

**FOOD BIOTECHNOLOGY  
(BIOT 4141)**

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) Polygalactouronase is used to improve quality of  
 (a) cheese (b) fruit juice  
 (c) bread (d) none of these.
- (ii) Identify the food pigment  
 (a) Diacetyl (b) Vanillin  
 (c) Lycopene (d) Lipase.
- (iii) Carotenoids are  
 (a) isoprenoids (b) alkaloids  
 (c) flavonoids (d) none of these.
- (iv) Hesperidins are present in  
 (a) citrus fruits (b) leafy vegetables  
 (c) tree (d) sea weeds.
- (v) Cabbage is fermented by  
 (a) Propionic acid bacteria (b) Lactic acid bacteria  
 (c) Acetic acid bacteria (d) none of these.
- (vi) Neurotoxins are produced by  
 (a) *A. flavus* (b) *A. oryzae*  
 (c) *A. niger* (d) *C. botulinum*.
- (vii) Vitamin C is a  
 (a) antioxidant (b) fat replacer  
 (c) preservative (d) artificial sweetener.
- (viii) Parabens are added in food as  
 (a) antioxidant (b) emulsifier  
 (c) preservative (d) fat replacer.

- (ix) Which of the following can be regarded as SCP?  
 (a) Spirulina (b) Yeast  
 (c) Button mushroom (d) All of them.
- (x) Swiss cheese is  
 (a) red cheese (b) blue cheese  
 (c) hard cheese with large holes (d) mold ripened cheese.

**Group - B**

2. (a) Compare and contrast: rancidity and putrefaction.  
 (b) What are the different types of rancidity?  
 (c) How putrefaction is detected chemically and by ERV method?  
**4 + 4 + 4 = 12**
3. (a) Compare the following methods of food preservation:  
 (i) canning (ii) irradiation (iii) refrigeration.  
 (b) How food can be classified according to the ease of spoilage?  
**(3 + 3 + 3) + 3 = 12**

**Group - C**

4. (a) What is water activity of food? How water activity is controlled in fermentation of cabbage?  
 (b) What is GMO? Discuss the molecular mechanism of production of FLAVR SAVR tomato.  
**(2 + 4) + (2 + 4) = 12**
5. (a) How does fermentation help in food preservation? Name three fermented food.  
 (b) What is malting? Mention the importance of malo-lactate fermentation in beer production.  
**(3 + 3) + (2 + 4) = 12**

**Group - D**

6. (a) What is the role of protein in baking industry?  
 (b) Briefly describe the role of arabanase and pectinase in fruit juice preparation.  
 (c) What is gelatinization?

**4 + 6 + 2 = 12**

7. (a) What do you mean by DE value of a corn syrup?  
(b) Write a flow diagram for the production of corn syrup and mention use of enzymes in different steps.  
(c) Write down the function of glucose oxidase and acetolactate decarboxylase in beer production.

**2 + 6 + 4 = 12**

**Group - E**

8. (a) Name any two flavouring agents and write their mode of action.  
(b) What are mycotoxins and mention their mode of action in food spoilage?  
(c) Write the mode of action of nitrate to prevent meat spoilage.

**3 + 6 + 3 = 12**

9. (a) How do food preservatives prevent the growth of microbes in food?  
(b) Name one natural antioxidant and state how does it prevent oxidative reaction.

**7 + 5 = 12**