

**P.G. DIPLOMA IN FOOD SCIENCE AND
TECHNOLOGY (PGDFT)****Term-End Examination****December, 2018****MFT-003 : FOOD PROCESSING AND
ENGINEERING***Time : 3 hours**Maximum Marks : 70*

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- Note :** (i) *Attempt any five questions.*
(ii) *All questions carry equal marks.*
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1. Explain the following terms (any seven). 2x7=14
- (a) Bulk Density
 - (b) Angle of Repose
 - (c) Zeroth law of thermodynamics
 - (d) Newtonian Fluid
 - (e) Kirchhoff's law
 - (f) Emulsification
 - (g) Dehulling
 - (h) Freeze burn (burn)
 - (i) Ultrasonics
2. (a) State the importance of physical and thermal properties of food materials in agricultural processing. 5
- (b) Describe the method of screen analysis to determine size of fine materials. 5
- (c) Explain coefficient of friction. Write its application in grain processing. 4

3. (a) Define 'Energy Balance' and explain different modes of energy in "energy balance process". 5
- (b) Calculate the amount of water to be supplied to a heat exchanger that cools 100 kg/hour of vegetable paste from 80°C to 10°C. The increase in water temperature should not exceed 10°C while passing through the heat exchanger. There is no mixing of water and tomato paste in the heat exchanger. The specific heat of vegetable paste and water can be assumed as 2846.76 and 4187 J/kg K respectively. 5
- (c) Give the basic steps involved in solving material balance problem. 4
4. (a) Explain the importance of design and layout of food processing plant in maintaining plant hygiene and sanitation. 6
- (b) Enlist physical sanitizing agents. 2
- (c) Write the criteria to be considered for site selection of a food processing plant. 4
- (d) Differentiate between CA and MA storage. 2
5. (a) State Fourier's law and derive the equation for computing heat transfer through a flat wall, spherical and cylindrical hollow objects. 8
- (b) What do you understand by radiation heat transfer? Define absorptivity and reflectivity. What is the absorptivity of a complete black body? 6

6. (a) Define 'sorting' and explain photometric sorting. 5
- (b) Enlist important cleaving methods used in agro processing unit. Explain how 'terminal velocity' is used in cleaving of food grains. 5
- (c) Describe the links of a cold chain supply system. 4
7. (a) Enlist the machines used for size reduction of fibrous, dry solids and liquid foods. 6
- (b) What is food extrusion ? Give advantages of extrusion cooking in food processing. Enlist some applications of extrusion cooking. 4+2=6
- (c) Explain 'Hundle technology'. 2
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