Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– • EXAMINATION – WINTER 2013

Subject Code: 153401 **Date:27/11/2013**

Subject Name: Applied Hydraulics and Pneumatics

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)**	(i)	Define the term fluid power. What are applications, advantages of fluid power	**03**
		(ii)	What are the properties require for Hydraulic systems with explanation.	**04**
	(b)	(i)	What are the losses in pipe, valves and fittings? Explain briefly Which equation is suitable to get it solve.	**04**
		(ii)	What are the important conclusion resulting from Reynolds's experiment?	**03**
Q.2	**(a)**	(i)	What is working principle of pump. Classify the types of pumps.	**04**
		(ii)	What is meant by the pressure rating of a positive displacement pump?	**03**
	(b)	(i)	What are the types of dynamic pumps? Explain with figure.	**04**
		(ii)	Why does the rod of a double-acting cylinder retract at a greater velocity than extends for the same input flow rate?	**03**
			OR	
	(b)	(i)	Explain with neat sketch construction and working of Internal gear pump and Gerotor pump.	**04**
		(ii)	How is torque developed in a vane motor? Explain with details.	**03**
Q.3	**(a)**	(i)	What is purpose of pressure relief valve, direction control valve and flow control valve?	**03**
		(ii)	Explain how the four-way directional control valve operates.	**04**
	(b)	(i)	How does an unloading valve differ from a sequence valve in mechanical construction?	**04**
		(ii)	Explain how the electrical control solenoid valve operates.	**03**
			OR	
Q.3	**(a)**	(i)	Explain the operational features of the pressure-compensated flow control valve.	**04**
		(ii)	Name the three major classifications of gas-loaded accumulators. Give one advantage of each classification.	**03**
	(b)		What is intensifier? Explain intensifier circuit with applications.	**07**
Q.4	**(a)**	(i)	Explain the functions of – 1. Lubricator Unit 2. Air control valves	**04**
		(ii)	How do pneumatic actuators differ from hydraulic actuators?	**03**
	(b)	(i)	Explain in brief Quick exhaust valves,	**03**
		(ii)	What are the pneumatic actuators? Explain any one.	**04**
			OR	
Q.4	**(a)**		Explain and draw sequential circuit design for any simple applications using cascade method.	**07**
	(b)		Explain and draw Penumo-hydraulic circuit for an application.	**07**
Q.5	**(a)**	(i)	How does a PLC differ from a general purpose computer?	**03**
		(ii)	What are electro hydraulic servo systems?	**04**
	(b)	(i)	What are the applications in fluid power control for SCADA.	**04**

	(ii)	Explain briefly hydro Mechanical servo systems.	**03**
		OR	
Q.5	**(a)**	What do you mean by Electro Hydraulic Pneumatic logic circuits? Explain with any one circuit.	**07**
	(b)	What are the failure and troubleshooting problems in Hydraulic circuit?	**07**

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