

**B.Sc. ZOOLOGY**  
**FOURTH SEMESTER (REPEAT)**  
**BIOCHEMISTRY OF METABOLIC PROCESSES**  
**BSZ-403**

**SET**  
**A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

( Objective )

*Choose the correct answer from the following:*

*1 × 20 = 20*

1. What is the name of the molecule that the cell uses to directly control metabolic pathways?  
a. Enzyme  
b. Substrate  
c. Product  
d. ATP
2. The body's central metabolic clearing house is:  
a. Adipose tissue  
b. Brain  
c. Skeletal muscle  
d. Liver
3. Pyruvate is the precursor of:  
a. Alanine  
b. Glutamate  
c. Serine  
d. Proline
4. Which of the following is a non-essential amino acid?  
a. Lysine  
b. Leucine  
c. Serine  
d. Methionine
5. The carbon skeleton of glycolytic amino acids is finally degraded to:  
a.  $\alpha$ -ketoglutarate  
b. Succinyl CoA  
c. Fumarate  
d. Any of the above
6. The free fatty acids are transported by blood in association with:  
a.  $\beta$ -lipoprotein  
b. Albumin  
c. Globulin  
d. Hemoglobin
7. ATP synthesis by ATP synthase is driven by the movement of:  
a. Protons  
b. NADH  
c. Electrons  
d. All of the above
8. How many ATP is/are required for activation of fatty acid?  
a. 1  
b. 2  
c. 3  
d. 4
9. Pentose Phosphate Pathway produces:  
a. Ribose sugar  
b. NADPH  
c. Both a & b  
d. None of these
10. Molecules inhibit ATP synthesis without affecting the respiratory chain and ATP synthase is called:  
a. Inhibitor  
b. Uncoupler  
c. Inducer  
d. Catalyst

11. Which of the following statements is true about the regulation of metabolic pathway?
- a. Metabolic regulation always depends on control by hormones
  - b. Most of the metabolic pathways are regulated
  - c. Most of the metabolic pathways are not regulated
  - d. Metabolic regulation does not depend on control by hormones
12. Which of the following cycle shows amphibolic pathway?
- a. Citric acid cycle
  - b. Glyoxylate
  - c. Glycolysis
  - d. Lipid metabolism
13. When two reactions are connected through a common intermediate, they are said to be:
- a. Regulated
  - b. Inhibited
  - c. Coupled
  - d. Compartmentalized
14. Which of the following gives rise to methionine, threonine and lysine?
- a. Pyruvate
  - b. Aspartate
  - c. Glutamate
  - d. Serine
15. In which form the nitrogen is incorporated into an amino acid?
- a. Nitrite
  - b. Glutamate
  - c. Nitrate
  - d. Ammonium ion
16. The EMP pathway in eukaryotes usually takes place in:
- a. Nucleus
  - b. Lysosome
  - c. Mitochondria
  - d. Cytoplasm
17. Electron transport system (ETS) is present in which of the following parts of mitochondria?
- a. Inner membrane
  - b. Outer membrane
  - c. Matrix
  - d. Stroma
18. Glucose 6-phosphatase enzyme is present in:
- a. Cytoplasm
  - b. Mitochondrial matrix
  - c. Lysosome
  - d. Endoplasmic reticulum
19. In Gluconeogenesis Glucose is produced from:
- a. Pyruvate
  - b. Glycerol
  - c. Glutamic acid
  - d. All of them
20. Inhibitor of Electron Transport chain is/are:
- a. Cyanide
  - b. Carbon Monoxide
  - c. Both a & b
  - d. None of these

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**( Descriptive )**

Time : 2 hr. 30 mins.

Marks : 50

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

1. What is transamination? Describe in detail with proper example. 2+8=10
2. What is glycolysis? Give diagrammatic presentation of different phases and reaction steps in glycolysis. Add note on the regulation and energy yield in glycolysis. 1+5+2+2=10
3. Briefly write about TCA cycle. Why TCA cycle is called amphibolic? 7+3=10
4. What are the differences between catabolic and anabolic pathway? Write down how the metabolism of fat, carbohydrate and protein lead to the liberation of Acetyl CoA with proper illustration. 2+8=10
5. What are the different sites where metabolism takes place? Write about the regulation of metabolism. 5+5=10
6. Mention the states during which ketone bodies serve as fuel. Write various steps of ketogenesis in the body. 2+8=10
7. Describe  $\beta$ -oxidation of Palmitic acid( $C_{16}$ ). 10
8. Mention two sites of occurrence of gluconeogenesis. Explain how the glucose molecules are formed from fatty acids, glycerol, lactate and glucogenic amino acid. 2+8=10

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