Total No. of printed pages = 5

19/2nd Sem/PFET 202

2022

EMERGING FOOD PROCESSING TECHNOLOGY-II : OILS, FATS, BAKERY AND CONFECTIONERY

Full Marks – 100

Time – Three hours

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

Attempt any *five* questions from the following.

1. (a) Describe the chemical reaction involved during hydrolytic rancidity of palm oil. 3

   (b) Why vegetable oil is more shelf stable than animal fat ? 2

   (c) Represent the structures of ETA and ALA and indicate its omega character. 4

   (d) Mention the reaction between palmitoleic acid and iodine. 4

[Turn over

(e) Describe the mechanism of action of antioxidants for the prevention of oxidation of lipid. What is the reversion of lipid ? Indicate only two techniques for the measurement of rancidity. 5+1+1=7

2. (a) State the importance of the saponification number and the Koettstorfer number. Cite one example of an emulsifier and state its function. 4+2=6

(b) Explain with reaction how many hydrogen atoms are required to hydrogenate EPA. 3

(c) Mention the fatty acid profile in any three edible oils. Write the measurement formula of % FFA in Palm oil. 6+2=8

(d) What is meant by polymorphism ? Cite the example of natural antioxidants available in RBO. 2+1=3

3. (a) Describe the SCFE of edible oil from oilseed. State the difference in extraction between Mechanical Pressing and SCFE. 4+2=6

(b) Differentiate between Physical refining and Chemical refining process with a flow diagram. 4

(c) Differentiate between single bleached and double bleached lecithin. Give two examples each of hydratable and non-hydratable phosphatides. What is treat ? 2+2+1=5

(d) Describe the enzymatic degumming process ? What is meant by miscella refining ? 3+2=5

4. (a) Differentiate between dewaxing and winterization in refining. 3

(b) Describe the process of continuous deodorization with a design of double shell deodorizer. 5

(c) Briefly describe the bleaching conditions in continuous bleaching operation. Give the mathematical expression of the bleaching process. 4+2=6

(d) Discuss interesterification of lipid. Give the composition of deodorizer distillate with respect to soybean oil. What do you understand by fractionation of oil ? 3+1+2=6

5. (a) Differentiate between Cocoa butter replacer, Cocoa butter equivalent and Cocoa butter substitute. 3

(b) How butter is manufactured ? Differentiate among butter, margarine and hydrogenated fat. 3+3=6

(c) Describe the role of major three ingredients in bakery product manufacturing. 6

(d) Explain the characteristics of different flours used in bakery product manufacturing. What is gluten and what is its function ? 3+2=5

6. (a) Mention the list of physicochemical tests performed in the quality evaluation of wheat flour. Describe briefly one physical and one chemical parameter determination technique. 2+6=8

(b) Give some examples of dough testing instruments. Explain the mechanism of a sophisticated instrument widely used in the bakery industry. 2+4=6

(c) Describe the different types of mixers used in the bakery industry with their functions. 6

7. (a) Briefly describe the production of confectionery gum with its composition. 4

(b) Explain the confectionery moulder with a suitable diagram. 3

(c) Describe the various types of mixing processes employed in the bakery industry. 4

(d) Discuss the various processing operations involved in confectionery production. 3

(e) Describe briefly a widely used continuous oven in biscuit manufacturing. Give a simplified diagram of a bakery oven. 3+3=6