Physical_Chemistry_2nd_YUGS_EV_ST

Name of a student ---------- Signature ---------- No. ----

Mustansiriyah University
Department of Chemistry

2nd SEM-2025_Bologna_Process
Mid_Exam_Class_B_Paper_B

Q1/ MCQ 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) $\Pi \alpha VP$ b) $\Pi \alpha BP$ c) $\Pi \alpha V$ d) $\Pi \alpha [B]$

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 CO_2 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 ^{O}C, and VP of pure toluene is 25 mmHg at 20 ^{O}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%)

Thus_13-03-2025 With my best wishes Dr Abduljabbar I. R. Rushdi

Name of a student TARA M. Jalil Signature T.M No.

Q2// $VP_{Ben2} = 75\ mmHg$, $VP_{Tolu} = 25\ mmHg$ at 20 C, $X_A - X_B = 0.5$ المكون المولي للمذيب

$P_{Ben} = X_A * VP_A^*$

$= 0.5 * 75 = 37.5$?

? ≡ Units

$P_{tol} = X_B * VP_B^*$

$P_{tol} = 0.5 * 25 = 12.5$?

Q2 25

Dalton's law $P_i = \chi_i P_T$

$P_{solution} = P_{Benzen} + P_{tolunen}$

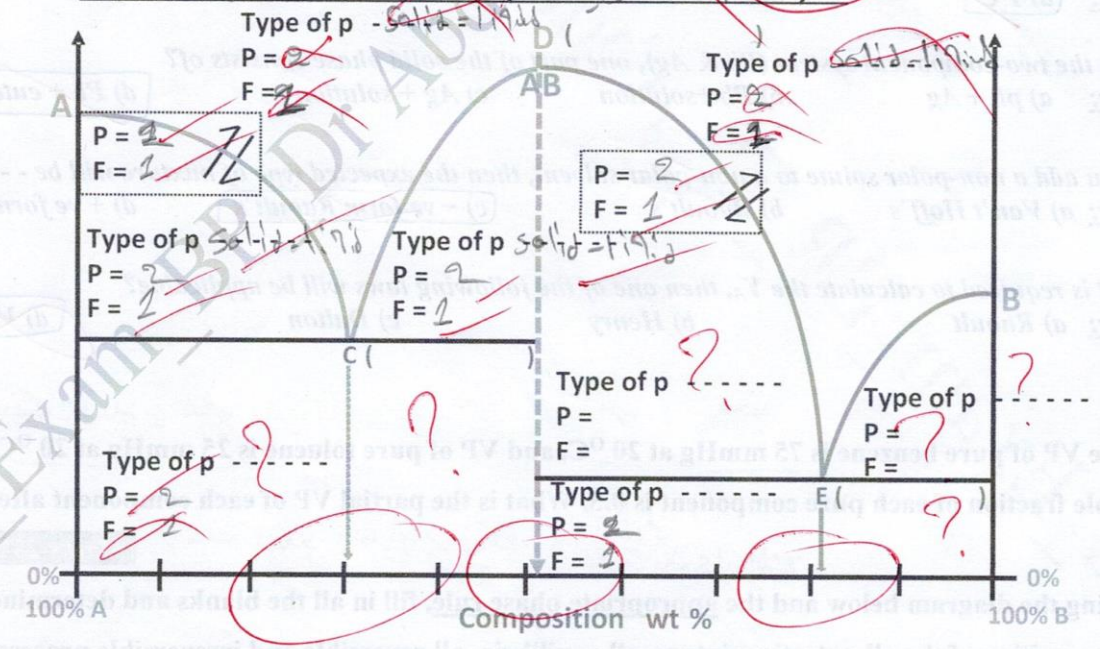
$= 37.5 + 12.5 = 50\ mmHg$

Q3 15/25

Y_B $X_{solution} = \frac{P_{Ben} P_{tolu}}{P_A^*}$

Y_T $X_{solution} = \frac{50}{37.5} = 1.3$

Two component system (نظام ذو مكونين)



س// ماهي المعادلة المستخدمة لحساب درجة الحرية

ج// المعادلة المستخدمة هي معادلة الطور المختزلة

$\bar{F} = 2 - P + 1$