

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VI EXAMINATION – WINTER 2025****Subject Code:3164106****Date:21-11-2025****Subject Name:Hydraulics and Pneumatics****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) List advantages and applications of fluid power systems.	03
	(b) Explain the Bramah's press principal with neat sketch.	04
	(c) Develop and explain speed control of double acting cylinder.	07
Q.2	(a) What are the different properties of hydraulic fluid required for functioning of system?	03
	(b) Explain displacement, torque and maximum pressure limit for rotary actuators.	04
	(c) Give the classification of Pumps. Sketch & explain working of Rotary Vane type of pump.	07
OR		
Q.3	(c) Draw ISO/ANSI symbol of hydraulic supply elements.	07
	(a) Explain Hydraulic time delay valve circuit with neat sketch.	03
	(b) Write significance of AND & OR elements in circuits.	04
	(c) What specific points should be taken care of while selecting a servo valve?	07
OR		
Q.3	(a) What is the cushioning in cylinder?	03
	(b) Explain significance of Quick Exhaust valve in pneumatic system with neat sketch.	04
	(c) State the common faults in a hydraulic system and suggest troubleshooting and remedies for the same.	07
Q.4	(a) What are the advantages of pilot operated valve over simple valve?	03
	(b) What is FRL unit in pneumatic system? Draw symbol and explain it.	04
	(c) If diameter of piston is 60 mm, diameter of piston rod is 10 mm, & air pressure is 100 N/mm ² , what will be the force in advance stroke & return stroke.	07
OR		
Q.4	(a) Draw schematic diagram of lever operated 4/3 DCV with open centre position.	03
	(b) List basic electrical devices used in hydraulic system. Explain working of pressure switch with neat sketch.	04
	(c) What is automation? Explain role of automation in hydraulics and pneumatics system.	07

- Q.5** (a) Explain functions of hydraulic reservoir in detail. **03**
(b) Compare hydro motor and electromotor. **04**
(c) Design a pneumatic circuit for 3-cylinders operation system using cascade method. **07**

OR

- Q.5** (a) What do you mean by intensifier? Explain working of Air-oil intensifier. **03**
(b) Classify pressure control valves and explain anyone. **04**
(c) Draw a hydraulic circuit diagram of a hydraulic system having a double acting cylinder which has a rapid approach speed, then slow feed motion and at the end of the stroke the cylinder returns rapidly. **07**
