Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2162004 **Date:09/05/2016**

Subject Name: Hydraulic & Pneumatic Systems

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.**

Q.1	**(a)**	How pressure is developed in oil hydraulic power transmission system? Explain pressure and flowrate are independent to each other.	**07**
	(b)	Compare hydraulic system with mechanical, electrical and pneumatic system.	**07**
Q.2	**(a)**	Explain construction and working of radial piston pump using schematic diagram.	**07**
	(b)	Show constructional differences among different vane pumps.	**07**
		OR	
	(b)	Write a short notes on fire resistant and bio-degradable oils.	**07**
Q.3	**(a)**	Explain pressure compensated flow control using neat schematic diagram.	**07**
	(b)	(1) Explain telescopic hydraulic cylinder using schematic diagram.	**04**
		(2) Give brief overview on hydrostatic transmission system.	**03**
		OR	
Q.3	**(a)**	Enlist different types of accumulators. Explain dead weight and spring loaded accumulators. Differentiate between them.	**07**
	(b)	Explain mechanical servo valve using neat schematic diagram.	**07**
Q.4	**(a)**	Draw and explain Meter-in, Meter out and By-pass speed control circuits. Also differentiate among them.	**07**
	(b)	What is the significance of center condition in 4/3 DCV? Which center condition is used in which application, explain each in detail.	**07**
		OR	
Q.4	**(a)**	Explain FRL unit in detail.	**07**
	(b)	Explain twin pressure valve, shuttle valve and quick exhaust valve using schematic diagram. Also give its applications.	**07**
Q.5	**(a)**	Explain cascade system for circuit design using assumed sequence.	**07**
	(b)	Enlist different types of pressure control valves. Explain construction and working of pressure relief valve.	**07**
		OR	
Q.5	**(a)**	In a press stamping operation to be performed using a stamping machine. Before stamping, workpiece has to be clamped under stamping station. Then stamping tool comes and performs stamping operation. Workpiece must be unclamped only after stamping operation.	**07**
	(b)	Enlist different types of hydraulic cylinders. What is cushioning assembly, explain using schematic diagram.	**07**

****