**Dayanand Science College, Latur**

**Department of Biotechnology**

**Class: M.Sc. BT F.Y. (sem-I)**

**Subject: Biochemistry (BT-III)**

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1.The smallest unit of matter –

A) element B) molecule C)atom D) nucleus

2.Atomic mass is contributed by –

A) proton and electron B)proton and neutron

C) electron and neutron D) neutron and electron

3.Isobars refers to –

1. same atomic number and same atomic mass
2. different atomic number but same atomic mass
3. different atomic number and different atomic mass
4. none of above

4.Primary and secondary structures of molecules are respectively stabilized by –

1. covalent and ionic bond
2. ionic and covalent bond
3. covalent and hydrogen bond
4. covalent and ionic bond

5.Amount of glucose required in grams to prepare 20ml of 2% glucose?

A) 4 g B) 0.4 g C) 2 g D) 20 g

6. Equivalent weight of 1N H2SO4 is –

(Given Mol. Wt. = 98)

A) 38.5 g B) 43 g C) 45 g D)49 g

7. The system which can exchange energy but not matter with the surrounding is referred as -

1. isolated system
2. closed system
3. open system
4. both A and B

8. Amont of heat energy required to raise the temperature of 1 kg of water by 1°C is designated as –

A) 1 calorie B) 10 kilo calorie

C)1 kilo calorie D) 100 calorie

9. The pH value of 10-2 M KOH is –

A) 2 B)12 C) 10 D) 14

10. The non specific type of bonding resulting in any two substances when they are brought closer –

A) hydrogen bond B) ionic bond C)vanderwaals D) covalent bond

11. Calculate the ionic strength of 0.1 MgSO4 –

A) 4 B) 0.2 C)0.4 D) 2.4

12. Lipid rafts in cell membrane constitutes of –

A) sphingomyelin B) cholesterol and sphingosine C) lipids only D) none of above

13. gamma linoleic acid is –

A) satured fats B) polyunsaturated fats C) sterols D) lipids

14. Thermal stability of cell membrane depends on –

A) unsaturated fats B) saturated fats

C) lipid rafts D) both b and c

15. According to Singer and Nicholson Model, cell membrane is in –

A) gel state B) liquid state C) quasi-fluid D) all of above

16. Method used to study mobility of cell membrane proteins is –

A) FRET B) FRAP C) diffusion D) Permeability

17. Palmitic acid comprises of –

A) 12C B) 14C C) 16C D) 18C

18. Strong acids –

1. have strong conjugate base
2. dissociate completely
3. have weak conjugate base
4. both b and c

19. The reaction with ΔG = -27 kcal/mol is -

A) at equilibrium B) not spontaneous

C) low activation energy D) spontaneous

20. Second law of thermodynamics is –

A) enthalpy B) energy conservation C) entropy D) heat

21. A triose sugar is

(A) Glycerose (B) Ribose (C) Erythrose (D) Fructose

1. The general formula of monosaccharides is - (A) CnH2nOn (B) C2nH2On (C) CnH2O2n (D) CnH2nO2n
2. The number of isomers of glucose is

(A) 2 (B) 4 (C) 8 (D) 16

24.Which of the following is a reducing sugar?

(A) Sucrose (B) Trehalose(C) Isomaltose (D) Agar

25.The sugar found in DNA is

(A) Xylose (B) Ribose (C)Deoxyribose (D) Ribulose

26.The carbohydrate of the blood group substances is

(A) Sucrose (B)Fucose (C) Arabinose (D) Maltose

27.The sugar found in milk is

(A) Galactose (B) Glucose (C) Fructose (D)Lactose

28.The polysaccharide used in assessing the glomerular fittration rate (GFR) is (A) Glycogen (B) Agar (C)Inulin (D) Hyaluronic acid

29.The constituent unit of inulin is

(A) Glucose (B)Fructose (C) Mannose (D) Galactose

1. The polysaccharide found in the exoskeleton of invertebrates is (A) Pectin (B) Chitin (C) Cellulose (D) Chondroitin sulphate
2. Sucrose consists of

