INDIAN SCHOOL MUSCAT
SENIOR SECTION
DEPARTMENT OF PHYSICS
CLASS XI

CLASS-XI **UNIT-VIII THERMODYNAMICS** **WORK SHEET- 8**

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 ?

SECTION-B NUMERICAL QUESTIONS

1. At 0^0C 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 1.013×10^5 N/m^2 & latent heat of melting of ice=80 cal/g.

2. 5 moles of oxygen are heated at constant volume from 10^0C to 20^0C. What will be the change in the internal energy of the gas? Cp of oxygen=8cal/mole C and R=8.36 J/ $mole^0$ C.

3. An engine has been designed to work between source & sink at temperatures 177 ^{0}C and 27^0C 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 127^0C & rejects 600 J of heat during each cycle. Calculate (i) efficiency of the engine (ii) temperature of the sink and (iii) amount of the useful work during each cycle.