

Assignment

Class -XI Science

Thermodynamics

October 2023

Q-1 One mole of acetone requires less heat to vapourise than 1 mol of water. Which of the two liquids has a higher enthalpy of vapourisation?

Q-2 Given that $\Delta H = 0$ for mixing of two gases. Explain whether the diffusion of these gases into each other in a closed container is a spontaneous process or not?

Q-3 At 298 K. K_p for the reaction $N_2O_4 (g) \rightleftharpoons 2NO_2 (g)$ is 0.98. Predict whether the reaction is spontaneous or not.

Q-4 Identify the state functions and path functions out of the following: enthalpy, entropy, heat, temperature, work, free energy.

Q-5 Which quantity out of $\Delta_r G$ and $\Delta_r G^\ominus$ will be zero at equilibrium?

Q-6 Heat capacity (C_p) is an extensive property but specific heat (c) is an intensive property. What will be the relation between C_p and c for 1 mol of water?

Q-7 The lattice enthalpy of an ionic compound is the enthalpy when one mole of an ionic compound present in its gaseous state, dissociates into its ions. It is impossible to determine it directly by experiment. Suggest and explain an indirect method to measure lattice enthalpy of $NaCl(s)$.

Q-8 State combined statement for first and second law of thermodynamics.

Q-9 Entropy change is not the sole criterion for spontaneity of a reaction .Justify

Q-10 .state third law of thermodynamics. Give its application