2023

FOOD PROCESSING & QUALITY MANAGEMENT / FOOD PROCESSING TECHNOLOGY

Paper : FPM/FPT-VC-3016

(Food Analysis)

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks for the questions

1. Answer the following questions : 1×7=7

(a) What method is commonly used to determine the moisture content of a food sample?

(b) What does the ash content of a food sample represent?

(i) Fat content

(ii) Inorganic mineral content

(iii) Protein content

(iv) Water content

(c) In the Kjeldahl method, what is the role of concentrated sulphuric acid?

(d) Which of the following is an example of physical adulteration of food?

(i) Adding water to milk

(ii) Mixing spices in a curry

(iii) Using organic farming methods

(iv) Storing food in a cool place

(e) Which is the primary component that makes up fats and oils?

(i) Glycerol

(ii) Phospholipid

(iii) Fatty acid

(iv) Protein

(f) What is the primary purpose of food testing and analysis in the context of adulteration?

(i) To increase food prices

(ii) To identify and prevent adulteration

(iii) To create new recipes

(iv) To market food products

(g) The intensity of color formed in the Lowry's method is directly proportional to what?

(i) The concentration of reducing sugar

(ii) The concentration of lipids

(iii) The concentration of proteins

(iv) The pH of the solution

2. Answer the following questions : 2×4=8

(a) What is food adulteration? Give an example of a common food item that is often adulterated with artificial colors. 1+1=2

(b) What is dry ashing? What is the primary purpose of dry ashing a sample? 1+1=2

(c) What does DNS stand for in the DNS method? What color change indicates a positive result in the DNS method? 1+1=2

(d) What type of samples are typically subjected to Soxhlet extraction? What is the role of condenser in Soxhlet apparatus? 1+1=2

3. Answer any *three* of the following questions : 5×3=

(a) Why is the Kjeldahl method primarily used for in food analysis? Describe the key steps involved in the Kjeldahl method. 1+4=

(b) What is a sampling plan? What are the key factors that influence the determination of an appropriate sample size in a sampling plan? 2+3=

(c) What is moisture content analysis in the context of food analysis? Why is it important to determine the moisture content? What unit is typically used to express moisture content? 1+3+1=5

(d) Why is the Biuret method used for in biochemical analysis? Explain the principle behind the Biuret reaction. 1+4=5

(e) Why is it important to analyze the vitamin C content in food and dietary supplement? What is the principle behind the titration method used for vitamin C analysis? What is the role of indicator in vitamin C titration? 1+2+2=5

4. Answer the following questions : $10 \times 3 = 30$

(a) Explain the concept of proximate analysis in food testing. What are the primary components analyzed in proximate analysis and why is it important in food industry?

$2+8=10$

OR

Explain the role of lipids in food and importance of lipid analysis in proximate analysis. How are lipids extracted from food samples? Explain.

$2+8=10$

(b) Define population and sample. Explain various types of sampling technique.

$3+7=10$

OR

Explain the concept of food adulteration and its significance in food safety and public health. Explain two different types of food adulteration.

$5+5=10$

(c) Discuss the methods and techniques commonly used for analysis of reducing sugar.

OR

Write notes on the following : 5+5=10

(i) Karl Fischer titration

(ii) Gerber method

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