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BAU702

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.*

Module – 1			M	L	C
Q.1	a.	Briefly explain pumping theory with a schematic sketch discuss pumping action of a simple piston pump.	10	L2	CO1
	b.	Classify pumps. Explain the working of a centrifugal pump detailing construction features with a pressure flow curve.	10	L3	CO2
OR					
Q.2	a.	Sketch and explain the external gear pump operation. Arrive at the theoretical flow rate of this pump.	10	L2	CO1
	b.	A gear pump has a 75 mm OD, a 50 mm inside diameter, and 25 mm width. If the volumetric efficiency is 90% , at rated pressure what is the corresponding actual flow rate? The pump speed is 1000 rpm.	10	L3	CO2
Module – 2					
Q.3	a.	Sketch and explain the working of a 4 – way DC valve. Use symbolic representation.	10	L2	CO2
	b.	Explain the construction and working of a simple pressure relief valve.	10	L3	CO3
OR					
Q.4	a.	List the most common causes of hydraulic system breakdown. What are the major causes of contamination of oil in filters and strainers.	10	L3	CO3
	b.	Figure out the hydraulic system operating problems and probable causes of the following : i) Noisy pump ii) Low or erratic pressure iii) Overheating of hydraulic fluid	10	L3	CO3
Module – 3					
Q.5	a.	With a circuit diagram discuss the control of a double acting cylinder.	10	L3	CO2
	b.	Construct the circuit diagram for pump unloading and elaborate on sequence of operation.	10	L3	CO3
OR					
Q.6	a.	How cylinder sequencing is done? Analyze with a hydraulic cylinder sequence circuits.	10	L2	CO2
	b.	With a circuit diagram explain speed control of a hydraulic motor.	10	L3	CO3
Module – 4					
Q.7	a.	With a block diagram discuss the components of a pneumatic system.	10	L3	CO1
	b.	Sketch and explain preparation of compressed air, indicating air treatment methods.	10	L3	CO3

OR

Q.8	a.	Write a note on static and dynamic seals using appropriate sketches.	10	L3	CO1
	b.	Explain the constructional features of a simple 2 / 2 and 3/2 poppet valve. (symbolic notation only)	10	L3	CO3

Module – 5

Q.9	a.	With appropriate symbols / circuit explain mechanical signal elimination.	10	L3	CO3
	b.	Construct / design a cascade circuit incorporating 4 / 2 way valves.	10	L3	CO4

OR

Q.10	a.	Sketch and explain a signal flow diagram.	10	L3	CO3
	b.	With a schematic diagram explain the construction and working of an air relay.	10	L3	CO4
