



INDIAN SCHOOL DARSAIT



DEPARTMENT OF CHEMISTRY

Subject: Chemistry		Topic : Thermodynamics		Date of Worksheet: 14.1.2019	
Resource Person: Rohitha		Date of Submission: _____			
Name of the Student: _____		Class & Division: XI		Roll Number: _____	
1	Predict the sign of H and S for the reaction $2\text{Cl}(\text{g}) \longrightarrow \text{Cl}_2(\text{g})$.			1	
2	Why is entropy of a substance taken as zero at absolute zero of temperature?			1	
3	For a reaction both ΔH and ΔS are positive. Under what conditions will the reaction occur spontaneously?			1	
4	State a) first law of thermodynamics b) second law of thermodynamics. c) third law of thermodynamics d) Hess's law			1 each	
5	Define a) specific heat capacity b) residual entropy			1 each	
6	How internal energy and enthalpy is related?			1	
7	What are the conditions for determining the spontaneity of a process?			2	
8	What is the difference between enthalpy of formation and enthalpy of reaction?			2	
9	Differentiate between extensive and intensive properties. Give examples.			2	
10	Draw Born-Haber cycle to find the lattice enthalpy of NaCl.			2	
11	What is meant by free energy? How is it related to enthalpy and entropy of the system? How is it useful in predicting the feasibility of a process?			2	
12	For the reaction $2\text{A} + \text{B} \longrightarrow \text{C}$ $\Delta H = 400 \text{ kJ mol}^{-1}$ and $\Delta S = 0.2 \text{ kJ K}^{-1} \text{ mol}^{-1}$. At what temperature will the reaction become spontaneous considering ΔH and ΔS to be constant over the temperature range?			2	
13	For the reaction $2\text{A}_{(\text{g})} + \text{B}_{(\text{g})} \longrightarrow 2\text{D}_{(\text{g})}$ $\Delta U^\circ = -10.5 \text{ kJ}$ and $\Delta S^\circ = -44.1 \text{ JK}^{-1}$. Calculate ΔG° for the reaction and predict whether the reaction may occur spontaneously.			2	
14	Calculate the enthalpy of formation of ethyl alcohol from the following data: Standard enthalpy of combustion of ethanol is -1368 kJ , enthalpies of formation of CO_2 and H_2O are -393.5 kJ and -286 kJ respectively.			2	
15.	Differentiate between an open system and a closed system. Give examples.			2	
16.	Derive the relation between C_p and C_v			2	