Register Number | | | | | | |

Part III — BIO-CHEMISTRY

(New Syllabus)

(English Version)

Time Allowed : 3 Hours] [Maximum Marks : 150

Note : i) Answer *all* the questions from **Part – I.**

ii) Answer any *fifteen* questions from **Part– II.**

iii) Answer Question No. **71** in **Section – A** and any *five* questions in **Section – B** from **Part – III.**

iv) Answer any *four* questions from **Part – IV.**

v) Draw diagrams and write equations wherever necessary.

PART – I

Note : Answer *all* the questions. 50 × 1 = 50

A. Choose and write the correct answers :

1. The term cell membrane was coined by

a) C. J. Nageli and Crammer b) Singer and Nicolson

c) Robertson d) Gorter and Grendel.

2. The unit of viscosity is

a) osmol b) poise

c) dyne d) newton.

3. The enzyme which is not of pancreatic origin is

a) steapsin b) amylase

c) sucrase d) chymotrypsin.

4. Pepsin is activated by

a) autocatalytically b) renim

c) HCl d) HCl and autocatalytically.

5. How many ATP molecules are generated during glycolysis ?

a) 2 b) 10

c) 6 d) 8.

6. Which of the following enzymes links glycolysis and TCA cycle ?

a) Glucokinase b) PFK

c) LDH d) Pyruvate dehydrogenase.

7. Amino acid is carried for protein synthesis by

a) *m*-RNA b) *t*-RNA

c) *r*-RNA d) both *m*-RNA and *t*-RNA.

8. GPT requires cofactor

a) NADH b) NADPH

c) Pyridoxal phosphate d) FAD.

9. ..... is involved in acetyl coA carboxylation reaction.

a) TPP Vitamin b) FAD Vitamin

c) Biotin d) Vitamin C.

10. The divalent cation needed for the catalysis of DNA-synthesis is

a) calcium b) magnesium

c) phosphate d) chloride.

11. Methyl cap and poly *A* tail are present in

a) *m*-RNA b) *t*-RNA

c) *r*-RNA d) *hn*-RNA.

12. Abnormal proliferation of cells is seen in

a) neoplasm b) albinism

c) alkaptonuria d) hemophilia.

13. Liver cells are loaded with glycogen in

a) Hemophilia b) Galactosemia

c) Albinism d) von Gierke's disease.

14. Which of the following is involved in ETC ?

a) Adenosine b) Non heme iron protein

c) Creatine phosphokinase d) Adenylate cyclase.

15. Pyrophosphate cleavage leads to

a) more energy cleavage that leads to wastage

b) completion of certain biosynthetic reaction

c) transfer of phosphate group to another molecule

d) activation of electron transport chain.

16. The reciprocal form of MM equation was considered by

a) Lineweaver Burk b) Fischer

c) Koshland d) Dixon.

17. ES complex formation is

a) a reversible reaction

b) an irreversible reaction

c) an energy consuming reaction

d) a complete reaction.

18. Immunoglobulin which can cross the placenta is

a) IgA b) IgE

c) IgM d) IgG.

19. In AIDS, the cells which are affected by HIV are

a) mast cells

b) *T* helper cells

c) *T* suppressor cells

d) *B* memory cells.

20. Haptens

a) are low molecular weight substances which cannot induce antibody formation

b) are high molecular weight substances which cannot induce antibody formation

c) are carrier molecules which can induce immune response

d) can activate *B* cells directly.

B. Fill in the blanks :

21. The proteins that are tightly embedded in the membrane are called as ..... .

22. Cholecystokinin and ..... are the two hormones that stimulate pancreatic juice secretion.

23. The major source of glucose in ruminants is ..... .

24. Synthesis of thyroxine is accelerated by ..... .

25. Deficiency of essential fatty acids (EFA) causes ..... .

26. ..... catalyses the synthesis of RNA primer.

27. The enzyme deficient in albinism is ..... .

28. Direct transfer of energy from phosphoenol pyruvate is an example for ..... .

C. Write *True* or *False* :

29. When RBCs are placed in hypotonic solution, crenation occurs.

30. The buffering action of haemoglobin is due to the lysine residues present in it.

31. Chloride ions are needed for the action of amylase.

32. Peptidyl transferase is present in 30s subunit of ribosome.

33. TTP is needed for the synthesis of RNA.

34. Oncogenic virus can induce cancer.

35. ATP synthetase is otherwise called as $F_1 F_0$ ATPase.

36. Enzyme substrate complex is formed in all enzymatic reactions.

37. The degree of competitive inhibition cannot be decreased by increasing the concentration of the substrate.

38. Lymphokines are mediators released by T killer cells to kill the tumor cells.

D. Match the following :

39.	Erythrocyte fragility test	a)	epinephrine
40.	Secretin	b)	a constant factor
41.	DOPA	c)	osmosis
42.	Cephalin	d)	helps for margination
43.	K_m	e)	GI tract hormone
44.	Chemotaxis	f)	phosphatidyl ethanolamine.

E. Give one word answer :

45. Name the tripeptide involved in the absorption of amino acids.

46. What is gluconeogenesis ?

47. Name the enzyme that converts acetyl coA to malonyl coA.

48. Name the base that is unique to DNA.

49. Name any two carcinogenic chemical compounds.

50. Name any two compounds which irreversibly inhibits enzyme activity.

PART – II

Note : Answer any *fifteen* questions. $15 \times 2 = 30$

51. Define osmosis.

52. Define buffer system.

53. What are carrier proteins ? Mention its types.

54. Give the reaction by which maltose is converted to glucose.

55. What is the action of HCl on nucleoprotein ?

56. Write a note on Pancreozymin.

57. Give the significance and function of Renin.

58. Write the three important irreversible reactions in glycolysis.

59. List the differences between NADH and NADPH.

60. How is methionine converted to active methionine ?

61. Give the significance of bile salts.

62. What is β-oxidation ?

63. Give the reaction sequence for the formation of lecithin.

64. State Chargoff's rule of DNA composition.

65. Show the formation of a phosphodiester bond.

66. Mention the structure of ATP.

67. What is the action of malonate on succinate dehydrogenase ?

68. What are the biochemical changes found in tumour cells ?

69. Write the classification of immune system.

70. Name any four bacterial infections / diseases with their causative agents.

PART – III

Note : Answer Question No. **71** in **Section-A** which is compulsory and any *five* questions from **Section-B**. $6 \times 5 = 30$

SECTION – A

71. Give the biological significance of surface tension.

OR

Write briefly on Donnan membrane equilibrium.

SECTION – B

72. How are amino acids absorbed from the diet ?

73. Explain glycogenolysis.

74. Describe Transamination reactions with examples.

75. How are fatty acids synthesised in our body ?

76. Give an account on atherosclerosis.

77. Give the cause and the symptoms of albinism.

78. Write a note on cancer.

79. Describe chemiosmotic theory.

80. What is Erythroblastosis foetalis ?

PART – IV

Note : Answer any *four* of the following questions. $4 \times 10 = 40$

81. Describe the steps involved in TCA cycle with structures.

82. Explain translation process with neat diagrams.

83. Briefly discuss the various steps involved in DNA biosynthesis.

84. Give an account on high energy compounds.

85. Derive MM equation.

86. Write notes on the following :

    i) Antibody structure

    ii) Antigen-Antibody reactions.