

Seat No. : \_\_\_\_\_

# FG-111

February-2025

Int. M.Sc. (CA & IT), Sem.-I

## Fundamentals of Computer Architecture and Electronics

Time : 1:00 Hour]

[Max. Marks : 25

**Instruction :** Use of simple calculator is allowed.

1. Answer the following questions : **5 × 2 = 10**

- (1) Explain Universal gates (NAND, NOR) for 2 and 3 input variables with logic diagram, truth table and Boolean expression.
- (2) What is Combinational Circuit ? Explain Half Adder block diagram, Logic Diagram, truth table and Boolean Expression.

**OR**

1. (1) Explain types of Secondary memory in detail.
- (2) What are Registers ? Explain types of Registers.

2. Answer the following questions : **5 × 2 = 10**

- (1) Explain T- Flip flop with truth table and block diagram.
- (2) What do you mean by Resistors ? Explain working with diagram.

**OR**

2. (1) What do you mean by Diodes ? Explain with diagram.
- (2) Explain difference between Combinational Circuit and Sequential Circuits.

3. Attempt any **five** : **5 × 1 = 5**

- (1) Perform Binary Addition :  $101110111 + 101101$
- (2) Perform Binary Multiplication :  $1111 \times 111$
- (3) Convert Decimal to Binary : 245
- (4) Convert Hexadecimal to Decimal : 4B.F
- (5) Convert Non-Canonical to Canonical :  $AB + AC' + BC$
- (6) Draw logic circuit for  $Y = (A+B) \cdot (C \cdot D)$