Total number of printed pages: 02 **Programme (UG)/IV/UFET 402**

2024

CERELAS AND LEGUMES PROCESSING TECHNOLOGY

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1.	a)	List out the name of equipment's used by millers at various stages of processing to obtain head rice from raw rice. Explain any one in details.	10
	b)	Compare and contrast the traditional method of rice milling with modern, automated rice milling techniques. Discuss the advantages and disadvantages of each approach.	10
2.	a)	Air carrying particle of density 1200 kg/m^3 and an average diameter of 25 micron enter a cyclone of 600 mm diameter at a linear velocity of 20 m/sec. Calculate the centrifugal force acting radially in the cyclone and the separation factor of the cyclone.	10
	b)	Explain in brief the variables in screening operations.	10
3.	a)	During evaluation of an air screen grain cleaner with two screens, 250 gm samples were collected for analysis of clean seed fraction from different outlets. Calculate the cleaning efficiency referring following data. Calculate the following details (for mesh size 10 and 28) i. Mass ratios of overflow to feed ii. Mass ration underflow to feed. iii. Calculate the overall effectiveness of the screen.	10

Mesh	D_p, mm	Cumulative mass fraction greater than D_p		
		Feed	Overflow	Underflow
4	4.699	0	0	0
8	2.362	0.15	0.43	0
10	1.651	0.47	0.85	0.195

		28	0.589	0.94	1.00	0.91	
		65	0.208	0.98	-	0.975	
		Pan	-	1.00	-	1.00	
	b)	What do you mean by parboiling? Discuss the objectives and steps of Rice parboiling process. Write 2 advantages and 2 disadvantages of rice parboiling process.					10
4	a)	Explain in details; the construction and working of rubber roll sheller with neat diagram.					10
	b)	Draw the flowchart of wheat processing in modern wheat mill.					10
5.	Differentiate the following (any four) In tabular format						05X04 = 20
		i)	Parboiling of rice and Parboiling of wheat				
		ii)	True density and Bulk Density				
		iii)	Sorting and grading				
		iv)	Angle of repose and Angle of internal friction				
		v)	Hard wheat and Soft wheat				
		vi)	Cereals and Pulses				
6.	Write short notes on (any four)						05X04 = 20
		i)	Wet milling of corn (only Flowchart)				
		ii)	Diagram of cyclone Separator (only diagram)				
		iii)	Methods of husking				
		iv)	By-products during rice processing				
		v)	Sphericity				
		vi)	Diagram of Paddy				
7.	a)	Discuss/Explain different engineering properties of cereals with proper notation (using symbols for representing operations).					10
	b)	Explain in detail the construction and working of Spiral separator with neat sketches.					10