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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)
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 Mercury does not wet the glass tube, it is due to _____ property.

- a) Adhesion b) Cohesion
- c) Viscosity d) Atmospheric pressure

Q.2 The nozzle fitted at the end of water pipe of water pipe discharge water at

- a) High pressure b) High velocity
- c) Low velocity d) None of the above

Q.3 Rain drops are spherical due to

- a) Surface tension b) Air resistance
- c) Viscosity d) Atmospheric pressure

Q.4 Bernoulli's theorem deals with the law of conservation of

- a) Mass b) Energy
- c) Momentum d) None of the above

Q.5 Mercury is used for _____ pressure ranges.

- a) High b) Low
- c) Sensitive d) None of the above

Q.6 The SI unit of discharge is

- a) m/s b) m²/s
- c) m³/s d) m-s

Q.7 The velocity at which the flow changes from laminar to turbulent is called _____

- a) Supersonic velocity b) Escape velocity
- c) Critical velocity d) None of the above

Q.8 Actual velocity of flow through an orifice is measured at

- a) Vena contracta b) Orifice exit
- c) End of the jet d) None of the above

Q.9 Which hydraulic device is similar to flywheel in function?

- a) Hydraulic ram
- b) Hydraulic accumulator
- c) Hydraulic jack
- d) Hydraulic coupling

Q.10 Centrifugal pump is started with its delivery valve kept.

- a) Fully open b) Half open
- c) Full closed d) Any position

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SECTION-B

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

- Q.11 Define mass density.
- Q.12 Define specific weight.
- Q.13 What is capillarity?
- Q.14 Define viscosity.
- Q.15 Define static pressure.
- Q.16 Name two pressure measuring devices.
- Q.17 Define Discharge.
- Q.18 What is unit of rate of flow?
- Q.19 Give relation between CC, CV and Cd.
- Q.20 What is the Loss of head due to friction?

SECTION-C

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

- Q.21 State & explain Bernoulli's Theorem.
- Q.22 Explain cavitation.
- Q.23 Show the relation between atmospheric and gauge pressure with a diagram.
- Q.24 Write short note on dead weight pressure gauge.
- Q.25 Write and explain the continuity equation with application.
- Q.26 A pipe 200mm in diameter is used to transport oil of sp. gravity 0.9 under a pressure of 2.5kPA and at a rate of 150 litres/s. Calculate total head in metres, at a point which is 3.5m above the datum line.

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- Q.27 Write short note on water hammer and its application.
- Q.28 Explain hydraulic brake with a neat sketch.
- Q.29 Explain screw pump.
- Q.30 What are the efficiencies of a turbine?
- Q.31 Write short note on Kaplan turbine.
- Q.32 Write the advantages and limitations of manometers.
- Q.33 If 5 litres of petrol of weight 3.5N, find its specific weight, mass density and specific gravity.
- Q.34 What do you mean by priming? What is the need of it?
- Q.35 Explain the types of fluids.

SECTION-D

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

- Q.36 A U-tube manometer containing mercury (Sp. gr 13.6) connect pipes A & B, pipe A carries liquid of specific gravity 1.2, pipe B carries Liquid of sp. Gravity 0.75. Pipe A is higher than pipe B by 100mm. The difference of mercury level is 180mm and raised level of mercury on the side of pipe A, falls below the centre line of pipe A by 150mm. Determine the difference of pressure between the two connected points of the pipes.
- Q.37 Explain the construction and working of pelton wheel turbine.
- Q.38 Discuss various components of pneumatic systems.

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