CBCS SCHEME

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BMT403

Fourth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
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.

		Module – 1	M	L	C
Q.1	a.	With a neat diagram, explain different components of a hydraulic system.	10	L2	CO1
	b.	Explain advantages, limitations and applications of hydraulics systems.	10	L1	CO1
		OR			
Q.2	a.	Differentiate positive displacement and non positive displacement pumps.	4	L2	CO1
	b.	Explain the construction and working of external gear pump.	8	L1	CO1
	c.	A pump has a displacement volume of 100 cm^3. It delivers 0.0015 m^3/s at 1000 rpm and 70 bars. If the power input torque is 120 N-m i) What is the overall efficiency of the pump? ii) What is the theoretical torque required to operate the pump?	8	L3	CO1
		Module – 2			
Q.3	a.	Classify hydraulic actuators and explain cylinder cushioning in hydraulic cylinder.	10	L2	CO2
	b.	Explain with a neat sketch working of vane motors.	10	L1	CO2
		OR			
Q.4	a.	With a neat diagram explain the construction and working of 3 position 4 way (3/4) direction control valve and give its graphical representation.	10	L3	CO2
	b.	Explain the construction and working of pressure compensated flow control valve.	10	L1	CO2
		Module – 3			
Q.5	a.	What are Accumilators? Explain different functions of accumulators.	4	L1	CO3
	b.	With a neat diagrams explain speed control of double acting cylinder.	6	L2	CO3
	c.	Explain cylinder synchronizing circuit with neat diagram.	10	L1	CO3
		OR			
Q.6	a.	Describe different desirable properties of hydraulic fluids.	10	L2	CO3
	b.	Explain the construction of hydraulic reservoir and describe its functions.	10	L1	CO3

		Module – 4			
Q.7	**a.**	Describe the structure of pneumatic system with a neat diagram and explain the function of each components.	**10**	**L2**	**CO4**
	b.	What is FRL unit in pneumatic system? Describe the construction and working of pressure regulator.	**10**	**L3**	**CO4**
		OR			
Q.8	**a.**	With a neat diagram, explain the following: i) Supply air throttling ii) Exhaust air throttling	**10**	**L3**	**CO4**
	b.	Explain the construction and working of shuttle value and quick exhaust value.	**10**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	With motion control diagram explain sequencing motion operation of pneumatic system with two cylinders.	**10**	**L3**	**CO5**
	b.	Explain the working of solenoid in direction control value.	**10**	**L1**	**CO5**
		OR			
Q.10		With neat diagram, explain the use of OR and AND gates in pneumatic application.	**20**	**L3**	**CO5**

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