



Mid Quiz

Physical Chemistry 2<sup>nd</sup> YUGS\_EV\_ST

30 Thirty  
100 only

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2<sup>nd</sup> 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<sub>2</sub>O, an increase in the?  
Answer: a) LP b) VP c) FP d) BP
- 3: The three phases of CO<sub>2</sub> in the phase diagram meets?  
Answer: a) at 1 atm b) over 1 atm c) below 1 atm 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)  $\Pi$  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<sub>ideal</sub> = 10 kPa. (Marks 25%)

$$P_V = P_V^* \cdot \frac{n_{solvent}}{n_{total}}$$

$$P_V = 12.0 \cdot \frac{12.0}{12.0 + 0.5} = 11.2 \text{ kPa}$$

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%)

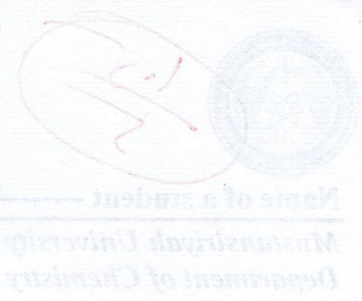
VP\* = 10  
+3  
zero  
25  
NO ANSWER

$$\frac{P_V^* - P_V}{P_V^*} = \frac{w_B}{M \cdot w} \times \frac{m \cdot w}{w}$$

~~$$\frac{12 - P_V}{12} = \frac{0.5}{8.4} \times \frac{6.2}{12}$$~~

$$- P_V = 0.025$$

Best wishes



Name of a student  
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1. The Gibbs phase rule is interested in  
Answer: a) p & T

2. What do you expect if you add NaCl to H<sub>2</sub>O, an increase  
Answer: a) LP

3. The three phases of CO<sub>2</sub> in the phase diagram meet at  
Answer: a) at 1 atm

4. The phase of super cooling is  
Answer: a) gas

5. How many phases are there when the number of variants is two and the number of components is one?  
Answer: a) zero

6. The Clapeyron equation can be applied when there is an equilibrium between one of the following?  
Answer: a) melt & freeze

7. The relationship between VP and TS is  
Answer: a) direct

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

9. Osmotic process is used to push the solvent in the  
Answer: a) solute

10. One of the most important benefits of measuring molar mass of the solute is to study the change in  
Answer: a) m

0.2 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<sub>solvent} = 10 kPa.</sub>

12.5 kPa

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.

100 ANSWER