



INDIAN SCHOOL MUSCAT

CLASS :.....XI.....

SUBJECT:.....PHYSICS.....

WORKSHEET :8



DATE :.....

CHAPTER 12 : THERMODYNAMICS

SECTION-A – CONCEPTUAL & APPLICATION TYPE QUESTIONS

- 1 Name the thermo dynamical variables defined by (i) Zeroth law, and (ii) first law of thermodynamics.
- 2 State two limitations of the first law of thermodynamics.
- 3 Explain why it is impossible to design a heat engine with 100% efficiency.
- 4 If a door of a working refrigerator is kept open for a long time in a closed room, will it make the room warm or cool ?
- 5 Why is necessary to do defrosting in a refrigerator?
- 6 Why the coefficient of performance decreases during peak of Summer?
- 7 How does the first law of thermodynamics change in the following cases?
i) adiabatic process ii) isochoric process
- 8 In a refrigerator heat energy is drawn from system at lower temperature and transferred to its surrounding at higher temperature . Is it in agreement with second law of thermodynamics?

SECTION -B NUMERICAL PROBLEMS

- 1 At 0°C and normal atmospheric pressure, the volume of 1g of water increases from 1 cm^3 to 1.091 cm^3 on freezing. What will be the change in its internal energy? Normal atmospheric pressure is $1.013 \times 10^5\text{ N/m}^2$ & latent heat of melting of ice= 80 cal/g .
- 2 5 moles of oxygen are heated at constant volume from 10°C to 20°C . What will be the change in the internal energy of the gas? C_p of oxygen= $8\text{ cal/mole }^{\circ}\text{C}$ and $R = 8.36\text{ J/ mole }^{\circ}\text{C}$.
- 3 An engine has been designed to work between source & sink at temperatures 177°C and 27°C respectively. If the energy input is 3600 J, what is the work done by engine?

4

A Carnot engine absorbs 1000 J of heat from reservoir at 127°C & rejects 600 J of heat during each cycle. Calculate (i) efficiency of the engine (ii) temperature of the sink a (iii) amount of the useful work during each cycle.