

2025

Emerging Food Processing Technology-II: Oils, Fats, Bakery & Confectionary

Full Marks: 100

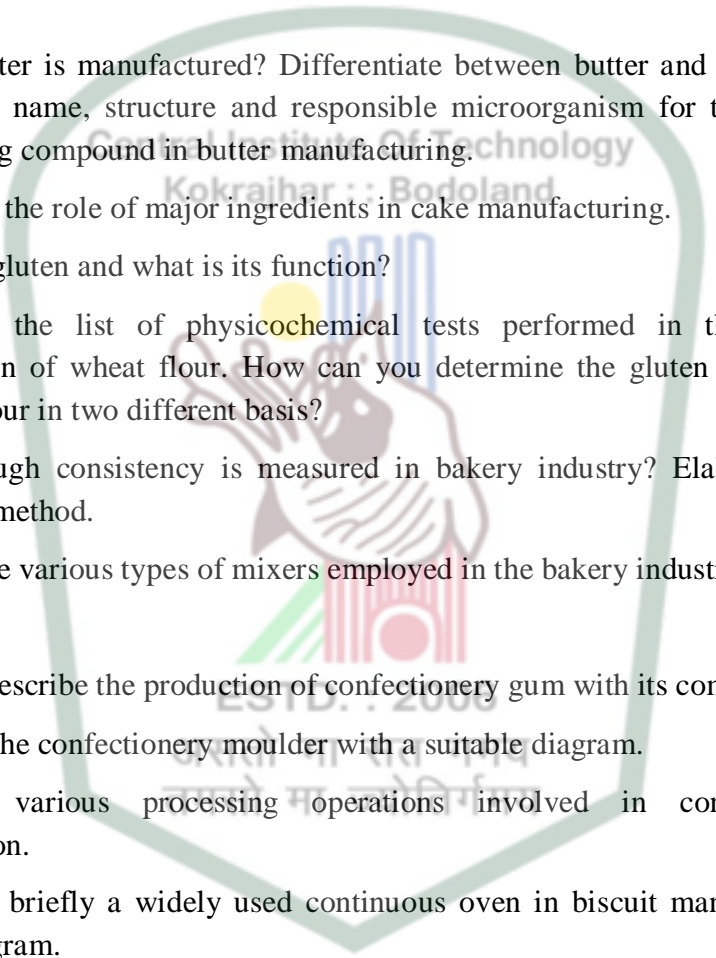
Time: Three hours

The figures in the margin indicate full marks for the questions.

Attempt any five questions from the following

5x20

1. a) Describe the chemical reaction involved during hydrolysis of triglyceride present in mustard oil. 3
- b) Why vegetable oil is more shelf stable than animal fat? 2
- c) Represent the structures of DPA and ETA and indicate its omega characteristic. 4
- d) Mention the reaction between arachidonic acid and iodine. 3
- e) Describe the mechanism of action of antioxidants for the prevention of autooxidation of lipid. Indicate two examples of permitted synthetic oxidant with structure. 5+3
2. a) State the importance of the Polensky Value and the saponification value. Cite one example of an emulsifier and metal chelator. 3+2
- b) Explain with reaction how many hydrogen atoms are required to hydrogenate ALA. 3
- c) Explain saponification with chemical reaction. Describe hydrolytic rancidity with chemical reaction. 3+3
- d) Explain dilatometry. What is cold test? Give few examples of natural antioxidants available in RBO. 2+2+2
3. a) Describe the health benefits of edible oil. What is ideal fatty acid balance? What is the standard Ω/Ω ratio of edible oil? 3+1+1
- b) Describe the pressing method of extraction of edible oil from oilseed. Explain with flow diagram the extraction of cottonseed oil from cottonseed. 3+3
- c) Differentiate between single bleached and double bleached lecithin. Give one example each of hydratable and nonhydratable phosphatide. What is oil cake? 2+2+1
- d) Describe the enzymatic degumming process with flow diagram. 4

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4. a) Differentiate between dewaxing and winterization? 2
- b) Describe the process of continuous deodorization by mentioning each step, process conditions with a design of double shell deodorizer. 8
- c) What is miscella refining? What is once refined oil? What is treat? 1+1+1
- d) Discuss different interesterification process of oil with chemical reactions. 7
5. a) What is cocoa butter? Give a detailed description of cocoa butter alternative (CBA). 1+3
- b) How butter is manufactured? Differentiate between butter and margarine. Give the name, structure and responsible microorganism for the flavour producing compound in butter manufacturing. 3+2+3
- c) Describe the role of major ingredients in cake manufacturing. 5
- d) What is gluten and what is its function? 3
6. a) Mention the list of physicochemical tests performed in the quality evaluation of wheat flour. How can you determine the gluten content of wheat flour in two different basis? 2+6
- b) How dough consistency is measured in bakery industry? Elaborate one suitable method. 2+4
- c) Describe various types of mixers employed in the bakery industry. 6
7. a) Briefly describe the production of confectionery gum with its composition. 4
- b) Explain the confectionery moulder with a suitable diagram. 5
- c) Discuss various processing operations involved in confectionery production. 5
- d) Describe briefly a widely used continuous oven in biscuit manufacturing with diagram. 6