

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Second Semester**Chemical Engineering***CH3251 / UCHT24201 - Introduction to Chemical Engineering***Regulations – 2021 & 2024**Duration : 3 Hrs**Maximum : 100 Marks***PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Distinguish between unit operations and unit processes.	L2	1	2
2.	Classify units and give any one example for each type of units and its dimensions.	L1	1	2
3.	List out few symbols used in process flow diagram.	L1	2	2
4.	Balance the stoichiometric equation given below: $\text{CH}_4 + 2\text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{H}_2$	L2	2	2
5.	Define the term 'viscosity' of a fluid and give its units.	L1	3	2
6.	Classify the flow regimes based on the values of Reynolds number and mention the ranges of Renolds number for each regime.	L2	3	2
7.	Name any four-design software used in chemical process industries.	L1	4	2
8.	What is meant by process flow diagram?	L1	4	2
9.	What is the role of a commissioning engineer in chemical process industries?	L2	5	2
10.	Mention the role of a research and development engineer in chemical process industries.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i List various products used by people in day-to-day life and mention the types of chemical industries that produce those products. Also add the technical information related to the products and processes.	L2	1	8
	ii Explain in brief the scale-up and scale-down in industrial processes.	L2	1	8
	Or			
b	Write a detailed note on recent developments in chemical process industries in the aspects of new technology related to the processes, new products developed, and pollution prevention and control.	L3	1	16

12.	a	Describe in detail the various modes of heat transfer and explain the concept of one-dimensional heat transfer in flat-slab and radial systems with neat diagrams.	L3	2	16
		Or			
	b	Explain the operation of the following equipment with neat diagrams: (i) Distillation column (ii) Evaporator	L3	2	16
13.	a i	Write a brief note on types and properties of fluids.	L2	3	8
	ii	Describe the factors to be considered for transporting a fluid using pumps.	L4	3	8
		Or			
	b	Write the detailed procedure for the dimensional analysis by Rayleigh method and Buckingham- π method.	L4	3	16
14.	a	Describe in detail the role of software in process engineering design.	L3	4	16
		Or			
	b	Write notes on the following with appropriate examples: (i) Computations using Microsoft Excel (ii) Piping and equipment design software	L3	4	16
15.	a	Explain the roles of the following in chemical process industries: (i) Process control/Automation engineer (ii) Process safety engineer	L2	5	16
		Or			
	b	Describe the roles of the following engineers: (i) Pharmaceutical process engineer (ii) Environmental engineer	L2	5	16