Name of a student -------------------------------- علي هادي خلف Signature ----------------------------------- No. 27

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 dm³ 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 underlined 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 Abduljabbar I. R. Rushdi**

Name of a student -- *Signature* ----------------------------- No. ------

$Q_2 = \dfrac{zero}{25}$

$Q_3 = \dfrac{15}{25}$

Condensed تكاثف

Two component system (ثلاثي شكل)

Type of p -- ثنائي (النقطة الثلاثية)
P = 2 $\bar{F} = P + 2$
F = 2

Type of p -- ثنائي
P = 2 $\bar{F} = C - P + 2$
F = 2

P = 2
F = 1

Type of p -- ثنائي (خليط صلب)
P = 2 $\bar{F} = C - P + 1$
F = 1

Type of p -- ثنائي
P = 2 $\bar{F} = C - P + 1$
F = 1

P = 2
F = 1

C (النقطة الأصهرية)

$\bar{F} = C - P + 1$

Type of p -- ثنائي
P = 2
F = 1

$\bar{F} = C - P + 1$

Type of p -- ثنائي
P = 2
F = 1

Type of p -- احادي
P = 1
F = 2

Type of p -- احادي
P = 1
F = 2

E (النقطة الأصهرية)

0% 100% A   90% 80% 70% 60% 50% 40% 30% 20% 10% 100% B 0%
Composition

B 0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100% B