

This question paper contains 4 printed pages]

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S. No. of Question Paper : **5619**

Unique Paper Code : **2173012017**

Name of the Paper : **DSE : Basic Principles of Food Chemistry**

Name of the Course : **B.Sc. (Hons.) Chemistry**

Semester : **IV/VI**

Duration : **3 Hours**

Maximum Marks : **90**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any six questions.

All parts of a question should be attempted together.

Each question carries **15** marks.

1. (a) "What is relatively small inorganic molecule, but organic left is highly dependent on this tiny molecule"
 - (i) What do you understand by free water ?
 - (ii) Draw a general moisture sorption isotherm (MSI), characteristic of most of the food.
 - (iii) Differentiate between the structure of water and ice.

P.T.O.

(b) What do you understand by browning of food ? Explain some of the factors responsible for it and how can it be prevented ?

(c) Differentiate between :

(i) Nutritive and Non-Nutritive Sweetners

(ii) Acidulants and Humectants. 5,5,5

2. (a) Explain the functional properties of protein in context of food chemistry. How are conjugated proteins different from simple proteins ?

(b) What do you understand by lipid hydrolysis ? How can it be prevented ?

(c) Write short notes on :

(i) Fat-Soluble Vitamins and their physiological importance

(ii) Trace Elements. 5,5,5

3. (a) Explain the classification of different polysaccharides on the basis of structure. Differentiate between Pectin and Agar.

(b) Give the structure and uses of any *two* of the following food dyes in food industry :

(i) Tartrazine

(ii) Indigo Carmine.

- (c) Define food fortification and elucidate its significance in food chemistry. Give *one* example each of food fortifying agents used in salt, orange juices and infant formulas. 5,5,5
4. (a) What are nature identical food colorants ? How are they different from natural food colorants ?
- (b) Write their sources, functions and importance in food chemistry (any *two*) :
- (i) Hemicellulose
- (ii) Cyclodextrin.
- (c) Explain the molecular mechanism of flavour perception. 5,5,5
5. (a) Explain the impact of heat on protein structure and functionality in food. Include examples of both beneficial and detrimental effects.
- (b) Classify lipids on the basis of their structure.
- (c) Write short notes on :
- (i) Food toxins
- (ii) Antioxidants. 5,5,5
6. (a) Explain the role of cholesterol in the body and explain how can it be affected by dietary choices.

(b) Give the structure, colour and sources of anthocyanins.

(c) Discuss the impact of pH on protein behaviour in food. Explain the concept of isoelectric point (pI) and its importance. 5,5,5

7. (a) What do you understand by 'taste inhibition' ? Give *two* examples of additives used as taste inhibitors ? How is it different from taste enhancement ?

(b) What do you mean by preservation of food. Explain any *two* methods of food preservation.

(c) Flavour additives can be categorized under natural and artificial. Justify with the use of relevant examples. 5,5,5

8. (a) Describe any method used for quantification of ascorbic acid in food samples such as lemon juice.

(b) Write short notes on the following :

(i) Betalains

(ii) Vitamin deficiencies.

(c) How are carotenes different from xanthophylls ? Discuss giving examples. 5,5,5