Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI (NEW).EXAMINATION – WINTER 2016

Subject Code: 2162004 Date: 24/10/2016

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)**	List various advantages and disadvantages of hydraulic system over pneumatic and electric systems.	**07**
	(b)	What are the major properties of oil used for oil hydraulic power transmission system?	**07**
Q.2	**(a)**	Explain the construction and working of external gear pump using schematic diagram.	**07**
	(b)	Explain construction and working of proportional valve using schematic diagram.	**07**
		OR	
	(b)	With illustrative example explain following phenomenon in context of hydraulic power transmission. "Pressure and flow rate are independent to each other"	**07**
Q.3	**(a)**	List different configuration of vane pump. Explain any one in detail.	**07**
	(b)	Explain construction and working of pressure relief valve using schematic diagram.	**07**
		OR	
Q.3	**(a)**	Explain cracking pressure and pressure override in context of a pressure relief valve. Draw the pressure override characteristics for an ideal condition of conventional spring loaded PRV.	**07**
	(b)	Explain swash plate Axial piston pump in detail.	**07**
Q.4	**(a)**	Explain the construction and working of check valve and pilot operated check valve using schematic diagram.	**07**
	(b)	(1) What is the significance of heating and cooling devices in hydraulic system? (2) Draw and explain the regenerative circuit. What are the advantages and disadvantages of it?	**03** **04**
		OR	
Q.4	**(a)**	Show and explain the power diagram for Meter-in and Meter-out circuits.	**07**
	(b)	What are the components of the pneumatic power transmission? Describe each of the components.	**07**
Q.5	**(a)**	Explain significance of different components present in a Time-delay valve.	**07**
	(b)	Prepare the pneumatic system to perform automatic to and fro motion of double acting pneumatic cylinder and explain working of it.	**07**
		OR	
Q.5	**(a)**	Explain cushion assembly in detail for pneumatic system. What is the requirement of it?	**07**
	(b)	Explain working of shuttle valve, twin pressure valve and quick exhaust valve in detail. Give critical application of each.	**07**

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