GUJARAT TECHNOLOGICAL UNIVERSITY MCA - SEMESTER-I • EXAMINATION – WINTER • 2014

	Subje Subie	ect Co ect Na	de: 610004 Date: 01-01-2015 me: Fundamentals of Computer Organization	
	Time	: 10:3	0 am - 01:00 pm Total Marks: 70	
		1. At 2. M 3. Fig	tempt all questions. ake suitable assumptions wherever necessary. gures to the right indicate full marks.	
Q.1	(a)	1.	 Prepare truth table for the following Boolean expressions: a. ABC + A'B' + A'C' b. A'B + A'C + B'C 	02
		2.	Simplify the following expression: $ABC + A(CD + CD^{)})$	01
		3.	Give the dual for the following Boolean expression: a. XY'Z + X'Y' + Y'Z b. $AB + A'B'$	02
		4.	Draw K-map for:	02
			a. $m0 + m2 + m6 + m7$ (K-map in X,Y,Z)	
		D (b. $m1 + m2 + m3 + m6 + m7 + m9 + m11 + m13 + m15$ (K-map in A,B,C,D)	
	(b)	Perfor	m the following operations: Represent decimal number 5347 in BCD format	01
		1. 2.	1101 - 1010 (Using 2's complement)	01
		<u>-</u> . 3.	Convert the hexadecimal number CB9 to binary and octal	02
		4.	Perform binary multiplication 16 * 8	02
		5.	Perform octal addition: 126 + 546	01
Q.2	(a)	1.	Explain various components of ALU in brief.	03
-		2.	Write a short note various addressing modes	04
	(b)	1.	Explain the various peripheral devices	04
		2.	Write a short note on Read Only Memory OR	03
	(b)	1.	Explain in detail any one printer.	04
	. ,	2.	Write a short note on Random Access Memory	03
Q.3	(a)	Write	a short note on 8 x 1 Multiplexer	07
	(b)	Briefly diagra	v explain the working of Half-Adder and Full-Adder along with the circuit ms.	07
0.2		Waite	UR	07
Q.3	(a) (b)	Write	a short note on Parallel Binary Adder	07 07
Q.4	(a) (b)	Write Simj varia NAI F(A	a brief account on JK Flip Flop. plify the Boolean function in sum-of-products form by means of a 4- able map. Draw the logic diagram with (a) AND-OR gates (b) NAND- ND gates B,C,D) = $\sum (0,1,4,5,10,11,14,15)$	07 07

OR

Q.4 (a) Write a short account on RS Flip Flop.

07

Q.4	(b)	Simplify the Boolean function in product-of-sums form by means of a 4-	07
		variable map. Draw the logic diagram with (a) OR-AND gates (b) NOR-NOR	
		gates	
		$F(A,B,C,D) = \prod (0,2,4,6,7,8,9,12,14)$	
Q.5	(a)	Explain the basic architecture of 8086 microprocessor in context of Bus Interface	07
		Unit and Execution Unit	

(b) Explain Binary up and down counter.

		OR	
Q.5	(a)	Explain Binary Coded Decimal Adder	07
	(b)	Explain Ripple Counter	07

07