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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL (A constituent unit of MAHE, Manipal)

V SEMESTER B. TECH (BIOTECHNOLOGY) END SEMESTER EXAMINATIONS (REGULAR), NOV/DEC 2019 SUBJECT: FOOD PROCESSING TECHNOLOGY [BIO 4016] REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

✤ Answer ALL the questions.

✤ Missing data may be suitable assumed.

| 1A. | Explain the concept of a_w and its relevance in food preservation. What are the | | |
|-----|---|---|--|
| | methods adopted to control the a_w in a food? | | |
| 1B. | What are the main causes of quality deterioration and spoilage of foods? | 3 | |
| 1C. | Discuss the role of minerals in human metabolism. | 3 | |
| 2A. | What are the different types of proteins present in milk? How are they used in | | |
| | different food products? | 3 | |
| 2B. | What are non-sugar sweeteners (NSS) used in food industry. Give example | | |
| | for NSS. | L | |
| 2C. | Diagrammatically represent the different factors influencing the microbial | 3 | |
| | activity. Explain each factor in detail. | 0 | |
| 2D. | Distinguish between food infections and food intoxications. | 2 | |
| 3A. | Illustrate the hierarchical classification of food preservation techniques | 2 | |
| 3B. | What are the advantages of low-temperature processing and preservation of | 2 | |
| 50. | foods? | - | |
| 3C. | What factors cause spoilage of foods during storage? How is spoilage of food | 2 | |
| | prevented during storage? | - | |
| 3D. | A food product is to be air cooled immediately after a pasteurization process. | | |
| | This can be done by using either natural or forced convection. Which one will | 2 | |
| | be the best method and justify? | | |
| 3E. | Blanching of fresh produce is aimed at reducing or eliminating enzymatic | | |
| | activity. Briefly name and discuss enzymes that can affect the quality of un- | 2 | |
| | blanched fresh produce. | | |

| 4A. | Discuss the steps involved in milk powder production, with special attention to heat treatment, evaporation and homogenization | | | |
|-----|--|---|--|--|
| 4B. | Enlist the unit operations in processing of fruits? What are the various products from a fruit processing unit? | 4 | | |
| 4C. | Explain the application of biotechnology in food product formulation and in food industry. | 2 | | |
| 5A. | Explain the steps involved in HACCP & QACCP based food safety system. | 3 | | |
| 5B. | Draw a simplified process block diagram for milk chocolate, chocolate syrup, and cocoa powder and explain each operation. | 4 | | |
| 50 | Food is milled from 6mm to 0.0012 mm using a 10hp motor. Would this motor | | | |
| 5C. | Rittinger and kick law and that 1hp=745.7W. | 3 | | |