Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER– 1 EXAMINATION – WINTER 2018

Subject Code: 3610004 Date: 08-01-2019

Subject Name: Fundamentals of 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 mark.**

Q.1 **(a)** Do as directed :

1. Convert decimal number(0.6875) to binary number **01**
2. Convert binary 0.001101 to decimal. **01**
3. What is mean by BCD ? Explain with example **02**
4. 10110 – 1011 **01**
5. 1101.11 × 101.1 **01**
6. 11110 / 101 **01**

(b) Do as directed :

1. Network Adapter **01**
2. USB Port **01**
3. Light pen **01**
4. What is mean by bistable device? explain with example **01**
5. List De Morgan's theorems **01**
6. Where does complements are used? Compare 1's complement with 2'scomplement. **02**

Q.2 **(a)** **Simplify the following Boolean Expressions:** **07**

a. A + B[AC + (B + C')D]

b. (A + B'C) ' (AB' + ABC)

(b) Briefly explain the working of any three peripheral devices. **07**

OR

(b) Write a short note on different categories of Printers. **07**

Q.3 **(a)** Design and explain binary counter to count from 0 to 7.. **07**

(b) Write note on 8 * 1 multiplexer. **07**

OR

Q.3 **(a)** Explain shift register with wave form and circuit diagram. **07**

(b) Explain Full adder in detail. **07**

Q.4 **(a)** Explain working of following instructions with example **07**

1. MOV
2. OR
3. CMP
4. NEG

(b) What is Flip-flop? Draw and explain the logic diagram and characteristics table of RS flip flop **07**

OR

Q.4 **(a)** Draw the structure of 8086 execution unit and explain it. **07**

(b) 1. Implement the Boolean function F = xy+x'y'+y'z using logic gates. **02**

2. Simplify the following Boolean function: **05**
F= A'B'C'+B'CD'+A'BCD'+AB'C'

Q.5 **(a)** Explain the interface of different buses with processor, memory and I/O devices. **07**

	(b)	Simplify the following Boolean function: F(w,x,y,z) = Σ(0,1,2,4,5,6,8,9,12,13,14) and draw the circuit diagram using of derived Boolean function using NAND gate only.	**07**

OR

Q.5	**(a)**	What do you mean by Addressing Techniques? Explain the direct, relative and indexed addressing techniques with an example.	**07**
	(b)	1. Prove by perfect induction method (A +B) + C=A+(B+C)	**04**
		2. Define distributive law and prove any one	**03**

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