

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 2171912****Date: 28/06/2023****Subject Name: Oil Hydraulics and Pneumatics****Time: 10:30 AM TO 01:00 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) Draw the basic circuit of hydraulic system with symbols.	03
	(b) Where is the application of normally open pressure control valve in hydraulic system?	04
	(c) Draw symbols as per ANSI of following components. 1.PRV 2. FRL 3. FCV 4. SAC 5.DAC 6. Tandem Cylinder 7. Time delay valve.	07
Q.2	(a) What is regeneration in hydraulic system?	03
	(b) Classify the types of hydraulic pressure control valves. Describe the working of a pressure reducing valve.	04
	(c) Draw meter in and meter out circuit with a suitable example.	07
	OR	
	(c) Explain balanced type vane pump and external gear pump with neat diagram.	07
Q.3	(a) What is the function of unloading valve?	03
	(b) What are advantages of using pneumatic system?	04
	(c) Draw the symbol FRL unit and explain its role in pneumatic system.	07
	OR	
Q.3	(a) Explain 4/3 sliding spool direction control valve working with tandem center.	03
	(b) Write Short notes on: 1. Ram type actuators 2. Telescopic type actuators	04
	(c) Draw the time delay logic circuit in pneumatic circuit. State the application of this circuit.	07
Q.4	(a) Explain FCV with integral check valve with suitable sketch.	03
	(b) Draw the pneumatic circuit by using twin pressure valve. Explain the logic circuit.	04
	(c) How speed control is achieved in Pneumatic systems? Explain fixed flow and variable flow control valve.	07
	OR	
Q.4	(a) What is the requirement of control valves?	03
	(b) Show the application of counterbalance valve in hydraulic system with the help of suitable circuit diagram.	04
	(c) List the different types of accumulators. Describe working of any two of them.	07
Q.5	(a) State function of cushioning mechanism of hydraulic cylinder and state function of valves used in it.	03
	(b) What is AND logic and OR logic in pneumatic system?	04

- (c) Why do you prefer the reciprocating pumps over rotary pumps? With the help of a neat sketch, explain the working principle of a bent axis piston pump. **07**
- OR**
- Q.5** (a) How speed control is achieved in pneumatic systems? Explain fixed flow and variable flow control valve. **03**
- (b) Draw and explain vane compressor. **04**
- (c) Sketch & explain pneumatic circuit by using Quick Exhaust valve. **07**
