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THERMODYNAMICS

1. Write zeroth law of thermodynamics.

2. What is state function and path function? Explain with example.

3. Write first law of thermodynamics.

4. Find the expression of joule Thomson coefficient.

5. Prove that Joule Thomson co-efficient is an isoenthalpic process.

6. Show that the Joule-Thompson coefficient $(\partial E/\partial V)_T$ can be expressed in the following

$$(\partial E/\partial V)_T = (\partial P/\partial T)\, V - P$$

7. Prove that joule coefficient is zero for ideal gas.

8. State the first law of thermodynamics.

9. An ideal gas is expanded from 20 L to 60L reversibly at 27 °C. Find out the heat change for the process.

10. Prove that Joule experiment is an isointernal energic process.

11. Prove that $C_P - C_v = nR$ for ideal gas.

12. Using the ideal gas equation find the value of joule Thomson expt.

13. Using graphical representation show two stage and one stage expansion are not equal.

14. Write and describe Hess' law.

16.what is bond enthalpy.

17. Find the expression of inversion temp of real gas.

18. What is formation and combustion enthalpy?

19. Write four steps of Carnot cycle and hence its efficiency.

20. Write second law of thermodynamics

21. Draw the S-T diagram of Carnot cycle.

22. For irreversible cycle $\Sigma q/T$ is negative - prove.

23. Find the condition for spontaneity and equilibrium condition.

24. What is work function? Explain its significance.

25. What is available and non-available work? Explain with thermodynamical change.

26. Find the expression of entropy change in terms of volume and temperature.

27. Derive Gibbs Helmotz equation.

28. What is standard state? Write the standard state for solid, liquid and gaseous system.