2019

B.Tech Even Semester (CBCS) Exam., May—2019

AGRICULTURAL ENGINEERING

(4th Semester)

Course No. : AE-CC–15

(Post-Harvest Operations)

Full Marks : 50
Pass Marks : 15

Time : 2 hours

Note : 1. Attempt *any* **five** questions.
2. Begin each answer in a new page.
3. Answer parts of a question at a place.
4. Assume reasonable data wherever required.
5. The figures in the right margin indicate full marks for the questions.

1. Define agricultural processing. Why is it required? Discuss all the unit operations in brief which are generally performed on paddy/wheat. 10

2. Explain the following : 5×2=10
(a) CFTRI method
(b) Pressure Parboiling Method

3. Discuss the aeration of grain and its benefits. Also describe with neat sketch, various configurations of duct used for air distribution inside the grain mass. 4+6=10

4. An RCC cylindrical grain storage bin has internal diameter of 5 m and is 20 m deep. It is completely filled with paddy weighing 600 kg/m^3. The angle of internal friction for paddy can be taken as 35° while the angle of friction between paddy and bin wall is 30°. The ratio of horizontal and vertical pressure intensity (k) is 0·4. Calculate the lateral pressure intensity at 2·0 m interval. 10

5. *(a)* Differentiate thin layer drying and deep bed drying. Also write the equation for rate of drying in thin layer drying. 6

(b) Define the following terms : 1×4=4
(i) Humidification
(ii) Relative humidity
(iii) Dew-point temperature
(iv) Handerson's equation

6. Write short notes on the following : 2½×4=10

(a) Degree of Milling

(b) Equilibrium Moisture Content (EMC)

(c) Hysteresis Effect

(d) Thermal Conductivity

7. *(a)* Define moisture content on wet basis and dry basis. Establish a relation between them. 5

(b) Write advantage and disadvantage of parboiling. 5

8. *(a)* Explain all the three laws associated with size reduction. 6

(b) How much power is required to crush 2 t/hr of material if 80% of the feed passes through IS sieve no. 480 (4·75 mm opening) and 80% of the product passes through IS sieve no. 50 (0·5 mm opening)? Given the work index of the material is 6·30. 4

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