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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 and Pneumatics/Hyd.Hyd.M/C

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 An ideal fluid is a fluid which is (Co1)
a) Compressible
b) Incompressible & viscous
c) Incompressible
d) None of the above

Q.2 Stoke is the unit of (CO1)
a) Kinematic viscosity b) Surface Tension
c) Dynamic viscosity d) None of the above

Q.3 The standard value of atmospheric pressure is (CO2)
a) 760 mm of mercury b) 1.01 bar
c) 10.34m of water d) All of the above

Q.4 Piezometer cannot be used to measure (CO2)
a) Pressure of liquid b) Pressure of gas
c) Negative pressure d) both (b) and (c)

Q.5 Bernoulli's theorem deals with the law of conservation of (CO3)
a) Mass b) Energy

c) Momentum d) None of the above

Q.6 The flow in a pipe is laminar if (CO3)
a) Re=2500 b) Re=3000
c) Re>3000 d) None of the above

Q.7 A nozzle coverts (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 Hydraulic Ram works on the principle of (CO4)
a) Water hammer b) Reciprocating action
c) Centrifugal action d) Bernoulli's theorem

Q.9 For small discharge at high pressure, which pump is preferred (CO5)
a) Centrifugal pump b) Axial flow pump
c) Propeller pump d) Reciprocating pump

Q.10 An ideal hydraulic oil should have (CO6)
a) Low falmmability b) Low volatility
c) Low density d) All of the above

SECTION-B

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

Q.11 Name types of fluids (CO1)
Q.12 What is the function of piezometer (CO2)
Q.13 Define Pascal's law (CO2)
Q.14 Expand H.G.L (CO3)
Q.15 What is turbulent flow? (CO3)
Q.16 Reynold's number Re=_____ (CO4)

Q.17 Hydraulic jack is used to change tyre of a four wheeler (CO4)
a) True b) False
Q.18 S.I Unit of Viscosity is_____ (CO1)
Q.19 What is Pitting of pumps? (CO5)
Q.20 Reciprocating pump is a _____displacement pump (CO5)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)
Q.21 Explain in brief various properties of Fluids (CO1)
Q.22 State and derive continuity equation (CO3)
Q.23 Explain differential manometer with a neat sketch (CO2)
Q.24 Write a short note on water hammer (CO2)
Q.25 Explain working of reciprocating pump with neat sketch (CO5)
Q.26 Explain pelton wheel turbine with a neat diagram. (CO4)
Q.27 Explain in brief basic components of hydraulic system. (CO6)
Q.28 In a pipe of 100mm diameter, water is flowing with a mean velocity of 3m/s and a gauge pressure of 300KN/m^2. Determine the total head , if the pipe is 10m above the datum line. Neglect friction. (CO3)
Q.29 Differentiate between impulse and Reaction turbines (CO5)

Q.30 Write a short note on Common problems in Pneumatic system (CO6)
Q.31 Explain in brief working of hydraulic accumulator (CO4)
Q.32 Explain Pitot tube with neat sketch (CO3)
Q.33 Explain Bernoulli's theorem in brief. (CO3)
Q.34 What is cavitation? (CO4)
Q.35 Write a short note on maintenance of hydraulic systems. (CO6)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)
Q.36 A pipe of diameter 20cm carries water at a velocity of 40m/s. The pressure at points A and B are given as 45N/cm^2 and 30N/cm^2 respectively, while the datum heads at A and B are 35m & 42m respectively. Find the loss of head between A and B? (CO3)
Q.37 Explain working of Hydraulic brakes with neat diagram. (CO6)
Q.38 Explain the following:
a) Centrifugal pump with a neat sketch (CO5)
b) Basic components of Pneumatics system (CO6)