to be (✓) 'tick marked' in the response sheets against the appropriate answers provided.
3. 8 questions are to be answered out of 12 questions carrying 5 marks each in Part 'B'.
4. **Negative marking** : 0.25 marks will be deducted for each wrong answer in Part 'A'.

Time : 2 Hours

Max. Marks : 100

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

PART – A

(Objective Type)

Choose appropriate answer from the options in the questions. **One mark each.**

(60 × 1 = 60 marks)

1. Chromatography is used to separate

a) Solution	b) Mixtures
c) Molecules	d) Atoms

DO NOT WRITE HERE

-
2. Thin layer chromatography is
- | | |
|------------------------------|---|
| a) Partition Chromatography | b) Electrical mobility of ionic species |
| c) Adsorption Chromatography | d) None of the above |
3. A technique which uses high pressure for separation?
- | | |
|---------|---------|
| a) TLC | b) HPLC |
| c) PAGE | d) GLC |
4. Electrophoresis is not used for the separation of _____?
- | | |
|------------------|------------|
| a) Nucleic acids | b) Prefins |
| c) Amino acids | d) Lipids |

5. Sodium Dodecyl Sulphate (SDS) used in SDS-PAGE is
- a) An anionic detergent
 - b) A cationic detergent
 - c) An anion exchanger
 - d) A catanoic exchanger
6. The strength of the acid depends upon
- a) Its density
 - b) Its viscosity
 - c) Its degree of ionisation
 - d) None of the above
7. 180 g of glucose ($C_6H_{12}O_6$) is present in 1 litre of an aqueou solution of glucose. It is said to be
- a) 1 molal
 - b) 0.1 molal
 - c) 10 molal
 - d) 0.01 molal
8. Oxidation involves
- a) Gain of electron
 - b) Loss of electrons
 - c) Increase in the valency of positive part
 - d) Decrease in the valency of positive part
9. Lysosomes are
- a) Power house of the cell
 - b) Bags of hydrolytic enzymes
 - c) Store house for genetic information
 - d) Interconnected channels in the cytoplasm
10. Indole ring is present in
- a) Arginine
 - b) Tryptophan
 - c) Histidine
 - d) Proline

11. All the following lipids are present in cell membrane except
- a) Lecithin
 - b) Cholesterol
 - c) Sphingomyelin
 - d) Triacylglycerol
12. The force maintaining the primary structure of a protein
- a) Peptide bonds
 - b) Hydrophobic forces
 - c) Hydrogen bonds
 - d) Electrostatic bonds
13. Denatured Proteins :
- a) Are soluble
 - b) Are difficult to digest
 - c) Are biologically inactive
 - d) Peptide bonds are broken
14. The enzyme
- a) Reduces the energy of activation
 - b) Increases total energy of substrate
 - c) Increases the equilibrium constant
 - d) Increases total energy of the product
15. Digestive enzymes belong to the class of
- a) Hydrolases
 - b) Ligases
 - c) Lyases
 - d) Oxidoreductases
16. A pair of sugars differing from each other in the functional group is called
- a) Anomers
 - b) Epimers
 - c) Racemers
 - d) Stereoisomers
17. Which of the following lipids is not present in vegetable oils?
- a) Cholesterol
 - b) Linoleic acid
 - c) Oleic acid
 - d) Stearic acid

18. The major fat in adipose tissue is :
- a) Phospholipid
 - b) Cholesterol
 - c) Sphingo lipid
 - d) Triacyl glycerol
19. All the bases are found in mRNA except :
- a) Adenine
 - b) Guanine
 - c) Uracil
 - d) Thymine
20. The nitrogeneous base absent in DNA is
- a) Uracil
 - b) Cytosine
 - c) Thymine
 - d) Guanine
21. Simple Sugar of the blood is
- a) Sucrose
 - b) Lactose
 - c) Glucose
 - d) Galactose
22. A fatty acid not synthesized in man is
- a) Oleic acid
 - b) Stearic acid
 - c) Palmitoleic acid
 - d) Linoleic acid
23. The link between glycolysis and krebs cycle is
- a) Pyruvic acid
 - b) Malic acid
 - c) Acetyl acid
 - d) Oxaloacetic acid
24. Hormones may be
- a) Steroids
 - b) Peptides
 - c) Amino acid derivatives
 - d) All of the above