(A) Glucose + glucose (B) Glucose + fructose

(C) Glucose + galactose (D) Glucose + mannose

32. Repeating units of hyaluronic acid are

1. N-acetyl glucosamine and D-glucuronic acid
2. N-acetyl galactosamine and D-glucuronic acid
3. N-acetyl glucosamine and galactose
4. N-acetyl galactosamine and L- iduronic acid

33. An example of a hydroxy fatty acid is

(A) Ricinoleic acid (B) Crotonic acid (C) Butyric acid (D) Oleic acid

34. An example of a saturated fatty acid is

(A) Palmitic acid(B) Oleic acid (C) Linoleic acid (D) Erucic acid

35. 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

1. 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
2. Essential fatty acid:

(A) Linoleic acid (B) Linolenic acid

(C) Arachidonic acid (D) All these

38. The fatty acid present in cerebrosides is

(A) Lignoceric acid(B) Valeric acid (C) Caprylic acid (D) Behenic acid

39.In humans, a dietary essential fatty acid is

(A) Palmitic acid (B) Stearic acid

(C) Oleic acid (D) Linoleic acid

40. A lipid containing alcoholic amine residue is

(A) Phosphatidic acid (B) Ganglioside

(C) Glucocerebroside (D) Sphingomyelin

41. All proteins contain the

(A) Same 20 amino acids (B) Different amino acids

(C) 300 Amino acids occurring in nature (D) Only a few amino acids

42. Proteins contain

(A) Only L- α - amino acids (B) Only D-amino acids

(C) DL-Amino acids (D) Both (A) and (B)

43. The optically inactive amino acid is

(A) Glycine (B) Serine (C) Threonine (D) Valine

44. At neutral pH, a mixture of amino acids in solution would be predominantly:

(A) Dipolar ions (B) Nonpolar molecules

(C) Positive and monovalent (D) Hydrophobic

45. The true statement about solutions of amino acids at physiological pH is

1. All amino acids contain both positive and negative charges
2. All amino acids contain positively charged side chains
3. Some amino acids contain only positive charge
4. All amino acids contain negatively charged side chains

46. pH (isoelectric pH) of alanine is

(A) 6.02 (B) 6.6 (C) 6.8 (D) 7.2

47. Since the pK values for aspartic acid are 2.0, 3.9 and 10.0, it follows that the isoelectric (pH) is

(A) 3.0 (B) 3.9 (C) 5.9 (D) 6.0

48. Sulphur containing amino acid is

(A) Methionine (B) Leucine (C) Valine (D) Asparagine

49. An example of sulphur containing amino acid is

1. 2-Amino-3-mercaptopropanoic acid
2. 2-Amino-3-methylbutanoic acid
3. 2-Amino-3-hydroxypropanoic acid
4. Amino acetic acid

50. All the following are sulphur containing amino acids found in proteins except

(A) Cysteine (B) Cystine (C) Methionine (D) Threonine

51. An aromatic amino acid is

(A) Lysine (B) Tyrosine (C) Taurine (D) Arginine

52. A Holoenzyme is

(A) Functional unit (B) Apo enzyme (C) Coenzyme (D) All of these

53. Example of an extracellular enzyme is

(A) Lactate dehydrogenase (B) Cytochrome oxidase

(C) Pancreatic lipase (D) Hexokinase

54. Enzymes, which are produced in inactive form in the living cells, are called

(A) Papain (B) Lysozymes (C) Apoenzymes (D) Proenzymes

55. An example of ligases is

(A) Succinate thiokinase (B) Alanine racemase

(C) Fumarase (D) Aldolase

56. An example of lyases is

(A) Glutamine synthetase (B) Fumarase

(C) Cholinesterase (D) Amylase

57. Fischer’s ‘lock and key’ model of the enzyme action implies that

1. The active site is complementary in shape to that of substance only after interaction.
2. The active site is complementary in shape to that of substance
3. Substrates change conformation prior to active site interaction
4. The active site is flexible and adjusts to substrate

