

Code No.

L – 4025

**Entrance Examination for Admission to the P.G. Courses in the Teaching Departments, 2021**

**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. The first amino acid incorporated in a polypeptide in a ribosome of a human is
 

a) N formyl methionine	b) Methionine
c) Phenyl alanine	d) Hydroxy lysine

DO NOT WRITE HERE

- 
2. The first amino acid incorporated in a polypeptide in a ribosome of a bacterium is
- a) N formyl methionine
  - b) Methionine
  - c) Alanine
  - d) Glycine
3. The integrator between the TCA cycle and urea cycle is
- a) Fumarate
  - b) Malate
  - c) Pyruvate
  - d) Citrate
4. Bence Jones proteinuria is characterized by
- a) Non-heat coagulability
  - b) Heat coagulability at 100°C
  - c) Heat coagulability at 45 to 60°C
  - d) Precipitation at 25°C

5. Bence Jones proteins may be excreted in urine of patients suffering from
- a) Tuberculosis
  - b) Diabetes mellitus
  - c) Multiple myeloma
  - d) Hyperthyroidism
6. Xanthuric acid is an abnormal metabolite of
- a) Xanthine
  - b) Uric acid
  - c) Tyrosine
  - d) Tryptophan
7. Two nitrogen atoms of Urea in the urea cycle come from
- a)  $\text{NH}_3$
  - b) One from  $\text{NH}_3$  and one from aspartate
  - c) One from  $\text{NH}_3$  and one from glutamate
  - d) One from  $\text{NH}_3$  and one from alanine
8. Pyruvic acid can be obtained by transamination of alanine with
- a)  $\alpha$ - keto glutaric acid
  - b) Acetoacetic acid
  - c)  $\beta$ -OH butyric acid
  - d) Phosphoenol Pyruvic acid
9. In the synthesis of 1 molecule of urea in the Kreb's Henseleit cycle the number of AMPs formed is
- a) 1
  - b) 2
  - c) 3
  - d) 4
10. Formation of melanin from tyrosine requires the action of
- a) Dopa decarboxylation
  - b) Diamine oxidase
  - c) Peroxidase
  - d) Tyrosinase
11. An example of a hydroxy fatty acid is
- a) Ricinoleic acid
  - b) Crotonic acid
  - c) Butyric acid
  - d) Oleic acid
12. An example of a saturated fatty acid is
- a) Palmitic acid
  - b) Oleic acid
  - c) Linoleic acid
  - d) Erucic acid

13. If the fatty acid is esterified with an alcohol of high molecular weight instead of glycerol, the resulting compound is
- a) Lipositol
  - b) Plasmalogen
  - c) Wax
  - d) Cephalin
14. A fatty acid which is not synthesized in the body and has to be supplied in the diet is
- a) Palmitic acid
  - b) Lauric acid
  - c) Linolenic acid
  - d) Palmitoleic acid
15. Essential fatty acid:
- a) Linoleic acid
  - b) Linolenic acid
  - c) Arachidonic acid
  - d) All of these
16. The fatty acid present in cerebrosides is
- a) Lignoceric acid
  - b) Valeric acid
  - c) Caprylic acid
  - d) Behenic acid
17. The number of double bonds in arachidonic acid is
- a) 1
  - b) 2
  - c) 4
  - d) 6
18. In humans, a dietary essential fatty acid is
- a) Palmitic acid
  - b) Stearic acid
  - c) Oleic acid
  - d) Linoleic acid
19. A lipid containing alcoholic amine residue is
- a) Phosphatidic acid
  - b) Ganglioside
  - c) Glucocerebroside
  - d) Sphingomyelin
20. Cephalin consists of
- a) Glycerol, fatty acids, phosphoric acid and choline
  - b) Glycerol, fatty acids, phosphoric acid and ethanolamine
  - c) Glycerol, fatty acids, phosphoric acid and inositol
  - d) Glycerol, fatty acids, phosphoric acid and serine

