

THERMODYNAMICS-I
4TH EXAM/MECH/RAC/5307/2253/MAY'15

Duration: 3 hrs.

M. Marks: 75

SECTION-A

Multiple Choice Questions:

(15 × 1= 15)

1. Zeroth law of thermodynamics forms the basis of measurement.
a) Pressure b) Temperature c) Energy d) Work.
2. Area under temperature-entropy diagram gives
a) Work b) Power c) Heat d) None of these
3. Work done during constant volume process is
a) Maximum b) Zero c) Positive d) Negative
4. Which of the following parameter remains constant during superheating of steam
a) Volume b) Pressure c) Internal energy d) Enthalpy
5. The most efficient thermodynamic cycle operating between two fixed temperature is
a) Rankine cycle b) Dual cycle c) Diesel Cycle d) Carnot cycle

b) Fill in the blanks:

1. The transfer of heat from sun to earth is by
2. The speed of a rotary compressor is as compared to reciprocating compressor.
3. High pressure boilers are tube boilers.
4. During addition of latent heat, temperature of the substance
5. An ideal gas is a gas having no forces of attraction.

c) State True/False:

1. Second law of thermodynamics establishes the concept of entropy.
2. In an adiabatic process, transfer of heat energy takes place.
3. The value of C_p for gas is always more than its C_v .
4. Specific volume is an extensive property.
5. Pressure gauges record the absolute pressure of the steam.

SECTION-B

NOTE: Attempt any six questions.

(6 × 5= 30)

- a) Explain Boyle's law and Charle's law.
- b) Discuss open system, closed system and isolated system with neat sketch.
- c) Write a short note on throttling process.
- d) What is Kelvin Planck statement and Clausius statement?
- e) Define ideal gases and real gases.
- f) Compare water tube and fire tube boiler.
- g) Explain thermodynamic equilibrium.
- h) Explain different modes of heat transfer.
- i) Discuss Mollier diagram with a neat sketch.

SECTION-C

NOTE: Attempt any three questions.

(3 × 10= 30)

1. Describe Lancashire boiler with a neat sketch.
2. Derive an expression for work done during a polytropic process.
3. Derive an expression for efficiency of an Otto cycle.
4. Derive an expression for specific heats with characteristics.
5. Explain centrifugal compressor with a neat sketch.