

*Thapar University*  
*Department of Biotechnology and Environmental Sciences*  
M.Sc. Biotechnology BH 010: Food Biotechnology

Time : 3 h  
M.M. 72

All questions carry equal marks. Attempt any six questions.  
Answer all parts of one question at one place.

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|---|---|--|---|
| 1 | a | Differentiate between the dry and wet process of maize milling. Explain the wet milling process.   | 6 |
|   | b | Write the principles and mechanism involved during high-pressure processing and pulsed electric field application for food preservation. | 4 |
|   | c | Write short notes on: Clarification of milk, and<br>Regeneration during pasteurization   | 2 |
| 2 | a | What is HACCP? Write about its implementation in food industry.  | 4 |
|   | b | Describe the bread baking process.   | 4 |
|   | c | Draw the detailed flowchart for manufacture of soya protein isolate.   | 2 |
|   | d | Enlist the antinutritional factors in pulses.  | 2 |
| 3 | a | Explain beer preparation. In which steps modern biotechnology has helped in improving the process or overcoming the problems?            | 6 |
|   | b | Give a brief introduction of the freezers used in food industry.   | 5 |
|   | c | What is the importance and use of lipoxygenase in food industry?   | 1 |
| 4 | a | What is the controlled atmosphere packing of fruits and vegetables? Describe the ways to achieve it.                                     | 5 |
|   | b | Explain the cleaning equipment used for food plant sanitation.   | 4 |
|   | c | Explain rancidity of oils. Name three antioxidants.  | 3 |
| 5 | a | Which criteria are kept in mind for food plant layout and machine design regarding sanitation?   | 6 |
|   | b | What is the effect of irradiation on food components? Is irradiated food safe for human consumption? Discuss.                            | 6 |
| 6 | a | Give a detailed procedure for calculation of thermal processing time.  | 5 |
|   | b | Describe the process for ice cream manufacture.  | 4 |
|   | c | Microbial cell cultures are immensely useful for production of food ingredients, processing aids and nutrients? Elaborate.               | 3 |
| 7 | a | Give reasons for loss in quality on freezing and dehydration of foods.   | 6 |
|   | b | How is wheat milling different from rice milling. Give brief description of both the processes.  | 6 |

**All the best!!**