No. of Printed Pages : 4
Roll No. .....

181732/121732/031732
/94834/117232

3rd Sem / Mechanical
Subject:- Thermodynamics 1

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 Where there is no transfer of mass and energy to and from the system , is (CO1)
a) closed system b) open system
c) isolated system d) none of the above

Q.2 A system consist of single phase is known as (CO1)
a) heterogenous system b) open system
c) closed system d) homogenous system

Q.3 The thermodynamic properties of a system are (CO2)
a) internal energy, entropy, enthalpy
b) density, pressure
c) both a and b
d) neither a nor b

Q.4 The state of a substance whose evaporation from its liquid state is complete is called (CO4)
a) vapours b) steam
c) real gas d) perfect gas

Q.5 The SI unit of characteristics gas constant is (CO2)
a) J/kg b) J/K
c) J/kg K d) KJ/kg

Q.6 In throttling process (CO6)
a) Q=0 b) W=0
c) both (a) and (b) d) none

Q.7 The efficiency of perpetual motion machine of second kind is (CO4)
a) 0% b) 50%
c) 75% d) 100%

Q.8 The point at which all the three phase co-exist in equilibrium is called (CO6)
a) critical point b) triple point
c) ideal point d) none of the above

Q.9 Which form of the vapour has a behaviour close to the perfect gas ? (CO5)
a) wet vapour b) dry saturated vapour
c) wet and dry vapour d) superheated vapour

Q.10 The device which supply feed water to the boiler is called (CO7)
a) economiser b) water level indicator
c) feed pump d) none of the above

SECTION-B

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

Q.11 What is a boiler? (CO7)

Q.12 What is the function of intercooler? (CO7)

Q.13 When the wet steam is further heated and it does not contain any suspended particles of water is known as _____. (CO6)

Q.14 The mass fraction of each component of a mixture is defined as the ratio of the mass of a given component to the mass of the entire mixture. (True/False)(CO6)

Q.15 The reservoir which is at high temp and supplies heat is known as heat source. (CO4)

Q.16 Isochoric is a constant pressure process. (True/False) (CO3)

Q.17 What is the value of characteristic gas constant for air? (CO2)

Q.18 Give two examples of closed system. (CO1)

Q.19 Define open system. (CO1)

Q.20 Define efficiency of a cycle. (CO8)

SECTION-C

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

Q.21 Define system, state and process. (CO1)

Q.22 Derive general gas equation. (CO2)

Q.23 Explain various uses of compressed air. (CO9)

Q.24 Derive an expression of work done for isochoric process. (CO3)

Q.25 Explain Joule experiment with neat sketch. (CO4)

Q.26 Explain heat source and heat sink. (CO4)

Q.27 Explain perpetual motion machine of first kind. (CO4)

Q.28 Define Mass Fraction, Mole fraction and Volume fraction. (CO6)

Q.29 Explain the process of formation of steam. (CO6)

Q.30 What are fire tube boilers? Give any two examples. (CO7)

Q.31 Name five boiler accessories. (CO7)

Q.32 Difference between reciprocating and rotary air compressors. (CO9)

Q.33 What is the significance of an air-standard cycle. (CO8)

Q.34 Determine the volume occupied by a given mass of air at a temperature of 245°C, If the same mass of air occupies 2m at 23°C. the pressure of air remains unchanged. (CO4)

Q.35 Define dryness fraction, latent heat of steam and superheated steam. (CO6)

SECTION-D

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

Q.36 Explain the construction and working of BABCOCK and WILCOX Boiler with a neat diagram. (CO7)

Q.37 What are the types of air compressor. Explain rotary compressors in detail with neat diagram. (CO9)

Q.38 Derive expression of work done, heat transfer and internal energy for isothermal process. (CO3)

(**Note:** Course outcome/CO is for office use only)