U.S.N | | | | | | | | | | |

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Industrial and Production Engineering

Semester End Examination; May/June - 2018

Hydraulics and Pneumatics Systems

Time: 3 hrs *Max. Marks: 100*

***Note**: Answer **FIVE** full questions, selecting **ONE** full question from each unit.*

UNIT - I

1 a. Explain Fluid Power system. List their advantages and limitations. 8

b. Define the following terms and state its effect on fluid power system : 6

i) Pressure ii) Density iii) Viscosity

c. With a neat sketch, explain the working principle of Axial Piston Pump (Swash plate design). 6

2 a. Derive an expression for Force and Velocity for a double acting cylinder piston extending on one side for both extension stroke and retraction stroke. 10

b. With a neat sketch, explain the working principle of an external gear motor. Also derive an expression for overall μ of external motor. 10

UNIT - II

3 a. With a neat sketches, explain the following control valves along with their symbols : 12

i) Pressure relief valve

ii) Flow control valve

iii) 4/2 direction control valve

b. With appropriate symbols, show at least four actuating devices for direction control valve. 8

4 a. With a neat sketch, explain the working principle of counter balance value. 10

b. Explain the following with suitable sketches : 10

i) Pressure reducing valve

ii) Sequence valve

UNIT - III

5 a. Explain the following circuits : 12

i) Regenerative circuit

ii) Double pump hydraulic system

b. With a neat sketch, explain the working principle of meter in circuit extending. 8

6 a. Define Accumulator. Give the classification of Accumulator. Also list the functions of Accumulator. 10

b. With a neat sketch, explain bladder type Accumulator. 10

Contd…2

UNIT - IV

7	a.	With a neat sketch, explain reservoir system.	8
	b.	Distinguish between filters and strainers. Explain different types of filters. Also define β-ratio.	12
8	a.	Discuss wear of moving parts due to solid- particle contanamination.	8
	b.	Write a note on trouble shooting of hydraulic system.	12

UNIT - V

9	a.	What are the advantages of Pneumatic system over Hydraulic system?	6
	b.	With a neat sketch, explain the major components used in a Pneumatic system.	9
	c.	Give ten applications of Pneumatic systems.	5
10	a.	Give the classifications of Air compressor and explain anyone with a neat sketch.	8
	b.	With a neat sketch, explain the working principle of Air lubricator.	12

* * * *