F18

1.5/5

30/100 Thirty only

11-12-2025

Physical_Chemistry_2nd_YUGS_EV_ST

Name of a student ---------- غاصت عماد فاضل ---------- Signature ---------- ---------- No. ----------

Mustansiriyah University
Department of Chemistry

1st SEM-2025_Bologna_Process
Mid_Exam_Class_A_Paper_A

Q1: Circle the right answer for all of the following **(50 Marks)**

15/50

تسيل الغاز

1: liquefaction of the gas means which of the following?

(a) Z = 1 (b) Z > 1 (c) Z < 1 (d) Z ≠ 1

في معادلة فان دير فال تاتا الصيغة الصحيحة لحساب حجم الغاز

2: In the van der Waals equation, what is the correct formula for the volume of the gas?

(a) n_i/n_T (b) V (c) V/m (d) V/n

اذا اعطاك الغاز كتلة وطلب منك ايجاد الحجم

3: If a gas has polar particles, then the difference between the volume of this gas is:

(a) $V_{Real} > V_{Perfect}$ (b) $V_{Real} < V_{Perfect}$ (c) $V_{Real} = V_{Perfect}$ (d) $V_{Real} \neq V_{Perfect}$

يعني الصيغة تتغير الصيغة الاديابتك

4: It can classify the type of reaction within adiabatic process as:

(a) reversible (b) isobaric (c) isothermal (d) free expansion

اذا كان الغاز اهلك لكبير اسمه اجو يثبت الضغط لا صيغة هنا الحل

5: If it is required to measure the work done in an isochoric process, the value of work will be:

(a) zero (b) one (c) two (d) three

في نظام محكم الغلق لان الشغل يكون مساوي صفر

6: In a completely insulated system, the work done is in contact with which of the following?

(a) gas (b) system (c) surrounding (d) pressure

عندما يكون الضغط الداخلي للنظام مساوي للضغط الجوي فان القيمة الحقيقية للضغط

7: When the internal pressure of the system is equal to atmospheric pressure, the actual value will be:

(a) zero (b) one (c) two (d) three

خلال العملية الكبتية ويكون درجة الحرارة ثابت الضغط يساوي ضغط النظام صفر

8: During an isothermal reversible process, the change in temperature of the system is?

(a) variable (b) equal to zero (c) 25 °C (d) constant

السعة الحرارية هي خاصية مقاسة بينما السعة الحرارية المولارية

9: Heat capacity is extensive property while molar heat capacity is ---------- property:

(a) proportional (b) intensive (c) extensive (d) direct

عندما يكون ΔH = 0

10: When ΔH = zero, the process is:

(a) isobaric (b) isochoric (c) isothermal (d) adiabatic

معادلة فان دير فال احسب درجة الحرارة

Q2: Using van der Waals equation, calculate the temperature of 5.0 mol of an unknown gas in a 5.0 L container at 80 bar. Compare this temperature with the value obtained from the ideal gas equation. a = 0.0341 L^2 atm mol^{-2}; b = 0.0237 L mol^{-1}. **(25 Marks)**

Q3: 1100 J of heat energy was applied to (50 g, 27 g mol^{-1}) of aluminum metal. The temperature increased from 25 °C to 45 °C. Calculate $C_{p,m}$ of aluminum. **(25 Marks)**

T_1 T_2

سعة الالمنيوم

Thu_11-12-2025 Best wishes Dr Abduljabbar I. R. Rushdi

Mid_Exam_Bologna_Process_2025

$PV = nRT$

$= n \times 0.082 \times$

$Q_2 \; \frac{3}{25}$

? ≡ Units

Q3)

$Q = C_{p,m} \times n \times \Delta T$

$1100 = C \times 50 \times 293$

$C = \frac{1100}{50 \times 293} = \frac{1100}{14650} = 0.075$

$\Delta t = T_f - T_i$

$\Delta t = 45 - 25 = 20°C$

$20 + 273 = 293K$

$Q_3 \; \frac{12}{25}$