LS2JPHC500 Reg. No. | | | | | | | | |

ST ALOYSIUS (DEEMED TO BE UNIVERSITY)

MANGALURU

SCHOOL OF LIFE SCIENCES
(PG PROGRAMME)

Semester I – P.G. Examination –M.Sc. Food Science Nutrition and Dietetics

October/ November - 2025

FOOD CHEMISTRY

Time: 2 ½ hrs. **Max Marks: 60**

Note: Draw neat labelled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x2=10)

1. Name three commonly used sweeteners in the food industry and give an example of each.
2. What are colloids?
3. Write the concept of retrogradation in starch-based systems.
4. What are the main sources of carbohydrates in the human diet?
5. What is flavour reversion, and which type of lipid is most susceptible to it?
6. List two physical properties of amino acids.

II. Write explanatory notes on any SIX of the following: (6x5=30)

7. Explain how water-soluble interactions affect the solubility of solutes in water. Provide examples.
8. Explain about classification and purification of colloids.
9. Analyze how the physical properties of carbohydrates like solubility and sweetness vary across different types.
10. Compare the chemical and functional differences between trans fats and cis fats. Discuss the health implications of trans fat consumption.
11. Compare the chemical reactions of oxidation and hydrolysis of fatty acids, and discuss how they impact food quality.
12. Explain About Texturised protein and denaturation of protein
13. What are the biological value and net protein utilization (NPU) of proteins, and how are they measured? Discuss their significance in evaluating protein quality.

III. Answer any TWO of the following: (2 x10=20)

14. Explain in detail about classification and properties of carbohydrates.
15. Briefly describe classification and properties of fats.
16. Analyze the processes of acetylation and interesterification and explain how they modify the functional properties of fats and oils in the food industry. Give examples.

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Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics

October/ November - 2025

Principles of Food Processing and Preservation

Time: 2 ½ hrs. **Max Marks: 60**

Note: Draw neat labelled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x2=10)

1. Define D Value and F value.
2. What is shallow frying?
3. What are the advantages and limitations of sun drying
4. What are the factors influencing drying process
5. What is the principle of ohmic heating?
6. What is the principle of hypobaric storage?

II. Write explanatory notes on any SIX of the following: (6x5=30)

7. Describe how thermal death time (TDT) is used to ensure food safety
8. What are the principles of food preservation?
9. Explain the drying curve and the stages of drying
10. What are modified and controlled atmosphere storage.
11. Explain the stages of freezing curve
12. How does microwave processing impact the quality of food?
13. What is Pulsed Electric Field (PEF) processing?

III. Answer any TWO of the following: (2 x10=20)

14. Analyze the principles of conventional preservation methods like pickling, salting, and smoking and their importance in modern
15. Compare dehydration and concentration in terms of their processes, advantages, and challenges
16. Discuss in detail about food Irradiation.

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Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics

October/ November - 2025

Macronutrients in Human Nutrition

Time: 2 ½ hrs. **Max Marks: 60**

Note: Draw neat labelled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x2=10)

1. Differentiate between Glycemic index and Glycemic load.
2. Write a note on Global malnutrition.
3. Define lipoproteins and list out the major classes of lipoproteins in the circulation.
4. Short chain fatty acids.
5. List the key steps in the digestion of dietary proteins.
6. What is PDCAAS method?

II. Write explanatory notes on any SIX of the following: (6x5=30)

7. Evaluate the components energy expenditure.
8. Discuss fortification as a novel method of food enrichment.
9. Discuss reverse cholesteral metabolism, how does HDL improves endothelial integrity and health?
10. Elaborate on the role of LDL-cholestrol in CVD and how can PUFA be beneficial.
11. Explain the term "Essentail amino acids". With a few examples discuss the biochemical role of esstential amino acid.
12. Write a detail note on the monosaccharides processing in the hepatocytes.
13. What is amino acid scoring? How can it be computed?

III. Answer any TWO of the following: (2 x10=20)

14. Discuss the fate of non-available of CHOs in the colon.
15. Elaborate on the metabolism of lipids and add a note on role of MUFA in prevention of CVD.
16. Metabolically review the processes involved in the metabolism of proteins or amino acids

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SCHOOL OF LIFE SCIENCES
(PG PROGRAMME)

Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics

October/ November - 2025

Human Physiology

Time: 2 ½ hrs. **Max Marks: 60**

Note: Draw neat labeled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x2=10)

1. What is the role of hemoglobin in red blood cells?
2. Which immune cells produce antibodies?
3. What is the primary function of the hypothalamus?
4. Outline the importance of alveoli in the lungs.
5. Define motility and its importance in the GIT.
6. Identify the primary function of the parathyroid glands.

II. Write explanatory notes on any SIX of the following: (6x5=30)

7. Explain how membrane proteins aid in both cell transport and intercellular communication. Provide examples of specific proteins and their roles.
8. Describe the role of cartilage in joint function and how it contributes to movement.
9. Discuss how hemoglobin's structure allows for efficient oxygen loading and unloading.
10. Explain the mechanisms of inspiration and expiration.
11. How does the skin protect the body from pathogens and environmental damage?
12. Explain the process of nerve impulse conduction.
13. Compare and contrast the functions of the proximal and distal convoluted tubules.

III. Answer any TWO of the following: (2 x10=20)

14. Compare and contrast the structure and function of the adrenal glands and pancreas. Evaluate their interaction in stress response
15. Critically assess the importance of immune memory in vaccines. How does the interaction between cell-mediated and humoral immunity contribute to the development of long-lasting immunity after vaccination?
16. Analyze the factors affecting GI motility, including neural and hormonal control. Evaluate the roles of hormones like gastrin, cholecystokinin (CCK), and motilin in coordinating digestive processes.

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Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics

October/ November - 2025

Micronutrient in Human Nutrition

Time: 2 ½ hrs. **Max Marks: 60**

Note: Draw neat labelled diagrams/schematic sketches/structures wherever necessary.

I. Write short notes on any FIVE of the following. (5x2=10)

1. How does chloride contribute to the movement of fluids in and out of cells?
2. Write a short note on the physiological functions of sodium.
3. Write a note on the toxicity of vitamin D and E.
4. Describe the effect of warfarin as an antagonist of vitamin K.
5. What is pyruvate dehydrogenase complex?
6. Identify two in vitro methods used to study the bioavailability of nutrients.

II. Write explanatory notes on any SIX of the following: (6x5=30)

7. Discuss microbial assay and radio isotope assay.
8. Evaluate the potential impact of chronic metabolic acidosis on bone health and discuss strategies to mitigate this effect.
9. How does fluoride affect dental enamel and the formation of cavities?
10. Elucidate illustratively the digestion and absorbtion of riboflavin.
11. Discuss the role of Vit – A in gene expnession and tissue differentiation.
12. Discuss the metabolism of iron.
13. Explain physiological functions of selenium.

III. Answer any TWO of the following: (2 x10=20)

14. Evaluate the consequences of hypercalcemia and hypocalcaemia on various body systems and functions.
15. Elucidate the metabolic functions of Vitamin K and C in Humans.
16. Discuss and elaborate on the metabolic roles of B_1 and B_3 in Humans.

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