BCH 211 PAST INCOURSES AND QUIZZES COLLATION

1. Water is _____
   A. Nucleophilic
   B. Electrophillic
   C. Non-polar
   D. Low dielectric constant
   E. Not amphoteric

2. Acids dissociate into _____
   A. Hydrogen and Hydroxonium ions
   B. Hydroxide and Hydroxonium ion
   C. Hydroxonium and Hydrogen ion
   D. Superoxide and Hydroxonium ion
   E. Hydroxonium and Hydrogen ions

3. The angle between hydrogen ions in water is _____
   A. 103^{o}
   B. 105^{o}
   C. 106^{o}
   D. 104^{o}
   E. 103.5^{o}

4. pH is equal to pKa when the ratio of base to acid is ___
   A. 1:10
   B. 1:1
   C. 1:100
   D. 1:4
   E. 1:5

5. The molar concentration of pure water is _____
   A. 55.56M
   B. 56.55M
   C. 50.56M
   D. 55.00M
   E. 56.00M

6. The simplest carbohydrate is _____
   A. Glyceraldehyde
   B. Glucose
   C. Fructose
   D. Mannose
   E. Galactose

7. A monosaccharide with a ketone group is
   A. Aldehyde
   B. Ester
   C. Aldose
   D. Ketose

E. Amide

8. Enantiomers are ____
   A. Mirror images
   B. Not stereoisomers
   C. Differing spatial arrangements
   D. Have the same number of chiral centre
   E. Are asymmetric carbon atoms

9. Ribose sugar is component of ____
   A. Halogens
   B. DNA
   C. RNA
   D. Amides
   E. Esters

10. Hydrogen bond rupture require _____
    A. 5.4Kcal/mol of heat
    B. 4.5Kcal/mol of heat
    C. 6.0Kcal/mol of heat
    D. 5.7Kcal/mol of heat
    E. 6.5Kcal/mol of heat

11. The hydrogen bonds in water have a half-life of
    A. 1 microsecond
    B. 2 microsecond
    C. 1o microsecond
    D. 6 microsecond
    E. 7 microsecond

12. The polysaccharide found in the exoskeleton of invertebrates is
    A. Pectin
    B. Leptin
    C. Cellulose
    D. Chitin
    E. Chrondotin

13. The linkages in glycogen are
    A. α 1→4
    B. β 1→3
    C. α 1→2
    D. β 1→6
    E. α 1→3

14. An epimer pair is
    A. Glucose and Fructose
    B. Fructose and Mannose
    C. Galactose and Glucose
    D. Mannose and Glucose

E. Ribose and Mannose

15. The difference between ribose and deoxyribose is the absence of oxygen on carbon number
    A. 4
    B. 5
    C. 2
    D. 3
    E. 1

16. The epimerization around carbon 4 convert glucose to
    A. Galactose
    B. Mannose
    C. Fructose
    D. Fucose
    E. Sedoheptalose

17. The general formula of carbohydrates is
    A. $(CHO)_n$
    B. $(CH_2O)_n$
    C. $(C_2H_2O)_n$
    D. $(CHO_2)_n$
    E. $(CHO)_{2n}$

18. The solvent with the highest polarity is
    A. Kerosene
    B. Ethanol
    C. Chloroform
    D. Benzene
    E. Petroleum ether

19. The pH when the ratio of acid to base is 1:10 is
    A. pKa + 4
    B. pKa + 5
    C. pKa + 3
    D. pKa + 2
    E. pKa + 1

20. The linkages in lactose are
    A. α 1→4
    B. β 1→3
    C. 1→6
    D. β 1→4
    E. α 1→3

21. The following are structural polysaccharides except
    A. Heparin
    B. Glycogen
    C. Cellulose
    D. Chitin
    E. Chrondrochitin

22. Examples of Heteropolysaccharides are
    A. Glycogen
    B. Heparin
    C. Cellulose
    D. Sucrose
    E. Leptin

23. The hydrogen ion concentration of a solution whose pH is 4 is
    A. 4.0×10^{5}
    B. 2.0×10^{5}
    C. 1.0×10^{4}
    D. 2.0×10^{-2}
    E. 4.0×10^{7}

24. The following are polysaccharides except
    A. Lactose
    B. Glycogen
    C. Cellulose
    D. Chitin
    E. Chrondrochitin

