

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- V EXAMINATION-SUMMER 2023

Subject Code: 3151913

Date: 23/06/2023

Subject Name: Oil 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) Draw the basic circuit of hydraulics with symbolic representation.	03
(b) Draw the ISO symbol for following 1. 4/3 DC valve (hydraulic). 2. 5/3 DC valve (pneumatic) 3. Double acting cylinder 4. PCV	04
(c) Explain five types of FCV with symbols and location in circuit.	07
Q.2 (a) What is regeneration in hydraulic system?	03
(b) Classify the PCVs with location and application.	04
(c) Draw meter in & meter out hydraulic circuit with a suitable example.	07
OR	
(c) Classify the pumps used for the hydraulic system and explain external and internal gear pump with neat sketches.	07
Q.3 (a) What is the function of check valve in hydraulic system?	03
(b) Explain working of sequence valve with neat sketch.	04
(c) Draw the detailed symbol of FRL unit. Draw the pneumatic basic circuit with symbolic representation.	07
OR	
Q.3 (a) Classify the pumps used for the hydraulic system and explain working of pressure compensated vane pump with neat sketch.	03
(b) Write Short notes on: 1. Ram type actuators 2. Telescopic type actuators	04
(c) Explain difference between Hydraulics System and Pneumatics system. Explain main three components of each of them.	07
Q.4 (a) Explain quick exhaust valve with suitable sketch.	03

- (b) Explain time delay circuit used in pneumatic system. **04**
- (c) Explain pneumatic sequencing circuit with application. **07**
- OR**
- Q.4** (a) Explain Flash Point, HWCF and TAN with reference to hydraulic oil. **03**
- (b) Show the application of counterbalance valve 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 are limit switches? How do they differ from push button switches? **04**
- (c) Why do you prefer the reciprocating pumps over rotary pumps? With the help of a neat sketch, explain the working principle of an Inline 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) Compare fixed and flexible automation system with suitable example. **04**
- (c) Draw a circuit for operation of single acting pneumatic cylinder using push button operated 5/2 DC valve. **07**
