GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-IV(New) EXAMINATION – SUMMER 2016

Sul	bject	Code:2142406 Date:03/06	Date:03/06/2016	
Subject Name:Digital Electronics and its applications Time:10:30 AM to 01:00 PM T Instructions:			Total Marks: 70	
	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.		
0.1		Do as directed:-	14	
L	1	$(1010.011)_2 = ()_{10}$		
	2	$(630.4)_8 = ()_{10}$		
	3	$(0.513)_{10} = ()_8$		
	4	What is basic need of complement? Enlist its types.		
	5	$(0011) = ()_{\text{Excess-3}}$		
	6	Define canonical & standard forms.		
	7	What do you understand by Binary logic?		
	8	Define Flip-Flop.		
	9	What do you understand by Multiplexer?		
	10	Using 10's complement, subtract : $(72532-3250)$		
	11	$(0/3.124) = (2)_2$ Differentiate PAM & POM		
	12	Explain Duality Principle		
	13	What do you understand by K-MAP?		
0.2	(a)	$(1011)^2 \times (101)^2 = ($) without converting it into Decimal	03	
~· -	(b)	Compare 1's and 2's complement with examples.	04	
	(c)	Simplify the following Boolean function using K-MAP?	07	
		$F(w,x,y,z) = \sum (0,1,2,4,5,6,8,9,12,13,14)$		
		OR		
	(c)	Draw and explain two input (i) AND (ii) OR and (iii) EX-OR gates.	07	
Q.3	(a)	Define followings:-	03	
	<i>(</i> -),	(1) wired logic (2) Fan out (3) Propagation delay		
	(b)	Design half adders and explain various implementations.	04	
	(C)	Simplify the following Boolean function using K-MAP? $E(A, B, C, D, E) = \sum_{i=1}^{n} (0.2, 4, 6, 0.11, 12, 15, 17, 21, 25, 27, 20, 21)$	07	
		$F(A,B,C,D,E) = \sum (0,2,4,0,9,11,13,15,17,21,23,27,29,31)$		
03	(9)	Define Magnitude Comparator Explain with circuit 4-bit Magnitude	03	
Q.J	(a)	Comparator	05	
	(b)	What do you understand by Decoder? Draw & explain 3-to-8 line	04	
		Decoder.	-	
	(c)	Write a brief note on edge-triggered SR and JK Flip-Flops.	07	
Q.4	(a)	Explain in brief Triggering of Flip-Flops.	03	
	(b)	Explain PLA and it's application.	04	
	(c)	Discuss Following 1) Accumulator Register	07	

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		2) ALU Status Register	
		3) Scratchpad memory	
		OR	
Q.4	(a)	Explain the concept of Register transfer level.	03
	(b)	Discuss the differences between hard wired control &	04
		Micro program control. State the merits of one over the	
		Other.	
	(c)	Enlist the methods of control organization? Explain any one in	07
		details.	
Q.5	(a)	Compare Combinational logic & sequential logic?	03
-	(b)	Write a note on Binary Ripple Counter.	04
	(c)	Write a note on Master-Slave Flip-Flop.	07
		OR	
Q.5	(a)	What is basic requirements of memory? Explain in brief EEPROM.	03
-	(b)	Compare SRAM & DRAM in all aspects.	04
	(c)	Explain design and functioning of half and full substractors.	07
