Name of a student ---------------------- علي نجم ستار ---- **Signature** ------------------ **No.** 35

Mustansiriyah University
Department of Chemistry

2nd SEM-2025_Bologna_Process
Mid_Exam_Class_B_Paper_B

Q1/ MCQ test (Answer the following)   (Marks 50 %)

اذا كانت العلاقة بين كمية مذاب و Π متناسبة فان الا معادلة علاقة تناسبية

1: If the relation between the amount of solute and the Π is proportional, then the right equation is?
Answer: a) $\Pi \alpha VP$ b) $\Pi \alpha BP$ c) $\Pi \alpha V$ d) $\Pi \alpha [B]$

اذا كانت عملية الترسب هي السائدة

2: If the deposition is dominated, then one of the following will be true.
Answer: a) $\Delta_{vap}H = +ve$ b) $\Delta_{vap}H = -ve$ c) $\Delta_{sub}H = +ve$ d) $\Delta_{sub}H = -ve$

ماهو عدد الاطوار عندما يكون عدد متغيرات واحد وعدد مكونات واحد

3: How many phases are there when the number of variants is one and the number of components is one?
Answer: a) zero   b) 1   c) 2   d) 3

ماهو الاختبار الصحيح لانحراف الموجب

4: Which One of the following formulas represents the right equation of positive 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) $P_A < \chi_A P^*_A$

اضافة المذيب النقي

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

ماهو عدد الاطوار درجات الحرية الغاز عندما يكون موجود في خط الاتزان

6: How many p and F of CO_2 when it is positioned at the boundary of the phase?
Answer: a) $p = 2 \& F = 1$ b) $p = 3 \& F = 0$ c) $p = 1 \& F = 2$ d) $p = 2 \& F = 2$

الماء السائل والثلج يكون من ماهو عدد مكونات

7: Liquid water and ice are formed from?
Answer: a) 1 C   b) 2 C   c) 3 C   d) 4 C

منظام ثنائي يكون من رصاص وفضة احد الاجزاء موجود في الطور الصلب

8: With the two-component system (Pb & Ag), one part of the solid phase consists of?
Answer: a) pb + Ag   b) Pb +solution   c) Ag + solution   d) Pb + eutectic

اذا انت اضافة مذاب غيرمتطاير ومذيب غيرمتطاير سيكون فراغ

9: If you add a non-polar solute to a non-polar solvent, then the expected type of mixture will be - - - - - law.
Answer: a) Van't Hoff's   b) Raoult's   c) − ve form Raoult's   d) + ve form Raoult's

اذا كان المطلب حساب اذان احد قوانين طابقة

10: If it is required to calculate the Y_A, then one of the following laws will be applicable?
Answer: a) Raoult   b) Henry   c) Dalton   d) Van't Hoff

Q2 The VP of pure benzene is 75 mmHg at 20 ^{O}C, and VP of pure toluene is 25 mmHg at 20 ^{O}C. The mole fraction of each pure component is 0.5. What is the partial VP of each component after mixing?

(Marks 25%)

ضغط البخاري النزين و ضغط بخاري التلوين النقي

Q3 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%)

عسر الطولي

ماهو ضغط البخاري لمكونات بعد خلية المزج

Thus_13-03-2025   *With my best wishes*   *Dr Abduljabbar I. R. Rushdi*

Name of a student ------------------ كلية نجم ستار ------ Signature ------ ✍ ------ No.-----

Q2||

$$\ln \frac{P_F}{P_i} = -\frac{\Delta_{vap} H}{R} \times \left(\frac{1}{T_1} - \frac{1}{T_2}\right)$$

$$\ln \frac{P_F}{P_i} = \frac{0.5}{8.314} \times \left(\frac{1}{298K} - \frac{1}{298K}\right)$$ ~~Wrong E9.1~~
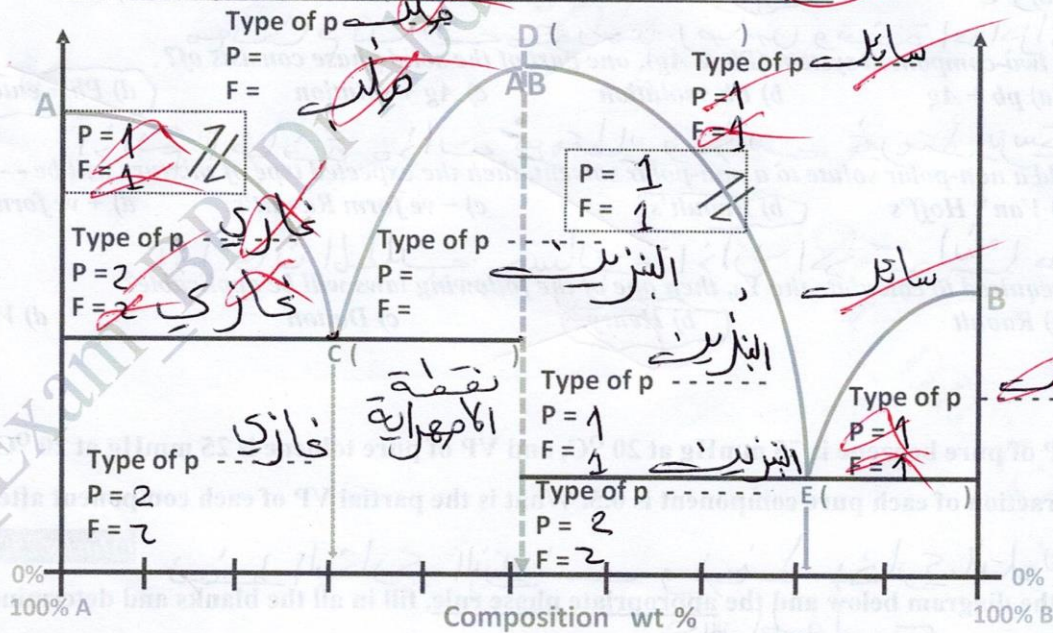
$$\frac{P_F}{P_i} = e^{\frac{0.5}{8.314} \times \left(\frac{1}{298K} - \frac{1}{298K}\right)}$$

$$P_F = P_i \times e^{0.2013}$$

$$P_F = 1.602$$

Q3 5/5

Two component   system ( )

Type of p مولد
P =
F =

A ▯ P = 1 ~~1~~ ?L
F = ~~1~~ ?

D ( )
Type of p سايل
P = 1
F = ~~1~~ ?

AB ▯ P = 1 ?L
F = 1

Type of p غازي
P = 2
F = ~~2~~ ?L

Type of p
P =
F =

سائل البنزين

B

C ( ) نقطة الانصهارية غازي

Type of p البنزين
P = 1
F = 1

Type of p سائل
P = ~~1~~
F = ~~1~~

Type of p خازي
P = 2
F = 2

Type of p البنزين
P = 2
F = 2

E ( )

100% A   Composition wt %   100% B

$$F = C - P + 2$$
$$= \underline{\cancel{1}} - \underline{\cancel{2}} + 2$$
$$= \cancel{\underline{1}}$$