



Mid & Quiz

40/100 Forty only

Physical_Chemistry_2nd_YUGS_EV_ST



Name of a student

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Signature

Handwritten signature

No. 17

Mustansiriyah University
Department of Chemistry

2nd SEM-2025 Bologna_Process
Mid_Exam_Class_B_Paper_A

Q1/ MCQ test (Answer the following)

(Marks 50 %)

1: The reduced phase rule is interested in two variants?
فاحدة لواء تتغير نوكتها فن حيزات

- Answer: a) ~~p & T~~ b) F & T c) p & conc. d) T & conc.

2: Ideal solution follows ----- law.

- Answer: a) Raoult's b) Trouton's c) Henry's law d) Van't Hoff's law

3: The three phases of H₂O in the phase diagram meets?

- Answer: a) at 1 atm b) over 1 atm c) below 1atm d) at any pressure

4: Liquid solution of HNO₃ is formed from?

- Answer: a) 1 C b) 2 C c) 3 C d) 4 C

5: How many phases are there when the number of variants is zero and the number of components is one?

- Answer: a) zero b) 1 c) 2 d) 3

6: The Clausius-Clapeyron equation can be applied when there is an equilibrium between one of the following?

- Answer: a) L & L b) S & L c) G & L d) S & S

7: One of the following formulas represents the right equation of Henry's law?

- Answer: a) $P_A = \chi_A P^* A$ b) $P_A > \chi_A P^* A$ c) $P_A < \chi_A P^* A$ d) none of these

8: Molality is used to calculate the molar mass of the?

- Answer: a) non-volatile solute b) pure solute c) pure solvent d) solution

9: Osmosis pressure exerts when the solvent transfers to the?

- Answer: a) volatile solute b) non-volatile solute c) pure solvent d) solution

10- One of the most important benefits of measuring ΔVP , ΔT_b , ΔT_f and $\Delta \Pi$ is to calculate ----- of B?

- Answer: a) M b) m c) V d) p

Q2/ The vapor pressure (VP) of a substance is 30 torr at 250 K. At what temperature will the substance have VP of 150 torr? $\Delta_{vap}H$ is 45 kJ mol⁻¹?

(Marks 25%)

Q3/ Plot the phase diagram of the system (A & B) assumed that (A & B) do not react with each other. A freezes at (-5°C) and B freezes at (7°C), and that an eutectic mixture is formed when the ratio is 70 wt % of A and that the eutectic melts at (-10°C), then label all the parts (p & F) of the diagram? (Marks 25%)

B = 30%

Thur_13-03-2025

Best wishes

Dr Abduljabbar I. R. Rushdi

Samolshan

Q2

$$\ln \frac{P_f}{P_i} = \frac{\Delta_{vap}H}{R} \left(\frac{1}{T_f} - \frac{1}{T_i} \right)$$

$$\ln \frac{150}{30} = \frac{45 \text{ kJ mol}^{-1}}{8.314 \text{ J K}^{-1} \text{ mol}^{-1}} \left(\frac{1}{T_f} - \frac{1}{250} \right) \text{ K}^{-1}$$

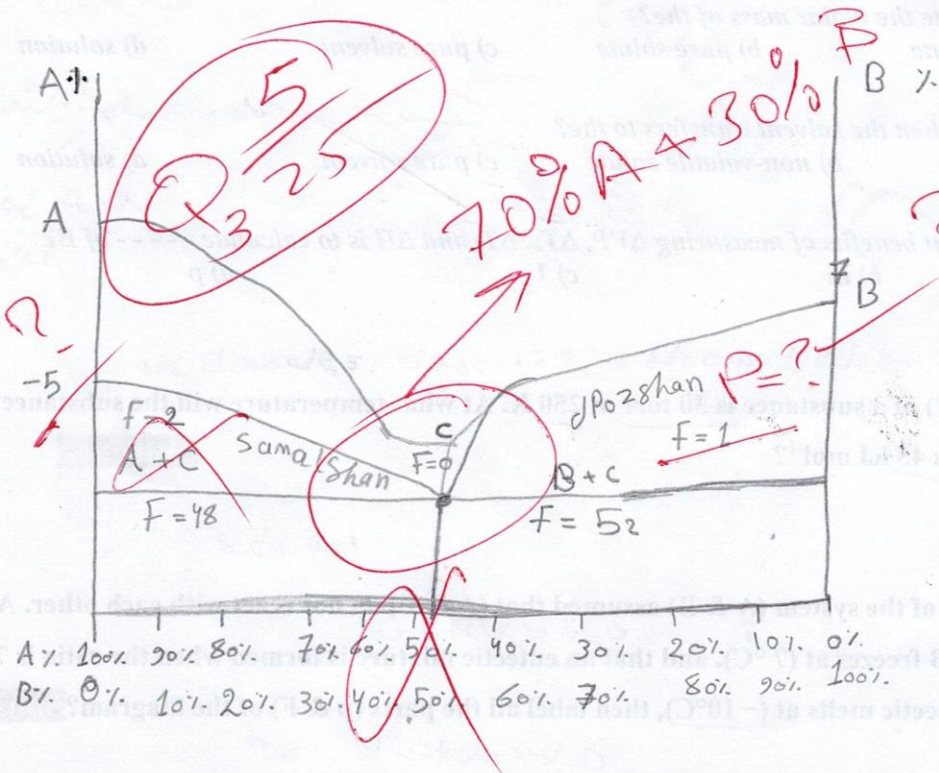
$$0.1 = 5.4 \text{ K mol}^{-1} (T_f - 4)$$

$$T_f = \frac{5.4 \times 4}{0.1}$$

$$T_f = 216 \text{ K}$$

Q2

Q3



قانون
 ~~$F = C - P + 2$~~
 $F = C - P + 1$
 Reduced