B.Tech Even Semester Examination, May, 2025

Agricultural Engineering

(4th Semester)

Course No: AE-405

(Post Harvest Operations)

Full Marks: 50
Pass Marks: 25
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 figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

1. Draw a neat diagram of a Screw conveyor with its parts and briefly describe each. 4+3+3

2. What do you mean by parboiling? Write down five advantages and five disadvantages for each. 4+6

3. What do you mean by the law of size reduction? Explain them in detail. 4+6

4. Write down the different properties of grain and explain briefly the thermal properties of grain. 6+4

5. (a) Discuss the CFTRI method of dal milling. 6

   (b) Discuss briefly the working of a Ball mill with a neat diagram. 4

6. (a) One tonne of dried grain at 10% moisture content (wb) is obtained from steam parboiled paddy grain of 35% (wb). How much will the weight of a steamed parboiled paddy be? 5

   (b) If the initial moisture content of 100 kg of paddy on the wet basis is 20% and dried to a final moisture content of 20 % on a dry basis, determine the amount of moisture removed. 5

7. During evaluation of an air screen grain cleaner with 2 screens 200 g samples were collected for analysis of clean seed fraction from different outlets. The data are presented in the table. Calculate the cleaning efficiency of the cleaner. 2+8

Sample fraction	Feed, g	Cleaning outlet, g	Blower outlet, g	Oversize outlet, g	Undersize outlet, g
Cleaned seed, g	185.25	196.5	1.75	3.5	3.0
Impurities, g	14.75	3.5	198.25	196.5	197.0

8. (a) Write down the mechanism with a neat diagram of falling rate drying. 6

   (b) Differentiate between the ideal screen and the actual screen. 4

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