



B.TECH DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Fifth Semester

BIOTECHNOLOGY

U18BTE0002: Food Process Engineering

COURSE OUTCOMES

- CO1:** Apply and analyze the pre-cleaning techniques in food processing
CO2: Apply different types of high temperature processing operations
CO3: Illustrate different drying and dehydration techniques
CO4: Categorize several low temperature processing and preservation techniques
CO5: Classify various post -processing operations
CO6: Apply and analyse various packaging operations

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

(Answer not more than 40 words)

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|---|-----|-------------------|
| 1. Write the working mechanism of air screen cleaner. | CO1 | [K ₃] |
| 2. Provide the importance of cleaning and grading process in food processing technology. | CO1 | [K ₂] |
| 3. Draw the plate heat exchanger used for pasteurization process. | CO2 | [K ₃] |
| 4. What is the purpose of extrusion process? | CO2 | [K ₂] |
| 5. Distinguish between dehydration and rehydration methods. | CO3 | [K ₂] |
| 6. Enlist the factors that affect the quality of dried foods. | CO3 | [K ₂] |
| 7. Summarize the benefits of CAS. | CO4 | [K ₂] |
| 8. Distinguish between controlled atmosphere and modified atmosphere based storage processes. | CO4 | [K ₂] |
| 9. Name the coating materials that are used to enrobe foods. | CO5 | [K ₂] |
| 10. Write the role of carbon dioxide in the improvement of shelf life. | CO6 | [K ₂] |

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

(Answer not more than 400 words)

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|---|----|-----|-------------------|
| 11. Assume that you are in the process of removal of unwanted or inedible material from the fruits and vegetables, and to improve the appearance of the final | 16 | CO1 | [K ₃] |
|---|----|-----|-------------------|

- product. What methods can be adopted? Explain few methods in detail.
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|-----|----|---|----|-----|-------------------|
| 12. | a) | Illustrate the working mechanism of specific gravity separator with a neat sketch. | 8 | CO1 | [K ₂] |
| | b) | Explain the working mechanism of color separator with a neat illustration. | 8 | CO1 | [K ₃] |
| 13. | a) | A process involves in heating the milk to 72°C for at least 15 seconds (and no more than 25 seconds). Identify the process and explain in detail. | 8 | CO2 | [K ₂] |
| | b) | Discuss the blanching process and its effect on food quality. | 8 | CO2 | [K ₂] |
| 14. | | Write a detailed note on the working principle of drum and freeze dryer with a neat sketch and provide their advantages. | 16 | CO3 | [K ₂] |
| 15. | | Explain in detail the refrigeration and freezing methods of food storage. | 16 | CO4 | [K ₂] |
| 16. | a) | Provide the principles of enrobing and purpose coating on food products. | 6 | CO5 | [K ₂] |
| | b) | Modified atmosphere packaging (MAP) is a food packaging technology that has revolutionized the storage and transportation of perishable food products. Justify the statement with suitable reasons. | 10 | CO6 | [K ₃] |
