

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Winter, 2019 - 20 Examination

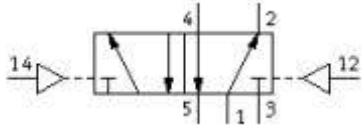
Semester: 5
Subject Code: 03113301
Subject Name: Hydraulic and Pneumatic Systems

Date: 28/11/2019
Time: 10:30 m to 01:00pm
Total Marks: 60

instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions (All are compulsory) (Each of one mark)**(15)**

1. Which type of motion is transmitted by hydraulic actuators?
 a. linear motion b. rotary motion c. both a. and b. d. none of the above
2. What does the numbers in 4/2 valve mean?
 a. 4 positions and 2 ways b. 4 ways and 2 positions c. none of the above
3. In pneumatic systems, AND gate is also known as
 a. check valve b. shuttle valve c. dual pressure valve d. none of the above
4. An ideal fluid is frictionless and incompressible
 a. Correct b. Incorrect
5. Symbol of : Shuttle Valve
6. Symbol of : Solenoid Operated 5/3 DCV
7. Equation of Reynolds number =
8. What is continuity equation?
9. Define the direction control valve.
10. Shape of Cam ring of unbalanced vane pump is _____.
11. Define following valve:

12. The Reynolds number for laminar flow is _____.
13. Pressure of 1 bar is equal to _____ PSI.
14. The resistance to the flow of fluid inside a piston develops _____.
15. _____ & _____ are elements of time delay valve.

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Define and explain Pascal's law in detail with suitable example.

B) Compare: Hydraulics System with Pneumatics System

C) Describe the following:

1. Quick Exhaust valve
2. Shuttle Valve.

D) Classify the pumps used for the hydraulic system and explain any of them.

Q.3 A) Differentiate between pressure reducing valve and pressure relief valve. **(07)**

B) Design and explain operation of Failsafe circuit with overload protection. **(08)**

OR

B) What is Accumulator? List the types of Accumulator and Explain any one type of Accumulator with application of it in Injection molding system. **(08)**

Q.4 A) Draw & explain meter-out circuit for hydraulic system. **(07)**

OR

A) Draw symbols of the following:

(1) Line, Passing (2) Cylinder, Double Acting (3) Check Valve (4) Temperature Gauge (5) Accumulator, Spring loaded (6) Two way valve (7) Filter **(07)**

B) Draw the suitable schematic circuit to control the movement of the drill and the clamp in the automated drilling machine. Explain the important elements used in the circuit, define cascade sequence with step diagram. **(08)**