58.Coenzymes are

1. Heat stable, dialyzable, non protein organic molecules
2. Soluble, colloidal, protein molecules
3. Structural analogue of enzymes
4. Different forms of enzymes

59. Isoenzymes are

1. Chemically, immunologically and electrophoretically different forms of an enzyme
2. Different forms of an enzyme similar in all properties
3. Catalysing different reactions
4. Having the same quaternary structures like the enzymes

60. Factors affecting enzyme activity:

(A) Concentration (B) pH (C) Temperature (D) All of these

61. A nucleoside consists of

1. Nitrogenous base
2. Purine or pyrimidine base + sugar
3. Purine or pyrimidine base + phosphorous
4. Purine + pyrimidine base + sugar + phosphorous

62. A nucleotide consists of

1. A nitrogenous base like choline
2. Purine + pyrimidine base + sugar + phosphorous
3. Purine or pyrimidine base + sugar
4. Purine or pyrimidine base + phosphorous

63. A purine nucleotide is

(A) AMP (B) UMP (C) CMP (D) TMP

64. A pyrimidine nucleotide is

(A) GMP (B) AMP (C) CMP (D) IMP

65. Adenine is

(A) 6-Amino purine (B) 2-Amino-6-oxypurine

(C) 2-Oxy-4-aminopyrimidine (D) 2, 4-Dioxypyrimidine

66. 2, 4-Dioxypyrimidine is

(A) Thymine (B) Cystosine(C) Uracil (D) Guanine

67. The chemical name of guanine is

1. 2,4-Dioxy-5-methylpyrimidine
2. 2-Amino-6-oxypurine
3. 2-Oxy-4-aminopyrimidine
4. 2, 4-Dioxypyrimidine

68. Nucleotides and nucleic acids concentration are often also expressed in terms of

(A) ng (B) mg (C) meq(D) OD at 260 nm

69. The pyrimidine nucleotide acting as the high energy intermediate is

(A) ATP (B) UTP (C) UDPG (D) CMP

70. The carbon of the pentose in ester linkage with the phosphate in a nucleotide structure is

(A) C1 (B) C3 (C) C4 (D) C5

71. Uracil and ribose form

(A) Uridine (B) Cytidine (C) Guanosine (D) Adenosine

72. The most abundant free nucleotide in mammalian cells is

(A) ATP (B) NAD( C) GTP (D) FAD

73. The nucleic acid base found in mRNA but not in DNA is

(A) Adenine (B) Cytosine (C) Guanine (D) Uracil

74. In RNA moleule ‘Caps’

1. Allow tRNA to be processed
2. Are unique to eukaryotic mRNA
3. Occur at the 3’ end of tRNA
4. Allow correct translation of prokaryotic mRNA

75. In contrast to eukaryoticmRNA , prokaryotic mRNA

1. Can be polycistronic
2. Is synthesized with introns
3. Can only be monocistronic
4. Has a poly A tail

76. The nitrogenous base present in the RNA molecule is

(A) Thymine (B) Uracil (C) Xanthine (D) Hypoxanthine

77. RNA does not contain

(A) Uracil (B) Adenine (C) Thymine (D) Ribose

78. The sugar moiety present in RNA is

(A) Ribulose (B) Arabinose (C) Ribose (D) Deoxyribose

79. The structure of tRNA appears like a

(A) Helix (B) Hair pin (C) Clover leaf (D) Coil

80. In DNA molecule

1. Guanine content does not equal cytosine content
2. Adenine content does not equal thymine content
3. Adenine content equals uracil content
4. Guanine content equals cytosine content