25. The following are monosaccharides except
    A. Mannose
    B. Glucose
    C. Fructose
    D. Sucrose
    E. Galactose

26. Nutritionally essential amino acids include
    A. Tyrosine
    B. Alanine
    C. Phenylalanine
    D. A and B
    E. B and C

27. The α – carbon of the following amino acids are chiral EXCEPT
    A. Proline
    B. Valine
    C. Glycine
    D. Glutamate
    E. Leucine

28. Ile is a 3 – letter code for one of the following amino acids
    A. Alanine
    B. Leucine
    C. Hydroxylysine
    D. Lysine
    E. None of the above

29. One of the following is/are amino acids with aliphatic side chain
    A. Serine
    B. Asparagine
    C. Leucine
    D. Aspartic acid
    E. Proline

30. The following is/are true about histidine side chain
    A. It is aromatic
    B. It is acidic
    C. It is basic
    D. It is aliphatic
    E. A and C

31. The following amino acids sets are naturally found in all proteins
    A. Glutamate, Alanine and hydroxylysine
    B. Glycine, Proline and Aspartic acide
    C. Tyrosine, Phenylaline, Trypthophan
    D. Phenylalaline, Alanine and Glycine
    E. All of the above

32. Globin is the protein part of haemoglobin. It contains
    A. L-amino acids
    B. α-amino acids
    C. β-sheets
    D. All of the above

33. Amino acids and their derivatives participates in the following cellular functions EXCEPT
    A. Nerve transmission
    B. Biosynthesis of polyphyrins
    C. Hormonal signal
    D. None of the above
    E. All of the above

34. A zwitter ion
    A. Has a net charge of +1
    B. Is undissociated
    C. Has a net charge of -1
    D. Has a net charge of zero
    E. None of the above

35. Isoelectric point is
    A. pKa at pH 7
    B. pH at pKa 7
    C. pKa when net charge is +1
    D. pKa when net charge is zero
    E. pH when the net charge is zero

36. The following is/are true of pKa
    A. Shows the strength of amino acids
    B. It is equal to the net charge on the on the amino acids
    C. Varies with environment
    D. A and B
    E. A and c

37. In Watson-Crick model of the DNA, The sugar phosphate backbone is on the _____ of the helix
    A. Inside
    B. Outside
    C. Middle
    D. Base
    E. Top

38. In Watson-Crick model of the DNA, Adjacent bases are separated by
    A. 34 Å
    B. 3.4 Å
    C. 0.34 Å
    D. 20 Å

E. 0.2 Å

39. In Watson-Crick model of the DNA, The diameter of the helix is
    A. 34 Å
    B. 3.4 Å
    C. 0.34 Å
    D. 20 Å
    E. 0.2 Å

40. The model described is the _____ form of DNA
    A. A-form
    B. B-form
    C. C-form
    D. D-form
    E. Z-form

41. The glycosidic bond between a nitrogenous base and the C-1 of the ribose in a nucleoside is
    A. N-1 of purines
    B. N-3 of purines
    C. N-9 of purines
    D. N-1 of pyrimidines
    E. N-3 of pyrimidines

42. Dehydrogenases belong to which class of enzymes?
    A. Oxidoreductases
    B. Hydrolases
    C. Transferases
    D. Lyases
    E. Isomerases

43. Enzymes that carry out the reaction involving transfer of electrons are classified as
    A. Oxidoreductases
    B. Hydrolases
    C. Transferases
    D. Lyases
    E. Isomerases

44. Enzymes that change the geometry or structure if a molecule can be classified as
    A. Oxidoreductases
    B. Hydrolases

C. Transferases
D. Lyases
E. Isomerases

45. Enzymes that catalyse the reaction of addition or removal of hydrogen are classified as
A. Oxidoreductases
B. Hydrolases
C. Transferases
D. Lyases
E. Isomerases

46. The low water solubility of lipids is due to lack of polarizing atoms such as
A. Calcium
B. Hydrogen
C. Iron
D. Nitrogen
E. Potassium

47. _____ is not an hydrolysable lipid
A. Simple ester
B. Lipid alcohols
C. Phospholipids
D. Glycolipids
E. Water

48. _____ is a substance that donates an electron
A. Bronsted Acid
B. Lewis Base
C. Arrhenius base
D. Lewis Acid
E. Bronsted Base

