Seat No.:	Enrolment No.

Subject Code: 2724701

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

## ME - SEMESTER-II EXAMINATION - SUMMER 2015

Date: 26/05/2015

Sul	oject	Name: Advance Oil Hydraulic and Pneumatic Systems	
Tir	ne: 02	2:30 PM to 05:00 PM Total Marks: 70	
Inst	ruction	18:	
		Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	
Q.1	(a) (b)	State and explain major advantages and disadvantages of hydraulic system. Draw the schematic diagram of hydraulic reservoir and explain its functions.	07 07
Q.2	(a) (b)	Explain the major properties of hydraulic fluid required in hydraulic system. With neat sketch explain working and construction of gear pump. What is trapped oil in terms of gear pump?	07 07
	(b)	OR With neat sketch explain working and construction of balanced vane pump.	07
Q.3	(a)	Write a short note on following: (i) Bio-Degradable hydraulic oils.	04
	(b)	(ii) Location of filters.	03 07
	<b>(b)</b>	State advantages of HWCF.  OR	U /
Q.3	(a)	Explain the following:	
<b>V.</b>	(41)	(i) Types of filters.	04
		(ii) Sources of contaminations.	03
	(b)	State important additives used in HWCF to provide required physical characteristics.	07
Q.4	(a)	With neat sketch explain working and construction of 5/2 direction control valve.	07
	<b>(b)</b>	Explain with neat sketch single stage electro-hydraulic servo valve.  OR	07
Q.4	(a)	With neat sketch explain working and construction of pressure compensated flow control valve.	07
	<b>(b)</b>	Explain use of counter balance valve with proper hydraulic circuit diagram.	07
Q.5	(a)	Design an electro-hydraulic circuit to control the speed and pressure of hydraulic piston using 4/2 solenoid operated spring return direction control valve. The piston should retract immediately if the pressure exceeds the limit of pressure switch.	07
	<b>(b)</b>	What is FRL unit? Explain any two component of FRL unit with neat sketch.  OR	07
Q.5	(a)	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 when third push button is pressed.	07
	(b)	State the functions of hydraulic accumulators and with neat sketch explain any two accumulators in detail.	07

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