21. Acrolein test is answered by
- a) Cholesterol
  - b) Glycerol
  - c) Glycosides
  - d) Sphingol
22. The smell of fat turned rancid is due to
- a) Presence of Vit E
  - b) Presence of quinones
  - c) Phenols
  - d) Volatile fatty acids
23. Phospholipids are important cell membrane components because
- a) They have glycerol
  - b) They can form bilayers in water
  - c) They have both polar and non polar portions
  - d) They combine covalently with proteins
24. Which one of the following is not a phospholipid?
- a) Lecithin
  - b) Plasmalogen
  - c) Lysolecithin
  - d) Gangliosides
25. A fatty acid which is not synthesized in human body and has to be supplied in the diet:
- a) Palmitic acid
  - b) Oleic acid
  - c) Linoleic acid
  - d) Stearic acid
26. In cephalin, choline is replaced by
- a) Serine
  - b) Ethanolamine
  - c) Betaine
  - d) Sphingosine
27. The triacyl glycerol present in plasma lipoproteins are hydrolyzed by
- a) Lingual lipase
  - b) Pancreatic lipase
  - c) Colipase
  - d) Lipoprotein lipase

28. Amphiphatic lipids are
- a) Hydrophilic
  - b) Hydrophobic
  - c) Both (a) and (b)
  - d) Lipophilic
29. Which of the following is not essential fatty acid?
- a) Oleic acid
  - b) Linoleic acid
  - c) Arachidonic acid
  - d) Linolenic acid
30. The calorific value of lipid is
- a) 4.0 Kcal/gm
  - b) 6.0 Kcal/gm
  - c) 9.0 Kcal/gm
  - d) 15 Kcal/gm
31. Subacute combined degeneration of cord is caused due to deficiency of
- a) Niacin
  - b) Cobalamin
  - c) Biotin
  - d) Thiamin
32. Vitamin required for metabolism of diols e.g. conversion of ethylene glycol to acetaldehyde is
- a) Thiamin
  - b) Cobalamin
  - c) Pyridoxine
  - d) Folic acid
33. Both folic acid and methyl cobalamin (vitamin B12) are required in
- a) Deamination of serine
  - b) Deamination of threonine
  - c) Conversion of pyridoxal phosphate to pyridoxamine phosphate
  - d) Methylation of homocystein to methionine
34. Folic acid or folate consists of the
- a) Base pteridine, p-amino benzoic acid and aspartate
  - b) Base purine, p-amino benzoic acid and glutamate
  - c) Base pteridine, p-amino benzoic acid and glutamate
  - d) Base purine, p-hydroxy benzoic acid and glutamate

35. Folate as a coenzyme is involved in the transfer and utilization of
- a) Amino group
  - b) Hydroxyl group
  - c) Single carbon moiety
  - d) Amido group
36. Folic acid deficiency can be diagnosed by increased urinary excretion of
- a) Methylmalonate
  - b) Figlu
  - c) Cystathionine
  - d) Creatinine
37. Sulpha drugs interfere with bacterial synthesis of
- a) Lipoate
  - b) Vitamin E
  - c) Tetrahydrofolate
  - d) Ascorbic acid
38. Folate deficiency causes
- a) Microcytic anemia
  - b) Hemolytic anemia
  - c) Iron deficiency anemia
  - d) Megaloblastic anemia
39. Thiamin is heat stable in
- a) Acidic medium
  - b) Alkaline medium
  - c) Both (a) and (b)
  - d) None of these
40. Thiamin deficiency includes
- a) Mental depression
  - b) Fatigue
  - c) Beriberi
  - d) All of these
41. Example of an extracellular enzyme is
- a) Lactate dehydrogenase
  - b) Cytochrome oxidase
  - c) Pancreatic lipase
  - d) Hexokinase

42. Enzymes, which are produced in inactive form in the living cells, are called
- a) Papain
  - b) Lysozymes
  - c) Apoenzymes
  - d) Proenzymes
43. An example of ligases is
- a) Succinate thiokinase
  - b) Alanine racemase
  - c) Fumarase
  - d) Aldolase
44. An example of lyases is
- a) Glutamine synthetase
  - b) Fumarase
  - c) Cholinesterase
  - d) Amylase
45. Activation or inactivation of certain key regulatory enzymes is accomplished by covalent modification of the amino acid
- a) Tyrosine
  - b) Phenylalanine
  - c) Lysine
  - d) Serine
46. The enzyme which can add water to a carbon-carbon double bond or remove water to create a double bond without breaking the bond is
- a) Hydratase
  - b) Hydroxylase
  - c) Hydrolase
  - d) Esterase
47. Fischer's 'lock and key' model of the enzyme action implies that
- a) The active site is complementary in shape to that of substance only after interaction
  - b) The active site is complementary in shape to that of substance
  - c) Substrates change conformation prior to active site interaction
  - d) The active site is flexible and adjusts to substrate
48. From the Lineweaver-Burk plot of Michaelis-Menten equation.  $K_m$  and  $V_{max}$  can be determined when  $V$  is the reaction velocity at substrate concentration  $S$ , the X-axis experimental data are expressed as
- a)  $1/V$
  - b)  $V$
  - c)  $1/S$
  - d)  $S$



