2025/11

SET B

BACHELOR OF MEDICAL LABORATORY TECHNOLOGY
THIRD SEMESTER
BIOCHEMISTRY III
BMLT – 303

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs. **Full Marks: 70**

Objective

Time: 30 min. **Marks: 20**

Choose the correct answer from the following: ***1×20=20***

1. The TCA cycle is also known as:
   a. Krebs cycle
   b. Cori cycle
   c. Calvin Cycle
   d. Urea cycle

2. Glycogen storage diseases are caused by:
   a. Viral infection
   b. Vitamin deficiency
   c. Enzyme deficiency
   d. Hormonal imbalance

3. Glycogenesis refers to:
   a. Breakdown of glycogen
   b. Conversion of glucose to lactate
   c. Synthesis of glycogen
   d. Formation of glucose from fat

4. The ETC is located in:
   a. Cytoplasm
   b. Nucleus
   c. Inner mitochondrial membrane
   d. Golgi body

5. The major site for glycogen storage in the body is:
   a. Brain
   b. Liver and muscles
   c. Kidney
   d. Pancreas

6. Which co-enzyme donates electrons to complex I?
   a. FADH2
   b. Co-enzyme Q
   c. NADH
   d. Co-enzyme C

7. The TCA cycle takes place in the:
   a. Mitochondrial matrix
   b. Golgi apparatus
   c. Cytoplasm
   d. Nucleus

8. How many ATP molecules are produced (net gain) from one molecule of glucose in glycolysis
   a. 4
   b. 6
   c. 2
   d. 8

9. The end product of glycolysis under aerobic condition is:
   a. Lactate
   b. Acetyl CoA
   c. Pyruvate
   d. Ethanol

10. In gas chromatography, which of the following is typically used as the mobile phase?
    a. Ethanol
    b. Water
    c. Helium
    d. Silica gel

11. Which of the following statements best describe the principle of chromatography?
    a. It separates substances based on their melting points
    b. It separates components based on their boiling points
    c. It separates mixtures based on differential partitioning between stationary and mobile phases
    d. It separates substances based on their densities

12. Radioimmunoassay (RIA) is primarily used for:
    a. Detection of bacterial infections
    b. Quantification of hormones, drugs, proteins at very low concentrations
    c. Identification of DNA mutations
    d. Isolation of cell organelles

13. Which of the following is not a common type of ELISA?
    a. Direct ELISA
    b. Sandwich ELISA
    c. Indirect ELISA
    d. Competitive ELISA with radioactivity

14. Which of the following is a key component in an ELISA test?
    a. DNA probes
    b. Radioactive isotopes
    c. Enzyme-linked antibody
    d. Fluorescent dyes

15. What is nucleotide?
    a. Nitrogenous base only
    b. Nitrogenous base + sugar + phosphate
    c. Nitrogenous base + Sugar
    d. Sugar + Phosphate

16. The drug of choice for primary gout is:
    a. Allopurinol
    b. Colchicine
    c. Aspirin
    d. Probenecid

17. The chief product of catabolism of purines in human beings is:
    a. Urea
    b. Hypoxanthine
    c. Uric acid
    d. Beta aminoisobutyric acid

18. Normal blood cholesterol level is:
    a. 40-60mg/100ml
    b. 120-150mh/100ml
    c. 70-110mg/100ml
    d. 150-200mg/100ml

19. The key enzyme in fatty acid synthesis is:
    a. Acetyl CoA carboxylase
    b. Enoylreductase
    c. Beta hydroxyl acyl dehydratase
    d. Acetyl transacylase

20. The pathway which takes place in the mitochondria is:
    a. Ketogenesis
    b. HMP shunt pathway
    c. Glycolysis
    d. Cholesterol synthesis

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Descriptive

Time : 2 hrs. 30 min. Marks : 50

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

1. Explain the steps of beta oxidation of fatty acid, giving energetics of Palmitic acid 8+2=10

2. Enumerate the major steps of synthesis of cholesterol and how is it regulated 5+5=10

3. a. What is the normal blood level of uric acid? Explain gout. 5+5=10

   b. Give the sources of carbon and nitrogen atoms of purine rings. Indicate the clinical uses of inhibitors of purine nucleotide synthesis.

4. a. What is the role of citrate in fatty acid synthesis? 5+5=10

   b. Classify lipoprotein.

5. Briefly explain Electron Transport Chain in detail 10

6. a. Describe Glycolysis. Write the steps involved in the pathways, mentioning the important enzymes and energy yield. 5+5=10

   b. Describe Glycogen storage diseases in detail

7. a. Define chromatography. Explain the differences between the mobile phase and the stationary phase and state two uses of chromatography. 5+5=10

   b. What is ELISA? What is the basic principle of ELISA and state two uses?

8. a. What is RIA? Mention some major application. 5+5=10

   b. State some advantages and disadvantages of RIA.

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