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_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 equilibriunt 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 (T) & (F) of the diagram? (Marks 25%)

Q2)

$$\frac{VP^* - VP}{VP^*} = \frac{Wt_B}{M.wt_B} \cdot \frac{M.wt_A}{Wt_A}$$

$$\frac{12\ KPa - VP}{12\ KPa} = 0.5_{mol} * \frac{12\ mol}{1}$$

$$12\ KPa - VP = 12\ KPa * 0.5\ mol * 12\ mol$$

$$VP = \frac{12\ KPa * 0.5\ mol * 12\ mol}{12\ KPa} \times 12\ mol$$

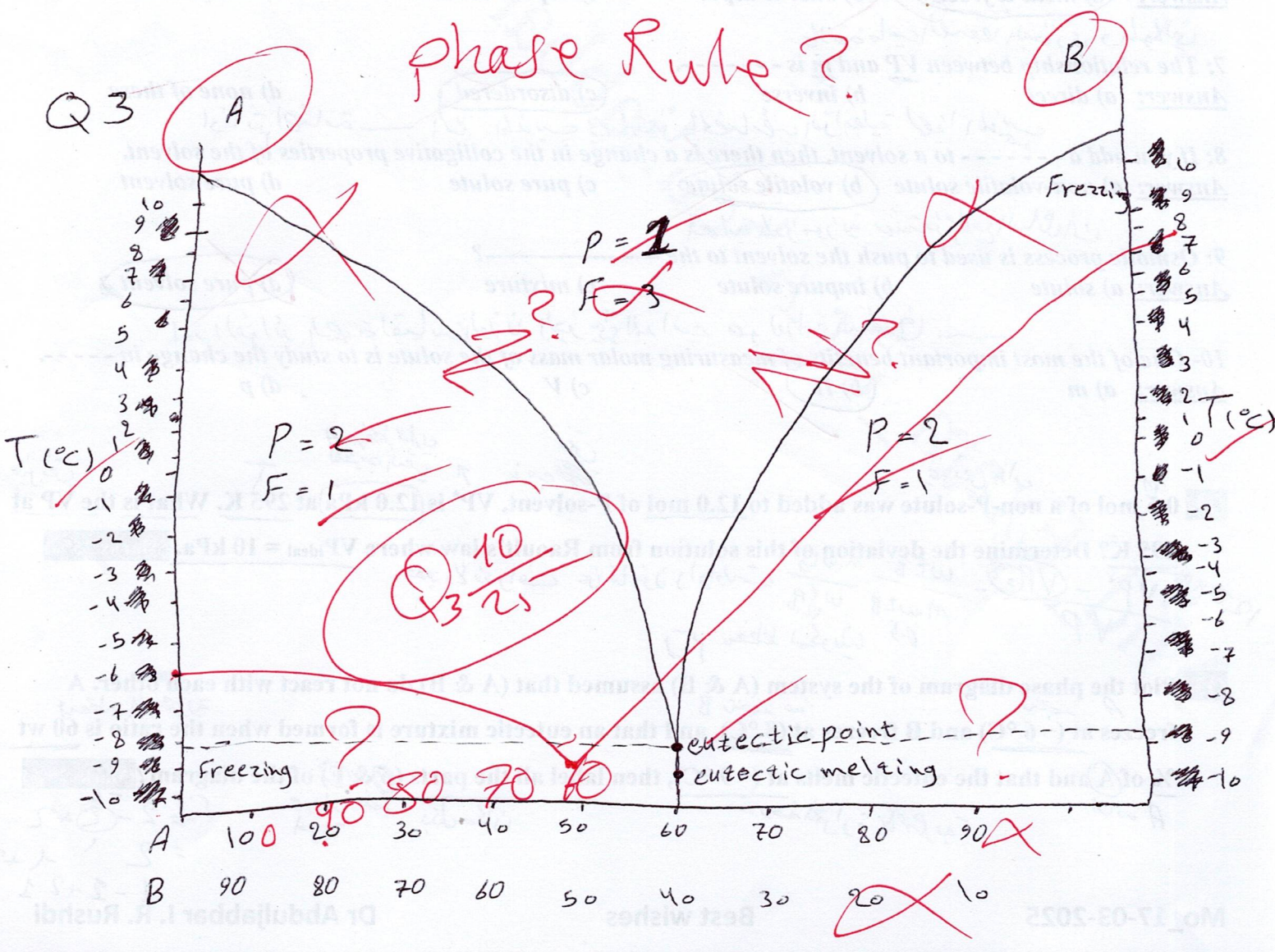
$$VP = 6\ KPa$$

$$VP_{solution} = 6\ KPa \quad , \quad VP_{ideal} = 10\ KPa$$

$$VP_{solution} < VP_{ideal} \quad , \Delta H = +$$

Q2 5/25

Q3) phase Rule?



Q3 10/25