Q.25 State Kelvin-Plank statement of second law of thermodynamics.

Q.26 Explain steady and unsteady flows.

Q.27 Write a short note on Vander Wall's Equation.

Q.28 Explain Bourdon's Tube Press use Gauge with diagram.

Q.29 Write a short note on rotary air compressor.

Q.30 Explain the layout of pneumatic system.

Q.31 Define Rate of flow and its units.

Q.32 Define Pascal's law and its applications.

Q.33 Write a short note on characteristic gas constant.

Q.34 Discuss various types of manometers.

Q.35 Discuss pneumatic wrenches and pneumatic nut runner briefly.

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 Hydraulic brake with diagram.

Q.37 Explain otto cycle with PV & TS diagram.

Q.38 Derive an expression for work done, change in internal energy and rate of heat transfer for an adiabatic process.

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Roll No. .....

3rd Sem /Auto

Subject:- Basics of Thermodynamics, Hydraulics and Pneumatics

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 An open system is that

a) In which the product of pressure and Volume of a gas remains constant

b) In which energy transfers into or out of system, but there is no transfer of mass across the system boundary.

c) In which there is an exchange of mass across the system boundary in addition to transfer of energy.

d) None of the above.

Q.2 If the pressure remains constant, the volume of a given mass of a gas is directly proportional to its absolute temperature. This is known as

a) Boyle's law b) Charle's law

c) Gay-Lussac law d) Regnault's law

Q.3 First law of thermodynamics deals with

a) conservation of energy

b) conservation of force

c) conservation of mass

d) conservation of momentum

Q.4 Constant volume Process is also Known as

a) Isochoric process b) Isobaric process

c) Isothermal process d) Throttling process

Q.5 Pneumatic is related to

a) Water b) Air

c) Both A & B d) Oil

Q.6 Diesel cycle is Known as:

a) Constant Pressure cycle

b) Constant Temperature cycle

c) Constant entropy cycle

d) Constant volume cycle

Q.7 Mercury does not wet the glass tube, it is due to property of

a) Adhesion b) Cohesion

c) Viscosity d) Atmospheric pressure

Q.8 The value of Y for air is

a) 22.4m b) 287 J/kg k

c) 1.4 d) 8314 J/kg mole /k

Q.9 The thermodynamic properties of a system are

a) internal, energy, entropy, enthalpy

b) density, pressure , temperature, volume.

c) Both (a) and (b).

d) Neither (a) nor (b).

Q.10 The specific weight of water is

a) 1000 N/m^3 b) 9810 N/m^3

c) 9.81 N/m^3 d) 1000 kg/m^3

SECTION-B

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

Q.11 Oxygen, nitrogen, hydrogen and air may be regarded as perfect gases within certain temperature and pressure limits.(True / False)

Q.12 Define air standard efficiency of a cycle..

Q.13 Define static pressure.

Q.14 Define Surface Tension.

Q.15 Everything external to the system i s called_____

Q.16 Define Turbulent Flow.

Q.17 The S.I. unit of mass density is_____

Q.18 Which law is known as "Law of conservation of energy"?

Q.19 Define energy.

Q.20 Define hydraulic pump.

SECTION-C

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

Q.21 Differentiate between Heat and work.

Q.22 State Regnault's law.

Q.23 State pascal's law. Give its application in practical problems.

Q.24 Determine the density and specific volume of carbon monoxide at a pressure of 100kPa and temperature of 300 K. For CO, take gas constant=297.4 J/Kg K.