BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Bachelor of Science (Honours) in Biotechnology
Course Name – Advanced Chemistry
Course Code - BBTC403
(Semester IV)

Time allotted : 1 Hrs.15 Min. **Full Marks : 60**

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question) 1 x 60=60

Choose the correct alternative from the following :

(1) An example of sulphur containing amino acid is

a) Lysine b) Cysteine
c) Alaline d) Valine

(2) The N terminal end having free NH_2 group is written on which side of peptide chain

a) Left b) Right
c) Middle d) North East

(3) Examples of Epimers are

a) Glucose & Galactose b) Glucose & Ribose
c) Maltose & Glucose d) Fructose & Maltose

(4) Maltose is a disaccharide of

a) Glucose and galactose b) Glucose and ribose
c) Glucose and glucose d) Fructose and lactose

(5) Ozonolysis of an organic compound 'A' produces acetone and propionaldehyde in equimol ar quantity. Identify 'A' from the following compounds

a) 1-pentene b) 2-methyl-1-pentene
c) 2-methyl-2-pentene d) 2-pentene

(6) When HBr reacts with propene (by a non-radical route), which statement about the mecha nism is incorrect?

a) The major product is 2-bromopropane b) A carbenium ion forms as an intermediate

c) Br– adds in a rate-determining step.
d) H–Br is heterolytically cleaved

(7) What is the solubility of lipids in water?

a) Soluble
b) Partially soluble
c) Insoluble
d) Partially insoluble

(8) An example of oxygen containing amino acid is

a) Serine
b) Threonine
c) Valine
d) Both serine and threonine

(9) Benzaldehyde on heating with hippuric acid in presence of NaOAc and Ac_2O to produce

a) Alaline
b) Glycine
c) Aspartic acid
d) Phenyl alaline

(10) **Which of the following statements is true about the (primary) 1° structure of proteins?**

a) The helical structure of the protein
b) Subunit structure of the protein
c) Three-dimensional structure of the protein
d) The sequence of amino acids joined by a peptide bond

(11) An example of basic amino acid is

a) Arginine
b) Lysine
c) Aspartic acid
d) Both arginine and lysine

(12) Which of the following amino acids has a net negative charge at physiologic pH (~7.4)?

a) Glutamic Acid
b) Histidine
c) Lysine
d) Aspargine

(13) In peptide C terminal end of amino acid is written on which side

a) Left
b) Right
c) Both left and right
d) North East

(14) -NH_2 group of amino acid can be protected by using

a) DCC
b) p-nitro phenol
c) Phosphorus Pentachloride
d) BOC

(15) -COOH group of amino acid can be activated by

a) DCC
b) p-nitrophenol
c) Both DCC and p-nitrophenol
d) BOC

(16) Carboxypeptidase method is used to protect

a) N terminal end of peptide
b) C terminal end of peptide
c) Both N terminal and C terminal end of peptide
d) Middle of peptide

(17) In sanger method the reagent used is

a) 2,4,dichloro flurobenzene
b) 2,4,dinitro flurobenzene
c) Para chloro benzoic acid
d) Dansyl chloride

(18) Adenine and thymine are held together by how many number of Hydrogen bonds ?

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

(19) Which end of amino acid is protected by Dansyl method ?

a) C terminal
b) N terminal

c) Both C and N terminal
d) North East

(20) In edmann method the reagent used is

a) Phenyl cyanide
b) Phenyl isocyanide
c) Phenyl isothiocyanate
d) Benzene

(21) The enzyme used to protect N terminal end of amino acid is

a) Carboxypeptidase
b) Lysase
c) Leucine aminopeptidase
d) Glysase

(22) In case of merrified resin solid peptide synthesis , C terminal amino acid is protected by u sing

a) T-butyl oxy carbonyl
b) T-butyl chloride
c) T-butyl iodide
d) T-butyl fluoride

(23) An example of non-reducing sugar is

a) Fructose
b) Glucose
c) Sucrose
d) Mannose

(24) Similar osazones are formed between

a) Glucose , Galactose and Mannose
b) Glucose, Fructose and Starch
c) Galactose, mannose and Fructose
d) Glucose, Mannose and Fructose

(25) Anomers are diasteroisomers that differs in the configuration of which carbon

a) C1
b) C2
c) C3
d) C4

(26) Sucrose molecule is formed by combination of

a) α D (+) glucopyranoside and β D(-) Fructopyr anoside
b) α D (+) glucopyranoside and β D(-) Fructofur anoside
c) α D (+) glucofuranoside and β D(-) Fructopyra noside
d) α D (+) glucopyranoside and β D(+) Fructopyr anoside

(27) In alkaline medium OH^- attacks which side of the alkene

a) Less hindered side
b) More hindered side
c) Double bond of the alkene
d) Both less hindered side and double bond of th e alkene

(28) An example of even carbon fatty acids is

a) Butyric acid
b) Caproic acid
c) Capric acid
d) All of the above

(29) Which of the following is the correct combination of C-2 epimer and C-4 epimer of gluco se respectively.

a) Galactose, Mannose
b) Mannose, Galactose
c) Vervascose, Mannose
d) Idose, Galactose

(30) Glucose on treatment with conc nitric acid produces

a) Gluconic acid
b) Glucaric acid
c) Glucosazone
d) Fructose

(31) The reaction of glucose with phenyl hydrazine does not proceed beyond C2 due to

