



Physical Chemistry 2nd - YUGS_EV_ST



Name of a student Signature No. 3

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1st SEM-2025 Bologna Process
Mid_Exam_Class_A_Paper_B

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

- علية تسهل الفلز في
- 1: Liquification of the gas means which of the following?
 (a) $pV_m = nRT$ (b) $pV_m < nRT$ (c) $pV_m > nRT$ (d) $pV_m \neq nRT$
- 2: What is the right formula that can be used for calculating the mole fraction of the gas in a mixture?
 (a) V/n (b) n/V (c) V/m (d) n_i/n_T
- 3: A real gas behaves like an ideal gas, when which of the following is true?
 (a) $pV_m/RT = 1$ (b) $pV_m/RT \neq 1$ (c) $pV_m/RT < 1$ (d) $pV_m/RT > 1$
- 4: Heat energy transfer can be measured by which of the following?
 (a) thermometer (b) closed system (c) heat capacity (d) calorimeter
- 5: An isobaric process means which of the following?
 (a) $\Delta T = 0$ (b) $\Delta p = 0$ (c) $C_v \Delta T = 0$ (d) $C_p \Delta T = 0$
- 6: The unit of C_p/C_v is:
 (a) $J \text{ mol}^{-1} \text{ K}^{-1}$ (b) $J \text{ g}^{-1} \text{ K}^{-1}$ (c) $J \text{ mol}^{-1} \text{ }^\circ\text{C}^{-1}$ (d) none of these
- 7: When the process cannot compensate the loss of q, then we can call it:
 (a) isothermal (b) adiabatic (c) isobaric (d) isochoric
- 8: When the system is completely isolated, then ΔH can be calculated by which of the following?
 (a) $p_{ex} \Delta V$ (b) $nRT \ln V_f/V_i$ (c) $C_p \Delta T$ (d) ΔVU
- 9: $C_p > C_v$ due to which of the following?
 (a) ΔU (b) Q (c) ΔH (d) R
- 10: When the process is reversible and $p_{in} > p_{ex}$, the process is called:
 (a) isochoric (b) isothermal (c) isobaric (d) exothermic

Q2: Calculate the density of an unknown gas with a molar mass of 40 g mol^{-1} at STP conditions. (25 points)

Q3: A diatomic ideal gas is compressed reversibly and adiabatically at T_i of 67°C to T_f of 450 K . Calculate (a) work was performed? (b) ΔU , (c) q and (d) ΔH . (25 Marks)