Q.P. Code: 20AG0708 **R20**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations March-2023

AGRICULTURAL PROCESS ENGINEERING

(Agricultural Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1		Explain the possible force-deformation curve for an agricultural product.	CO2	L1	12M
		OR			
2	a	Define porosity and explain the method for determination of porosity with neat sketch.	CO2	L1	6M
	b	Explain the Toughness, Resilience and Stiffness with neat sketch.	CO2	L2	6M

UNIT-II

3	a	What is a drag coefficient? Draw the forces acting on a body immersed in fluid with suitable equations.	CO2	L1	6M
	b	Define terminal velocity and derive equation for terminal velocity of a particle with neat sketch.	CO2	L3	6M
		OR			
4	a	Explain the relationship between conductivity and resistivity of a material with equations.	CO3	L2	6M
	b	Write about dielectric materials and discuss the importance of dielectric materials food engineering.	CO3	L2	6M

UNIT-III

5	a	A screen is used to separate two components (A and B) from a feed where F, O and U are taken as mass flow rates of feed, overflow and underflow streams, respectively. The corresponding mass fraction of the oversize component A in these streams is Xf, Xo and Xu. Derive an expression for overall effectiveness of this screen.	CO4	L3	6M
	b	Explain rotary air screen cleaner with neat sketch.	CO4	L2	6M
		OR			
6		A cyclone separator having the following specifications is used to collect particles of specific gravity 1.2. Cyclone diameter=180 cm; Air inlet diameter=30 cm; Separating height= 2.5 of dia. Of inlet; Helix pitch=15°; Inlet width=10 cm and Entry particle velocity= 15 m/s. Compute the smallest particle which can be collected. Estimate the pressure drop through the unit.	CO4	L3	12M

UNIT-IV

7	a	Explain working principle of Ball mill with neat sketch.	CO4	L2	8M
	b	How much power is required to crush 2 t/hr of a 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 as 6.30.	CO4	L2	4M

OR

8	a	State Kicks, Rittinger's and bonds law for energy requirement with related equations.	CO4	L1	6M
	b	Explain working principle of Attrition mill with neat sketch.	CO4	L2	6M

UNIT-V

9	a	Explain dry milling process of pulses with neat flow chart.	CO5	L2	6M
	b	Explain rotary and centrifugal filters with neat sketch.	CO6	L2	6M

OR

10	a	Explain CFTRI method of parboiling.	CO5	L2	6M
	b	Explain working mechanism of rubber roll sheller with neat sketch.	CO5	L2	6M

*** END ***