

**GIET UNIVERSITY, GUNUPUR – 765022**

B. Tech (Fifth Semester Regular) Examinations, December – 2023

**21BAGES25004 – Post Harvest Engineering of Cereals, Pulses and Oil Seeds (AGE)**

Time: 3 hrs

Maximum: 70 Marks

**(The figures in the right hand margin indicate marks)****PART – A****(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Define sorting and scalping operation in Agricultural Processing.	CO1	K1
b. Define parboiling of paddy and state the objectives of parboiling.	CO2	K2
c. Write the major advantage and disadvantages of Sun drying (Natural drying) of Agricultural Product.	CO1	K1
d. Describe in brief mechanisms, the movement of moisture inside a porous product takes place during the grain drying process.	CO3	K4
e. State the basic differences between construction and operation of Vertical whitening cone and vertical polishing cone.	CO3	K3

**PART – B****(15 x 4 = 60 Marks)**Answer **ALL** questions

	Marks	CO #	Blooms Level
2. a. Explain operation / working of Specific Gravity Separator with schematic diagram.	7	CO1	K2
b. Explain the difference between the Shaking Screen and Horizontal Screen for screening / cleaning / separating process of Agricultural Produce.	8	CO3	K4
(OR)			
c. State the advantages and disadvantages of parboiling of paddy.	7	CO1	K2
d. Describe the working of Vibratory Air Screen Cleaner for Agricultural Produce.	8	CO3	K4
3.a. 100 kg of paddy at 20% moisture content (wb) is dried to 12% moisture content (wb) for hulling. At the drying time 2 hrs, the product moisture content is 15% (wb), and EMC, Me = of the paddy at given condition of drying is 9.52% (db). Calculate the Moisture Ratio of the described drying system.	7	CO4	K2
b. Explain Convective drying (Mechanical drying method) with schematic diagram.	8	CO4	K2

(OR)

c.	Describe the operation of Flat Bed Type Batch Dryer for on-farm drying of Agricultural Product.	7	CO4	K2
d.	Explain the construction of Recirculatory Batch Dryer with Schematic diagram.	8	CO4	K2
4.a.	In an experiment on drying an amount of 25 gram of moisture was removed from the product during 10 minutes' time interval. The initial moisture of 1 kg product is 30% (db). Calculate Drying rate in gram of water per minute per 100gm of bone-dry material.	8	CO6	K2
b.	Explain the working of Oscillating grading sieves which is widely used in Rice Milling to grade the Milled rice (OR)	7	CO3	K2
c.	Determine the values of EMC (Equilibrium Moisture Content) using HENDERSON EMC Model for drying of paddy at 40oC air temperature and 50% relative humidity of drying air Given: The value of constant 'C' = $2.32 \times 10^{-5}$ and "n" = 1.98	8	CO6	K2
d.	State the Process Flow chart to extract the oil from oilseeds using Mechanical Oil expeller.	7	CO5	K2
5.a.	150 kg of Bengal gram (chick pea) milled under CFTRI Mini Dal Mill. The following observations were recorded, 1. Mass of unhulled grain (pulses): 12 kg 2. Mass of broken: 15kg 3. Actual mass of Husk removed during milling: 18kg 4. Theoretical Husk content of the grain: 11% Calculate the milling efficiency of used Dhal Mill for Bengal gram	8	CO6	K2
b.	Explain in brief the working of below said Commercial Milling Machines use in pulse milling. (i) Attrition Mill (ii) Emery roller (OR)	7	CO5	K2
c.	Potato Flakes (moisture content 75% wb) are being dried in concurrent flow dryer. It was found that 70% of original water has been removed by the dryer. Calculate the moisture content in dried potatoes flakes on db dry basis).	8	CO6	K2
d.	With schematic diagram describe the working Break rolls in wheat milling plant.	7	CO5	K2

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