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

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Mechanical Engineering

Semester End Examination; Dec. - 2019

Hydraulics and Pneumatics

Time: 3 hrs *Max. Marks: 100*

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

UNIT - I

1 a. State Pascal's law and explain its application. 6

b. With a neat sketch, explain construction and working of Gerotor pump. 10

c. A gear pump has an 80 mm outside diameter with a 55 mm inside diameter and 25 mm width. If the actual pump flow at 1600 rpm and rated pressure is 95 LPM what is the volumetric efficiency? 4

2 a. Describe with a neat diagram bent axis type axial piston motor. 10

b. A hydraulic motor has a 82 cm^3 volumetric displacement if it has a pressure valve setting for 70 bars and it receives oil from a 0.006 m^3/s pump, find;

i) The motor speed

ii) Torque capacity

iii) Power capacity of the motor 10

UNIT - II

3 a. Explain with a neat sketch the working of a pressure reducing valve and also draw the graphical symbol for the valve. 10

b. With a neat diagram, explain the construction and working of a pressure compensated flow control valve and also draw the graphical symbol for the valve. 10

4 a. Explain with a neat circuit diagram the working of a locking cylinder using pilot operated check valve. 10

b. With a neat circuit diagram, explain the working of speed control and direction reversal of a hydraulic motor. 10

UNIT - III

5 a. Explain with neat diagrams the important locations of filters. 10

b. Explain problem coused by gases in hydraulic fluids. 10

6 a. Explain with a block diagram, a structure of pneumatic system. 10

b. With the help of a neat sketch, explain how end position cushioning is achieved in pneumatic cylinders? 10

Contd...2

UNIT - IV

7	a.	With a neat sketch, explain indirect actuation pneumatic cylinders.	10
	b.	Explain the use of memory valve with the help of a neat sketch.	10
8	a.	Explain speed control of cylinders supply air throttling and exhaust air throttling with a circuit.	10
	b.	With the help of a neat diagram, explain the construction and working of a quick exhaust valve.	10

UNIT - V

9	a.	Sketch and explain two cylinder pneumatic circuit to control its motion in a pneumatic system.	10
	b.	Explain with a neat circuit diagram signal elimination by reversing valves.	10
10	a.	Discuss the various stages of compressed air preparation with a neat diagram.	10
	b.	Explain distribution of compressed air piping layout.	10

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