Q.24 What are control valves and give their types? (CO2)
Q.25 Explain working of pneumatic cylinders? (CO4)
Q.26 State and explain the continuity equation. (CO1)
Q.27 What is the importance of filter, regulator and lubricator in pneumatic circuits? (CO4)
Q.28 Define compressible fluids and give their types. (CO3)
Q.29 Sketch and explain basic pneumatic circuits in brief. (CO5)
Q.30 Explain hydraulic power pack in brief? (CO2)
Q.31 Explain the selection criteria of pneumatic valves. (CO4)
Q.32 Compare reciprocating pump and centrifugal pump. (CO2)
Q.33 Draw a simple hydraulic circuit labeling all the components. (CO5)
Q.34 What is the difference between Reciprocating and Rotary compressor? (CO4)
Q.35 Establish a relationship between Mass density and weight density. (CO1)

SECTION-D

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

Q.36 Explain the construction and working of a centrifugal pump with a neat sketch. (CO2)
Q.37 Explain the rules/norms for designing hydraulic and pneumatic circuits. (CO5)
Q.38 Write short note on followings
a) Air motor
b) Air lubricator (CO4)

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4th Sem / Mechatronics
Subject:- Hydraulic and Pneumatic Systems

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 The scientific principle that makes hydraulic systems possible is (CO1)
a) Boyle's law b) Pascal's principle
c) Continuity Equation d) Bernoulli's principle

Q.2 The Bernouli's equation is based on the principle of conservation of (CO1)
a) Mass b) Force
c) Momentum d) Energy

Q.3 Which among the following pumps have a definite amount of discharge? (CO2)
a) Non-positive displacement pumps
b) Positive displacement pumps
c) Self-priming pumps
d) Jet pumps

Q.4 Which among the following is not the components of the FRL unit? (CO5)
a) Air filter b) Air dryer
c) Air regulator d) Air lubricator

Q.5 What is the function of the air compressor? (CO4)

a) Decreases the pressure of air
b) Increases the pressure of air
c) Removes dust particles
d) Adds lubricating oil

Q.6 In which type of system does power transmission take place through compressed air? (CO5)

a) Fluid power system b) Hydraulic system
c) Pneumatic system d) Stepper motors

Q.7 The fluids in which the volume can be reduced with the application of external pressure are termed as _____ fluid. (CO3)

a) Incompressible b) Compressible
c) both a & b d) None of the above

Q.8 The lubricator in a pneumatic circuit is the: (CO5)

a) First element in line
b) Second element in line
c) Last element in line
d) Third element in line

Q.9 What is the function of the pressure control valve? (CO2)

a) To control the force generated by actuators
b) To perform two operations in sequence
c) To control the direction of flow
d) To avoid the development of excess of pressure

Q.10 Compressible flow is assumed to be (CO3)

a) Isentropic b) Adiabatic
c) Polytropic d) Both A & B

SECTION-B

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

Q.11 SI units of specific gravity are_____ (CO1)

Q.12 In the pneumatic system,_____ is caused as the working medium. (CO4)

Q.13 Draw the symbol of a hydraulic cylinder with end cushioning. (CO5)

Q.14 Write the expanded form of FRL. (CO4)

Q.15 _____ is the measure of a fluid's resistance to flow and shear. (CO1)

Q.16 Centrifugal pumps are most commonly used when large discharge is required. (T/F) (CO2)

Q.17 Rotary actuators convert energy of_____ fluid into rotary motion. (CO2)

Q.18 In Single acting hydraulic cylinders, the hydraulic fluid acts on both ends of the pistons. (T/F) (CO4)

Q.19 Density of fluid does not change during the process of flow is known as _____. (CO3)

Q.20 Reciprocating pump is of _____ displacement pump. (CO2)

SECTION-C

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

Q.21 Explain Pascal's law with the help of a practical applications of it. (CO1)

Q.22 Write a note on pipe material, types of fittings and connectors in the fluid systems. (CO2)

Q.23 Compare the hydraulic system and pneumatic system. (CO1)