Q.28 Differentiate between the impulse turbine and reaction turbine.

Q.29 Explain the working of Bourdons tube pressure gauge.

Q.30 Classify the various type of seals.

Q.31 If the mass density of fluid is 790kg/m^3, find the specific weight and specific volume.

Q.32 Define Bernoullis Theorem and its Limitations.

Q.33 Write a short note on water hammer and its applications.

Q.34 Explain differential manometer with neat sketch.

Q.35 Write the construction working of reciprocating pump.

Section-D

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

Q.36 Explain the construction and working of hydraulic ram with the help of diagram.

Q.37 Explain in detail the following with diagram

a) Venturimeter

b) Hydraulic Accumulator

Q.38 Classify hydraulic turbine and explain any two type of turbines.

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4th Sem. / Mechatronics
Subject : Hydraulic & Pneumatic Systems

Time : 3 Hrs. M.M. : 100

SECTION-A

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

Q.1 Pascal's Law is concerned with -

a) Pressure in a liquid

b) Tension in string

c) Forces between two surfaces in contact

d) Intermolecular forces of gases

Q.2 The study of pneumatics deals with system Operated with

a) Air b) Oil

c) Both A & B d) Water

Q.3 Which one of the following is a type of Actuator in a System?

a) Cylinder b) Valve

c) Pump d) Strainer

Q.4 If the liquid particles move in zig-zag way, the flow is

a) Unsteady flow b) Turbulent flow

c) Non-uniform flow d) All of the above

Q.5 Mercury is used for _____pressure ranges

a) High b) Low

c) Sensitive d) None of the above

Q.6 Kinematic Viscosity is

a) Dynamic viscosity x Mass density

b) Dynamic Viscosity / Pressure

c) Dynamic viscosity / Mass density

d) None of the above

Q.7 A reaction turbine may be

a) Radial flow turbine b) Axial flow turbine

c) Mixed flow turbine d) Any of the above

Q.8 Which of the following is a basic component of hydraulic system?

a) Pump b) Filter

c) Actuator d) Any of the above

Q.9 The nozzle fitted at the end of water pipe discharge water at

a) High pressure b) High velocity

c) Low viscosity d) None of the above

Q.10 An ideal fluid has

a) Viscosity b) No density

c) No compressibility d) All of the above

Section-B

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

Q.11 Define fluids.

Q.12 Explain FLR unit.

Q.13 Define unsteady flow.

Q.14 Write continuity Equation.

Q.15 Write the formula of Reynold's number.

Q.16 Define Upper critical Velocity.

Q.17 Write two common problems in pneumatic system.

Q.18 Define hydraulic press.

Q.19 Give principle of reaction turbine.

Q.20 What is the use of u-tube manometer.

Section-C

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

Q.21 Explain in brief various properties of fluids.

Q.22 Name various minor head losses in pipe.

Q.23 Explain the working of hydraulic door closer.

Q.24 Explain in brief basic components of pneumatic system.

Q25 List the various causes of contamination.

Q.26 Define the following a) Surface tension b) Absolute Pressure

Q.27 Explain real fluids and its categories.