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 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

Q2/

$\pi = RT[\text{~~B~~}]$

$= 0.082 \frac{L \cdot atm}{mol \cdot K} \times 295\ K \quad [0.5]\ mol$

$\pi = 12.09\ atm \quad \times 10^5\ Kpa$

$= 1.2\ Kpa$

Q2 = 2/25

Q3/

Q3 = 6/25