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_A_Paper_C

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

1: Depression of freezing point of a solution means increasing in?
Answer: a) T b) H c) μ d) S

2: If you apply the reduced phase rule to condensed systems, then the expected value of pressure is - - - - - -?
Answer: a) zero b) 1 c) 2 d) 3

3: The reduced phase rule can be applied when the number of components is - - - - - - -?
Answer: a) zero b) 1 c) 2 d) 3

4: Which One of the following formulas represents the right equation of negative 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: The difference between pure and impure solvent is?
Answer: a) $\mu^* = \mu$ b) $\mu^* > \mu$ c) $\mu^* < \mu$ d) $\mu^* \neq \mu$

7: The relationship between ΔT_f and χ_B is?
Answer: a) direct b) inverse c) disordered d) none of these

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

9: If you add a solute to a solvent, then there is a decrease in the - - - - - of the solution.
Answer: a) S b) H c) T d) μ

10: Dalton's law is used to calculate the partial pressure of - - - - - - - - - phase?
Answer: a) liquid b) gas c) solid d) plasma

Q2/ **The Π of a solution containing 4.0 g of an unknown substance per 0.5 dm^3 of solution is 10^3 torr at 34.0 °C. Find the molar mass of this unknown.** (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%)

Mo_17-03-2025 With my best wishes Dr Abdulljabbar I. R. Rushdi

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$\Omega = 1000\,torr$. $T = 34^\circ C + 273 = 307K$. $W_B = 4g$

$\Omega = T\,R\,[B]$

$1.31\,atm = 307K \times 0.082 \frac{atm.L}{K.mol} \times [B]$

$[B] = 0.05M$

$\frac{1000\,torr}{760} = 1.31\,atm$

$0.5\,dm^3 = 0.5L$

wrong!

$n\ m = [B] \times V = 0.05\,n/L * 0.5L$

$n\ m = 0.025\,mol$

wrong!

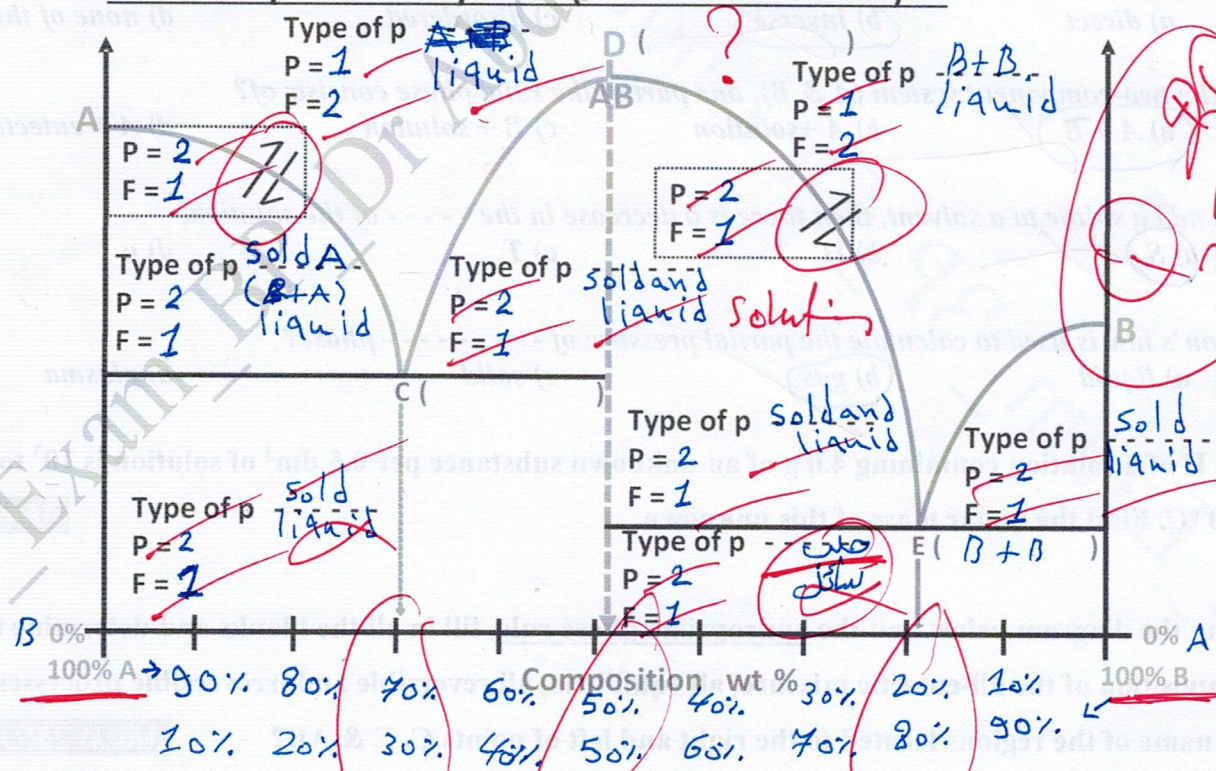
$n\ M.wt = \frac{W}{M} = \frac{4(g)}{0.025(mol)}$

$M.wt = 160(g/mol)$

$Q_2\ \frac{25}{25}$

مكثف - Condensed

Two component system (سائل سائل)



$Q_3\ \frac{40}{25}$

$F = C - P + 1$

P = طور F = درجة الحرية

C = مكون

Mid_Exam_Prof Dr Abduljabbar I. R. Rushdi 2025