

M.Sc. (Sem.-II) Examination

408

Bio Chemistry

May-2017

Time : 3 Hours]

[Max. Marks : 70

1. A) Why is it important to determine body composition? Add a note on the constituent elements. 07
- OR**
- A) Explain Plethysmography, Hydrodensitometry and DEXA used to determine body composition.
- B) Discuss measurement of energy expenditure by indirect calorimetry. 07
- OR**
- B) What is meant by Thermogenic effects of foods? Explain brown fat metabolism.
2. A) Describe the absorbance, metabolism and nutritional significance of Iron. 07
- OR**
- A) Discuss the biochemical role and interaction of Vitamin D₃ and Ca²⁺.
- B) Explain the biochemical functions and deficiencies of Phosphorous and Magnesium. 07
- OR**
- B) Write a note on the vitamin and mineral requirements during pregnancy.
3. A) Describe the etiology, nutritional disorder and management in Kwashiorkar cases. 07
- OR**
- A) What is PEM? Give a detailed account of the biochemical and metabolic changes in such conditions.
- B). Write a detailed note on the biochemical alterations which occur during starvation. 07
- OR**
- B) Elucidate the causes of obesity. Explain in detail the role of satiety signals.
4. A) How do dental caries occur? Explain precautions to avoid caries. 07
- OR**
- A) What is Artherosclerosis? Discuss dietary elements in its prevention and treatment.
- B) Explain the symptoms, biochemical causes and diet restriction in Gout. 07
- OR**
- B) Explain the genetic and metabolic error in PKU and MSUD.

P.T.O

5. Write in brief (Two marks each)

14

- A. Enlist factors affecting BMR
 - B. What is Tinsel disease?
 - C. Mention the sources and deficiencies of Zinc.
 - D. What are the distinguishing features of Marasmus infants?
 - E. How are Anthropometric measurements taken to study starvation effects?
 - F. What are the dietary controls in type 2 Diabetes Mellitus?
 - G. Explain: Protein sparing action of carbohydrates.
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- NB : i. All questions are compulsory
ii. All questions carry equal marks

- 1A. Write an account on the unisubstrate enzyme kinetics. 7
OR
- 1A. Discuss the linear and direct linear plots.
- 1B. Write a note on bi-substrate reaction kinetics. 7
OR
- 1B. Explain the classification of multisubstrate enzyme reactions.
- 2A. Describe two methods for examining enzyme-substrate interaction. 7
OR
- 2A. Elucidate with examples, any two substrate-enzyme catalytic mechanisms.
- 2B. Explain various methods used to determine enzyme turnover rate
OR
- 2B. Describe the kinetics associated with enzyme turnover
- 3A. Discuss Ligand- Receptor binding and explain positive and negative co-operativity. 7
OR
- 3A. Write an account on saturation analysis. Comment on the significance of Hill and Scatchard plots.
- 3B. Discuss regulation by allosteric enzymes. Explain the kinetics involved. 7
OR
- 3B. Describe matrix materials and advantages of Immobilized enzymes. State the methods.
- 4A. Explain the pyruvate dehydrogenase complex in detail and state the advantages. 7
OR
- 4A. Discuss the role of Co.A, Tetrahydrofolicacid and TPP in enzyme catalysis.
- 4B. Give an account of the activation of enzymes by alkali and alkali-earth metal ions. 7
OR
- 4B. Explain the regulation of enzymes by Lac operon and trp models.
5. Answer briefly (Two marks each): 14.
- What is the significance of the Briggs-Haldane Equation?
 - Define any two units for enzyme activity.
 - What are ribozymes and abzymes?
 - Mention 3 amino acids important for catalysis of Trypsin.
 - Explain: Half-life of pyruvate kinase.
 - Justify: NAD⁺ is an obligatory co-factor for alcohol dehydrogenase.
 - What is the importance of Se and Cu²⁺ in enzyme catalysis?
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BCH 410 (Human Physiology)

Time: 3 Hours]

[Max Marks: 70

Instructions:

All questions are compulsory.

Illustrate your answers with neat diagrams wherever necessary

1. (A) Give a brief account of various factors associated with Blood clotting. [7]
OR
 (A) Discuss the importance of various Plasma Proteins.
 (B) Give a detailed account of the Cardiac action potential. [7]
OR
 (B) Explain in detail the Cellular components of blood. Add a note on their functions.
2. (A) Explain in detail the Pulmonary Ventilation and External (Pulmonary) Respiration. [7]
OR
 (A) Describe the Haemoglobin Saturation with Oxygen (SbO_2).
 (B) Describe the Control of Respiration. [7]
OR
 (B) Explain the role of respiration in the Acid-Base Balance of our body.
3. (A) Explain the various mechanisms associated with Food and Water intake. [7]
OR
 (A) Describe the process of digestion of Carbohydrates and its absorption.
 (B) Give a detailed account on the Gastric motility and Gastric emptying. [7]
OR
 (B) Explain the process of Protein digestion and absorption.
4. (A) Explain in detail the role of body fluids in Homeostasis and the importance of body fluid Osmolality. [7]
OR
 (A) Describe the mechanism of Micturition and add a note on the hormonal control of excretion.
 (B) Briefly explain the various Aquaporins and its functions. Add a note on ABC transporters. [7]
OR
 (B) Explain the Internal blood vessels of Kidney. Add a note on various types of Nephrons.
5. **Answer in Brief:** [14]
 - A Mention the role of Pancreatic Islets.
 - B Mention the functions of Gastrin and Ghrelin.
 - C Explain in short the hormones of Liver.
 - D What are Effective and Ineffective Osmoles?
 - E What is Compliance? Which are the factors that influence compliance?
 - F What are Astrocytes and Ependymal cells?
 - G Explain how you can differentiate Sympathetic and Parasympathetic Outflow.