

**ADVANCED FOOD BIOTECHNOLOGY  
(BIOT 5242)**

**Time Allotted : 3 hrs**

**Full Marks : 70**

*Figures out of the right margin indicate full marks.*

*Candidates are required to answer Group A and  
any 5 (five) from Group B to E, taking at least one from each group.*

*Candidates are required to give answer in their own words as far as practicable.*

**Group - A  
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) Biocoverion method is applied for production of
    - (a) Flavouring agent
    - (b) Chelating agent
    - (c) Preservative
    - (d) None of these.
  - (ii) Delayed bitterness occur in presence of
    - (a) Flavonoids
    - (b) Terpenoids
    - (c) Antioxidants
    - (d) None of these.
  - (iii) Carrageenan as a food gum is obtained from
    - (a) bacteria
    - (b) fungi
    - (c) plant
    - (d) sea weeds.
  - (iv) Glutathione is a/an
    - (a) Flavonoid
    - (b) Terpenoid
    - (c) Antioxidant
    - (d) None of these.
  - (v) Mustard powder is added in food as
    - (a) antioxidant
    - (b) emulsifier
    - (c) preservative
    - (d) fat replacer.
  - (vi) One example of cationic surfactant is
    - (a) lecithin
    - (b) quartenary ammonium salt
    - (c) propylene glycol ester
    - (d) none of these.
  - (vii) Vinegar salad dressing is an example of
    - (a) oil-in-water emulsion
    - (b) water-in-oil emulsion
    - (c) solid-liquid emulsion
    - (d) aerosol emulsion.
  - (viii) SCFAs are produced by
    - (a) Insoluble fibre
    - (b) Soluble fibre
    - (c) Fermentable fibre
    - (d) Soluble and fermentable fibre.

- (ix) Stevia is an example of  
(a) Natural sweetner (b) Antioxidant  
(c) Artificial sweetner (d) Biogum.
- (x) Coalescence happens when  
(a) the dispersed phase forms clumps  
(b) the dispersed phase coalesce to form a separate layer  
(c) the continuous phase concentrate towards the surface  
(d) the continuous phase coalesce to form a separate layer.

### Group- B

2. (a) Define food additives. How citrus juices are concentrated and why? *[(CO2) (Remember/LOCQ)]*  
(b) What are the two forms of dietary fibre? How they are formed? Mention their health benefits. *[(CO3) (Understand/IOCQ)]*  
**(3 + 3) + (3 + 3) = 12**
3. (a) Why colouring agents are added to food? Mention any one colouring agent and its mode of action. *[(CO2) (Remember/LOCQ)]*  
(b) Mention the mode of action of nitrite and polyhydroxy alcohols. *[(CO3) (Understand/HOCQ)]*  
**(2 + 4) + (3 + 3) = 12**

### Group - C

4. (a) Briefly explain four different types of spoilage reaction. *[(CO4) (Explain/IOCQ)]*  
(b) Mention methods of detection of spoilage reaction. *[(CO6) (Describe/IOCQ)]*  
**8 + 4 = 12**
5. (a) Differentiate between food-borne infection and food-borne intoxication with suitable example. *[(CO2) (Understand/LOCQ)]*  
(b) Mention any two extrinsic factors associated with food spoilage. *[(CO1) (Analyze/IOCQ)]*  
**8 + 4 = 12**

### Group - D

6. (a) Define : Nutraceutical, Pharmaceutical, Functional Food. *[(CO4) (Explain/LOCQ)]*  
(b) Mention the role of PUFA as nutraceutical. What are its different sources? *[(CO4) (Remember/IOCQ)]*  
**(2 + 2 + 2) + 6 = 12**
7. (a) Differentiate between probiotic and prebiotic compounds with examples. *[(CO3) Justify/IOCQ]*  
(b) What are the toxic components present in cereals? Write the toxicity of any one of them. How they can be removed? *[(CO5) (Remember/LOCQ)]*  
**4 + (2 + 4 + 2) = 12**

**Group - E**

8. (a) What are phenolic phytochemicals and why they are important? [[CO3] (Explain/HOCQ)]  
 (b) Define humecants with suitable example. [[CO4] (Remember/LOCQ)]  
 (c) Mention the role of lysozyme in food preservation. [[CO1] (Understand/IOCQ)]  
**7 + 3 + 2 = 12**
9. (a) Write notes on advantages and disadvantages of good quality protein. [[CO1](Justify/IOCQ)]  
 (b) Mention the role of ascorbic acid and glutathione. [[CO3](Analyse/HOCQ)]  
**6 + 6 = 12**
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<i>Cognition Level</i>	<i>LOCQ</i>	<i>IOCQ</i>	<i>HOCQ</i>
<i>Percentage distribution</i>	<i>38.54</i>	<i>41.67</i>	<i>19.79</i>

**Course Outcome (CO):**

After completing this course, students will be able to:

- CO1: Apply different food preservation techniques  
 CO2: Know different food processing techniques  
 CO3: Analyse different types of processed food  
 CO4: Application of enzymes in food industry  
 CO5: Detect adulteration and toxic food components  
 CO6: Gain knowledge of different functional food and GMO

*\*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.*

