Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER-VI • EXAMINATION – SUMMER- 2015

Subject Code: 162004 **Date: 14/05/2015**

Subject Name: Hydraulic and Pneumatic Systems

Time: 10.30am-01.00pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What are the advantages and disadvantages of hydraulic system?	**07**
	(b)	With neat sketch explain working and construction of balanced vane pump.	**07**
Q.2	**(a)**	State and explain major properties of hydraulic fluid.	**07**
	(b)	State advantages of HWCF.	**07**
		OR	
	(b)	State important additives used in HWCF to provide required physical characteristics.	**07**
Q.3	**(a)**	Explain the criteria for selection of pump.	**07**
	(b)	Write a short note on following:	
		(i) Bio-Degradable hydraulic oils.	**04**
		(ii)Location of filters.	**03**
		OR	
Q.3	**(a)**	With neat sketch explain working and construction of gear pump. What is trapped oil in terms of internal gear pump?	**07**
	(b)	Explain the following:	
		(i) Types of filters.	**04**
		(ii)Sources of contaminations.	**03**
Q.4	**(a)**	Draw schematic diagram of time delay valve and explain its working.	**07**
	(b)	What is FRL unit? Explain any two component of FRL unit with schematic diagram.	**07**
		OR	
Q.4	**(a)**	With neat sketch explain working and construction of sequence valve.	**07**
	(b)	With neat sketch explain working and construction of pressure compensated flow control valve.	**07**
Q.5	**(a)**	Draw neat sketch of hydraulic reservoir. State and explain its functions in detail.	**07**
	(b)	Design and explain regenerative hydraulic circuit.	**07**
		OR	
Q.5	**(a)**	Explain AND GATE and OR GATE and Quick Exhaust valve with schematic diagram.	**07**
	(b)	Design and explain a pneumatic circuit to control double acting cylinder using 5/2 air-air operated valve. The cylinder should extend when two push button are press simultaneously. The cylinder should retract automatically after extension or when emergency push button is pressed.	**07**

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