2/46

0205N155

Candidate's Seat No :_____

MSc Sem.-2 Examination

408

Food Science

Time : 2-30 Hours] **May-2025** **[Max. Marks : 70**

Instructions: Illustrate your answers with neat diagrams wherever necessary.

Question 1 **Write the following**

(i) Illustrate the events of the cardiac cycle and correlate them with ECG waves and heart sounds. (7 Marks)

(ii) Explain the clinical significance of abnormal counts or functions of RBCs, WBCs, and platelets, including examples like anemia, leukemia, and thrombocytopenia. (7 Marks)

OR

(i) Discuss the hormonal and autonomic regulation of heartbeat, including the role of sympathetic and parasympathetic stimulation. (7 Marks)

(ii) Explain: autorhythmicity in heart. (7 Marks)

Question 2 **Write the following**

(i) Explain the chloride shift and reverse chloride shift in RBCs and their physiological significance. (7 Marks)

(ii) Write a detailed account of the effects of high altitude on the body and the physiological adaptations. (7 Marks)

OR

(i) Explain the mechanisms and causes of metabolic acidosis and metabolic alkalosis. (7 Marks)

(ii) Describe the mechanisms of continuous vs. saltatory conduction and their physiological relevance. (7 Marks)

Question 3 **Write the following**

(i) Describe the composition, functions, and regulation of saliva in detail. (7 Marks)

(ii) Explain the process of protein digestion, including enzymes involved at each stage. (7 Marks)

OR

(i) Describe lipid digestion from the oral cavity to the small intestine. (7 Marks)

(ii) Describe the composition, functions, and regulation of bile secretion. (7 Marks)

(P.T.O)

N 155-2

Question 4 **Write the following**

(i) Describe the countercurrent multiplier mechanism and explain how it creates and maintains the medullary osmotic gradient necessary for water reabsorption. (7 Marks)

(ii) Describe signal transduction pathways involved in ADH action. (7 Marks)

OR

(i) Explain how the kidney maintains electrolyte balance during periods of dehydration versus water excess, detailing the hormonal and physiological responses involved. (7 Marks)

(ii) Explain the process of glomerular filtration, including the structure of the filtration barrier, forces involved, and how the glomerular filtration rate is regulated. (7 Marks)

Question 5 **Attempt any seven out of twelve** (14 Marks)

(i) Name the natural pacemaker of the heart and its location.

(ii) Mention any two functions of plasma proteins.

(iii) What is fibrinolysis?

(iv) State the difference between intrinsic and extrinsic pathways of coagulation.

(v) What causes a rightward shift in the oxygen dissociation curve?

(vi) What is the normal pH range of blood?

(vii) How does hemoglobin play a role in maintaining blood pH?

(viii) Name the enzyme that converts maltose into glucose in saliva.

(ix) Which gland secretes lingual lipase?

(x) What are micelles?

(xi) What is the main function of the glomerulus?

(xii) What hormone stimulates water reabsorption in the collecting ducts?