Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 153401 **Date:15/12/2015**

Subject Name: Applied Hydraulics & Pneumatics

Time: 10:30am to 1:00pm **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) Compare Hydraulic system with Mechanical system in context to i. Power to weight ratio ii. Speed control iii. Over load safe protection	**03**
		ii) Telescopic cylinder is considered as suitable choice for dump truck. Justify the statement.	**04**
	(b)	Explain properties of Hydraulic oil in detail.	**07**
Q.2	**(a)**	What is pressure compensated pump? Compare unbalanced vane pump with balanced vane pump with neat sketch.	**07**
	(b)	Explain various types of hydraulic cylinders and write the selection criteria for it.	**07**
		OR	
	(b)	What is Direction Control Valve? Explain 4/3 spool operated DCV with schematic diagram.	**07**
Q.3	**(a)**	Discuss Hydraulic Sequence Valve with line diagram.	**07**
	(b)	Design Hydraulic circuit diagram for speed control of double acting cylinder with Meter Out System. Explain the same in brief.	**07**
		OR	
Q.3	**(a)**	Explain Pilot operated Check Valve with neat sketch.	**07**
	(b)	Suggest and Draw suitable Hydraulic circuit to get accurate speed control with high efficiency. Also explain reason for high efficiency in Bleed-Off circuit.	**07**
Q.4	**(a)**	Describe hydro mechanical servo system with schematic diagram.	**07**
	(b)	What is FRL unit used in Pneumatic System? State the purpose of the same. Explain construction & working of Lubricator used in a pneumatic system.	**07**
		OR	
Q.4	**(a)**	Explain Pneumatic Shuttle valve and Twin Pressure valve with neat line diagram. State application of both.	**07**
	(b)	Explain Electrohydraulic servo system. State advantages of same over mechanical servo system.	**07**

Q.5 **(a)** Explain following Fluidics Logical Pneumatic Gates with suitable application: **07**

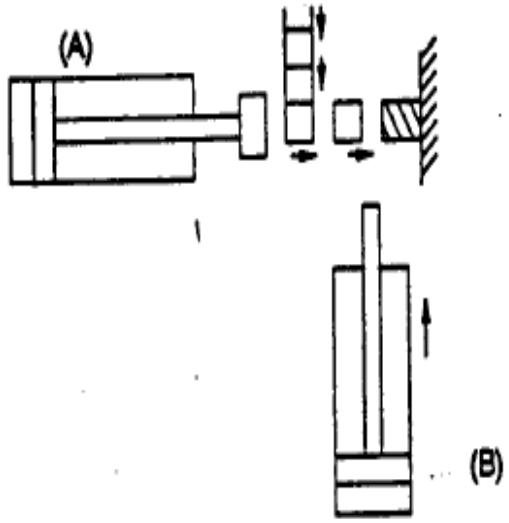
1) AND Gate
2) OR Gate
3) NOR Gate

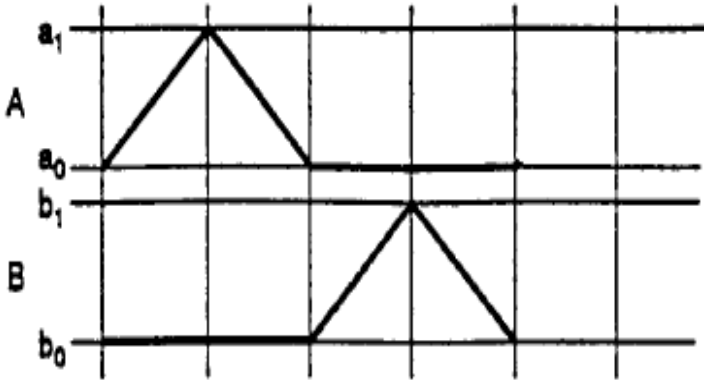
(b) State various types of commonly used Accumulators. Explain any one in detail. **07**

OR

Q.5 **(a)** Describe various PLC applications in Fluid Power Control. **07**

(b) A component is to pushed and bored from one side as shown in work layout in the figure and position-step diagram. Design a fully pneumatic circuit for this system





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