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3rd Sem / Mechanical Engg.

Subject : Thermodynamics - I

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Thermodynamics properties of a system are

a) Internal energy, entropy, enthalpy

b) Density, pressure, temperature, volume

c) Botth (a) and (b)

d) Neither (a) nor (b)

Q.2 The normal temperature and pressure are

a) 15deg C and 1.01325 bar

b) 0deg C and 1.01325 bar

c) 0deg C and 0.01325

d) 15 deg C and 0.01325

Q.3 Constant pressure is also known as

a) Isochoric process b) Isobaric process

c) Isothermal process d) Throttling process

Q.4 The entropy of water at 0deg C is assumed to be

a) 1 b) -1

c) 0 d) 10

Q.5 For complete specification of superheated vapour, one needs following properties

a) Pressure

b) temperature and enthalpy

c) Pressure as well as temperature

d) Specific volume

Q.6 An air preheater

a) Enable low grade fuel to be burnt

b) Increases the efficiency of the boiler

c) Increases the evaporative capacity of the boiler

d) All of the above

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 A perfect gas obeys _____ under all condition of temperature and pressure.

Q.8 In adiabatic process, no _____ transfer take place across the system boundary.

Q.9 First law of thermodynamic is based upon law of conservation of energy. (True/False)

Q.10 There are _____ fuel tubes in the lancashire boiler.

Q.11 A carnot cycle consist of two _____ processes and two_____ processes.

Q.12 Centrifugal compressor is a type of_____ compressor.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Compare Otto cycle and diesel cycle.

Q.14 Explain the following with reference to compressor

a) inlet pressure b) Swept volume

Q.15 Gives the various applications of steam.

Q.16 Explain enthalpy of an ideal gas.

Q.17 Write a short note on heat sink and heat source.

Q.18 Explain in detail the various Specific heats.

Q.19 Drive an expression for heat supplied in isothermal process.

Q.20 Explain the process of formation of steam.

Q.21 Calculate the enthalpy of 1kg of steam at a pressure of 20bar, when its dryness fraction is 0.8.

Q.22 Briefly explain boilers with example.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Differentiate between reciprocating and rotary compressor.

Q.24 Explain the construction and working of Lancashire boiler with the help of neat sketch.

Q.25 Drive a relationship between specific heats Cp and Cv.