

Code No: **RT4103A****R13****Set No. 1****IV B.Tech I Semester Supplementary Examinations, February/March - 2018****INDUSTRIAL HYDRAULICS AND PNEUMATICS****(Mechanical Engineering)****Time: 3 hours****Max. Marks: 70***Question paper consists of Part-A and Part-B**Answer ALL sub questions from Part-A**Answer any THREE questions from Part-B*

PART-A (22 Marks)

1. a) Give any two differences between hydraulic power and pneumatic power. [4]
- b) What are the main advantages of gear motors? [3]
- c) List the drawbacks of simple relief valve. [4]
- d) How are the accumulators used in Hydraulics circuits? [3]
- e) What is the principle of solenoid? [4]
- f) How does a proportional valve differ from conventional solenoid valves? [4]

PART-B (3x16 = 48 Marks)

2. a) With a sketch, explain the working of vane pump. Derive an expression for the theoretical discharge of the pump. [8]
- b) Mention the different types of fluid power systems and list at least two practical applications of each of these systems. [8]
3. a) Explain with suitable circuits, how the single acting and double acting cylinders are controlled. [8]
- b) Discuss the steps involved in the selection of a pump for a hydraulic circuit. [8]
4. a) Explain the working of a pilot operated pressure relief valve with neat sketch. [8]
- b) Illustrate the use of sequence valve with a simple hydraulic circuit. [8]
5. a) Explain any two types of accumulator circuits with sketch. [8]
- b) Draw a basic block of a circuit showing the reservoir, accessories, pressure relief valve, pump and tank lines. [8]
6. Explain the various types of pneumatic switching elements with simple sketch. [16]
7. a) What could be the reasons for failure in fluid power systems? [8]
- b) Discuss the applications of Programmable logic controllers in fluid power control. [8]