

**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) Enzyme necessary for plant oil modification
    - (a) catalase
    - (b) peroxidase
    - (b) elongase
    - (d) none of these.
  - (ii) Green tea contains
    - (a) catechin
    - (b) tulsi leaves
    - (c) theaflavin
    - (d) none of these.
  - (iii) Limonene is a
    - (a) colouring agent
    - (b) flavouring agent
    - (c) humecant
    - (d) none of these.
  - (iv) Identify the food flavouring agent
    - (a) diacetyl
    - (b) vanillin
    - (c) lycopene
    - (d) lipase.
  - (v) Guar gum as a food gum is obtained from
    - (a) bacteria
    - (b) fungi
    - (c) plant
    - (d) sea weeds.
  - (vi) Phenolic phytochemicals have antioxidant property due to
    - (a) phenolic ring
    - (b) hydroxyl ring
    - (b) both (a) and (b)
    - (d) none of these.
  - (vii) Propionic acid is added in food as
    - (a) antioxidant
    - (b) emulsifier
    - (c) preservative
    - (d) none of these.

- (viii) Sucralose is a/an  
 (a) antioxidant (b) fat replacer  
 (c) preservative (d) artificial sweetener.
- (ix) Stevia is an  
 (a) artificial sweetener (b) artificial antioxidant  
 (c) artificial fibre (d) artificial food gum.
- (x) DHA is obtained by  
 (a) solvent extraction of turmeric (b) distillation  
 (c) concentrating fish oil (d) none of these.

**Group - B**

2. (a) Write the use of: (i) guar gum and (ii) xanthan gum in different food preparation.  
 (b) How biogum is extracted from different natural sources? Elaborate giving suitable example.  
**(3 + 3) + 6 = 12**
3. (a) What are antioxidants? Compare the beneficial effects of natural and artificial antioxidants.  
 (b) What is bioconversion? Give example.  
**6 + (2 + 4) = 12**

**Group - C**

4. (a) Discuss different extrinsic factors associated with food spoilage.  
 (b) What is rancidity?  
 (c) Name any three antimicrobial substances present in food. What is the mode of action of lysozyme?  
**3 + 3 + 6 = 12**
5. (a) Name one bacterial and one fungal toxin and write their mode of action.  
 (b) Differentiate food-borne infection and intoxication.  
 (c) What is ergotism?  
**6 + 3 + 3 = 12**

**Group - D**

6. (a) Define nutraceutical and mention its properties.  
 (b) Classify them with suitable examples.  
 (b) Discuss the role of curcumin and DHA as nutraceutical.  
**(2 + 2) + 2 + (3 + 3) = 12**
7. (a) What is the role of phytates in cereal grains?  
 (b) Mention some ways to reduce the amount of phytic acid in cereals.  
 (c) How curcumin can be extracted from turmeric?  
**3 + 6 + 3 = 12**

**Group - E**

8. (a) What are phenolic phytochemicals and write their mode of action.  
 (b) Write down the mode of action of terpenoid and anthocyanin in food.  
**6 + 6 = 12**
9. (a) What are allium compounds? Write their mode of action.  
 (b) Mention any two enzymes and their mode of action for modification of plant oil.  
**6 + 6 = 12**