



15/5

F17

Physical Chemistry 2nd YUGS EV ST

30/100 (marks)
20/2076
Signature
No. 419



Name of a student _____
Mustansiriyah University
Department of Chemistry

Signature _____ No. 419
2nd SEM-2026 Bologna Process
Mid Exam Class A Paper A

01/MCO test (Answer the following)

(Marks 50 %)

1: Depression of freezing point of a solution associated an increasing in?

Answer: a) T b) H c) μ d) S

2: When applying the reduced phase rule to condensed systems, the pressure is assumed to be ----- atm?

Answer: a) zero b) 1 c) 2 d) 3

3: The reduced phase rule applies when which variable is kept constant?

Answer: a) T b) conc c) p d) χ

4: Which One of the following expressions represents a 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 a pure solvent results in 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 pure 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 which phase?

Answer: a) liquid b) gas c) solid d) plasma

103 + 0.5 = 0.53

02 A solution contains 4.0 g of an unknown substance in 0.5 dm³ of solution. Its osmotic pressure is 103 torr at 34.0 °C. Calculate the molar mass of the unknown substance. (Marks 25%)

حسب الكتل الموليه

03 Using the diagram below and the 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%)

اكتب قاعد الطور المختلطة



7.17

Physical Chemistry 2nd YUGS_EV_ST



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wt of solution = 4g

$P = \frac{103 \text{ torr}}{760} \Rightarrow P = 0.135 \text{ atm}$

$V = 0.5 \text{ dm}^3 \Rightarrow V = 0.5 \text{ L} \Rightarrow V = 0.5 \times 10^{-3} \text{ m}^3$? \equiv units

$T_c = 34.00^\circ + 273 \text{ K} \Rightarrow T_{15} = 307 \text{ K}$

$PV = nRT \Rightarrow (0.135 \text{ atm})(0.5 \times 10^{-3} \text{ m}^3) = \left(\frac{wt}{M_{wt}}\right)(8.314)(307 \text{ K})$

$0.0675 = \left(\frac{4g}{M_{wt}}\right)(2.55)$

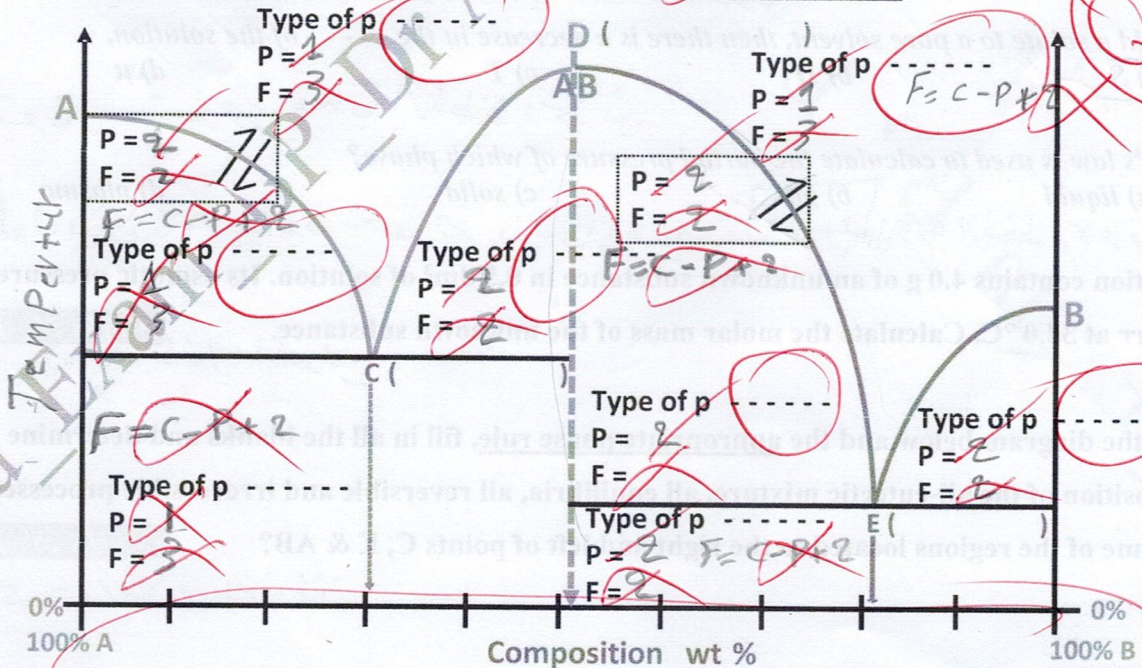
$0.0675 = \frac{(10.2)}{M_{wt}} \Rightarrow M_{wt} = \frac{10.2}{0.0675} \Rightarrow M_{wt} = 151.253$

$M_{wt} = 151.253 \text{ g/mol}$

Abduljabbar I. R. Rushdi 2026

$F = C - P + 2$

Two component system (Benz + Naph)



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