CBCS SCHEME

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BME702

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Hydraulics and Pneumatics

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

			M	L	C
		Module – 1			
Q.1	a.	Define fluid power system and explain the structure of basic hydraulic system with a block diagram.	10	L1	CO1
	b.	List and explain the difference between hydraulics and pneumatics focusing on the advantages, disadvantages and applications.	10	L1	CO1
		OR			
Q.2	a.	Define hydraulic fluid and explain the necessary properties of a good hydraulic fluid.	10	L2	CO1
	b.	Identify and describe various filter locations in a hydraulic system with a neat sketch.	10	L2	CO1
		Module – 2			
Q.3	a.	Classify fixed displacement pumps.	5	L2	CO2
	b.	Describe the pumping theory of positive displacement pumps.	5	L2	CO2
	c.	With a neat sketch, explain the working of an unbalanced vane pump.	10	L2	CO2
		OR			
Q.4	a.	Explain the working of single-acting and double acting hydraulic cylinder with neat sketch.	10	L3	CO2
	b.	Write short notes on : i) Cylinder cushioning ii) Accumulator	10	L2	CO2
		Module – 3			
Q.5	a.	With a neat sketch, explain the working of a 4/3 solenoid – operated Directional Control Valve (DCV)	10	L3	CO3
	b.	With a neat sketch, explain the functions and applications of shuttle valve. Also, mention the truth table of the same.	10	L2	CO3
		OR			
Q.6	a.	With a neat sketch, explain the working of meter – in hydraulic circuit. Mention its advantages and applications.	10	L3	CO3
	b.	With a neat hydraulic circuit, explain the working and applications of a regenerative circuit.	10	L3	CO3

		Module – 4			
Q.7	a.	With a block diagram, explain the working of a pneumatic control system.	10	L2	CO4
	b.	Write short notes on : i) Characteristics of compressed air ii) FRL unit.	10	L2	CO4
		OR			
Q.8	a.	With a neat circuit diagram, explain the working and applications of a quick exhaust valve.	10	L3	CO4
	b.	Write short notes on : i) Rod-less pneumatic cylinder ii) Mounting methods in pneumatic	10	L2	CO4
		Module – 5			
Q.9	a.	Explain two types of throttling methods in pneumatic systems. Also mention their advantages and applications.	10	L2	CO5
	b.	Explain the direct and indirect actuation methods using neat pneumatic circuits.	10	L3	CO5
		OR			
Q.10	a.	Construct and explain a pneumatic circuit to achieve the sequence $A^+ B^+ B^- A^-$ of the pneumatic cylinders. Mention its applications.	10	L3	CO5
	b.	Write short notes on : i) Time delay valve ii) Signal overlapping in pneumatics	10	L2	CO5

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