

**P.G. DIPLOMA IN FOOD SCIENCE AND
TECHNOLOGY (PGDFT)**

Term-End Examination

December, 2013

**MFT-003 : (FOOD PROCESSING AND
ENGINEERING)**

Time : 2 hours

Maximum Marks : 70

Note : *Attempt any five questions.*

All the questions carry equal marks.

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| 1. | What are thermal properties of food ? Explain their importance in food storage engineering with suitable examples. | 14 |
| 2. | (a) What is the difference between natural and forced convection ? | 7 |
| | (b) State fourier's law and derive the equation for computing heat transfer through cylindrical hollow objects. | 4 |
| | (c) Explain the term reflection, absorption and transmission of radiation ? | 3 |
| 3. | (a) State the laws of thermodynamics. | 3 |
| | (b) Calculate the amount of water left in the residue, when a mixture of 50kg each of benzene and water is distilled at 70°C and the last trace of benzene has just boiled off. Benzene and water may be assumed to be completely immiscible. At 70°C, the vapour pressures of benzene and water are 72.92 and 31.06 kPa respectively. | 6 |

- (c) Explain the various pumps used in food processing plants. 5
4. (a) Explain the nature of forces used in size reduction. List the desirable characteristics of a bucket elevator. Explain the construction and working of bucket elevator. 7
- (b) Give the details of various dry cleaning and wet cleaning methods. Explain the size reduction of solid, fibrous and liquid foods. 7
5. (a) What is freezing and freezing time ? Give details of freezing time calculations and various methods of freezing. What are the various factors which are required to be taken into consideration while designing freezers ? 7
- (b) Calculate the process time for batch sterilization by formula method. 7
6. (a) What are the different ways of controlling insects and rodents damage ? Explain various types of food storage structures. Explain cold chain supply system and modified atmosphere storage. 7
- (b) Explain the open and closed circuit grinding. Give details of various fumigation equipments used in storage and transportation of food materials. 7
7. (a) Explain the effect of mixing on foods. Write the mechanism of the mixers used for liquids of moderate viscosity and mixers used for dry solids. 7
- (b) Give details of high pressure processing, pulsed electric field and ohmic heating of foods. 7

8. (a) Explain the various factors affecting the efficiency of expression. Explain the method of roller and screw pressing food system. 7
- (b) Explain the criteria of site selection. Give details of importance and different types of plant layout. Give the general guidelines for cereal and pulse processing plant. 7
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