

**B.Sc. BIOTECHNOLOGY  
FIRST SEMESTER (REPEAT)  
BIOCHEMISTRY AND METABOLISM  
BBT-101  
[USE OMR FOR OBJECTIVE PART]**

**SET  
A**

Duration: 3 hrs.

Full Marks: 70

**( Objective )**

Time: 30 mins.

Marks: 20

*Choose the correct answer from the following:*

*1 × 20 = 20*

- Which of the following Biomolecules simply refers to as "Staff of life"?
  - Lipids
  - Proteins
  - Vitamins
  - Carbohydrates
- Which of the following is the general formula of Carbohydrates?
  - $(C_4H_2O)_n$
  - $(C_6H_2O)_n$
  - $(CH_2O)_n$
  - $(C_2H_2O)_n COOH$
- Which of the following monosaccharides is the majority found in the human body?
  - D-type
  - L-type
  - LD-types
  - None of the above
- Which of the following techniques is used to determine the protein structures?
  - X-ray crystallography
  - Kryptonics X-ray vision
  - Magnetic resonance imaging (MRI)
  - None of the above
- Which of the following is the smallest carbohydrate-triose?
  - Ribose
  - Glucose
  - Glyceraldehyde
  - Dihydroxyacetone
- A short length of DNA molecule has 80 thiamine and 80 guanine bases. The total number of nucleotide in the DNA fragment is:
  - 160
  - 40
  - 320
  - 640
- All of the reactant will be converted to products:
  - Will never reach equilibrium
  - Will not occur spontaneously
  - Will proceed at a rapid rate
  - Will proceed at a rapid rate
- ATP is a:
  - Nucleoside
  - Nucleotide
  - Vitamin
  - Nucleic acid
- Metal ions that temporary binds substrate and active site of 'enzyme' is called:
  - Inhibitors
  - Coenzymes
  - Prosthetic group
  - Cofactors
- Sphingomyelins are found in:
  - Muscles
  - Nephrons
  - Brain tissues
  - Hepatocytes

11. The synthesis of glucose from fats are called:
  - a. Glycolysis
  - b. Krebs cycle
  - c. Glycogenolysis
  - d. Gluconeogenesis
12. In Krebs Cycle a six carbon compound is formed by the combination of Acetyl CoA and:
  - a. Citric acid
  - b. Malic acid
  - c. Oxaloacetic acid
  - d. Succinic acid
13. All of the following are important electrolytes except:
  - a. Pottasium ions
  - b. Carbon ions
  - c. Chloride Ions
  - d. Sodium ions
14. Which of the following enzyme catalyses the first step of glycolysis?
  - a. Hexokinase
  - b. Pyruvate kinase
  - c. Glukokinase
  - d. Phosphofructokinase 1
15. The repeating units of proteins are:
  - a. Glucose units
  - b. Amino acids
  - c. Fatty acids
  - d. Peptides
16. Nutritional polysaccharide is:
  - a. Starch and glycogen
  - b. Starch and chitin
  - c. Starch and cellulose
  - d. Starch and glucose
17. Enzyme which helps in changing shape of a molecule:
  - a. Ligases
  - b. Dehydrogenases
  - c. Hydrolases
  - d. Isomerases
18. The backbone of DNA is:
  - a. Hydrophilic
  - b. Hydrophobic
  - c. Neutral
  - d. Both hydrophilic and hydrophobic
19. During one Kreb cycle number of carbondioxide molecules released is:
  - a. 1
  - b. 2
  - c. 3
  - d. 4
20. Ramachandran plot is used for:
  - a. Predicting the structure of an enzyme
  - b. Predicting the structure of a protein
  - c. Predicting the secondary of proteins from primary sequence
  - d. All the above

-- --- --

**( Descriptive )**

Time : 2 hr. 30 mins.

Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

- |   |        |
|---|--------|
| 1. What do you mean by gluconeogenesis, when does it happen and write the enzymes involved in gluconeogenesis? Explain the process of glycolysis along with the enzymes involved in it. | 3+7=10 |
| 2. Describe in detail:<br>a) Fate of pyruvate under aerobic and anaerobic condition.<br>b) Write the importance of hexose monophosphate shunt.  | 5+5=10 |
| 3. a) What are lipids, how are they classified?<br>b) Write short notes on:<br>(i) Essential fatty acid and<br>(ii) Prostaglandins  | 5+5=10 |
| 4. Define Proteins. What are the forces stabilizing the structure of proteins?  | 3+7=10 |
| 5. Describe electron transport chain in brief.  | 10     |
| 6. a) Differentiate between denaturation and renaturation of DNA.<br>b) Differentiate between A-DNA and B-DNA.  | 5+5=10 |
| 7. Write a note on:<br>a) Enzyme nomenclature according to Enzyme commission.<br>b) Write short note on Holoenzyme and Apoenzyme.   | 5+5=10 |
| 8. Write a note on:<br>a) Essential and Nonessential amino acids.<br>b) Fibrous and Globular proteins.  | 5+5=10 |

= = \*\*\* = =