



30/100 Thirty only



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Mustansiriyah University
Department of Chemistry
2nd SEM-2025 Bologna Process
Mid Exam Class B Paper B

Q1/ MCO test (Answer the following) (Marks 50%)

1: If the relation between the amount of solute and the Π is proportional, then the right equation is?
Answer: a) $\Pi \propto VP$ b) $\Pi \propto BP$ c) $\Pi \propto V$ d) $\Pi \propto [B]$

2: If the deposition is dominated, then one of the following will be true.
Answer: a) $\Delta_{vap}H = +ve$ b) $\Delta_{vap}H = -ve$ c) $\Delta_{sub}H = +ve$ d) $\Delta_{sub}H = -ve$

3: How many phases are there when the number of variants is one and the number of components is one?
Answer: a) zero b) 1 c) 2 d) 3

4: Which One of the following formulas represents the right equation of positive deviation from Raoult's law?
Answer: a) $P_A \neq \chi_A P_A^*$ b) $P_A = \chi_A P_A^*$ c) $P_A > \chi_A P_A^*$ d) $P_A < \chi_A P_A^*$

5: Addition of a non-volatile solute to the pure solvent causes a change in?
Answer: a) $\Delta_{mix}H$ b) $\Delta_{mix}S$ c) $\Delta_{mix}V$ d) all of these

6: How many p and F of CO₂ when it is positioned at the boundary of the phase?
Answer: a) $p = 2$ & $F = 1$ b) $p = 3$ & $F = 0$ c) $p = 1$ & $F = 2$ d) $p = 2$ & $F = 2$

7: Liquid water and ice are formed from?
Answer: a) 1 C b) 2 C c) 3 C d) 4 C

8: With the two-component system (Pb & Ag), one part of the solid phase consists of?
Answer: a) pb + Ag b) Pb + solution c) Ag + solution d) Pb + eutectic

9: If you add a non-polar solute to a non-polar solvent, then the expected type of mixture will be ----- law.
Answer: a) Van't Hoff's b) Raoult's c) -ve form Raoult's d) +ve form Raoult's

10: If it is required to calculate the Y_A , then one of the following laws will be applicable?
Answer: a) Raoult b) Henry c) Dalton d) Van't Hoff

Q2 The VP of pure benzene is 75 mmHg at 20 °C, and VP of pure toluene is 25 mmHg at 20 °C. The mole fraction of each pure component is 0.5. What is the partial VP of each component after mixing? (Marks 25%)

Q3 Using the diagram below and the appropriate phase rule, fill in all the blanks and determine the composition of the all-eutectic mixture, all equilibria, all reversible and irreversible processes, and the name of the regions located to the right and left of points C, E & AB? (Marks 25%)



Name of a student _____ Signature _____ No. _____

$P_{Benzene} = 75 \text{ mmHg}$

$P_{Toluene} = 25 \text{ mmHg}$

$P_{Benzene} = X_A \cdot P_i^*$

$P_i = \frac{P_{Benzene}^*}{X_A} = \frac{75 \text{ mmHg}}{0.5} = 150 \text{ mmHg}$

$P_i \text{ toluene} = \frac{P^*}{X_A} = \frac{25}{0.5} = 50 \text{ mmHg}$

$P_T = P_{Benzene} + P_{Toluene}$

$P_T = 37.5 \text{ mmHg} + 50 \text{ mmHg}$

$P_T = 87.5$

$\text{Benzene} = \frac{P_i}{P_T} = \frac{37.5 \text{ mmHg}}{87.5 \text{ mmHg}} = 0.428$

$\text{toluene} = \frac{P_i}{P_T} = \frac{50 \text{ mmHg}}{87.5 \text{ mmHg}} = 0.57$

50 mmHg

