Code No: **R42035** **R10** **Set No. 1**

IV B.Tech II Semester Supplementary Examinations, April - 2018

INDUSTRIAL HYDRAULICS & PNEUMATICS

(Mechanical Engineering)

Time : 3 hours **Max. Marks: 75**

Answer any Five Questions

All Questions carry equal marks

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1 a) Differentiate between internal and external gear pump. [8]
b) Draw the characteristic curves of a gear pump and explain their utility. [7]

2 a) Why is cushioning needed in hydraulic cylinder? Differentiate between fixed and adjustable cushioning. [8]
b) Distinguish between single acting and double acting type hydraulic cylinders. [7]

3 a) Explain the functions of the following components of an hydraulic circuit.
(i) Direction Control Valve (ii) Pressure control Valve [8]
b) Explain with sketches, the working of the following direction control valves in cylinder actuation.
(i) 2 position 4 way valve (ii) 3 position 4 way valve [7]

4 a) Explain the working of 3 types of gas charged accumulators with sketches [8]
b) With the help of a schematic diagram, explain the working of hydropneumatic accumulator. [7]

5 Explain the function of the following components:
(i) Breather filter (ii) Suction strainer (iii) Return line filter
(iv) Oil level gauge (v) pressure gauge [15]

6 a) Describe the important characteristics of 3/2 Pneumatic direction control valve and explain its operation. [8]
b) Differentiate between signal air and control air. [7]

7 A clamping and stamping machine has two double acting cylinders. On pressing a switch S_1, the clamping cylinder (1.0) extends and clamps and job. The stamping cylinder (2.0) then extends and presses the job. Once a preset stamping pressure is reached, the stamping, cylinder retracts. Draw the Electropneumatic circuit for the purpose. [15]

8 Draw the ladder diagram and write the mnemonics instructions for a double acting pneumatic cylinder which on pressing a switch, extends and stamps a sheet. The cylinder returns after a second switch is pressed. [15]