Register No: _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Fourth Semester

Chemical Engineering

PC3352 - Mechanical Operations

Regulations - 2021

Duration: 3 Hrs *Maximum: 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	List the various techniques for measuring the particle size along with their size range.	AN	1	2
2.	Differentiate between ideal and actual screens.	UN	1	2
3.	What are the factors affecting the size reduction process?	RE	2	2
4.	State the importance of particle size enlargement.	UN	2	2
5.	Distinguish between sedimentation and centrifugation.	AP	3	2
6.	Write the principle of electrostatic separators.	RE	3	2
7.	List the characteristics of filter media.	RE	4	2
8.	List the factors to be considered for the selection of a filter.	RE	4	2
9.	Mention the various functions of a kneader while mixing heavy pastes.	UN	5	2
10.	Mention the type of materials used for screw conveyors.	UN	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	Discuss the different techniques of size analysis in detail.	AN	1	13
		Or			
	b	Discuss the different types of motions of screens with neat diagram.	AN	1	13
12.	a	Explain the principle, construction and working of a tumbling mill.	UN	2	13
		Or			
	b	Write a Top-down approach and Bottom-up approach in nano particle fabrication.	UN	2	13
13.	a	Explain the working principle and construction of gravity thickener with a neat diagram.	UN	3	13
		Or			
	b	Explain the working principle and construction of cyclones with a neat diagram.	UN	3	13

14.	a	Explain the principle of filtration. Derive equations for constant pressure filtration and constant rate filtration.	AP	4	13
		Or			
	b	Explain the working principle and construction of a filtration equipment with a neat diagram.	AP	4	13
15.	a	Explain with neat diagram, the different types of mixers used for free-flowing solids.	UN	5	13
		Or			
	b	Explain the different types of conveyors and their performance characteristics.	UN	5	13

*PART – C (Marks 1*15 = 15)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
16.	a	With a neat sketch, discuss the constructional features, working principle and application of mechanical classifiers.	AP	3	15
		Or			
	b	Discuss in detail about storage and conveying of solids.	AP	5	15