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

Mustansiriyah University   2nd_SEM-2025_Bologna_Process
Department of Chemistry   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 underline 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

$P_A = 10^3 \text{ torr}$. $T = 34.0°C$

$$\frac{P_B^* - P_B}{P_B} = \frac{W_A}{M_B} \frac{M_A}{W_B}$$

wrong eq%

Q_2 zero / 25

Two component system ( )

Type of p -
P = 1
F = 3

A
P = 2
F = 1

Type of p -
P = 2
F = 1

Type of p -
P = 1
F = 3

D ( )
AB

Type of p -
P = 1
F = 2

P =
F =

Type of p -
P = 2
F = 1

B

C ( )

Type of p - ?
P = 1
F = 3

Type of p -
P = 1
F = 3

Type of p - ?
P = 1
F = 3

Type of p - ?
P = 0
F = 2

E ( )

0%
100% A   Composition   wt %   100% B
0%

Q₃ 5/25