

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

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Course Code

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Fifth Semester B.E. Degree Examinations, September/October 2024

FLUID POWER ENGINEERING

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions choosing ONE full Question from each Module.
2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO:PI)</u>
<u>Module-1</u>			
1.	a. State Pascal's law. Explain with neat sketch, the basic hydraulic power system.	10	(1 :1 : 1.6.1)
	b. List the advantages, disadvantages and applications of hydraulic system.	10	(1 :1 : 1.6.1)
(OR)			
2.	a. State the differences between static and dynamic seals.	10	(1 :1 : 1.6.1)
	b. Explain briefly filters and strainers in hydraulic system.	10	(1 :1 : 1.6.1)
<u>Module-2</u>			
3.	a. Explain with neat diagram single acting and double acting hydraulic cylinder.	10	(1 :2 : 1.6.1)
	b. Explain with a neat sketch how three way two position and four way three position directional control valves operate. Give graphical symbols.	10	(1 :2 : 1.6.1)
(OR)			
4.	a. Draw the hydraulic symbol for the following hydraulic control valves: (i) Check valve (ii) Shuttle valve (iii) Needle valve (iv) Simple pressure relief valve (v) Pressure reducing valve.	08	(1 :2 : 1.6.1)
	b. Sketch and explain the constructional features of poppet valve.	06	(1 :2 : 1.6.1)
	c. Explain with a neat sketch the working of sequence valve with an example.	06	(1 :2 : 1.6.1)
<u>Module-3</u>			
5.	a. Define control valves. Briefly classify different types of control valves.	08	(1 :3 : 1.6.1)
	b. Explain with sketch needle valve and check valve.	12	(1 :3 : 1.6.1)
(OR)			
6.	a. With a neat sketch explain the working of pressure relief valve and pressure compensated valve.	10	(1 :3 : 1.6.1)
	b. Explain the working of meter-in and meter out circuit for controlling the speed of hydraulic cylinder.	10	(1 :3 : 1.6.1)
<u>Module-4</u>			
7.	a. Mention the advantages and disadvantages of pneumatic power system.	06	(2 :4 : 1.6.1)

Note: (RBTL - Revised Bloom's Taxonomy Level: CO - Course Outcome: PI- Performance Indicator)

- b. What are the characteristics compressed air? **06** (1 :4 : 1.6.1)
- c. With a neat sketch explain structure of Pneumatic control system. **08** (1 :4 : 1.6.1)

(OR)

- 8. a. With a neat sketch, explain FRL unit in a pneumatic system. **12** (1 :4 : 1.6.1)
- b. With a neat sketch explain end position cushioning. **08** (1 :4 : 1.6.1)

Module-5

- 9. a. Explain OR & AND gates in pneumatic systems with an example. **06** (1 :5 : 1.6.1)
- b. With a neat sketch, explain quick exhaust valve **06** (2 :5 : 1.6.1)
- c. What do you mean by direct and indirect actuation pneumatic control? Explain with a circuit diagram. **08** (1 :5 : 1.6.1)

(OR)

- 10. a. Write a short note on the following **08** (2 :5 : 1.6.1)
(i) Solenoid (ii) Electromagnetic Relay
- b. What are the advantages of cascade design? **04** (1 :5 : 1.6.1)
- c. Explain with neat sketch, coordinated sequence motion of two cylinders. **08** (1 :5 : 1.6.1)

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