GUJARAT TECHNOLOGICAL UNIVERSITY BE SEMESTER III (NEW) EXAMINATION – SUMMER 2015

Subject Code: 2131704 Date:			27/05/2015 Marks: 70	
Subject Name: Digital Logic Circuits Time:02.30pm-05.00pm Total Marl Instructions: 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.				
Q.1	(a) (b)	With necessary sketch explain full adder in detail. Discuss D-type edge- triggered flip-flop in detail.	07 07	
Q.2	(a)	Draw the state diagram of BCD ripple counter, develop its logic diagram and	07	
	(b)	 (i) Represent the decimal number 8620 in BCD, Excess-3, and Gray code. (ii) Convert the following numbers to decimal: (10001.101)₂, (1010.011)₂, (630.4)₈, (A3E5)₁₆ 	07	
	(b)	Simplify following Boolean functions using K-map: (i) $F(w,x,y,z) = \Sigma (0,1,2,4,5,6,8,9,12,13,14)$ (ii) $F = A'B'C'+B'CD'+A'BCD'+AB'C'$	07	
Q.3	(a)	Construct 4x16 decoder with two 3x8 decoders.	07	
-	(b)	Simplify the following Boolean function by means of the tabulation method: $F(w,x,y,z) = \Sigma (0,1,2,8,10,11,14,15)$	07	
0.2	(-)	OR	07	
Q.3	(a)	(i) $F = A (B + CD) + BC'$ with NOR gates (ii) $F = (A + B') (CD + E)$ with NAND gates	07	
	(b)	Simplify the following Boolean function in a) Sum of Products and b) Product of Sums: $F(A,B,C,D) = \Sigma(0,1,2,5,8,9,10)$	07	
Q.4	(a) (b)	Explain with diagram and truth table the Operation of 4-to-1 line multiplexer. List the characteristics of Logic families. Explain DTL logic family in brief.	07 07	
		OR		
Q.4	(a) (b)	With neat sketch explain the operation of clocked RS flip flop. What is the function of shift register? With the help of simple diagram explain its working.	07 07	
Q.5	(a) (b)	Explain Arithmetic micro operations. With block diagram explain Successive approximation ADC.	07 07	
		OR		
Q.5	(a) (b)	Write short note on R-2R ladder type DAC. Explain working of 4-bit binary ripple counter.	07 07	