49. A diprotic acid has ….. proton(s) that can be donated
A. Six
B. Two
C. Seven
D. five
E. One

50. Ka for dissociation of HCl is …….. .
A. 100
B. 1000
C. 1500
D. 700
E. 500

51. Kw is ……..
    A. Ka/Kb
    B. Ka × Kb/K
    C. Ka × Kb
    D. K/ka × Kb
    E. Kb/Ka

52. The pH for pure water is ……..
    A. 6
    B. 7
    C. 6.5
    D. 5
    E. 7.4

53. The pH when a weak acid is half-neutralized is equal to ……. .
    A. pKa + 2
    B. pKa - 2
    C. pKa
    D. pKa + 1
    E. pKa - 1

54. The term Kw is the……
    A. Dissociation constant for water.
    B. molar concentration of water
    C. molar constant of water
    D. Hydrogen product of water
    E. Ion product of water

55. In a differential centrifugation set up, one of these will pelletize last
    A. Nucleus
    B. Ribosome
    C. Endoplasmic Reticulum
    D. Golgi apparatus
    E. Lysosomes

56. Proline is a/an _____ amino acid
    A. Aliphatic
    B. Basic
    C. Aromatic
    D. Heteronuclear
    E. Heterocyclic

57. An example of non-protein amino acid is
    A. Cysteine
    B. Valine
    C. Serotonine
    D. Methionin
    E. Theonine

58. Which of the following is not a function of a biological membrane?
    A. Receptor for hormones
    B. Transport
    C. Cell Recognition
    D. Contact
    E. Defence

59. One of the following is not a group of amino acids?

A. Heterocyclic
B. Polar, Uncharged
C. Aromatic
D. Negatively charged
E. Aliphatic

60. How many carbon atoms are present in myristic acid
A. 12
B. 14
C. 20
D. 18
E. 16

61. One of the following is NOT a symptom of scurvy
A. Bleeding
B. Loosing of teeth
C. Abnormal bone development
D. Swollen upper plate
E. Swollen gum

62. Vitamin C is an essential co-enzyme catalysing the conversion of
A. Cysteine to cystine
B. Proinsulin to insulin
C. Tyrosine to tryptophan
D. Serine to hydroxyserine
E. Proline to hydroxyproline

63. A large membranous sac in the cytoplasm is
A. Vacoule
B. Lysosome
C. Centriole
D. Golgi apparatus
E. Endoplasmic reticulum

64. One of the following is not a substituent of amino acids
A. R
B. COO-
C. OH-
D. H3N+
E. H

65. Which of the following is not fuel molecule?
A. Vitamins
B. Proteins
C. Glucose
D. Lipids
E. Carbohydrates

66. Which of this is not an unsaturated fatty acid?
A. Linoleic acid
B. Arachidonic acid
C. Linoleic acid
D. Arachidoic acid
E. Oleic acid

67. What is DNA?

A. reb
B. Deoxyribonucleic acid
C. ribo
D. nuvl
E. trib

68. Emphysema is a disease associated with the deficiency of
A. Rhodopsin
B. Tyrosine
C. Antitrypsin
D. Insulin
E. Elastin

69. Which of these contains sialic acid?
A. Ganglosides
B. Sphingosine
C. Galactocereboside
D. Ganglion
E. Sphigomyelin

70. A complicated layer of membranous channels and saccules in the cytoplasm is
A. Mitochondria
B. Endoplasmic reticulum
C. Golgi apparatus
D. Lysosomes
E. Vacoule

71. Chromoproteins are proteins conjugated with
A. Chromium
B. Chlorine
C. Chromatograms
D. Pigments
E. Chloropheniramine

72. In a differential centrifugation set up, one of these will pelletize first
A. Nucleus
B. Ribosome
C. Endoplasmic Reticulum
D. Golgi apparatus
E. Lysosomes

73. A double membrane bound organelle is
A. Mitochondria
B. Golgi apparatus
C. Lysosomes
D. Endoplasmic reticulum
E. Vacoule

74. Which of these is not found in a biological membrane?
A. Glut4
B. Cytochrome C
C. Calcium pump
D. Sodium pump
E. Trypsin

