

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023

Subject Code:2171912

Date:14-12-2023

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) Give the required properties of hydraulic oil.	04
	(c) Give the classification of Pumps. Sketch & Explain working of Rotary Vane type of pump.	07
Q.2	(a) State the Pascal's law. Explain the principle of Bramah's press principle.	03
	(b) Draw the circuit of a simple hydraulic system, in standard symbols, and explain briefly the function of its basic elements.	04
	(c) What is the purpose of the filter in a hydraulic system? Where is it located in hydraulic circuit?	07
	OR	
	(c) Explain the construction and working of external gear pump using schematic diagram.	07
Q.3	(a) Draw speed controlled actuator, Meter- out circuits for DAC for extension.	03
	(b) State different types of Accumulator. Explain one in detail.	04
	(c) State and explain four main center conditions of 4/3 spool type direction control valve. Draw hydraulic symbols of each position for 4/3 solenoid operated spring centered direction control valve.	07
	OR	
Q.3	(a) How does a pressure relief valve differ from a pressure reducing valve?	03
	(b) Sketch and explain flow control valve with integral check valve.	04
	(c) Give different types of air compressors. Sketch multistage reciprocating air compressor and enumerate different parts of compressor. What are selection criteria for compressor?	07
Q.4	(a) Give difference between Meter-in and Meter-out circuit.	03
	(b) Write a note on thermocouple type temperature sensor.	04
	(c) Bleed off Circuits – sketch & explain its working.	07
	OR	
Q.4	(a) List the electric devices used in the control of fluid power system.	03
	(b) Explain construction and working of Quick Exhaust Valve.	04
	(c) Explain the difference between regenerative and sequence control circuit for hydraulic control with neat sketch and	07

suitable example.

- | | | | |
|------------|------------|--|-----------|
| Q.5 | (a) | Explain Cascading Method for sequencing. | 03 |
| | (b) | Explain different types of fire resistance hydraulic fluid. | 04 |
| | (c) | Explain construction and operation of time delay valve.
Illustrate its application in setting delay in closing time through
a typical pneumatic circuit. | 07 |

OR

- | | | | |
|------------|------------|--|-----------|
| Q.5 | (a) | Explain 'cushioning' of pneumatic cylinder. | 03 |
| | (b) | Describe Working of twin pressure valve with neat sketch &
draw its symbol. | 04 |
| | (c) | Draw Symbol of filter & explain the working of by-pass type
filter. | 07 |
