

# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034



**M.Sc. DEGREE EXAMINATION – FOOD CHEMISTRY AND FOOD PROCESSING**

**FIRST SEMESTER – NOVEMBER 2018**

**17/18PFP1MC01– FOOD CHEMISTRY - I**

Date: 25-10-2018

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

## Part A

**Answer all the questions.**

10 x 2 =20 marks

1. Define free water in food. Mention any two of its properties.
2. Why does ice float on water?
3. What are carbohydrates? What is their importance?
4. How can you obtain D-mannose from D-glucose?
5. What are Emulsifying agents?
6. Define Plastein reaction.
7. Differentiate cofactors and coenzymes with suitable examples.
8. Highlight the role of endogenous enzymes in modifying lipid components of Milk.
9. Define Reichert meissel and Polanski value in fats and oils.
10. What is auto oxidation of foods? Mention any two possible ways of preventing such oxidation.

## Part B

**Answer any eight questions.**

8x5=40 marks

11. Briefly discuss the physical and chemical properties of water.
12. Explain the level of water binding in food material by sorption isotherm.
13. Discuss the Maillard Browning reaction in food products.
14. Give the classification of carbohydrates. Describe the oxidation and reduction reaction of glucose.
15. Discuss the factors influencing the concentration of Enzymes in foods.
16. Derive Arrhenius equation.
17. Explain the rate of the reaction with respect to kinetics.
18. Explain the structural hierarchies of proteins.
19. Discuss any two physico chemical properties of amino acids.
20. Describe the mechanism of action of Anti oxidants in foods.
21. Explain the rate of changes in macro nutrients with respect to temperature and relative humidity during food processing.
22. It takes about 3.0 minutes to cook a hard-boiled egg in Chennai, but at the higher altitude of Ooty, where water boils at 92°C, the cooking time is 4.5 minutes. Use this information to estimate the activation energy for the coagulation of egg albumin protein.

## Part C

**Answer any four questions.**

4x 10=40 marks

23. i) Discuss the technological aspects of freeze drying with different stages. (5)  
ii) Explain the glass transitions and molecular mobility in foods. (5)
24. i) Describe the important application of CMC and MCC in food industries. (5)  
ii) What are the uses of modified and unmodified starch? (5)
25. i) What are Enzyme kinetics? (3)  
ii) Discuss the types of Enzyme inhibition. (7)

26. Discuss the various forces involved in the stability of protein structure.

27. Explain the following reactions of proteins with suitable equations

i) Alkylation (2.5)

ii) Acylation (2.5)

iii) Sulphitolysis (2.5)

iv) Phosphorylation (2.5)

28. i) Explain the role of Anti-oxidants in free radical propagation. (5)

ii) Describe the biochemical tests involved in checking the quality of fat. (5)

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