75. A stack of 3 to 20 Slightly curved saccules in the cytoplasm is
A. Mitochondria

B. Golgi apparatus
C. Lysosomes
D. Endoplasmic reticulum
E. Vacoule

76. Which of the following is not a function of peptides?
A. Hormones
B. Structure
C. Antibiotics
D. Protection
E. Neuropeptides

77. One of this is not a difference between eukaryotic and prokaryotic cells
A. Presence or absence of endoplasmic reticulum
B. Presence or absence of nucleus
C. Presence or absence of ribosome
D. Presence or absence of Golgi apparatus
E. Presence or absence of lysosomes

78. Aldononose has
A. Ketone + 9C
B. Aldehyde + 8C
C. Ketone + 8C
D. Ketone + 5C
E. Aldehyde + 9C

79. _____ is an acidic phospholipid
A. Phosphatidylethanolamine
B. Phosphatidylserine
C. Phosphatidylinositol
D. Phosphatidate
E. Phosphatidylcholine

80. The pH of a solution with hydrogen concentration of 3.2×10^{-4} mol/L is
A. 5
B. 3
C. 3.5
D. 4
E. 4.5

81. The pH of the blood is
A. 6
B. 5
C. 6.5
D. 7
E. 7.4

82. _____ is an important storage polysaccharide in plants
A. Cellulose
B. Hemicellulose
C. Starch
D. Glycogen
E. Chitin

83. The equilibrium constant for the dissociation of water (K) is
A. 1.0×10^{-17}
B. 1.8×10^{-16}

C. 1.0×10^{-14}
D. 1.0×10^{-12}
E. 1.0×10^{-11}

84. The mathematical term for the pH is
A. Log $[OH^-]$
B. Log $[H^+][OH^-]$
C. –log $[OH^-]$
D. Log$[1/H^+][OH^-]$
E. –log $[H^+]$

85. On average, each molecule in liquid water associates through hydrogen bond with _____ others
A. 3.5
B. 5
C. 4
D. 3
E. 7

86. Water molecule is a slightly skewed
A. Heptahedron
B. Tetrahedron
C. Hexahedron
D. Pentahedron
E. Monahedron

87. Strong acids have
A. High pKa
B. Low pKa
C. High pH
D. Low pKa and High pH
E. High pKa and High pH

88. A tripotic acid has _____ proton(s) that can be donated
A. Two
B. One
C. Five
D. Six
E. None of the above

89. β(1→4) glycosidic linkage is present in one of the following
A. Amylose
B. Glycogen
C. Cellulose
D. Raffinose
E. Starch

90. _____ is an important structural polysaccharide in animals
A. Hyaluronic acid
B. Cellulose
C. Maltose
D. Glycogen
E. Chitin

91. The form in which starch exists include
A. Heparin
B. Glycogen
C. Galactose

D. Maltose
E. Amylose

92. _____ consist of unbranched D-glucose connected by β(1→4) glycosidic linkages
A. Sucrose
B. Cellulose
C. Maltose
D. Raffinose
E. Lactose

93. _____ is an important storage polysaccharide
A. Hyaluronic acid
B. Cellulose
C. Maltose
D. Glycogen
E. Chitin

94. Glyceraldehyde is an example of
A. Acetone
B. Aldehyde
C. Ketone
D. Polyhydroxy aldehyde
E. Polyhydroxy ketone

95. _____ is an important structural heteropolysaccharide
A. Hyaluronic acid
B. Cellulose
C. Maltose
D. Glycogen
E. Chitin

96. One of the following has a α(1→6) glycosidic linkage
A. Heparin
B. Glycogen
C. Galactose
D. Maltose
E. Cellulose

97. _____ is not a polysaccharide
A. Hyaluronic acid
B. Cellulose
C. Chitin
D. Glycogen
E. None of the above

98. One of the following has only α(1→4) glycosidic linkage
A. Heparin
B. Glycogen
C. Galactose
D. Maltose
E. Cellulose

99. One of the following is NOT an example of unsaturated fatty acid
A. Oleic acid
B. Palmitic
C. Palmoitoleic
D. Linoleic

E. Linolenic

100. Identify the INCORRECT description of waxes
   A. They are esters
   B. They are ethers
   C. They contain acids
   D. They contain alcohols
   E. Their carbon atoms are usually even numbered

101. Triacylglycerols are NOT
   A. Carboxylic acid tri-esters bof glycerols
   B. Three carbon tri-alcohol
   C. Part of fats stored in our bodies
   D. Precursors of Hormones
   E. Major source of biochemical energy

