

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA INTEGRATED– SEMESTER I- EXAMINATION- WINTER-2022

Subject Code: 2618601**Date: 07/02/2023****Subject Name: Fundamental of Computer Organization****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of simple calculators and non-programmable scientific calculators are permitted.

- Q.1 (a)** Do as directed.
1. Convert the $(278)_{16}$ in to binary, Octal, Decimal and BCD number system. **04**
 2. Prove De Morgan's Theorem by truth table on any expression. **03**
- (b)** Explain addition in 1's complements and 2's complements system with sign bit representation. **07**
- Q.2 (a)** Which gates are known as basic gates? Explain their working with help of truth table. **07**
- (b)** Draw the circuit for the $AB'+BC'+A'BC$. Can we convert that circuit using NAND gates only? Explain in details. **07**
- OR**
- (b)** What is the purpose of Flip Flop? Explain RS Flip Flop in details **07**
- Q.3 (a)** To select any one line from given 8 lines, how multiplexer will be used? Explain in detail. **07**
- (b)** What is addressing technique? How direct and indirect addressing technique differ? Explain with help of example. **07**
- OR**
- Q.3 (a)** How the Full Adder can be constructed using Half Adder? Explain working of Full Adder in details. **07**
- (b)** What is the indexed addressing scheme and immediate addressing scheme? Compare both of them. **07**
- Q.4 (a)** Explain various instruction word formats in details. **07**
- (b)** What is instruction cycle and execution cycle? How they work in computer organization? **07**
- OR**
- Q.4 (a)** What is Bus? Explain various types of Bus. **07**
- (b)** What is ROM? Explain various types of ROM. **07**
- Q.5 (a)** With example, explain AND, OR and XOR instruction of 8086 microprocessor. **07**
- (b)** Explain various flags used in 8086 microprocessor. **07**
- OR**
- Q.5 (a)** With example, explain MOV, ADD & SUB instructions of 8086 microprocessor in details. **07**
- (b)** Explain static RAM and Dynamic RAM in details. **07**
