**REG.NO:**

**SEMBODAI RUKMANI VARATHARAJAN ENGINEERING COLLEGE**

**ACADEMIC YEAR 2013-2014/ODD SEMESTER**

**CYCLE TEST – I AUG-2013**

**DEPARTMENT OF MECHANICAL ENGINEERING**

**SUBJECT CODE/TITLE:** ENGINEERING THERMODYMICS

**YEAR/SEM:** II/III **DATE:**

**DURATION:** 1 ½ HOURS **MAX.MARKS:** 50

**Answer ALL the Questions**

**PART A (5X2=10)**

1. Differentiate Intensive and Extensive properties.
2. What do you understand by equilibrium of a system?
3. Define Zeroth Law of thermodynamics?
4. State Carnot’s theorem.
5. Write the expression for COP of a heat pump and a refrigerator?

**PART B (40 MARKS)**

1. i) A certain water heater operates under steady flow conditions receiving 4.2 kg/s of water at 75oC temperature, enthalpy 313.93 kJ/kg. The water is heated by mixing with steam which is supplied to the heater at temperature 100.2oC and enthalpy 2676 kJ/kg. The mixture leaves the heater as liquid water at temperature 100oC and enthalpy 419 kJ/kg. How much stem must be supplied to the heater per hour? (8)

ii)Write short notes on

1. reversible and irreversible process (4)
2. Point and Path function (4)
3. i) Calculate the decrease in available energy when 25 kg of water at 95oC mix with 35 kg of water at 35oC, the pressure being taken as constant and the temperature of surrounding being 15oC (Cp of water= 4.2 kJ/kg K). (10)

ii) State the Kelvin – Plank statement and Clausius statement of second law of thermodynamics. (6)

1. Derive Clausius inequality and mention the criteria for reversibility of a cycle. (8)