81. Hormones

(A) Act as coenzyme (B) Act as enzyme

(C) Influence synthesis of enzymes (D) Belong to B-complex group

82. Hormone that binds to intracellular receptor is

(A) Adrenocorticotropic hormone (B) Thyroxine

(C) Follicle stimulating hormone (D) Glucagon

83. Hormone that bind to cell surface receptor and require the second messenger camp is

(A) Antidiuretic hormone (B) Cholecystokinin (C) Calcitriol (D) Gastrin

84. A hormone secreted from anterior pituitary is

(A) Growth hormone (B) Vasopressin (C) Oxytocin (D) Epinephrine

85. A hormone secreted from posterior pituitary is

(A) Vasopressin (B) Thyrotropic hormone

(C) Prolactin (D) Adrenocorticotropic hormone

86. Acromegaly results due to excessive release of

(A) Thyroxine (B) Growth hormone (C) Insulin (D) Glucagon

87. Growth hormone is released by

(A) Somatostatin (B) Growth hormone releasing hormone

(C) Prolactin release inhibiting hormone (D) Luteinizing releasing hormone

88. Biological activity of ACTH requires

(A) 10-N-terminal amino acid (B) 24-N-terminal amino acid

(C) 24-C-terminal amino acid (D) 15-C-terminal amino acid

89. ACTH stimulates the secretion of

(A) Glucocorticoids (B) Epinephrine

(C) Thyroxine (D) Luteinizing hormone

90. Excessive secretion of ACTH causes

(A) Cushing’s syndrome(B) Addison’s disease

(C) Myxoedema (D) Thyrotoxicosis

91. ADH

(A) Reabsorbs water from renal tubules (B) Excretes water from renal tubules (C) Excretes hypotonic urine (D) Causes low specific gravity of urine

92. Insufficient free T3 and T4 results in

(A) Grave’s disease (B) Mysoedema

(C) Cushing syndrome (D) Gigantism

93. PTH

1. Reduces the renal clearance or excretion of calcium
2. Increases renal phosphate clearance
3. Increases the renal clearance of calcium
4. Decreases the renal phosphate clearance
5. Calcitonin causes

(A) Calcinuria and phosphaturia (B) Decrease in urinary calcium

(C) Decrease in urinary phosphorous (D) Increase in blood calcium level

1. Vitamins are

(A) Accessory food factors (B) Generally synthesized in the body

(C) Produced in endocrine glands (D) Proteins in nature

96.Vitamin A or retinal is a

1. Steroid
2. Polyisoprenoid compound containing a cyclohexenyl ring
3. Benzoquinone derivative
4. 6-Hydroxychromane

97. Fat soluble vitamins are

(A) Soluble in alcohol (B) one or more Propene units

(C) Stored in liver (D) All these

98. Deficiency of Vitamin A causes

(A) Xeropthalmia (B) Hypoprothrombinemia

(C) Megaloblastic anemia (D) Pernicious anemia

99. Vitamin D absorption is increased in

(A) Acid pH of intestine (B) Alkaline pH of intestine

(C) Impaired fat absorption (D) Contents of diet

100. Vitamin K is found in

(A) Green leafy plants (B) Meat (C) Fish (D) Milk

Answer Key

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.C | 2.B | 3.B | 4.C | 5.B | 6.D | 7.B | 8.C | 9.B | 10.C |
| 11.C | 12.B | 13.B | 14.D | 15.C | 16.B | 17.C | 18.D | 19.D | 20.C |
| 21.A | 22.S | 23.D | 24.C | 25.C | 26.B | 27.D | 28.C | 29.B | 30.B |
| 31.B | 32.A | 33.A | 34.A | 35.C | 36.C | 37.D | 38.A | 39.D | 40.D |
| 41.A | 42.A | 43.A | 44.A | 45.A | 46.A | 47.A | 48.A | 49.A | 50.D |
| 51.B | 52.D | 53.C | 54.D | 55.A | 56.B | 57.B | 58.A | 59.A | 60.D |
| 61.B | 62.B | 63.A | 64.C | 65.A | 66.C | 67.B | 68.D | 69.C | 70.D |
| 71.A | 72.A | 73.D | 74.B | 75.A | 76.B | 77.C | 78.C | 79.C | 80.D |
| 81.C | 82.B | 83.A | 84.A | 85.A | 86.B | 87.B | 88.B | 89.A | 90.A |
| 91.A | 92.B | 93.A | 94.A | 95.A | 96.B | 97.D | 98.A | 99.A | 100.A |