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Code No: **RT4103A** **R13** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, February/March - 2018

INDUSTRIAL HYDRAULICS AND PNUMATICS

(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 THEE questions from Part-B
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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 it 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]

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