2018

B.Tech Even Semester (CBCS) Exam., May—2018

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 margin indicate full marks for the questions.

1. *(a)* What is parboiling? Explain the various steps of parboiling of paddy. 2+3=5

(b) Write the advantage and disadvantage of parboiling. 5

2. Explain the following : 5+5=10

(a) CFTRI method

(b) Pressure parboiling method

3. Discuss the aeration of grain and its benefits. Also describe with neat sketch, the 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 m interval. 10

5. *(a)* What do you mean by screen effectiveness? Derive the formula for it. 6

(b) Define the following terms : 4

(i) Humidification

(ii) Schule process

(iii) Dobhapa

(iv) Henderson's equation

6. *(a)* Define the following terms : 5

(i) Degree of milling

(ii) Ideal screen

(iii) Actual screen

(iv) Free moisture

(v) Aperture

(b) Write down the difference among cleaning, grading and sorting. 5

7. *(a)* Explain the working principle of air screen cleaner with suitable diagram. 6

(b) 1 tonne of dried grain at 12% moisture content (Wb) is obtained from steam parboiled paddy grain of 30% moisture content (Wb). How much will be the amount of weight of steamed parboiled paddy? 4

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

(b) A food material is milled from particle size of 5 mm to 0·0012 mm using 7 kW motor. What size of motor will be required to reduce the same feed particle to product particle size of 0·0005 mm? Assume same feed rate and apply Rittinger's law. 4

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