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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Eighth Semester, B.E. - Industrial and Production Engineering
Semester End Examination; June/July - 2015
Fluid Power Systems

Time: 3 hrs   Max. Marks: 100

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

PART - A

1 a.	Give the historical background of Fluid Process system.	6
b.	Explain PASCAL's Law with a neat sketch.	4
c.	Explain with a neat sketch the radial piston pump (swash plate design.) Also give an expression for volumetric displacement and volumetric efficiency.	10
2.a.	With neat sketches explain single acting and double acting linear actuators. Also give expressions for force, velocity and power.	10
b.	Explain the function of a vane motor; Also give expressions for Volumetric efficiency, Mechanical Efficiency and overall efficiency.	10
3 a.	Explain with a neat sketch the working principle of a compound pressure relief value.	10
b.	List and explain with sketches the different types of actuation devices used in fluid power system.	6
c.	Give the Graphic symbol of the following: i) Counter balance value and ii) Throttle check valve.	4
4 a.	Explain with the circuit diagram the hydraulic cylinder sequencing circuit.	10
b.	What is an hydraulic accumulator. What are its functions? Explain any one type of hydraulic accumulator with a neat sketch.	10

PART – B

5 a.	Explain the 3 types of filtration methods adopted for hydraulic oil filtration.	6
b.	Explain the term Beta Ratio and Beta Efficiency.	4
c.	Discuss any five important trouble shootings in hydraulic system failure.	10
6 a.	List the reasons for selecting pneumatic system over hydraulic system.	5
b.	Explain with a neat sketch the working of a FRL unit.	10
c.	List any ten application areas of pneumatic system.	5
7.	With neat sketches and graphic symbol explain the following values, i) Quick Exhaust Valve ii) Shuttle valve iii) 5/2 direction control valve iv) Memory valve	20
8 a.	Explain the following logical gates along with graphic symbol and truth table. i) OR Gate ii) AND Gate	10
b.	Explain with a pneumatic circuit diagram the working principle of a dual – cylinder sequencing circuit using limit switches.	10