25. Hypothyroidism in childhood leads to
- a) Cretinism
 - b) Sterility
 - c) Addison's disease
 - d) Myxoedema
26. Hormones differ from enzymes in that they are
- a) found only in animals
 - b) found only in plants
 - c) used up in metabolism
 - d) not used up in metabolism
27. Pellagra is caused due to prolonged deficiency of
- a) Niacin
 - b) Ascorbic acid
 - c) Thiamine
 - d) Folic acid
28. Prolonged deficiency of Vitamin B₁ in human diet may lead to
- a) Pellagra
 - b) Beri-beri
 - c) Scurvy
 - d) Cheilosis
29. Diabetes mellitus is due to the lack of
- a) Starch in food
 - b) Trypsin in pancreatic juice
 - c) Insulin in blood
 - d) ADH in Kidneys
30. Which intermediate of the TCA cycle is an unsaturated dicarboxylic acid?
- a) Succinate
 - b) Malate
 - c) Oxaloacetate
 - d) Fumerate
31. All contain high energy bond except
- a) ATP
 - b) Glucose-6-phosphate
 - c) Acetyl CoA
 - d) Phospho enol pyruvate

32. Heme is converted to bilirubin in
- a) Mitochondria
 - b) Microsomes
 - c) Golgi bodies
 - d) Plasma membrane
33. 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
34. Normal value of blood urea is
- a) 3–4 mg/100 ml
 - b) 4–8 mg/100 ml
 - c) 8–16 mg/100 ml
 - d) 20–40 mg/100 ml
35. Which of the following hormones is not involved in carbohydrate metabolism?
- a) Cortisol
 - b) ACTH
 - c) Glucagon
 - d) Vasopressin
36. During each cycle of β -oxidation of fatty acid all the following compounds are generated EXCEPT
- a) NADH
 - b) H_2O
 - c) $FADH_2$
 - d) Acetyl-CoA
37. Which coenzyme is not involved in oxidative decarboxylation of pyruvic acid?
- a) TPP
 - b) Lipoic acid
 - c) CoA-SH
 - d) Biotin
38. Metabolic alkalosis is characterised by
- a) High hydrogen ion concentration in plasma
 - b) Increased PCO_2
 - c) Elevated chloride level in serum
 - d) Low potassium level

39. Deficiency of Vitamin A leads to
- a) Night blindness
 - b) Rickets
 - c) Macrocytic anemia
 - d) Microcytic anemia
40. The metal present in Vitamin B₁₂ is
- a) Copper
 - b) Cobalt
 - c) Chromium
 - d) Manganese
41. Which one of the following is a reference management software?
- a) Graph pad prism
 - b) SPSS
 - c) Mendeley
 - d) Statcratt
42. Which one is not associated with quantitative research design?
- a) Quasi experimental
 - b) Experimental
 - c) Ethnography
 - d) None of the above
43. The parameter compared in one way analysis of variance (ANOVA) is
- a) Median
 - b) Mean
 - c) Standard Deviation
 - d) Frequency Counts
44. Type II error occurs when
- a) Null hypothesis is true, but rejected
 - b) Null hypothesis is false, but fails to be rejected
 - c) One fails to make a decision to or not to reject a hypothesis
 - d) None of the above
45. Which of the following is the most abundant immunoglobulin?
- a) IgM
 - b) IgG
 - c) IgA
 - d) IgE

