

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020

Subject Code:3151913

Date:22/01/2021

Subject Name:Oil Hydraulics And Pneumatics

Time:10:30 AM TO 12:30 PM

Total Marks: 56

Instructions:

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		Marks
Q.1	(a) What are limit switches? How do they differ from push button switches?	03
	(b) Which are the different function of hydraulic oil? Also list properties of hydraulic oil.	04
	(c) Give ISO/ANSI symbol of following.	07
	i. Single acting cylinder with spring return actuator	
	ii. Bi-directional variable displacement pump	
	iii. Pilot operated pressure relief valve	
	iv. 4/3 directional control valve	
	v. Adjustable flow control valve with throttle	
	vi. FRL unit	
	vii. Telescopic cylinder	
Q.2	(a) Explain any one method of controlling air receiver pressure.	03
	(b) Classify air compressors. Write a short note on selection criteria of compressor.	04
	(c) Cite the classification of check valves and explain the function of pilot-operated check valve, giving the necessary drawing.	07
Q.3	(a) Write a short note on fire resistant oil	03
	(b) Explain 4/3 sliding spool direction control valve working.	04
	(c) List different pressure control valves giving its application. Explain construction and working of any one in detail with the help of neat sketch.	07
Q.4	(a) Explain 'cushioning' of pneumatic cylinder	03
	(b) Write a short note on the Quick Exhaust valve	04
	(c) Explain regenerative circuit with a suitable	07

- application.
- Q.5** (a) Draw a circuit for operation of single acting pneumatic cylinder using push button operated 3/2 DC valve. **03**
- (b) How continuous rotary air motors differs from limited rotation air motors? **04**
- (c) Explain sequencing of four double acting air cylinders with neat sketch. **07**
- Q.6** (a) In what ways, pneumatic circuits differ from the hydraulic circuits? **03**
- (b) Explain cascade system for circuit design using assumed sequence. **04**
- (c) Explain with suitable circuits how the single acting and double acting hydraulic cylinders are controlled. **07**
- Q.7** (a) Draw a circuit for operation of unidirectional motor using 3/2 direction control valve **03**
- (b) Compare fixed and flexible automation system with suitable example. **04**
- (c) Draw and explain sequencing circuit to operate two double acting cylinder using limit valves. **07**
- Q.8** (a) What do you mean by automation? List advantages and disadvantages of automation in fluid power systems. **03**
- (b) Give classification of automation in industry. Discuss the role of automation in hydraulic and pneumatic industry. **04**
- (c) Write short note on programmed automation. **07**