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St Aloysius College (Autonomous)
Mangaluru

Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics
November / December - 2023

FOOD CHEMISTRY

Time: 3 hrs.

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Max Marks: 70

I. Answer any SIX of the following: (6x3=18)

1. Write a note on importance of water and respective chemistry of ice formation.
2. Recall the primary elements that contribute to super secondary structures in proteins?
3. Write a brief note on Guar Gum.
4. Define carbohydrates and explain their importance in food chemistry.
5. Write a note on Emulsion.
6. Why are trans fats used? What is the problem with industrial trans fats?
7. Write a note on cofactor and its types.

II. Answer any FOUR of the following: (4x7=28)

8. Propose strategies for controlling water activity to extend the shelf life of a specific food product.
9. Critically assess the impact of enzymatic browning on the quality and nutritional value of fruits and vegetables during processing. Suggest methods to control enzymatic browning effectively.
10. Examine the concept of fat substitutes in food manufacturing. Discuss their potential benefits and drawbacks in terms of taste, texture, and health.
11. Summarize the role of denaturation in food preparation, such as coagulation in dairy products.
12. Critically assess the role of flavors in food products. Explain how flavor compounds are affected by processing methods and storage conditions.

III. Answer any TWO of the following: (2 x12=24)

13. Explain the classifications of proteins with examples.
14. Critically analyze the theory of Enzyme catalysis, including the enzyme-substrate complex, active sites and catalytic mechanism.
15. Discuss in detailed the physical and chemical properties of lipids.

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Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics
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PRINCIPLES OF FOOD PROCESSING AND PRESERVATION

Time: 3 hrs.

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Max Marks: 70

I. Answer any SIX of the following:

(6x3=18)

1. Name two chemical factors and give an example of a miscellaneous factor that can cause food spoilage.
2. What is oil turnover? How is it calculated?
3. Write a short note on the process of flash freezing.
4. List main changes to food kept in frozen storage.
5. What are the stages of reconstitution process in rehydration?
6. Write a short note on factors affecting drying process.
7. Write a short note on slow and quick freezing on foods.

II. Answer any FOUR of the following:

(4x7=28)

8. Elucidate the process of ultrasound treatment and applications and advantages in food industries.
9. Compare and contrast on the types of smoking and what makes food smoke?
10. Explain why the understanding of thermal death time is important in food preservation.
11. Explain the process of freezing using a freezing curve.
12. Describe the basic principle behind UHT processing and how it differs from traditional pasteurization methods.

III. Answer any TWO of the following:

(2 x12=24)

13. Elucidate the process of pulse electric field and applications and advantages in food industries.
14. What is the difference including the advantage and disadvantage of using different types of oils for deep frying considering smoke points, health, cost and flavour.
15. Discuss the unit operation of membrane separation with illustration of different types of membranes and their application in food industries.

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St Aloysius College (Autonomous)**Mangaluru****Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics****November/December - 2023****Human Nutrition****Time: 3 hrs.****Max Marks: 70****I. Answer any SIX of the following: (6x3=18)**

1. Write a short note on the concept of integrated approach in nutritional sciences.
2. Why EAR used for populations in the place of RDA?
3. Glycemic index and glycemic load.
4. Name the primary enzyme responsible for fat digestion in the digestive system.
5. Explain transamination and deamination with an example.
6. What are the prominent protein quality indexes adopted by ICMR?
7. What are chylomicrons and how are they metabolize?

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II. Answer any FOUR of the following: (4x7=28)

8. Analyze how the body adapt to chronic energy deficiency.
9. Explain Carbohydrate metabolism disorders and their causes in detail.
10. Analyze the impact of dietary fat quality on health, considering the roles of PUFAs and MUFAs.
11. "HDL is a good cholesterol" Justify and discuss its metabolic pathway in human.
12. Elaborate on the future challenges for research in the area of nutrition.

III. Answer any TWO of the following: (2 x12=24)

13. Explain in detail about the digestive fate of carbohydrates in human digestive system
14. Compare and contrast the older methods of protein quality evaluation and the recent methods.
15. What is PEM and give its classification. Discuss the theory of adaptation to stress in PEM and elaborate on its management.

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

**November/December - 2023
Human Physiology**

Time: 3 hrs.

Max Marks: 70

I. Answer any SIX of the following:

(6x3=18)

1. Define mitosis and list the main stages involved
2. Define passive transport and provide an example.
3. Write a short note on the gas that is transported by red blood cells in the form of oxyhemoglobin?
4. Write a short note on structure and function of cardiac muscle
5. If a person has an overactive adrenal gland, what physiological changes might occur?
6. What is Addison's Disease and write the symptoms
7. What is the role of kidney in maintaining pH of blood

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II. Answer any FOUR of the following:

(4x7=28)

8. Write the functions of thymus and pineal gland
9. Explain the role of liver in digestion process
10. Explain the organization of central nervous system.
11. Discuss how blood indices can be used to differentiate between various types of anemia.
12. Describe the process of digestion with the help of hormones involved in it.

III. Answer any TWO of the following:

(2 x12=24)

13. Critically evaluate the role of second messengers in intracellular signaling pathways.
14. Discuss on the physiological effects of training
15. Describe the differences between fibrinolysis and coagulation in relation to blood clotting.

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Mangaluru**

**Semester I – P.G. Examination – M.Sc. Food Science Nutrition and Dietetics
November/December - 2023**

ESSENTIALS OF MICRONUTRIENTS

Time: 3 hrs.

Max Marks: 70

I. Answer any SIX of the following:

(6x3=18)

1. How the body uses renal mechanism to regulate pH.
2. Write a short note on the electrolyte deficiencies.
3. "Vitamin D can influence Vit A activity. Justify.
4. Which is the most active form of vitamin E and how is it expressed and derived.
5. What is pernicious anemia? List the dietary sources for its prevention.
6. Describe the structure and sources of biotin.
7. Write a note on Beri Beri and Pellagra.

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II. Answer any FOUR of the following:

(4x7=28)

8. Evaluate the role of selenium in synthesizing seleno amino acids and explain selenium deficiency and toxicity.
9. Illustrate and explain the sodium potassium pump and add a note on deficiency of potassium and sodium.
10. Elucidate the metabolic functions of riboflavin.
11. a) Illustrate the folic acid cycle
b) Write a note on importance of fluoride in human body.
12. Discuss the role and toxicity of vitamin K in human nutrition.

III. Answer any TWO of the following:

(2 x12=24)

13. Elaborate on one metabolic role each for vitamin A and vitamin D.
14. Explain the metabolism, of calcium and its disorders.
15. Discuss the metabolism process of
 - i) zinc in enterocyte
 - ii) Iodine in thyroid gland