102. Identify the ODD statement about fat
   A. It is solid at room temperature
   B. It contains a high proportion of saturated fatty acids
   C. It contains a high proportion of unsaturated fatty acids
   D. A mixture of triacylglycerols
   E. It is dietary

103. Which two fatty acids are believed to be important for cardiovascular health?
   A. Omega 3 and Omega 4
   B. Omega 3 and Omega 6
   C. Omega 4 and Omega 7
   D. Omega 7 and Omega 9
   E. Omega 3 and Omega 9

104. The only two essential fatty acids are
   A. Palmitoleic and Oleic
   B. Arachidonic and Arachidic
   C. Linoleic and Linolenic
   D. Lauric and Stearic
   E. Stearic and Myristic

105. Fatty acids provide what amount of energy when metabolized?
   A. 4kcal/g
   B. 9kcal/g
   C. 14kcal/g
   D. 19kcal/g
   E. 24kcal/g

106. Which lipid provides insulation for animals in form of body fat which allows them to survive in colder temperatures?
   A. Triacylglycerols
   B. Waxes
   C. Cholesterol
   D. Phospholipids
   E. Sphigolipids

107. Amino acids are linked together by _____ to form proteins
   A. Peptide bonds
   B. Carboxylic bonds
   C. Amino linkages
   D. Phosphodiester bonds

E. Imido bonds

108. Proteins are soluble in one of the following
A. H_2O
B. CH_3COOH
C. H_2SO_4
D. HNO_3

109. The reasons why most proteins are optically active is because
A. They possess carboxylic group
B. They possess amino group
C. They possess both carboxylic and amino group
D. They possess R-group
E. They possess asymmetric carbon atom

110. The reasons why most proteins are amphoteric is because
A. They possess carboxylic group
B. They possess amino group
C. They possess both carboxylic and amino group
D. They possess R-group
E. They possess asymmetric carbon atom

111. There are _____ levels of protein structure
A. 3
B. 4
C. 5
D. 6
E. 7

112. Force stabilizing tertiary protein structure involve the following **except**
A. Peptide bonds
B. Disulphide
C. Van der Waal's forces
D. Electrostatic forces
E. Hydrophobic forces

113. A good example of a protein possessing a quaternary structure is
A. Insulin
B. Myelin
C. Haemoglobin
D. Collagen
E. Elastin

114. Adenylate is another name for
A. ATP
B. ADP
C. AMP
D. Adenine
E. Adenosine

115. Factors affecting nucleic acid hybridization include the following except
A. Ionic strength
B. Reaction time
C. Pressure
D. Urea
E. Formamide

116. The following are nucleosides EXCEPT
    A. Adenosine
    B. Thymidine
    C. Guanosine
    D. Cytosine
    E. Uridine

117. The following compunds ae methyl xanthines EXCEPT
    A. Theobromine
    B. Theophylline
    C. Hypoxanthine
    D. Caffeine
    E. None of the above

118. _____ is true of CMP
    A. Its ribose has no –OH on C-2
    B. It has one phosphate group
    C. It is pyrimidine nucleotide
    D. A and C
    E. All of the above

119. Cellular functions of ATP include all of the following EXCEPT
    A. Second messenger
    B. Donation of phosphate group
    C. DNA sybthesis
    D. Biologic transducer of free energy
    E. None of the above

120. One of the following is true of nucleotides
    A. Adenosine is a nucleotide
    B. Guanylate is a nucleotide
    C. Thymine is a nucleotide
    D. Uridine is a nucleotide
    E. Cytidine is a nucleotide

121. A nucleotide has the following chemical moieties
    A. A ribose
    B. Sulphate
    C. Nitrogenous base
    D. A and C
    E. All of the above

122. Which of the following test is specific for tryptophan?
    A. Ninhydrin
    B. Xanthoproteic
    C. Millon's
    D. Hopkins-Cole
    E. Nitropruside

123. Which of the following test is specific for tyrosine and tryptophan?
    A. Ninhydrin
    B. Xanthoproteic
    C. Millon's
    D. Hopkins-Cole
    E. Nitropruside

124. Which of the following test is specific for tyrosine?

A. Ninhydrin
B. Xanthoproteic
C. Millon's
D. Hopkins-Cole
E. Nitropruside