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**Seventh Semester B.E. Degree Examination, June/July 2015**  
**Hydraulics and Pneumatics**

Time: 3 hrs.

Max. Marks: 100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART - A**

- 1 a. What are the advantages, limitations and applications of hydraulic systems? (06 Marks)  
b. With a neat sketch, explain construction and working of unbalanced type gear pump and derive expression for volumetric displacement of the pump. (09 Marks)  
c. Define the terms volumetric displacement, theoretical flow rate, volumetric efficiency and mechanical efficiency. (05 Marks)
- 2 a. Distinguish clearly between 1<sup>st</sup> class, 2<sup>nd</sup> class and 3<sup>rd</sup> class lever system used in hydraulic system. (09 Marks)  
b. With a neat sketch, explain the working of axial piston motor. (05 Marks)  
c. A hydraulic motor has 82cm<sup>3</sup> (0.082L) volumetric displacements. If it has pressure rating of 70 bar and it receives oil from 0.0006m<sup>3</sup>/sec (0.60LPS) theoretical flow rate pump. Find the motor i) Speed ii) Theoretical torque iii) Theoretical power. (06 Marks)
- 3 a. With a neat sketch, explain the three types of center flow path configuration for Three positions, Four way valves. (09 Marks)  
b. With a schematic diagram, explain the working of simple pressure relief valve. (05 Marks)  
c. Explain the working of sequence valve with an example. (06 Marks)
- 4 a. Explain with suitable circuit how Automatic cylinder reciprocates with two sequence valves. (10 Marks)  
b. Explain with Hydraulic circuit, how speed control can be achieved in Hydraulic motor. (06 Marks)  
c. Explain spring loaded type accumulator used in Hydraulic system. (04 Marks)

**PART - B**

- 5 a. Give three important functions of Baffle plates used in reservoir. (07 Marks)  
b. Define the terms Beta ratio and Beta efficiency of filters. (07 Marks)  
c. Name five things that can cause a noisy pump. (06 Marks)
- 6 a. Explain the characteristics of compressed air. (05 Marks)  
b. Sketch and explain the working of rodless cylinder. (05 Marks)  
c. Explain briefly the end position cushioning of pneumatic cylinder. (10 Marks)
- 7 a. Write a note on direct and indirect actuation of pneumatic cylinders. (10 Marks)  
b. Explain the logic OR function with a shuttle valve and the double acting cylinder. (10 Marks)
- 8 a. Explain the Motion control diagram for a 2 – cylinder circuit. (08 Marks)  
b. Write a note on relays used in electro – pneumatic control. (06 Marks)  
c. Sketch and explain the non receiving type pressure regulator. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8=50, will be treated as malpractice.