Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA Integrated - SEMESTER– 1 EXAMINATION – WINTER 2018

Subject Code: 2618601 Date: 01-01-2019

Subject Name: Fundamental Computer Organization

Time: 10.30 am to 1.00 pm 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) Convert $(1101.000101)_2$ to Decimal (ii) Convert $(12.75)_{10}$ to Binary (iii) Convert $(10110.0101)_2$ to Octal (iv) Convert $(24.6)_8$ to Decimal (v) Convert $(D2E.8)_{16}$ to Binary (vi) Perform BCD Addition : 679.6 + 536.8 (vii) Subtract $(1010)_2$ from $(1101)_2$ using 1st complement.	**07**
	(b)	Explain printer and its types. Explain any one Impact and Non-Impact Printer.	**07**
Q.2	**(a)**	What is universal gate? Which gates are known as universal gate? Explain with reason with help of any one such gate as universal gate.	**07**
	(b)	What is De Morgan's Theorem? Proof it by using perfect induction method.	**07**
		OR	
	(b)	What is Boolean Algebra Function? Explain any five Basic Laws of Boolean Algebra.	**07**
Q.3	**(a)**	What is shift register? Explain its working with proper circuit diagram.	**07**
	(b)	What is multiplexer? Explain basic working and applications of Multiplexer.	**07**
		OR	
Q.3	**(a)**	What is RS Filp-Flop? Draw the circuit diagram and explain its working.	**07**
	(b)	Explain Binary Coded Decimal Adder with neat diagram and also explain with suitable example.(4 bit Input is being taken by student by own)	**07**
Q.4	**(a)**	Explain cache operation, principle of locality and cache hierarchy.	**05**
	(b)	Explain characteristics of memory system and explain memory hierarchy.	**05**
	(c)	Explain RAM? Types of RAM? Which did you select? Why?	**04**
		OR	
Q.4	**(a)**	Write short notes on instruction cycle and execution cycle organization of control register.	**05**
	(b)	Explain ROM? Types of ROM? Explain their application.	**05**
	(c)	What is Bus? Explain different types of buses.	**04**
Q.5	**(a)**	Explain instruction format of 8086 microprocessor.	**07**
	(b)	Explain different addressing modes of 8086 with example.	**07**
		OR	
Q.5	**(a)**	Explain working of following instructions with example 1. DIV 2. NOT 3. XOR 4. ADD 5. MOV 6. CMP 7. DEC	**07**
	(b)	Draw the block diagram of 8086 architecture and explain functional part of Bus Interface unit	**07**

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