Seat No	o.:	Enrolment No	
		GUJARAT TECHNOLOGICAL UNIVERSITY	
		M. E SEMESTER - II • EXAMINATION - SUMMER • 2014	
Subject	ct co	de: 1720807 Date: 23-06-2014	
•		me: Automation in Production and Hydraulic Control	
-		0 pm - 05:00 pm Total Marks: 70	
Instruc		A A	
		ttempt all questions.	
		ake suitable assumptions wherever necessary.	
		gures to the right indicate full marks.	
		8	
Q.1	(a)	State and explain the principle of operation of hydraulic power transmission.	07
		Also discuss the comparative advantages over pneumatic operation with example.	
	(b)	Define automation. Highlight the advantages and limitations of automation.	07
Q.2	(a)	Sketch ISO symbol for following hydraulic control:	07
		(i)4/3 Directional Control Valve	
		(ii) Pressure limiting Valve with Variable Setting	
		(iii) Cylinder with cushion	
		(iv) Combined Pump/Motors with variable discharge	
		(v) Flow control valve with variable output	
		(vi) Pressure reducing valve	
	(b)	(vii) Hydraulic pump with two flow directions	07
	(b)	Explain the difference between close centre & open centre hydraulic circuits. Also discuss their comparative merits & demerits.	07
		OR	
	(b)	Define automated inspection. What are the three ways in which an inspection	07
	(2)	procedure can be automated?	0.
Q.3	(a)	Explain any one type of hopper feeder.	07
	(b)	Write a short-note on: Transfer mechanisms.	07
	` '	OR	
Q.3	(a)	A 20-station transfer line is divided into two stages of 10 stations each. The ideal	07
		cycle time of each stage is 1.5 min. All of the stations in the line have the same	
		probability of stopping, $p = 0.005$. We assume that the downtime is constant when	
		a breakdown occurs, $T_d = 10.0$ min. Using the upper-bound approach, compute	
		the line efficiency for the following buffer capacities: (a) $b = 0$,(b) $b = 10$.	
	(b)	Discuss: Design for assembly (DFA)	07
Q.4	(a)	Enlist different types of hydraulic valves and explain pressure relief valve with its	07
	<i>a</i> >	symbol.	0.5
	(b)	Describe construction and working of a variable delivery vane pump with sketch.	07
Q.4	(a)	OR Explain the function of procesure reducing valve and explain any one type with	07
	(a)	Explain the function of pressure reducing valve and explain any one type with neat sketch.	U /
	(b)	Explain with neat sketch of Hydraulic Accumulator.	07
Q.5	(a)	Write a short-note on: machining centers.	07
	(b)	What do you mean by low cost automation? Explain above concept with suitable	07
	(0)	example	37
		OR	
Q.5	(a)	Explain with neat sketch working principle of hydraulic circuit operation for	07
	` /	power steering system in automobile.	
	(b)	Sketch hydraulic circuit naming each element for: a drilling machine.	07

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