# BRAINWARE UNIVERSITY

## Term End Examination 2022
## Programme – B.Sc.(BT)-Hons-2022
## Course Name – Biochemistry
## Course Code - BBTC104
## ( Semester I )

**Full Marks : 60** **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Choose the correct answer from the following that explains water as a liquid at room temperature?

a) Noncovalent interactions b) Hydrogen bonds between water molecules
c) Van der Waals forces of attraction d) Covalent bonding

(ii) Based on which of the following enzymes Hydrolysis reactions are catalyzed?

a) Hydrolase b) Oxidoreductase
c) Isomerase d) Ligase

(iii) Which of the following is an example of epimers?

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

(iv) Identify the amino acids containing nonpolar, aliphatic R groups.

a) Phenylalanine, tyrosine, and tryptophan b) Glycine, alanine, leucine
c) Lysine, arginine, histidine d) Serine, threonine, cysteine

(v) Which of the following bond is required for the formation of protein structure?

a) Hydrogen bond b) Covalent bond
c) Hydrophobic bond d) All of the above

(vi) Which of the following types of DNA helix is right handed

a) Z DNA b) B DNA
c) A DNA d) Both 2 and 3

(vii) Select the reason of production of lactic acid is produced in muscles

a) Aerobic respiration b) Excess of oxygen
c) Anaerobic respiration d) Kreb's cycle

(viii) Identify the correct feature of trans unsaturated fatty acids have

a) Hydrogen atoms attached to the carbon b) Hydrogen atoms attached to the carbon

double bond are on the same side
double bond are on the opposite side
c) Both are correct
d) None of these

(ix) Carbon-to-carbon bonds are all single for

a) Unsaturated Fatty acid
b) Bile acid
c) Saturated Fatty acid
d) All of the these

(x) Report the substrate is used in the last step of glycolysis?

a) Glyceraldehyde 3 phosphate
b) Pyruvate
c) Phospenolpyruvate
d) Dihydroxy ketone

(xi) Which one is decarboxylation step in Kreb's cycle

a) Formation of Malate from fumarate
b) Alpha ketoglutarate to Succinyl-CoA
c) Both
d) None

(xii) Secondary structure is defined by _____

a) Hydrogen bonding
b) Vander Waals forces
c) Covalent bonding
d) Ionic bonding

(xiii) Formulate a nucleotide

a) a base + a sugar
b) a base + a sugar + phosphate
c) a base + phosphate
d) NOTA

(xiv) If an acid dissociates into HA= H+ + A-, then which of the following is the correct relationship

a) pH=pKa+ log [A-]/[HA]
b) pH=pKa- log [A-]/[HA]
c) pH=pKa+ log [HA-]/[A-]
d) pKa=pH+ log [A-]/[HA]

(xv) Decide who predicted the helix model of DNA

a) Nelson and Cox
b) Murashige and Skoog
c) Watson and Crick
d) James Ross

## Group-B

(Short Answer Type Questions) 3 x 5=15

2. Describe the alpha-helix structure of protein with special reference to the Hydrogen bonds with illustrations. (3)
3. Explain saturated fatty acids brielfy? (3)
4. What is a triglyceride? (3)
5. Explain the Bi-uret test with schematic diagram. (3)
6. Explain mechanism of enzymes with respect to activation energy. (3)

**OR**

Describe the chemical properties of nucleic acids in detail (3)

## Group-C

(Long Answer Type Questions) 5 x 6=30

7. Evaluate the purpose of Pentose phosphate pathway. (5)
8. Discuss about enzymes under the following headings: (a) Definition. (b) Classification. (c) Isoenzymes. (5)
9. Explain glycolysis (5)
10. Briefly explain the following reactions (Any two). a. Inversion of Sucrose. b. Osazone formation. c. Energy generation phase of Glycolysis. (5)
11. Explain the structure of starch with diagram. (5)
12. How does enzyme lowers the activation energy of reaction? (5)

**OR**

Define Km? Justify Km= [S], when V=1/2 Vmax. (5)

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