

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA INTEGRATED– SEMESTER - I EXAMINATION- SUMMER-2023

Subject Code: 2618601**Date: 12/07/2023****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: 07**
- i. Convert $(1110.011)_2$ to Decimal.
 - ii. Convert $(1056)_{16}$ to an octal number.
 - iii. Convert $(10101)_2$ into an octal number.
 - iv. Convert hexadecimal 2C to decimal number.
 - v. What is UPS?
 - vi. What is RAM?
 - vii. What is ALU?
- (b) What are input devices? Explain any four in detail. 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) Where does complements are used? Compare 1's complement with 2's complement. 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) Explain 1-bit binary half adder and full adder in detail with example. 07**
- OR**
- Q.3 (a) Explain basic working and applications of Multiplexer. 07**
- (b) What is RS Flip-Flop? Draw the circuit diagram and explain its working. 07**
- Q.4 (a) Explain RAM? Types of RAM? 07**
- (b) What is Bus? Explain different types of buses. 07**
- OR**
- Q.4 (a) Write short notes on instruction cycle and execution cycle organization of control register. 07**
- (b) Write note on Addressing Techniques. 07**
- Q.5 (a) Explain working of following instructions with example 07**
- i. ADD
 - ii. DIV
 - iii. CMP
 - iv. NEG
 - v. XOR
 - vi. IMC
 - vii. MOV
- (b) Explain instruction format of 8086 microprocessor. 07**
- OR**
- Q.5 (a) Write note on Data Addressing Modes. 07**
- (b) Write note on Bus Interface Unit. 07**