Q.26 Define first law of thermodynamics. What are its limitations.

Q.27 Explain perpetual motion machine of first kind.

Q.28 Explain the difference between an ideal gas and real gas.

Q.29 Explain triple point of a pure substance.

Q.30 With a neat diagram explain the process of formation of steam.

Q.31 Explain the process of rankine cycle.

Q.32 Differentiate fire tube boiler and water tube boilers.

Q.33 Write a short note on modern boilers.

Q.34 Enlist the uses of compressed air.

Q.35 Explain the working principle of natural and forced convection system.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Derive an expression for work done, change in internal energy and rate of heat transfer for an adiabatic process.

Q.37 Explain any two applications of general steady flow equation.

Q.38 Explain the construction & working of rotary centrifugal air compressor in detail. Also write its applications.

2nd Sem / Mechanical Engineering
Subject:- Thermodynamics

Time : 3Hrs.   M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 What is thermodynamics?
a) study of the relationship between heat and other forms of energy
b) study of the conversion of chemical energy to other forms of energy
c) study of the relationship between mechanical energy to other forms of energy
d) study of the conversion of mechanical energy to other forms of energy

Q.2 Which of the following thermodynamic law gives the concept of enthalpy?
a) First law of thermodynamics
b) Second law of thermodynamics
c) Third law of thermodynamics
d) Fourth law of thermodynamics

Q.3 What is the shape of the graph that is drawn between pressure and volume?
a) A straight line   b) Circular
c) Parabola   d) Hyperbola

Q.4 In which of the following processes is heat transfer equal to zero?
   a) Isentropic   b) Isochoric
   c) Isothermal   d) Diathermic
Q.5 First law of thermodynamics is based on?
   a) Conservation of energy
   b) Conservation of mass
   c) Conservation of momentum
   d) Conservation of work
Q.6 Which law of thermodynamics says that efficiency of a heat engine cannot be 1?
   a) First   b) Zeroth
   c) Second   d) Third
Q.7 What is a quasi-static process?
   a) Irreversible
   b) Reversible
   c) In equilibrium at every state
   d) Not involving friction
Q.8 The behavior of real gases approaches that of ideal gas in which of these following conditions?
   a) Low pressure & low temperature
   b) Low pressure & high temperature
   c) High Pressure & high temperature
   d) high pressure & low temperature
Q.9 The internal energy saturated water at the triple point is
   a) 1   b) 0
   c) -1   d) infinity

Q.10 What is the function of the air compressor?
   a) Decreases the pressure of air
   b) Adds lubricating oil
   c) Removes dust particles
   d) Increases the pressure of air

SECTION-B

Note: Objective type questions. All questions are compulsory.   (10x1=10)
Q.11 Define universe.
Q.12 Define reversible process.
Q.13 Define ideal gas.
Q.14 Describe throttling process.
Q.15 Define non-flow system.
Q.16 Describe free expansion.
Q.17 Define enthalpy.
Q.18 Define saturated steam.
Q.19 Define air compressor.
Q.20 Describe conduction mode of heat transfer.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions.   (12x5=60)
Q.21 Explain closed and isolated systems.
Q.22 Differentiate between reversible and irreversible process with examples.
Q.23 Explain Boyle's law and Charle's law for perfect gases.
Q.24 Derive the characteristic equation for gas.
Q.25 Derive an expression for the work done in polytropic process.