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MBC–009

M. SC. (BIOCHEMISTRY)

(MSCBCH)

Term-End Examination

December, 2025

MBC-009 : CLINICAL BIOCHEMISTRY

Time : 3 Hours *Maximum Marks : 100*

Note : *(i) Answer any* ***five*** *questions.*

(ii) All questions carry equal marks.

1. (a) Name different types of autoanalyzers. List the steps involved in sample analysis on the automated systems. 5

   (b) How are blood samples collected and stored for clinical lab investigations ? Explain the use of colour-coded collection tubes for collection of blood samples. 10

(c) Discuss integral components of data management in a clinical lab. 5

2. (a) What are marker enzymes ? Discuss the role of serum aspartate amino transferase and serum alanine amino transferase as diagnostic enzyme markers. 2+4+4

(b) Explain the structure and functions of different types of White Blood Cells. Describe manual method of WBC count. 10

3. (a) Write notes on the following : 2×5=10

(i) Gibbs-Donnan equilibrium

(ii) Regulation of blood pH by respiratory system

(b) How is blood glucose homeostasis maintained ? 5

(c) Discuss the underlying cause, symptoms and treatment of galactosemia. 5

4. (a) What are dyslipidemias ? Discuss their classification and underlying cause. 5

   (b) Write briefly on the following : 2×2.5=5

   (i) Familial hypercholestemia

   (ii) Krabbe disease

   (c) Describe different types of hemoglobinopathies. 10

5. Write short notes on any *four* of the following : 4×5=20

   (i) Methylmalonic acidemia

   (ii) Blistering cutaneous porphyrias

   (iii) Hepatocellular carcinoma

   (iv) Disorders of bilirubin metabolism

   (v) Microalbuminuria

   (vi) Urinary tract obstruction

6. (a) Explain the role of any *two* of the following enzymes in cardiac health diagnosis : 2×5=10

   (i) Creatine kinase

(ii) ACE (Angiotensin Converting Enzyme)

(iii) Troponin

(b) What is oxidative stress ? Explain the role of enzymatic and non-enzymatic antioxidants. 10

7. Write brief description of any *four* of the following : 4×5=20

(i) Chemical carcinogens

(ii) Metabolic changes in tumor cells

(iii) Hypothyroidism

(iv) Human Chorionic Gonadotropin (HCG)

(v) Hasimoto thyroiditis

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