National Institute of Open Schooling
Senior Secondary
Lesson 11 – Thermodynamics
WORKSHEET – 11

Q.1 Observe your surrounding and give three examples of each heat and temperature. Explain the concept of heat and temperature. A tyre pumped to a pressure of 3.375 atmosphere and at 27°C suddenly bursts. Calculate the temperature of escaping air. Given γ = 1.5.

Q.2 Define Thermodynamic System. Observe your surrounding and on the basis of thermodynamic system give one example for each - Open System, Closed System and Isolated System

Q.3 Take a container and fill it with a boiling liquid (water/ tea/ milk/coffee). Left the container and observe the temperature in small intervals of 30 minutes. Note down your observations. It is common experience that after some time, the liquid attains the room temperature. Name and explain the phenomenon.

Q.4 If any of the thermodynamic variables of a system change while going from one equilibrium state to another, the system is said to execute a thermodynamic process. Name and define different types of thermodynamic processes. Observe your surrounding and give three practical examples of each thermodynamic process.

Q.5 State and explain First Law of Thermodynamics. This law fails to provide answers to some questions which are known as limitations of the First Law of Thermodynamics. Observe and mention those limitations of the First Law of Thermodynamics.
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Q.6 Think and answer, "Can heat be wholly converted into work" "Is it possible for any process to have as its sole result to transfer heat from a colder body to a hotter body without any external work. Discuss the postulate which contains answers of such questions.

Q.7 Notice your mother while cooking rice in open vessel with a lid; you will observe that when water is boiled in a vessel the steam generated inside throws off the lid. Explain the phenomenon.

Q.8 Name and explain the principle on which modern engines which we use in our daily life are based on. Also explain different categories of heat engine.

Q.9 Efficiency is defined as the ratio of heat converted into work in a cycle to heat taken from the source by the working substance. Based on this statement discuss efficiency of Carnot Engine

Q.10 Calculate the change in internal energy of a block of copper of mass 200 g when it is heated from 25°C to 75°C. Take specific heat of copper =0.1 cal g-1 °C-1 and assume the change in volume as negligible.