Q. Paper Code:
Set-: I

END SEMESTER EXAMINATION (ESE), Nov. – 2022
Course Name: Chemical Engineering Thermodynamics II Course Code: 201CHL302

Day and Date: Thursday, 8/12/2022

Seat No:

Time: 10 to 12 AM   **Max. Marks- 50**

Instructions:

i. Question No. 1 is compulsory.
ii. Figure to the right indicate full marks.

BT	CO's	Q. No.		Marks
		Q.1	**All Questions are compulsory**	**20**
	CO1	a	Derive the expressions for phase rule and Duhem's theorem for non-reacting system.	6M
1,2	CO2	b	The enthalpy of a binary liquid species 1 & 2 at fixed T & P is represented by the equation. $H=400\,x_1+600\,x_2+x_1x_2(40x_1+20x_2)$ Where, H is in J/mol. Determine expressions for $H^{\infty}_1 \wedge H^{\infty}_2$	7 M
1,2	CO3	c	Explain ideal solution model.	7 M
		Q.2	**All Questions are compulsory**	**10**
1,2	CO4	a	Write note on Thermodynamic consistency.	4
1,2	CO4	b	Derive expression for Excess gibbs energy. OR Explain Activity coefficient.	6
		Q.3	**All Questions are compulsory**	**10**
1,2	CO5	a	Write short note on Evaluation of Equilibrium Constant.	3
1,2	CO5	b	Derive the expression for the mole fraction interms of extent of reaction in chemical reaction equilibria. OR A gas mixture that contains 3 moles of N2,10 moles of H2 and 1 mole NH3 initially is undergoing the following reaction $N_2 + 3H_2 \rightarrow NH_3$ .Derive expressions for the mole fractions of the components taking part in the reaction in terms of the extent of reaction.	7
		Q.4	**Attempt any two out of three questions**	**10**
1,2	CO6	a	Explain Criteria of phase equilibrium.	5
1,2	CO6	b	Write note on Criteria of Stability.	5
1,2	CO6	C	Write short note on Solid-Liquid Equilibrium.	5

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