8083

Part III — BIO-CHEMISTRY

(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. $50 \times 1 = 50$

A.   Choose and write the correct answers :

1.   The pH of blood is

a)   7·4

b)   6·1

c)   1·3

d)   4·7.

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2. Which one is not a pancreatic enzyme ?

    a)   Trypsin   b)   Chymotrypsin

    c)   Pepsin   d)   Elastases.

3. *D* amino acids are absorbed by

    a)   Passive diffusion   b)   Active transport

    c)   Both of these   d)   None of these.

4. How many ATP molecules are generated during glycolysis ?

    a)   2   b)   10

    c)   6   d)   8.

5. The important reducing power produced in HMP shunt pathway is

    a)   NADH   b)   **NADPH**

    c)   FAD   d) $FADH_2$.

6. Which of the following amino acids is principal donor of methyl group ?

    a)   Serine   b)   Threonine

    c)   Alanine   d)   Methionine.

7. GPT requires cofactor

    a)   NADH   b)   NADPH

    c)   Pyridoxal phosphate   d)   FAD.

8. Number of **double bonds** present in arachidonic acid is

    a)   1   b)   2

    c)   3   d)   4.

9. The rate limiting enzyme in cholesterol biosynthesis is

    a) Acetyl CoA synthetase   b) Thiolase

    c) HMG CoA reductase   d) HMG CoA synthetase.

10. The number of hydrogen bonds between adenine and guanine is

    a) 1   b) 2

    c) 3   d) 4.

11. Biosynthesis of RNA is also called as

    a) Replication   b) Translation

    c) Transcription   d) none of these.

12. The metabolite that accumulates in Tay-Sachs disease is

    a) Galactose   b) Tyrosine

    c) Ganglioside   d) Glucose.

13. Hypopigmentation in skin and sclera is observed in

    a) Albinism   b) Alkaptonuria

    c) Hemophilia   d) Galactosemia.

14. Which part of the mitochondria contains Acetyl CoA synthetase ?

    a) Outer membrane   b) Inner membrane

    c) Inter-membrane space   d) Matrix.

15. Pyrophosphate cleavage leads to

    a)   more energy cleavage that leads to wastage

    b)   completeness of certain biosynthetic reaction

    c)   transfer of phosphate group to another molecule

    d)   activation of electron transport chain.

16. The reciprocal form of M-M equation was considered by

    a)   Lineweaver-Burk   b)   Fischer

    c)   Koshland   d)   Dixon.

17. Induced fit model was proposed by

    a)   Dixon   b)   Koshland

    c)   Michaelis-Menton   d)   Fischer

18. Which of the following is the competitive inhibitor of Succinate dehydrogenase ?

    a)   Succinate   b)   Fumarate

    c)   Malate   d)   Malonate.

19. Immunoglobin can cross the placenta

    a)   IgA   b)   IgE

    c)   IgM   d)   IgG.

20. Blood group depends on type of antigens which are found on the surface of

    a)   WBC   b)   Monosite

    c)   RBC   d)   Neutrophil.

B.   Fill in the blanks :

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

22. The buffering capacity of hemoglobin is due to the presence of ....
     groups in its histidine residues.

23. Ptyalin needs .... ions for their effective action.

24. Pancreatic lipase is also called as ....

25. .... is the major storage form of carbohydrate in animals.

26. Deamination of amino acids gives ....

27. .... is the amino alcohol present in sphingolipids.

28. Opsonization of bacteria is done by .... part of the complement.

C.   Write *True* or *False* :

29. The surface tension of plasma is 70 dynes/cm.

30. Peptidyl transferase is present in 30s sub-unit of ribosome.

31. Cephalins are otherwise called as phosphatidyl ethanol amine.

32. TTP is not needed for the synthesis of RNA.

33. Blood clotting mechanism is affected in hemophilia.

34. Alkaptonuria is associated with hypopigmentation of skin.

35. Sulfa drugs act as non-competitive inhibitors.

36. An uncompetitive inhibitor has affinity towards ES complex.

37. Di-isopropyl phosphofluoridate is a reversible inhibitor.

38. Epitopes are present in antigen.

D.   Match the following :

39.	Surfactant	a)	Plant sterol
40.	Stigmasterol	b)	Glucokinase
41.	Glycogenesis	c)	DNA synthesis
42.	DOPA	d)	Dipalmitoyl lecithin
43.	Replication	e)	Allergy
44.	IgE	f)	Epinephrine.

E.   Give one word answer :

45. What are the two types of trans-membrane proteins ?

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

47. Which enzyme is involved in joining of Okazaki fragments ?

48. Which enzyme is diagnosed in amniotic fluid of mother for Tay-Sachs disease ?

49. Who proposed the chemiosmotic theory ?

50. What is the other name of Cytochrome C reductase ?

PART – II

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

51. What is Passive transport ?

52. What is endocytosis ?

53. What are peripheral proteins ?

54. Why is cellulose not digested by humans ?

55. Write the absorption rate of monosaccharides.

56. Mention the factors affecting the absorption of amino acids.

57. Name the proteolytic enzymes present in gastric juice.

58. How is pyruvate converted to lactate ?

59. What is gluconeogenesis ?

60. What is post-translational modifications ?

61. Write the effects of lysolecithin.

62. Give the importance of Vitamin D.

63. Write the structure of cephalin.

64. What are exonucleases ?

65. Mention any four differences between replication and transcription.

66. Give the biochemical changes of tumour cells.

67. Write the structure of ATP.

68. What are enzyme inhibitors ?

69. What are the two main functions of an antibody ?

70. What are natural antibodies ?

PART – III

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

SECTION – A

71. Write briefly on Donnan membrane equilibrium.

OR

Explain the fluid mosaic model of cell membrane.

SECTION – B

72. Write short notes on digestion of proteins in duodenum.

73. Give an account on glycogenolysis.

74. Explain the formation of thyroid hormone.

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75. Give an account on atherosclerosis.

76. Describe the biosynthesis of cholesterol.

77. Write briefly on Alkaptonuria.

78. What are the causes of cancer ?

79. Give an account on members of electron transport chain.

80. Explain the factors influencing the antigenicity of antigens.

PART – IV

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

81. What are the reaction sequences of glycolysis ?

82. Explain the Urea cycle.

83. Give an account of replication.

84. Give an account on ATP as high energy compound.

85. Explain the reversible inhibition of enzymes.

86. Describe the acquired immunity.