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4th Sem. / Auto, Mech (3rd/ 4th) Prod (3rd), T & D (3rd), GE, CNC, Adv. Manuf. Tech, Mechatronics CAD/ CAM, Mech Engg. (Fabrication Tech), Mech Engg (CAD / CAM Design & Robotics)
Subject : Hydraulics & Pneumatics/Hyd. & Hyd. M/C

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (10x1=10)

Q.1 An Ideal hydraulic oil should have (CO1)
a) Low Flammability b) Low volatility
c) Low density d) All of the above

Q.2 Poise is the unit of (CO1)
a) Mass Density b) Dynamic Viscosity
c) Kinematic viscosity d) None of the above

Q.3 Which of the following is an Ideal fluid. (CO2)
a) Mercury b) Water
c) Kerosene d) Benzene

Q.4 N/m is the unit of : (CO2)
a) Viscosity b) Surface Tension
c) Capillarity d) Compressibility

Q.5 Manometer is used for measuring. (CO3)
a) High pressure
b) Both high and low pressure
c) Low pressure
d) Negative pressure

Q.6 The standard value of atmospheric pressure is : (CO3)
a) 760 mm of mercury b) 10.34m of water
c) 1.01325 bar d) All of the above

Q.7 A nozzle converts (CO3)
a) Pressure energy into kinetic energy
b) Kinetic energy into potential energy
c) Kinetic energy into Pressure energy
d) All of the above

Q.8 The continuity equation is given as: (CO4)
a) A/V = constant b) A/v^2 = constant
c) AxV= constant d) V/A= constant

Q.9 Bernoulli's theorem deals with the law of conservation of : (CO6)
a) Mass b) Momentum
c) Energy d) None of the above

Q.10 An ideal fluid is a fluid which is (CO6)
a) Compressible
b) Incompressible & viscous
c) Incompressible
d) None of above

SECTION-B

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

Q.11 Define Viscosity. (CO1)

Q.12 Define Mass Density. (CO2)

Q.13 Define surface tension. (CO1)

Q.14 Expand H.G.L. (CO2)

Q.15 What is laminar flow? (CO3)

Q.16 Define specific gravity. (CO3)

Q.17 Define Nozzle. (CO4)

Q.18 The SI Unit of discharge is _____. (CO6)

Q.19 What is Priming? (CO5)

Q.20 Define Seal. (CO5)

SECTION-C

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

Q.21 Explain in brief various types of fluids. (CO1)

Q.22 Explain Capillarity & write the formula for capillary Rise & Depression. (CO3)

Q.23 With the help of graph give the relationship between Absolute, Atmospheric & Gauge Pressures. (CO2)

Q.24 Write a short note on Darcy's equation of head loss. (CO3)

Q25 Explain working of Centrifugal pump with neat sketch. (CO5)

Q.26 Explain Francis turbine with a neat diagram. (CO5)

Q.27 Explain in brief common problems in Pneumatic systems. (CO6)

Q.28 IN a pipe of 150mm diameter, water is flowing with a mean velocity of 5m/s and a gauge pressure of 400KN/m^2. Determine the total head, if the pipe is 15m above the datum line. Neglect friction. (CO3)

Q.29 Compare Impulse and Reaction turbines. (CO5)

Q.30 Write a short note on types of Hydraulic Oils. (CO6)

Q.31 Explain in brief working of hydraulic jack. (CO4)

Q.32 Explain Venturimeter with a neat sketch. (CO2)

Q.33 State & explain Bernoulle's theorem. (CO3)

Q.34 Explain the concpet of water Hammer. (CO3)

Q.35 Write a short note on FLR. (CO6)

SECTION-D

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

Q.36 Explain the construction & working of Pelton wheel turbine with the help of neat sketch. (CO6)

Q.37 A pipe of diameter 30cm carries water at a velocity of 50m/s. The pressures at points A & B are given as 45N/cm^2 and 40 N/cm^2 respectively, while the datum heads at A and B are 35m and 40m respectively. Find the loss head between A & B. (CO3)

Q.38 Explain the following: (CO5)

a) Reciprocating Pump with a neat sketch (CO6)

b) Basic components of Hydraulic systems