

Roll No. _____

24043

**B. Tech. 3rd Semester (IT)
Examination – February, 2022**

DIGITAL ELECTRONICS

Paper : EE-204-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Section. Question No. 1 is compulsory. All questions carry equal marks.

1. Briefly explain the following : 4 × 5 = 20
- (a) Cyclic codes
 - (b) Magnitude Comparator
 - (c) Flip-flop
 - (d) RAM and ROM

SECTION - A

2. (a) Write a short note on Hamming Codes. 10
 (b) Design the circuit after minimization using k-map : 10

$$Y = \sum m(0, 2, 3, 6, 7, 8, 9, 10, 13)$$

3. Simplify the logic function using Quine-Mcclusky method : 20

$$Y(A, B, C, D) = \prod M(0, 1, 4, 6, 7, 9, 10, 13, 15)$$

SECTION - B

4. (a) Explain Full Adder with truth table and circuit. 10
 (b) Design the circuit of full-subtractor using 8 : 1 multiplexer. 10

5. Write short notes on : 2 × 10 = 20

- (a) BCD adder circuit
 (b) Priority Encoders

SECTION - C

6. (a) Convert JK to SK flip-flop. 10
 (b) What is race around condition and how we can remove it? 10

7. Explain Bidirectional shift register in detail. 20

SECTION - D

8. (a) Implement half subtractor using PLA. 10
 (b) Write a short note on hazards. 10

9. Write short notes on : 2 × 10 = 20

- (a) PAL and PLA
 (b) Algorithm State Machine (ASM)