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3rd Year / Mechanical Engg

Subject : Thermodynamic-1

Time : 3 Hrs. M.M. : 60

SECTION-A

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

Q.1 The properties which depend only on the mass of system are known as_____

a) Intensive b) Extensive
c) Thermal d) Both a and b

Q.2 In which law of the perfect gases, the temperature is kept constant

a) Charle's law b) Boyle's law
c) Avogadro law d) All of the above

Q.3 What is the SI unit of Entropy

a) J/Kg b) J/Kg K
c) $J/^0 K$ d) No Unit

Q.4 First law of thermodynamics is based upon

a) Conservation of mass
b) Conservation of energy
c) Conservation of entropy
d) Conservation of enthalpy

Q.5 Babcock and Wilcox boiler is

a) Fire tube boiler b) Water tube boiler
c) Steam tube boiler d) B**rass** tube boiler

Q.6 PMM -II is the machine which violates

a) Boyle's law
b) Charles law
c) 1st law if thermodynamic
d) 2nd law of thermodynamics

SECTION-B

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

Q.7 Entropy is a measure of _____.

Q.8 Give the equation of polytropic process.

Q.9 Define dry steam.

Q.10 Axial flow compressor is a type of ..... compressor.

Q.11 Nestler boiler is a type of _____tube boiler.

Q.12 Nozzles are of _____and_____types.

SECTION-C

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

Q.13 Drive an expression for heat supplied in isothermal process.

Q.14 Explain the construction & working of single stage reciprocating air compressor with the help of a neat diagram.

Q.15 Gives the various uses of steam.

Q.16 What is a thermodynamic property? What are its different types ? Explain.

Q.17 State and explain Vander wall's equation.

Q.18 Differentiate between water tube and fire tube boilers.

Q.19 A carnot engine operating between the temperatures T1=300k and T2=200k . It absorbs 100cal of heat then calculate

i) efficiency

ii) Heat rejected

Q.20 Explain kelvin-Planck's and Clausius statements in brief of 2^{nd} law of TD

Q.21 Derive an expression for relation between C_P & C_V

Q.22 Calculate the enthalpy of 10kg of steam at a pressure of 20 bar , when its dryness fraction is 0.7.

SECTION-D

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

Q.23 Define steady flow energy equation. Describe the application of steady flow energy equation for turbine , pumps and boilers.

Q.24 Explain the Construction and working of Babcock & Wilcox Boiler with help of neat sketch

Q.25 Explain Boyles law, Charles law and derive characteristic gas equation using these two laws