Q.P. Code: 19AG0707 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year I Semester Supplementary Examinations August-2022

AGRICULTURAL PROCESS ENGINEERING

(Agricultural Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	Define specific gravity. List out the methods for determination of specific gravity and explain Specific gravity balance (used for small fruits).	**L1**	**6M**
	b	Explain projected area method for measurement of size with neat sketch.	**L2**	**6M**
		OR		
2		List out the rheological models and derive kelvin model with related equations.	**L4**	**12M**
		UNIT-II		
3	**a**	Explain the method for determination of angle of repose of the food grains with neat sketch.	**L2**	**6M**
	b	Explain Rolling resistance with neat sketch.	**L2**	**6M**
		OR		
4	**a**	Explain the power losses due to friction with suitable equation.	**L2**	**6M**
	b	Assume that corn grain is to be conveyed through a length of 10 feet and up 4 feet at a rate of 10 bushels per minute by means of a drag-chain conveyor. Coefficient of friction of the grain against steel at 7.3% and 19.3% moisture content are respectively 0.46 and 0.56. The grain weighs 61.5 pounds per bushel when dry and 54.7 pounds per bushel when wet. Excluding the power required for running of the empty conveyor, determine the effect of moisture content on horsepower requirement to lift the grain.	**L3**	**6M**
		UNIT-III		
5	**a**	Explain Ideal and Actual screens and also explain different types of screens with neat sketch.	**L2**	**6M**
	b	Explain rotary air screen cleaner with neat sketch.	**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.	**L3**	**12M**
		UNIT-IV		
7	**a**	Explain working principle of Attrition mill with neat sketch.	**L2**	**6M**
	b	Explain the energy requirement of size deduction.	**L2**	**6M**

OR

8	**a**	Enlist and explain the types of forces used in size reduction equipment's.	**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.	**L3**	**4M**

UNIT-V

9		Explain about rubber roll Sheller with neat sketch.	**L2**	**12M**

OR

10	**a**	Enlist filtration equipment's and write the basic requirements for filtration equipment's.	**L2**	**5M**
	b	Explain centrifugal filters with neat sketch.	**L2**	**7M**

*** END ***