49. A sigmoidal plot of substrate concentration ( $[S]$ ) versus reaction velocity ( $V$ ) may indicate
- a) Michaelis-Menten kinetics                      b) Co-operative binding  
c) Competitive inhibition                              d) Non-competitive inhibition
50. The  $K_m$  of the enzyme giving the kinetic data as below is
- a) -0.50    b) -0.25  
c) +0.25    d) +0.33
51. In the erythrocytes, the net production of ATP molecules by the Rapport-Leubering pathway is
- a) 0    b) 2  
c) 4    d) 8
52. The ratio that most closely approximates the number of net molecules of ATP formed per mole of glucose utilized under aerobic conditions to the net number formed under anaerobic conditions is
- a) 4:1    b) 13:1  
c) 18:1    d) 24:1
53. The pathway of glycogen biosynthesis involves a special nucleotide of glucose. In the reaction below, NuDP stands for NuDP  
 $\text{Glucose} + \text{glycogen} \rightarrow \text{NuDP} + \text{glycogen} + 1$
- a) ADP    b) GDP  
c) UDP    d) CDP
54. Glucose 6-phosphate is converted to glucose 1-phosphate in a reaction catalysed by the enzyme phosphoglucomutase, which is
- a) Phosphorylated  
b) Dephosphorylated  
c) Phosphorylated-dephosphorylated  
d) Phosphorylated-dephosphorylated rephosphorylated

55. The glycogen content of the liver is upto
- |        |        |
|--------|--------|
| a) 6%  | b) 8%  |
| c) 10% | d) 12% |
56. In glycogenesis a branch point in the molecule is established by the enzyme
- Amylo [1 → 4][1 → 6] transglucosidase
  - $\alpha$ [1 → 4] $\alpha$ [1 → 4] Glucan transferase
  - Amylo [1 → 6] glucosidase
  - Glycogen synthase
57. In glycogenolysis, the enzyme which transfers a trisaccharide unit from one branch to the other exposing 1 → 6 branch point is
- Phosphorylase
  - $\alpha$  - [1 → 4] →  $\alpha$  - [1 → 4] → Glucan transferase
  - Amylo [1 → 6] glucosidase
  - Amylo [1 → 4] → [1 → 6] transglucosidase
58. In the synthesis of glycogen from glucose the reversible step is
- Glucose → glucose 6-phosphate
  - Glucose 6-phosphate → glucose 1 - phosphate
  - Glucose 1-phosphate → UDP glucose
  - UDP glucose → glycogen
59. The enzyme glucose-6-phosphatase which catalyses the conversion of glucose 6- phosphate to glucose is not found in
- |              |           |
|--------------|-----------|
| a) Liver     | b) Muscle |
| c) Intestine | d) Kidney |
60. Allosteric activator of glycogen synthase is
- |            |                        |
|------------|------------------------|
| a) Glucose | b) Glucose-6-Phosphate |
| c) UTP     | d) Glucose-1-phosphate |

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.

**(8 × 5 = 40 Marks)**

1. Write short notes on Atherosclerosis.
2. Give the important biochemical functions of glycine.
3. Discuss about the differential diagnosis of Jaundice.
4. Explain about the Metabolic changes during starvation.
5. How the Calcium and Phosphorus regulated in our body?
6. Explain the role of Cytochrome P450 in detoxification?
7. Write short notes on Oxidative stress and its effects.
8. Classify liver function tests (LFT).
9. Describe the structure, types and functions of Immunoglobulins.
10. Explain the Mechanism of Carcinogenesis.
11. Define hormones. Classify them with examples.
12. What is normal blood pH? Describe various mechanisms for maintenance of blood pH?





















