

S.No. of Question Paper : 13339
Unique Paper Code : 2174001006
Name of the Paper : GE-Chemistry of food Nutrients
Name of the Course : B.Sc. (Hons)/ B.Sc Prog.
Semester : I/III/V/VII
Duration : 2 Hours **Maximum Marks: 60**

Instructions for Candidates

1. Write Your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any four questions.
3. All questions carry equal marks.
4. Attempts all parts of the questions together.

1 (a) What do you understand by reducing and non-reducing sugars? Categorize the given sugars as reducing and non-reducing: Galactose, Lactose, Fructose, Maltose, Sucrose.

(b) Differentiate between homo and heteropolysaccharides with suitable examples. Discuss gum chemistry in detail.

(c) What is Caramelisation and non-enzymatic browning?

(5, 5, 5)

2 (a) What are phospholipids? Give suitable examples and their biological significance.

(b) What is the saponification process? Differentiate between saponifiable and non-saponifiable lipids by citing suitable examples.

(c) Expand PUFA and give examples of Omega-3 & 6 fatty acids. Describe their sources and important functions in the human body.

(5, 5, 5)

3 (a) Mention the significance of the tertiary structure of proteins, and elaborate on various types of interactions present to stabilise this structure.

(b) What are conjugated proteins? Give classification along with suitable examples.

(c) (i) Describe the phenomenon of denaturation.

(ii) What is a peptide linkage? What are the products of the hydrolysis of the peptide linkage?

(5, 5, 5)

4 (a) Differentiate between fat- and water-soluble vitamins. Why vitamin B₁₂ is important. What happens if there is a deficiency of vitamin B₁₂?

(b) Describe the effect of food processing on vitamins and minerals.

(c) Explain the important sources and biological significance of consuming magnesium and Zinc in diet.

(5, 5, 5)

5 (a) Write a short note on the structure and importance of starch in food chemistry.

(b) What is auto-oxidation of oils and fats? Give the causes and methods of prevention.

(c) Define the acid value and the method used for its estimation. Explain how acid value reflects the quality of vegetable oils.

(5, 5, 5)

6 (a) Give one example of the following:

i) Metalloprotein

(ii) A sulphur-containing amino acid

(iii) Monomers present in maltose

(iv) Common fatty acid present in oils

(v) Protein present in Milk and wheat

(b) Define the iodine value of oil. Calculate the iodine value of triolein, whose molecular weight is 885 g/mol, and it contains 3 double bonds.

(c) (i) Give the physiological importance of minerals in the human body.

(ii) Differentiate between hydrolytic and oxidative rancidity.

(5, 5, 5)