Q2

$VP^* = 12.0$ $VP = 12.0,$

$VP = ?$ ⭕ $\frac{10}{2}$ (Q2) $n = 0.5$

$$\frac{VP^* - VP}{VP^*} = \text{no of mol P} \times \frac{\text{no. of mol P}}{\text{solvent}} \quad \text{(Solute)}$$

$$\frac{12.0 KPa - P \, VP}{12.0 KPa} = 0.5 \, mol \times 12.0 \, mol$$

OR $\frac{0.5 \, mol}{12 \, mol}$ ✗

$$\frac{12.0 \, KPa - PV}{12.0 \, KPa} = 6$$ ✗

$$12.0 \, KPa - VP = 6 \times 12.0 \, KPa$$

$$12.0 \, KPa - VP = 72 \, KPa$$

$$VP = 72 \, KPa - 12.0 \, KPa = 60 \, KPa$$

$$\boxed{VP \, sol > VP \, ided = + \text{ Poisitive}}$$

Q3

⭕ $\frac{10}{2}$ (Q3)

A + B
C = 2 = P = 1

P = 2
C = 2 A + B solution F = ?
A = Soil liqid + soild

B+A = Liquid
C = 2 P = 2
Soild + Liquid

A + B
C = 2
P = 2

A - Liquid

C - Eutict

B + A =
C = 2
P = 2
B - Liqid

Temp

Solid

A 100 90 80 70 60 50 40 30 20 100 % B

| A % | 0/10 | 20 | 30 | 45 | 50 | 60 | 70 | 80 | 90 | 100 |
| 100 | 90 | 80 | 70 | 60 | 50 | 40 | 30 | 20 | 10 | 0 |
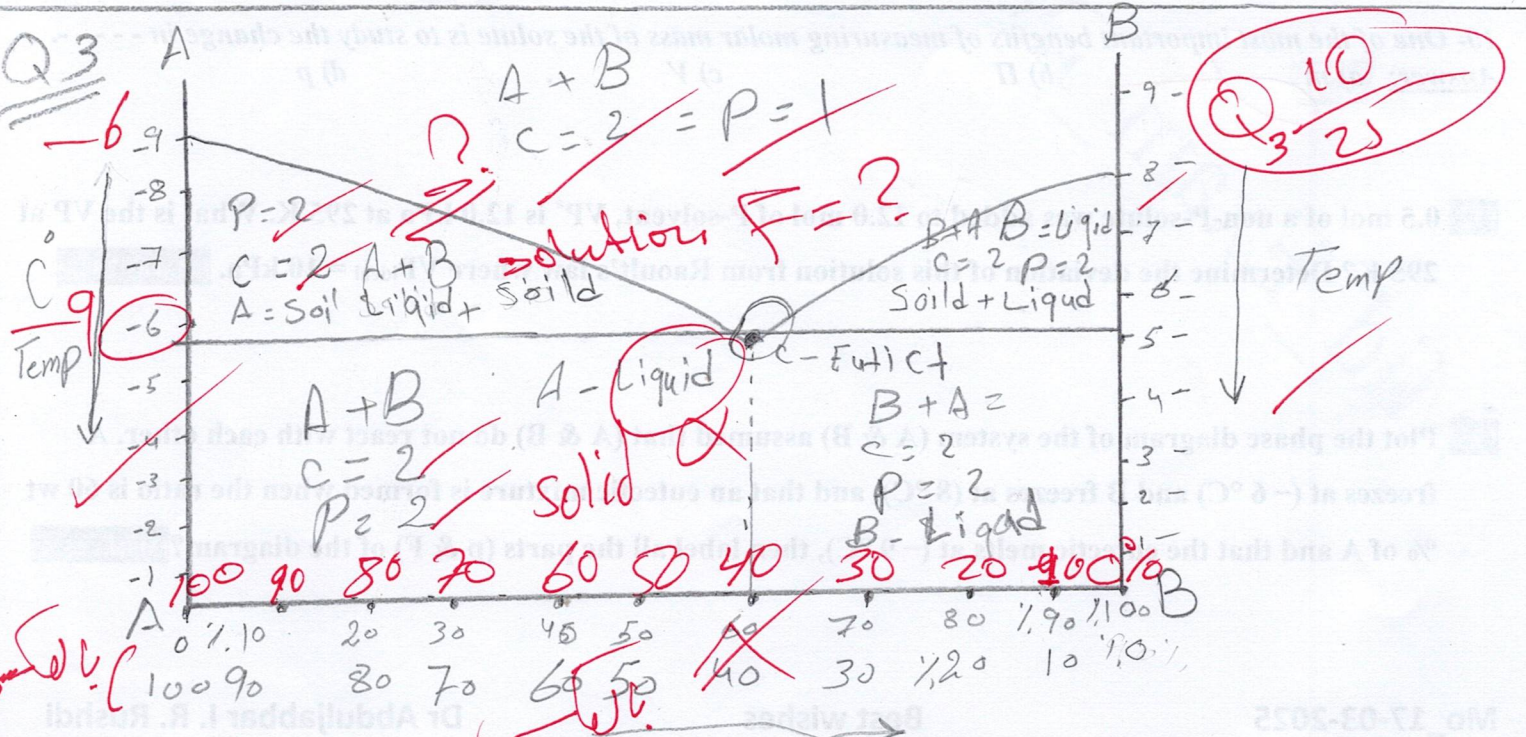
Name of a student _____ Signature _____ No. 23

Mustansiriyah University
Department of Chemistry

2nd_SEM-2025_Bologna_Process
Mid_Exam_Class_A_Paper_D

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

1: The Gibbs phase rule is interested in two variants?
Answer: a) p & T   b) F & T   c) p & conc.   d) T & conc.

2: What do you expect if you add NaCl to H_2O, an increase in the?
Answer: a) LP   b) VP   c) FP   d) BP

3: The three phases of CO_2 in the phase diagram meets?
Answer: a) at 1 atm   b) over 1 atm   c) below 1atm   d) at any pressure

4: The phase of super cooling is - - - - -?
Answer: a) gas   b) liquid   c) solid   d) plasma

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

6: The Clapeyron equation can be applied when there is an equilibrium between one of the following?
Answer: a) melt. & freez.   b) sub. & depo.   c) vap. & cond.   d) all of these

7: The relationship between VP and m is - - - - - - - .
Answer: a) direct   b) inverse   c) disordered   d) none of these

8: If you add a - - - - - - - to a solvent, then there is a change in the colligative properties of the solvent.
Answer: a) non-volatile solute   b) volatile solute   c) pure solute   d) pure solvent

9: Osmotic process is used to push the solvent to the -?
Answer: a) solute   b) impure solute   c) mixture   d) pure solvent

10- One of the most important benefits of measuring molar mass of the solute is to study the change in - - - - - .
Answer: a) m   b) Π c) V   d) p

Q2/ 0.5 mol of a non-P-solute was added to 12.0 mol of P-solvent, VP^* is 12.0 kPa at 295 K. What is the VP at 295 K? Determine the deviation of this solution from Raoult's law where VP_{ideal} = 10 kPa. (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 (− 6 °C) and B freezes at (8 °C), and that an eutectic mixture is formed when the ratio is 60 wt % of A and that the eutectic melts at (− 9 °C), then label all the parts (p & F) of the diagram? (Marks 25%)

Mo_17-03-2025   **Best wishes**   Dr Abduljabbar I. R. Rushdi