No. of Printed Pages : 4 181741/171741/121741/031741/
Roll No..... 117243/121841/31841/72442

4th Sem, **Branch :** Mechanical Engineering

Subject : Hydraulics & Pneumatics/ Hydraulics & Hyd. M/c

Time : 3 Hrs. **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 (CO-1)
a) Compressible b) Incompressible
c) Both A & B d) None of these

Q.2 The density of water is maximum at (CO-1)
a) 0^0C b) 4^0C
c) 273K d) 300K

Q.3 Surface tension of liquid. (CO-2)
a) Increases with area
b) Decreases with temperature
c) Increases with temperature
d) Decreases with area

Q.4 The unit of dynamic viscosity is (CO-2)
a) Ns/m^2 b) Nsm
c) Ns/m d) None of these

Q.5 1 Ns/m^2 = _____ poise. (CO-2)
a) 1 b) 10
c) 100 d) 1000

Q.6 Pizeometer cannot be used to measure (CO-3)
a) Pressure of a liquid

b) Negative pressure
c) Pressure of a gas
d) Both B & C

Q.7 The liquid used in an inverted U-tube differential manometer should be of (CO-3)
a) Low density b) High density
c) High surface tension d) Low surface tension

Q.8 Atmospheric pressure at sea level is (CO-4)
a) 0.1 N/mm^2 b) 0.2 N/mm^2
c) 0.3 N/mm^2 b) 0.4 N/mm^2

Q.9 Mercury is used in manometers because of its(CO-4)
a) High density
b) Very low vapour pressure
c) Low compressibility
d) Both B & C

Q.10 If the liquid particles move in zig-zag way, the flow is. (CO-5)
a) Unsteady flow b) Turbulent flow
c) Non-uniform flow d) All of these

SECTION-B

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

Q.11 Define ideal fluid. (CO-1)

Q.12 Name types of fluids. (CO-1)

Q.13 The S.I. Unit of surface tension is N/m^2. (True/False) (CO-1)

Q.14 When pressure is expressed in terms of height of liquid, it is called_____. (CO-2)

Q.15 Write the S.I. Unit of pressure of liquid. (CO-2)

Q.16 Write the expression for pressure head of a liquid. (CO-2)

Q.17 Pivot tube is used to measure _____ of flow at any point in a channel. (CO-3)

Q.18 Orifice meter is used to measure _____ of liquid through a pipe. (CO-3)

Q.19 Define pipe flow. (CO-5)

Q.20 The velocity at which flow changes from laminar to turbulent is called _____. (CO-6)

SECTION-C

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

Q.21 Derive the relation between specific weight and mass density. (CO-1)

Q.22 State Newton's law of viscosity. (CO-1)

Q.23 Explain capillarity. (CO-1)

Q.24 Write properties of ideal fluid. (CO-2)

Q.25 Explain vacuum pressure. (CO-2)

Q.26 Explain absolute pressure. (CO-1)

Q.27 Write the advantages of manometer. (Any five) (CO-1)

Q.28 State the condition for the flow to be laminar. (CO-2)

Q.29 State Bernoulli's theorem. (CO-2)

Q.30 Explain different types of hydraulic energies. (CO-2)

Q.31 Draw the distribution of velocity curve in a pipe. (CO-3)

Q.32 Explain loss of head at entrance of pipe. (CO-3)

Q.33 What is hydraulic jack? Explain with the help of neat sketch. (CO-4)

Q.34 Explain the principle of centrifugal pump. (CO-5)

Q.35 Write the applications of pneumatic system. (CO-6)

SECTION-D

Note : Long Answer type question. Attempt any two questions. (2x10=20)

Q.36 Explain basic component of a hydraulic system. (CO-1)

Q.37 State and drive continuity equation. (CO-4)

Q.38 Calculate the discharge through a pipe of diameter 200m when the difference of pressure head between the two end of pipe 500m apart is 4m of a water. Take the value of 'F' as 0.009. (CO-5)

Note: Course Outcome (CO) mentioned in the question paper is for official purpose only.

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