

**B.E. CHEMICAL ENGINEERING THIRD YEAR FIRST SEMESTER
SUPPLEMENTARY EXAM 2025**

CHEMICAL TECHNOLOGY-I

Time – 3 hrs

FM-100

To the point answer is encouraged

CO-1	(i) Write down the working principle of Deaerators. (ii) Show the schematic of ion exchange water softening. Write down the involved reactions. Discuss how the regeneration process is accomplished. (iii) How the calcium carbonate scale in cooling tower is controlled employing solubilizing chemicals? (iv) How calcium and magnesium hardness of boiler feed water can be handled via phosphate and calogen treatment? Write down the relevant reactions also. (v) Write short note on oxidizing biocides for cooling tower water.	5*5=25
CO-2	(i) Discuss the roles of the following during production of nitric acid: Absorption Tower, Cooler condenser and bleaching tower. (ii) Discuss the roles of pressure and temperature during catalytic oxidation of SO ₂ to SO ₃ . (iii) Write down the cell reactions in mercury cell and schematically discuss the process. (iv) What are the engineering aspects involved during soda ash manufacturing in Solvay process. Discuss with PFD. (v) What are different steps of chlorine handling.	6+6+6+10+7
CO-3	(i) Write down different steps of cement manufacturing and the reactions involved. Why gypsum is added during final grinding step? (ii) Write down the steps of paper making (show PFD)	10 10
CO-4	(i) Sketch the block diagram of carbon dioxide stripping Urea process. (ii) How CO ₂ , water and CO is removed during ammonia synthesis. (iii) Discuss the process description superphosphate and triple superphosphate production via suitable PFD.	6+6+8