

**ADVANCED FOOD BIOTECHNOLOGY
(BIOT 5242)**

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 4 (four) from Group B to E, taking one from each group.*

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

Group – A

1. Answer any twelve:

12 × 1 = 12

Choose the correct alternative for the following

- (i) Flavour of brassica is mainly due to the presence of
 - (a) Isothiocyanate
 - (b) Trimethylamine
 - (c) Ethylene diamine
 - (d) All of these
- (ii) The most common extrinsic property in spoilage of food is
 - (a) pH
 - (b) Temperature
 - (c) Pressure
 - (d) None of these
- (iii) Rancidity is degradation of
 - (a) Protein
 - (b) Carbohydrate
 - (c) Lipid
 - (d) None of these
- (iv) Polyethylene glycols are used as
 - (a) Preservative
 - (b) Humectants
 - (c) Chelating agent
 - (d) None of these
- (v) Bioconversion method is applicable for production of
 - (a) Flavouring agent
 - (b) Colouring agent
 - (c) Humectants
 - (d) None of these
- (vi) Lecithin is present in food as
 - (a) Preservative
 - (b) Emulsifier
 - (c) Humectant
 - (d) All of these
- (vii) One example of neutral surfactant is
 - (a) lecithin
 - (b) quaternary ammonium salt
 - (c) propylene glycol ester
 - (d) none of these
- (viii) DHA is obtained from
 - (a) Mother's milk
 - (b) Fish oil
 - (c) Plant oil
 - (d) Turmeric

- (ix) Soluble dietary fibres produce this important nutraceutical
 (a) PUFA (b) Emulsifier
 (c) Alginic acid (d) SCFA
- (x) One food gum obtained from animal source is
 (a) Gelatin (b) Agar-agar
 (c) Carrageenan (d) Xanthan gum

Fill in the blanks with the correct word

- (xi) Garlic contain antimicrobial substance is known as _____.
- (xii) Common example of fungal neurotoxin is known as _____.
- (xiii) Ethylene oxide is _____sterilizing agent.
- (xiv) One example of anionic surfactant is _____.
- (xv) Mustard is used in _____ as an emulsifier.

Group - B

2. (a) Analyse the effect of oxygen on myoglobin containing food. [[CO3](Analyse/IOCQ)]
 (b) Mention some antimicrobial substances and their mode of action present in food. [[CO1](Understand/LOCQ)]
 (c) Discuss the different stages of spoilage in meat and dairy product. [[CO2](Apply/IOCQ)]
4 + 4 + 4 = 12
3. (a) What is the chemical nature of surface active substances? Why it is used in food processing? [[CO3](Analyse/IOCQ)]
 (b) Discuss the production process of the following:
 (i) Espresso
 (ii) Mayonnaise [[CO2](Understand/IOCQ)]
(3 + 3) + (3 + 3) = 12

Group - C

4. (a) Briefly discuss the mode of action of ergot alkaloids and patulin. [[CO3](Analyse/IOCQ)]
 (b) Distinguish between foodborne infection and foodborne intoxication. [[CO5](Remember/LOCQ)]
7 + 5 = 12
5. (a) Compare the mode of action between sulphur di oxide and nitrite. [[CO3](Analyse/HOCQ)]
 (b) Discuss briefly non microbial food spoilage. [[CO2](Remember/LOCQ)]
6 + 6 = 12

Group - D

6. (a) Discuss the importance of inulins as a food supplement. [[CO4](Understand/IOCQ)]
(b) What is the FDA approved daily intake of Psyllium seed husk? Discuss its role as nutraceutical. [[CO3](Apply/IOCQ)]
(c) What is Aequorin? Why it is regarded as a protein-based nutraceutical? Why no immunogenic response is not observed in human for it, though it is a foreign protein? [[CO4](Remember/LOCQ)]
- 3 + (1 + 3) + (1 + 2 + 2) = 12**
7. (a) What is understood by fermentable fibre? What is their source? Why they are important? [[CO4](Understand/HOCQ)]
(b) Discuss the use of following in food processing:
Alginate acid
Lecithin [[CO2](Apply/IOCQ)]
- 6 + 6 = 12**

Group - E

8. (a) Analyse the importance of soyabean protein. [[CO6](Analyse/HOCQ)]
(b) Briefly discuss the functions of anticaking agent and chelating agent. [[CO4](Apply/HOCQ)]
(c) Explain how soya protein is modified and why? [[CO2](Apply/IOCQ)]
- 4 + 6 + 2 = 12**
9. (a) Mention any two enzymes and their role in genetic modification of plant oil. [[CO6](Analyse/IOCQ)]
(b) Describe the significance of allium compounds. [[CO4](Remember/LOCQ)]
- 6 + 6 = 12**

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	27.08	50	22.92

Course Outcome (CO):

After the completion of the 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.*