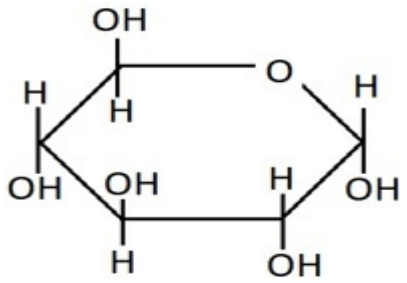
a) Intermolecular H bonding
b) Intramolecular H bonding

c) Acidity
d) Basicity

(32) All methyl pyranosides of α-D-hexose series have same configuration at

a) C1 and C5
b) C2 and C5
c) C3 and C5
d) C1 and C2

(33) Identify the compound from the Haworth projection shown.



a) α-D-(+)-glucopyranose
b) β-D-(+)-glucopyranose
c) α-D-(+)-glucofuranose
d) β-D-(+)-glucofuranose

(34) Which of the following is also known as invert sugar?

a) Sucrose
b) Fructose
c) Dextrose
d) Glucose

(35) In carbohydrate which special functional groups are present?

a) Alcohol and Carbonyl groups
b) Alcohol and hydrogen
c) Alcohol and ester
d) Alcohol and acid

(36) In polysaccharides, monosaccharides are joined by

a) peptide bond
b) glucose bond
c) glycosidic bond
d) covalent bond

(37) Which of the following glycoside linkage is found in maltose

a) glucose-fructose
b) glucose-glucose
c) galactose-glucose
d) glucose-gulose

(38) Select the odd one from the following.

a) Arabinose
b) Xylose
c) Lyxose
d) Erythose

(39) Which one of the following is not a disaccharide?

a) Sucrose
b) Maltose
c) Lactose
d) Cellulose

(40) A polysaccharide formed by β1-4 glycosidic linkage is

a) Starch
b) Cellulose
c) Sucrose
d) Xylose

(41) Which of the following is a carbohydrate?

a) $C_6H_{12}O_6$
b) $C_{12}H_{22}O_{11}$
c) C_2H_2
d) Both $C_6H_{12}O_6$ and $C_{12}H_{22}O_{11}$

(42) Which of the following is not an aldose?

a) Ribose
b) Glucose
c) Fructose
d) Mannose

(43) How is the secondary structure of protein mainly stabilized?

a) Hydrogen bonding
b) Vander Waal's force
c) Covalent interaction
d) Hydrophobic interaction

(44) If the peptide is sequenced using the Edman degradation, which step will be part of the pr ocedure?

a) The Edman reagent will react with all 12 amin o acids simultaneously
b) Lithium borohydride will react with an α-carb oxyl group.
c) Phenylisothiocyanate will react with a α-amin o group.
d) Strong acid will be used to cleave off one mod ified amino acid.

(45) The degree of unsaturation of lipids can be mesaured by

a) Iodine number
b) Saponification number
c) Reichert Meissel number
d) Polenske number

(46) An example of saturated fatty acid is

a) Caproic acid
b) Capric acid
c) Palmitic acid
d) Both capric and caproic acid

(47) The short hand representation of palmitic acid is

a) 16:0
b) 18:1(9)
c) 17:0
d) 19:0

(48) Compound lipid is composed of

a) Fatty acid only
b) Alcohol only
c) Fatty acid +alcohol+other substances
d) Glycerol only

(49) A triglyceride contains lauric acid (12:0), linoleic acid (18:2), and palmitoleic acid (16:1). How many moles of H_2 are required to completely hydrogenate this triglyceride?

a) Two
b) Six
c) Three
d) Four

(50) Saponification number is a measure of

a) Unsaturation in fatty acids
b) Average molecular weight of all the fatty acid s present in fat
c) Both unsaturation in fatty acids and average m olecular weight of all the fatty acids present in fat
d) How much amount of fatty acid is present in n ature

(51) A dibromo derivative of an alkane reacts with sodium metal to form an alicyclic hydrocar bon. The derivative is _____.

a) 2,2-dibromo butane
b) 1,1-dibromo propane
c) 1,4-dibromo butane
d) 1,2-dibromo ethane

(52) When 2-butyne is treated with Pd-$BaSO_4$; the product formed will be:

a) 1-butene
b) Trans-2-butene
c) Cis -2-butene
d) 2-hydroxy butane

(53) What is the expected product formed from the reaction between 2-butene and Cl_2?

a) 1-chlorobutane
b) 2-chlorobutane
c) 2,3-dichlorobutane
d) 2,2-dichlorobutane

(54) Which one is secondary pollutant?

a) Smog
b) PAN
c) Ozone
d) All of the above

(55) The name of the disease that occurs due to mercury pollution is

a) Minamata disease
b) Skin cancer
c) Ouch ouch disease
d) Kidney damage

(56) Itai Itai disease occurs due to

a) Arsenic pollution
b) Lead pollution
c) Mercury pollution
d) Cadmium pollution

(57) Air pollutant which reduces oxygen carrying capacity of hemoglobin is

a) Carbon monoxide
b) Ammonia
c) Hydrogen sulphide
d) Nitrogen dioxide

(58) The loss of chlorophyll causing yellowing of leaf is

a) Chlorosis
b) Photosynthesis
c) Chlorolysis
d) Cholera

(59) pH of the acid rain varies between

a) 3-6
b) 9-11
c) 11-14
d) 6-9

(60) The Montreal protocol is related to

a) Land pollution
b) Atmospheric pollution
c) Water pollution
d) Noise pollution