Seat No.: _____ Enrolment No._____

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 i. Bi-directional variable pump ii. Quick exhaust valve iii. Twin pressure valve	**03**

	(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**

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