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**4th Sem.**
**Branch : Mechanical, Mech. (Tool & Die)**
**Sub. : Hydraulics & Pneumatics**

**Time : 3 Hrs. M.M. : 60**

## SECTION-A

**Note: Multiple type Questions. All Questions are compulsory. (6x1=6)**

Q.1 Gauge pressure is always

a) Above the atmospheric pressure

b) Below the atmospheric pressure

c) Can be above or below the atmospheric pressure

d) Equal to atmospheric pressure

Q.2 Total Energy line always lies

a) Below the Hydraulic Gradient Line

b) Above or equal to the Hydraulic Gradient Line

c) Parallel to bottom of the pipe

d) Perpendicular to axis of pipe

Q.3 The following pump is a positive displacement pump

a) Centrifugal pump b) Rotory pump

c) Reciprocating pump d) All of the above



Q.4 Hydraulic press is based on the _____principle.

a) Bernoulli's Principle b) Pascal's law

c) Boyles Law d) Archimedes Principle

Q.5 At velocity the flow changes from laminar to turbulent is called_____.

a) Supersonic velocity

b) Escape velocity

c) Critical velocity

d) None of the above

Q.6 _____ Manometers are used for measuring high pressures

a) Differential manometers

b) U-Tube manometers

c) Piezometer

d) Bourdan's manometer

## SECTION-B

**Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)**

Q.7 Define Laminar Flow.

Q.8 Manometer is a device for ___.

Q.9 Define vapour pressure.

Q.10 Define centre of pressure.

Q.11 _____pressure is also known as negative pressure.

Q.12 Water hammer concept is used in _____Hydraulic device.

## SECTION-C

**Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)**

Q.13 Explain the working of centrifugal pump.

Q.14 Enumerate types of impellers in hydraulic pumps. Explain any one of them.

Q.15 Explain the construction, working and application of Hydraulic RAM.

Q.16 Explain any four minor pipe losses.

Q.17 Describe Cavitation in pump and its effects.

Q.18 Explain Reynold's number and its effect.

Q.19 Describe the working of Bourdan's pressure gauge, with the help of a neat diagram.

Q.20 Water is discharged from a tank to another with 20m difference of water levels through a pipe of 1000m long. The diameter for 1000m length of pipe is 400m. Find the discharge in litres per second through the pipe, taking into consideration the friction losses only. Assume the coefficient of friction on 0.008 for both the pipes.



Q.21 Explain the surface tension, its unit and give its various application.

Q.22 Derive an expression for co-efficient of discharge for orifice meter.

## SECTION-D

**Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)**

Q.23 Explain the construction, working and applications of Francis turbine.

Q.24 The right limb of a simple U-Tube manometer containing mercury is open to atmosphere while the left limb is connected to a pipe in which a liquid of specific gravity 0.80 is flowing. The centre of the pipe is 15 cm below the level of mercury in the right limb. Find the pressure of liquid in the pipe if the difference of mercury level in the two limbs is 30 cm.

Q.25 Write short note on :

a) Common faults in pneumatic systems.

b) Working of venturimeter