



**School of Bio Sciences and Technology
Fall Semester (2024-25)**

Continuous Assessment Test -1

Programme Name & Branch: B.Tech & Biotechnology

Course Name & code: Principles of Chemical Engineering & BBIT201L

Class Number: VL2024250101094 and VL2024250101093

Slot: F1+TF1

Faculty Name (s): Dr. Shanthi V and Dr. Dhanya V

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s): Write and explain the assumptions whenever made

Q. No.	Question	Max Marks
1.	a. Prove that $\text{kcal/h} = 1.163 (\text{N.m})/\text{s}$. b. Convert 150 lb/ft^3 into g/cm^3 ($1 \text{ lb} = 0.4535 \text{ kg}$; $1 \text{ ft} = 30.48 \text{ cm}$)	10
2.	20 g of caustic soda are dissolved in water to prepare 500 ml of solution. Find the normality and molarity of the solution.	10
3.	250-kg wet ammonium sulphate containing 50 kg moisture is sent to a dryer in order to remove 90% of the moisture in the feed. Calculate for the entrance and exit to the dryer, the following: (a) The weight fraction of water (b) The weight ratio of water (c) The weight percentage of moisture on a wet basis (d) The weight percentage of moisture on a dry basis.	10
4.	a. State Dalton's law and Amagat's law. b. Consider a gaseous system containing more than one component. How the density can be measured? Explain with appropriate equation.	10
5.	The feed to a continuous fractionation column analyses by weight 28 percent benzene and 72 percent toluene. The analysis of the distillate shows 52 weight percent benzene and 5 weight percent benzene was found in the bottom product. Calculate the amount of distillate and bottom product per 1000 kg of feed per hour. Also calculate the percent recovery of benzene.	10