46. _____ is a small molecule that stimulates the production of antibody molecules only when conjugated to a larger molecule.
- a) Hapten
 - b) Antigen
 - c) Epitope
 - d) Adjuvent
47. Counter stain used in gram staining is
- a) Crystal violet
 - b) Ethanol
 - c) Iodine
 - d) Safranin
48. Acid fast staining mainly used to detect
- a) Mycobacterium
 - b) Bacillus
 - c) E.Coli
 - d) Cornybacterium
49. Organism used to check the efficiency of autoclave is
- a) E.Coli
 - b) Bacillus stearothermophillus
 - c) Saccharomyces species
 - d) Bacillus subtilis
50. For protein detection most commonly used probe is
- a) Antibody
 - b) Lectin
 - c) Antigens
 - d) Interferons
51. Deficiency of folic acid and Vitamin B₁₂ leads to
- a) Xerophthalmia
 - b) Megaloblastic anaemia
 - c) Sickle cell anaemia
 - d) Microlytic anaemia
52. The enzyme which relaxes super coiled DNA is
- a) Topoisomerase I
 - b) Primase
 - c) DNA gyrase
 - d) DNA polymerase III
53. When mutation involves more than one nucleotide pair or entire gene, it is known as
- a) Point mutation
 - b) Somatic mutation
 - c) Transition
 - d) Gross mutation

54. Fidelity of replication is ensured by
- a) Complementary base pairing
 - b) Specificity of DNA polymerase
 - c) Recognition of specific nucleotide sequence
 - d) Formation of phosphodiester bonds
55. Post translational modifications include all the following EXCEPT
- a) Glycosylation
 - b) Hydroxylation
 - c) Decarboxylation
 - d) Phosphorylation
56. The phenomenon of inhibitory effect on photosynthesis due to extremely intense light is called
- a) Ionization
 - b) Polarization
 - c) Solarization
 - d) Evaporation
57. In a plant cell, the light reactions of photosynthesis take place in the
- a) Cytosol
 - b) Endoplasmic reticulum
 - c) Chloroplasts
 - d) Leucoplasts
58. The most stable RNA in the cell is
- a) m-RNA
 - b) t-RNA
 - c) s-RNA
 - d) r-RNA
59. Restriction endonuclease is employed for
- a) Joining strands of DNA
 - b) Cutting RNA
 - c) Cutting single strand DNA
 - d) Cutting double strand DNA
60. Which one is a hereditary disease
- a) Cataract
 - b) Phenylketonuria
 - c) Leprosy
 - d) Blindness

ANSWER SHEET — PART – A

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
16	A	B	C	D	E
17	A	B	C	D	E
18	A	B	C	D	E
19	A	B	C	D	E
20	A	B	C	D	E

21	A	B	C	D	E
22	A	B	C	D	E
23	A	B	C	D	E
24	A	B	C	D	E
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
32	A	B	C	D	E
33	A	B	C	D	E
34	A	B	C	D	E
35	A	B	C	D	E
36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E
40	A	B	C	D	E

41	A	B	C	D	E
42	A	B	C	D	E
43	A	B	C	D	E
44	A	B	C	D	E
45	A	B	C	D	E
46	A	B	C	D	E
47	A	B	C	D	E
48	A	B	C	D	E
49	A	B	C	D	E
50	A	B	C	D	E
51	A	B	C	D	E
52	A	B	C	D	E
53	A	B	C	D	E
54	A	B	C	D	E
55	A	B	C	D	E
56	A	B	C	D	E
57	A	B	C	D	E
58	A	B	C	D	E
59	A	B	C	D	E
60	A	B	C	D	E

BIOCHEMISTRY

PART – B

(Descriptive Type)

Answer **any eight** questions. Each questions carries **5** marks. **(8 × 5 = 40 Marks)**

1. How does the substrate concentration influence enzyme activity?
2. How does the chemiosmotic theory explain the mechanism of oxidative phosphorylation?
3. Give a brief overview of the citric acid cycle.
4. Explain the transport of oxygen by hemoglobin.
5. What are the tests that are useful in assessing kidney function?
6. Enumerate the functions of plasma proteins.
7. Give an account of the types of excision repairs.
8. What are the steps in a cloning experiment?
9. Give a brief account of thin layer chromatography.
10. Briefly explain the technique of Southern blotting.
11. Give the sources and fate of acetyl CoA.
12. Explain the role of cytochrome P450 in the detoxification mechanism.

