

MSc Sem.-2 Examination

410

Biochemistry

May-2025

[Max. Marks : 70]

Time : 2-30 Hours]

Instructions: Illustrate your answers with neat diagrams wherever necessary.

Question 1 Write the following

- (i) Discuss the nutritional significance, dietary sources, and deficiency (7 Marks) symptoms of Phosphorus.
- (ii) Elaborate on the biochemical functions and nutritional significance of (7 Marks) thiamine in its coenzyme form, highlighting its role in human metabolism.

OR

- (i) Differentiate between fat-soluble and water-soluble vitamins. Elaborate on (7 Marks) the biochemical role of Vitamin A in the visual cycle.
- (ii) Define thermogenic effect of food. Discuss the factors influencing energy (7 Marks) requirements in men and women.

Question 2 Write the following

- (i) Discuss the metabolic alterations observed in Protein Energy Malnutrition. (7 Marks) How do these changes differ between Marasmus and Kwashiorkor?
- (ii) Discuss the metabolism of fat, protein, and carbohydrates in starvation. (7 Marks)

OR

- (i) Describe the biochemical pathway of phenylalanine metabolism. Discuss the (7 Marks) causes, clinical features, and treatment of Phenylketonuria (PKU).
- (ii) Explain the techniques used to study starvation in humans. (7 Marks)

Question 3 Write the following

- (i) Explain the clinical interrelationship between lipids, lipoproteins, and (7 Marks) apolipoproteins. Also, give Examples of Sphingolipidosis and potential lipoprotein interactions.
- (ii) Describe the diagnostic tests for assessing apolipoproteins, HDL-cholesterol, (7 Marks) LDL-cholesterol, and triglycerides. How are these parameters interpreted in a clinical context?

OR

- (i) Enumerate and explain the enzymes and biochemical tests used to assess (7 Marks) cardiac function.
- (ii) Discuss the structure, function, and clinical relevance of lipoproteins. (7 Marks)

Question 4 Write the following

- (i) Discuss the role of nutrition in managing hyperlipidaemia. (7 Marks)
- (ii) Explain the biochemical and dietary management of gout. Add a note on foods to be avoided in hyperuricemia. (7 Marks)

OR

- (i) Describe the pathophysiology of atherosclerosis and the dietary strategies used in its prevention and management. (7 Marks)
- (ii) Describe the dietary interventions required in homocystinuria and galactosemia. (7 Marks)

Question 5 Attempt any seven out of twelve

(14 Marks)

- (i) List two functions of calcium in the human body.
 - (ii) Name two good dietary sources of iron.
 - (iii) What is hypervitaminosis? Name any one fat-soluble vitamin that may cause it.
 - (iv) Differentiate between direct and indirect calorimetry (any one point).
 - (v) What is BEE?
 - (vi) What vitamin deficiency leads to megaloblastic anemia?
 - (vii) Define aminoaciduria.
 - (viii) Name two dietary factors contributing to dental caries.
 - (ix) Name two nutrients that are restricted in renal failure.
 - (x) Mention two anti-inflammatory foods useful in rheumatic disorders.
 - (xi) What is the characteristic smell of urine in MSUD?
 - (xii) Differentiate between diabetes mellitus and diabetes insipidus (any one point).
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