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3rd Sem / Mech, Prod, GE, CAD/CAM, CNC, Metallurgy, Print Making Tech, Mech (Ad. Manu. Tech.), Mech Engg (Fabrication Tech), AME

Subject:- Thermodynamics-1 / Thermodynamics / Pr. of thermodynamics Engg.

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Which of the following is not a type of thermodynamic system?

a) Open b) Closed
c) Extensive d) Isolated

Q.2 Thermodynamic's Zeroth law is based upon:

a) Thermal equilibrium of the systems
b) Relative pressure between systems
c) Volume of the system
d) All of the above

Q.3 Otto cycle is also known as

a) Constant pressure cycle
b) Constant volume cycle
c) Constant entropy cycle
d) Constant temperature cycle

Q.4 What is the unit of Sp. Heat at constant pressure (Cp)

a) J/°K .kg b) KJ/°K
c) Kg/°K d) Kg/Hr

Q.5 Which of the following is considered as the most ideal or efficient engine ever made?

a) Steam engine b) Carnot engine
c) Petrol engine d) Diesel engine

Q.6 Enthalpy is known as the heat supplied to a system at

a) Constant volume
b) Constant pressure
c) Constant temperature
d) Constant entropy

Q.7 At triple point which of the following state of water exists?

a) Liquid b) Vapour
c) Solid d) All of the above

Q.8 What does the entropy of a substance is a measure of _____?

a) Pressure b) Heat
c) Randomness d) Latent heat

Q.9 What is the value of atmospheric pressure?

a) 273 Pa b) 1.01325 bar
c) 10^3 Pa d) 1×10^5 bar

Q.10 Water can be boiled at low temperatures as well, if _____

a) Pressure is high
b) Volume is less
c) Heat addition is constant
d) Pressure is low

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 In an isothermal process, the internal energy _____.

Q.12 The volume of air which is delivered by the compressor is called.

Q.13 The efficiency of perpetual motion machine of second kind is equal to _____ percent.

Q.14 The graph between _____and _____ is known as mollier diagram.

Q.15 Babcock and Wilcox boiler is a type of _____ tube boiler.

Q.16 Define ideal Gas.

Q.17 What is the equation for adiabatic process?

Q.18 Third law of thermodynamics states about _____ - entropy (high/low/zero)

Q.19 Diesel cycle is also known as _____ cycle.

Q.20 Axial flow compressor is a type of _____ compressor.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 A carnot engine operating between the temperatures T1=400K and T2 =300K. It absorbs 100cal of heat then calculate

i) efficiency ii) Heat rejected

Q.22 Explain the concept of system, boundary and universe with examples.

Q.23 Differentiate between intensive and extensive properties with examples.

Q.24 Explain the terms Enthalpy and internal energy.

Q.25 Explain Regnault's law, Avagadro law.

Q.26 Explain how will you find dryness fraction of steam.

Q.27 Explain the Joule's experiment and its findings.

Q.28 Explain the perpetual machine of first kind.

Q.29 Describe the concept of irreversibility and its measure.

Q.30 State and explain Vander wall's equation in brief.

Q.31 Explain the working of Nestler boiler with diagram.

Q.32 Compare PV diagram of Otto and diesel cycle.

Q.33 Define Air compressor. Write the uses of compressed air.

Q.34 Explain the construction and working of roots blower compressor with the help of neat sketch.

Q.35 What is a thermodynamic property? What are its different types? Explain.

SECTION-D

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

Q.36 Explain Boyles law, Charles law and derive characteristic gas equation using these two laws.

Q.37 Explain

i) Kelvin Plank statement

ii) Clausius statement of 2nd law of TD with diagram

Q.38 Compare fire tube and water tube boilers.