Name of a student -------------------------------------- Signature ------------------ No. -- 19

Mustansiriyah University
Department of Chemistry

2nd SEM-2025_Bologna_Process
Mid_Exam_Class_B_Paper_B

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

ادا كانت العلاقة بين كمية المذاب والضغط الازموزي ثابت فاذن احد المعادلات التالية عمل

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) $\Pi \alpha [B]$

ظاهر عدد الاطوار لنظام يكون فيه عدد المتغيرات ا وعدد المكونات ا

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) $\Delta_{sub}H = -ve$

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 اضنا الصحيح الرسمي عند الانحراف الموجب عن قانون راؤلت

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) $P_A < \chi_A P^*_A$

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 ودرجات الحرية لغاز ثاني اوكسيد الكاربون عندما يكون موجود

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

ماهو عدد الطور الماء السائل والثلج تكون من

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

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

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 المطلوب Y_A اذن احد القوانين التالية تكون قابلة للتطبيق

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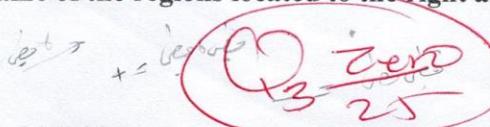Answer: a) Raoult   b) Henry   c) Dalton   d) Van't Hoff

Q2/ The VP of pure benzene is 75 mmHg at 20 °C, and VP of pure toluene is 25 mmHg at 20 °C. The mole fraction of each pure component is 0.5. What is the partial VP of each component after mixing? (Marks 25%)

Q3/ Using the diagram below and the <u>appropriate phase rule</u>, 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%)

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

Q_2 /

No need ؟

المطلوب :-

$PV = 75 mmHg \div 760 = 0.098 torr$

$PV = 25 mmHg \div 760 = 0.032 torr$

$mmHg = torr$

$T_F = 20°c + 273 = 293 K$

$T_i = 20°c + 273 = 293 K$

$\ln \frac{P_F}{P_i} = - \frac{\Delta_{vap}}{R} \left(\frac{1}{T_F} - \frac{1}{T_i} \right)$ Wrong eq.

$Q_2 \frac{Zero}{25}$

$\ln \underline{\quad}$

$Q_3 \frac{Zero}{25}$

Two component system ( )

Type of p - - - - - -
P =
F =

D ( )

Type of p - - - - - -
P =
F =

A

P = 2   ⅞
F =

Type of p - - - - -
P = 1
F =

A B

P = 2 ⅞
F =

Type of p - - - - -
P =
F =

B

C ( )

Type of p - - - - -
P = 1
F =

Type of p - - - - - -
P =
F =

Type of p - - - - - -
P =
F =

Type of p - - - - -
P =
F =

E ( )

0%
100% A

Composition   wt %

0%
100% B