xv) Discuss significance of Vander Waal's Equation.

SECTION-C

Note: Long answer type questions. Attempt any three questions. 3x10=30

Q.3 25 grams of Nitrogen expands adiabatically reversible from 3.5 litres to 8.5 litres at 82°C. Calculate q, W, ΔE and ΔH.

Q.4 Derive an expression of entropy change in isothermal process.

Q.5 Write short notes.

a) Vapour compression refrigeration cycle

b) Heat Engine.

Q.6 Write short notes on

a) Joule thomsan Effect

b) Application of third Law of thermodynamics.

Q.7 Derive an expression of work done for an ideal gas undergoing adiabatic process.

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4th Sem. / Chemical Engg./Chemical Engg. (SPT)

Subject : Chemical Engg. Thermodynamics/ Engg. Thermodynamcis

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

Q.1 a) Expand COP.

b) Write equation of Heat Engine's efficiency.

c) Write two Limitations of Ist Law of thermodynamics.

d) Define. State function.

e) Write Unit of Enthalpy.

f) Define Entropy.

g) Write SI Unit of heat.

h) Define work.

i) Write CFC.

j) State Joule's Law.

k) Define isometric process.

l) Define system.

m) Define isoentropic process.

n) State Dalton's Law.

o) Give two examples of Extensive properly.

p) Define Heat capacity.

q) Define inversion temperature.

r) Convert 108°F into °C.

SECTION-B

Note: Short answer type questions. Attempt any ten parts 10x4=40

Q.2 i) Prove that Cp - Cv = R for one mole of an ideal gas.

ii) State and Explain Henry's Law.

iii) Explain Absorption refrigeration cycle.

iv) Discuss significance of third law of thermodynamics.

v) Distinguish between homogenous and heterogenous systems.

vi) Explain concept of Free Energy.

vii) Write general statement of second Law of thermodynamics.

viii) Write short note on refrigerants.

ix) Define spontaneous process and give any five examples of spontaneous process.

x) Explain Polytropic and reversible isometric process.

xi) Discuss short note incharge in entropy in adiabatic process.

xii) Write short note on thermodynamics temperature scale.

xiii) Discuss Carnot cycle.

xiv) State properties of refrigerants.