

MD[BIOCHEMISTRY]

BF/2023/06

**Introductory Biochemistry & molecular Biochemistry
[Paper-I]**

Time : 3 Hours

M.M.: 100

Note: Attempt all questions. All questions carry equal marks.

NO SUPPLEMENTARY SHEET SHALL BE ALLOWED/PROVIDED**The student must write O.P. Code in the space provided on the Title page of the Answer Book.**

Illustrate your answer with suitable diagrams.

1. Define replication. Discuss the replication process in prokaryotes and enumerate the differences of replication between prokaryotes and eukaryotes. [10]
2. **Explain:**
 - a. Lineweaver- Burk plot [5]
 - b. Eadie- Hofstee plot [5]
3. What are domains, motifs, folds and supersecondary structures in proteins? [10]
4.
 - a. Mutarotation and its significance [5]
 - b. Mucopolysaccharidosis [5]
5. **Write short notes on:**
 - a. DNA vaccines [5]
 - b. Molecular basis of degeneracy of genetic code [5]
6. Discuss glycolipids and their significance. [10]
7. Write briefly on:
 - a. Synthetic nucleotide analogues used in chemotherapy [5]
 - b. Transgenic animals [5]
8. Describe SNP's and their significance. [10]
9. **Write short notes on:**
 - a. Growth factors and oncogenes [5]
 - b. Proteonomics [5]
10. Discuss post translational modifications. [10]

MD[BIOCHEMISTRY]

BF/2023/06

Biochemistry of body Metabolism
[Paper-II]

Time : 3 Hours

M.M.: 100

Note: Attempt all questions. All questions carry equal marks.

NO SUPPLEMENTARY SHEET SHALL BE ALLOWED/PROVIDED

The student must write Q.P. Code in the space provided on the Title page of the Answer Book.

Illustrate your answer with suitable diagrams.

1. Discuss the biosynthetic pathway for de novo cholesterol synthesis. Name the rate limiting enzyme of the pathway and explain its short term and long term regulation. [10]
2. Explain why:
 - a. Selenium is associated with hypothyroidism [5]
 - b. Carcinoid syndrome usually presents with pellagra like symptoms [5]
3. Describe briefly:
 - a. Role of folic acid in I-C metabolism [5]
 - b. ATP synthase complex [5]
4. Describe the synthesis and breakdown of glycogen in the body. Add a note on its hormonal regulation. [10]
5. Differentiate between:
 - a. Lineweaver- Burke plot in competitive and non-competitive enzyme inhibition [5]
 - b. Glycolysis in liver and RBCs [5]
6. Discuss the steps of heme biosynthesis and its regulation. [10]
7. Discuss briefly the metabolism of glycine and associated disorders. Add a note on the special products formed from this amino acid. [10]
8. Classify eicosanoids. Write about the physiological role of prostaglandins. [10]
9. Write about the role of cytochrome P450 in metabolism of xenobiotics. [10]
10. Explain the Mitchell's chemiosmotic theory in brief and mention the site of action of various respiratory inhibitors. [10]

MD[BIOCHEMISTRY]

BF/2023/06

Biochemistry of Hormones, Vitamins, Minerals, Enzymes & Clinical Biochemistry [Paper-III]

Time : 3 Hours

M.M.: 100

Note: Attempt all questions. All questions carry equal marks.

NO SUPPLEMENTARY SHEET SHALL BE ALLOWED/PROVIDED

The student must write Q.P. Code in the space provided on the Title page of the Answer Book.

Illustrate your answer with suitable diagrams.

- | | | |
|-----|---|---------|
| 1. | Classify vitamin. Discuss in detail the metabolism of vitamin D. | [10] |
| 2. | a. Explain how hormones have a role in obesity | [5] |
| | b. Describe the causes of hyponatremia | [5] |
| 3. | What is the principle of Electrophoresis? List the various types of Electrophoresis and describe any one in detail. | [10] |
| 4. | Discuss: - | [5+5] |
| | a. Levey Jennings charts | |
| | b. Sensitivity specificity | |
| 5. | Write short notes on: | [5+5] |
| | a. Rate limiting steps | |
| | b. Tumor markers | |
| 6. | Discuss the various types of enzymes inhibition with examples. | [10] |
| 7. | Discuss the diagnostic significance of various tumor markers. | [10] |
| 8. | Explain biochemical basis of:- | [2.5x4] |
| | a. Fluorosis | |
| | b. Rickets | |
| | c. Hemolysis | |
| | d. Iron absorption | |
| 9. | Discuss the kidney function tests. Add a note on derangements in various kidney diseases. | [10] |
| 10. | Write short notes on: | [2.5x4] |
| | a. Fructosamine | |
| | b. Diagnosis of adrenal insufficiency | |
| | c. Overflow proteinuria | |
| | d. Acute phase reactants | |

MD[BIOCHEMISTRY]

BF/2023/06

Recent advances in clinical Biochemistry and Biochemical methodologies [Paper-IV]

Time : 3 Hours

M.M.: 100

Note: Attempt all questions. All questions carry equal marks.

NO SUPPLEMENTARY SHEET SHALL BE ALLOWED/PROVIDED

The student must write Q.P. Code in the space provided on the Title page of the Answer Book.

Illustrate your answer with suitable diagrams.

1. Name various inherited disorders of bilirubin metabolism. Explain in detail Crigler-Najjar syndrome. [10]
2. **Write short notes on:-**
 - a. Effects of lead overexposure [5]
 - b. CA 125 as a tumor marker [5]
3. Describe structure and functions of insulin. Highlight its role in pathogenesis of type-2 diabetes mellitus. [10]
4. Write down clinical importance of cardiac markers in the diagnosis of cardiovascular diseases. [10]
5. Define glomerular filtration rate and various markers being used for its measurement. [10]
6. Describe hypokalemia, signs, symptoms and its clinical implications. [10]
7. Explain biochemistry and physiology of various markers of bone resorption. [10]
8. **Write short note on:**
 - a. Antidiuretic hormones [5]
 - b. Galactosemia [5]
9. Write principle and application of random access autoanalyzers in clinical biochemistry laboratory. [10]
10. Describe various disorders of purine catabolism. [10]
