

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023****Subject Code:3151913****Date:05-12-2023****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) Distinguish between hydraulic system and pneumatic system.	03
(b) Draw the circuit of a simple hydraulic system in standard symbols and explain briefly the functions of oil reservoir and rotary pump.	04
(c) Draw the detailed symbol of FRL unit. State the function of FRL unit. Explain air lubricator in detail with neat sketch.	07
Q.2 (a) What is the purpose of the filter in hydraulic system? Give detailed classification of filters.	03
(b) Explain Non return valve with neat sketch.	04
(c) Write short note on fire resistant oil and bio – degradable oil.	07
OR	
(c) Explain the different methods of actuation of direction control valve.	07
Q.3 (a) Explain the principal of flow control valve.	03
(b) Explain cushioning of pneumatic cylinder.	04
(c) Classify actuators. Explain construction and working of double acting linear actuator with neat sketch.	07
OR	
Q.3 (a) State function of accumulator. Explain dead weight accumulator.	03
(b) Draw hydraulic circuit to operate two single acting cylinders in sequence.	04
(c) Classify pressure control valves. Explain pressure relief valve in brief. State the importance of pressure relief valve in hydraulic systems.	07
Q.4 (a) Draw the ISO/ANSI symbol of	03
i. Bi-directional variable pump	
ii. Quick exhaust valve	
iii. Twin pressure valve	

- (b) Draw basic hydraulic circuit for control of single acting cylinder by 3/2 spring return lever operated directional control valve. 04
- (c) A single acting cylinder is to be operated from two different sources A and B such that its forward motion can be actuated from either of the two locations. Draw and explain circuit diagram. 07

OR

- Q.4 (a) State advantage and disadvantage of meter-in circuit. 03
- (b) Draw basic pneumatic circuit for control of unidirectional motor by 3/2 spring return lever operated directional control valve. 04
- (c) Sketch and explain working of bleed-off circuits for controlled extension and controlled retraction of double acting cylinder. 07
- Q.5 (a) Differentiate between circuit design software and circuit simulation software. 03
- (b) Draw regenerative circuit by using regenerative type mid-position 4/3 DCV 04
- (c) Explain power losses in hydraulic circuits. 07

OR

- Q.5 (a) Explain the necessity of automation in hydraulic and pneumatic industry. 03
- (b) Explain automation in fluid power system with block diagram. 04
- (c) State advantage and disadvantage of automation. Give detailed classification of automation. 07
