

Roll No.

Total Pages : 03

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B. Tech. EXAMINATION, 2022

Semester III (CBCS)

DIGITAL ELECTRONICS (ECE, EE, EEE, CSE, IT)

EC-302

Time : 3 Hours

Maximum Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *Five* questions in all, selecting *one* question from each Section A, B, C and D. Q. No. 9 is compulsory.

Section A

1. (a) What are Floating Point Number System and its uses ? 5
- (b) Explain diminished radix and radix complement. 5

2. (a) What is Fan in and Fan out ? If Fan out current $I_{OH} = 400 \mu A$ and Fan in current $I_{IH} = 40 \mu A$. How many gates are connected as output ? 5
- (b) What is totem pole (TTL) output in logic family ? 5

Section B

3. Design XNOR gate with the help of NAND gate and NOR gates. 10
4. Minimize the four variable logic function using K-Map :
 $f(A, B, C, D) = \Sigma m(0, 1, 2, 3, 5, 7, 8, 9, 11, 14)$. 10

Section C

5. Compare the Combinational System with the Sequential System. 10
6. Realize the D flip-flop using S-R flip-flop. 10

Section D

7. Write a short note on Shift registers. 10

8. What is Memory ? Give the classification of memory. 10

(Compulsory Question)

9. Answer the following : 10×2=20
- (a) Convert $(10100)_2$ into Hexadecimal.
- (b) Give applications of Excess-3 code.
- (c) Define the Sum of Product term.
- (d) Design OR gate using Multiplexer.
- (e) How many flip-flop are required for MOD-6 ring counter ?
- (f) Explain PISO shift register.
- (g) Write rules for BCD addition.
- (h) How many flip-flops are required to count from 0-999 ?
- (i) Give one application of Ex-OR logic gate.
- (j) Discuss FAN-OUT for logic gates.