※ 考生請注意：本試題 ☑可 ☐不可 使用計算機

說明：1. 請依序作答並標明題號
2. 計算題必須寫出計算過程，只寫答案不給分
3. $R = 8.314\ J\ mol^{-1}\ k^{-1} = 1.987\ cal\ mol^{-1}\ k^{-1}$

1. The vapour pressure of benzene between 10℃ and 30 ℃ are shown in following table. Caleculate the enthaphy of vaporization. (15%)

Pressure (torr)	Temperature (℃)
4037.24	10
4502.19	15
5005.63	20
5543.15	25
6113.89	30

2. For the decomposition of N_2O_5

θ (°C)	25	35	45	55	65
10^5K_1 (S^{-1})	1.72	6.65	24.95	75	240

Calculate A and E_a for the reaction in the following equation
$K_1 = Ae^{-Ea/RT}$ (20%)

3. Calculate ΔS for the isobaric heating of 1 mole of N_2 from 300 °K to 1000 °K
$C_p = 6.4492 + 1.4125 \times 10^{-3}T - 0.807 \times 10^{-7}T^2$ (15%)

4. One mole of an ideal gas at 300 °K expands isothermally and reversibly from 5 to 20 liters. By remembering that for an ideal gas, E is constant at constant temperature, calculate the work done and the heat absorbed by the gas. What is △H fir this process? (25%)

5. The equilibrium vapor pressure of water over $BaCl_2 \cdot H2O$ is 2.5 mm at 25 °C. What is △G for the process

$$BaCl_2 \cdot H_2O_{(s)} \rightarrow BaCl_{2(s)} + H_2O_{(g)},$$

Where the water vapor is imagined to be a 1-atm pressure? What is △G for the process if water vapor is produced at 2.5 mm? (25%)