XII STD – BIOCHEMISTRY

Model Question Paper

[Time allowed : 3 hrs]   **[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 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 Answer**

1.   The major buffer system of red blood cells are

(a) Phosphate buffer   (b) Hemoglobin buffer

(c) Carbonate buffer   (d) Acetate buffer

2.   Satiety value is high for

(a) Carbohydrates   (b) Proteins   (c) Fats   (d) Vitamins

3.   Which ions are needed for glucose transport?

(a) Na^+ (b) K^+ (c) Mg^{2+} (d) Ca^{2+}

4.   Glycolysis occurs in

(a) Mitochondria   (b) Cytosol   (c) Nucleus   (d) Ribosome

5.   How many irreversible steps occurs in glycolysis

(a) 2   (b) 4   (c) 3   (d) 5

6.   Urea is formed from

(a) Citrulline   (b) Arigininosuccinate (c) Arginine   (d) Ornithine

7.   Niacin synthesised in the body from

(a) Phenyl alanine   (b) Tyrosine   (c) Lysine   (d) Tryptophan

8.   Which one is a saturated acid

(a) Oleic acid   (b) Cerebronic acid   (c) Nervonic acid   (d) Stearic acid

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9. Lysolecithin is formed by the action of _____ an lecithin

(a) Lecithinase A   (b) Lecithinase A_2 (c) Lecithinase C   (d) Lecithinase D

10. Divalent cation needed for the catalysis of DNA synthesis is

(a) Calcium   (b) Magnesium   (c) Phosphate   (d) Chloride

11. Okasaki fragments are present in

(a) Leading strand   (b) Lagging strand

(c) Both the parental strands   (d) Both the daughter strands

12. Deficiency of glucose-6-phosphatase is seen in

(a) Von-Gierk' s disease   (b) Galactosemia

(c) Albinism   (d) Alkaptonuria

13. Abnormal proliferation of cells is seen in

(a) Neoplasm   (b) Albinism   (c) Alkaptonuria   (d) Hemophilia

14. Which of the following is the high energy compound

(a) Glyceraldehyde   (b) AMP   (c) Pyrophosphate   (d)   Lactate

15. Succinate dehydrogenase in mitochondria, is a marker of

(a) Inner membrane   (b) Outer membrane

(c) Inter membrane space   (c) Matrix

16. ES complex formation is

(a) A reversible reaction   (b) An irreversible reaction

(c) An energy consuming reaction   (d) A complete reaction

17. The reciprocal form of M.M. equation was considered by

(a) Line Weaver – Burk   (b) Fischer

(c) Koshland   (d) Dixon

18. Lock and Key theory was proposed by

(a) Dixon   (b) Fischer   (c) Koshland   (d) Michaelis Menton

19. Immunoglobulin which can cross the placenta

(a) IgA   (b) IgE   (c) IgM   (d) IgG

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

(a) Mast cells   (b) T-helper cells

(c) T-suppressor cells   (d) B-memory cells

B.   Fill up the blanks

21.   Two solutions with identical osmotic pressures are called _____

22.   The lubricating property of the synovial fluid is due to the presence of _____ in it.

23.   Pancreatic lipase is also called as _____

24.   Secretin is a polypeptide with _____ amino acids

25.   _____ is precursor for nucleotide synthesis.

26.   Translocation is catalysed by the enzyme _____

27.   Acetyl CoA is converted to malonyl CoA by the enzyme _____

28.   Erythroblastosis foetalis is caused by _____ antigen.

C.   Say True or False

29.   Facilitated diffusion is an energy dependent process.

30.   Leucine is purely ketogenic amino acid.

31.   Obesity is one of the causative factor of etherosclerosis.

32.   Single strand binding proteins bind to double stranded DNA.

33.   Benign tumours cannot spread from one part of the body to another part.

34.   Blood clotting mechanism is affected in hemophilia.

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

36.   An uncompetitive inhibition has affinity towards ES complex.

37.   Malonate is the competitive inhibitor of succinate dehydrogenase.

38.   Interferons are responsible for fever during infection.

D.   Match the following

39.   Hay's test   -   Insulin

40.   Cholecystokinin   -   Epinephrine

41.   Diabetes mellitus   -   GI tract hormone

42.   DOPA   -   Surface tension

43.   Transcription   -   Expressed by antigen presenting cells

44.   MHC II   -   Synthesis of RNA

E.   **Give one word answer**

45.   Name the protein that exchanges chloride and bicarbonate ions in red blood cells.

46.   Why cellulose cannot be digested by humans?

47.   Which protein is involved in termination of transcription?

48.   Which virus causes the Burkit Lymphoma?

49.   What is the other name of ATP synthetase?

50.   In which part of mitochondria the ETC chain proteins are located?

PART – II

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

51.   What is active transport?

52.   What are integral proteins?

53.   What is Donnan osmotic effect?

54. α-amylase is more powerful than ptyalin, Why?

55.   What is the action of pepsin on proteins?

56.   Name the enzymes which are present in pancreatic juice.

57.   List any two GI hormones.

58.   How pyruvic acid is converted acetyl CoA?

59.   What are two major classes of diabetes mellitus?

60.   Give the structure of thyroxine.

61.   What are essential fatty acids? Give an example.

62.   Give the importance of bile salts.

63.   How lecithin is converted to lysolecithin?

64.   State the Chargaffs rule of DNA composition.

65.   Name the three models of DNA replication.

66.   How radiation causes cancer?

67.   Write the structure of AMP.

68.   Define KM value.

69.   What are antigens?

70.   Draw the structure of an antibody.

PART – III

Note : Answer Question No. 71 in section A and any five from section B $6 \times 5 = 30$

Section A

71.   Give the biological significance of osmosis

(or)

Write briefly on Donnan membrane equilibrium

Section B

72.   Discuss the factors that affect carbohydrates and lipid absorption.

73.   Explain the HMP shunt pathway.

74.   Explain the formation of epinephrine from tyrosine.

75.   Give the biological functions of lipids.

76.   Give an account on biosynthesis of lecithin.

77.   Write short notes on Von-Gierke' s disease.

78.   What are the causes of cancer?

79.   Describe the inhibitors of electron transport chain.

80.   Write short notes on cell mediated immunity.

PART – IV

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

81.   What are the reaction sequences of glycolysis?

82.   What are the steps involved in the process of translation?

83.   Give an account on RNA biosynthesis.

84.   List out the members of electron transport chain with their arrangement.

85.   Derive M-M equation.

86.   Explain the immunoglobulins and their functions.