

[Total No. of Questions - 9] [Total No. of Printed Pages - 2]

Dec-22-0135

EC-302 (Digital Electronics)

(ECE, EE, EEE, CSE, IT)

B.Tech-3rd (CBCS)

Time : 3 Hours

Max. 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. Section E (Q.No. 9) is compulsory.

SECTION A (10 each)

1. (a) Write the algorithm of BCD addition with an example.
(b) Why Gray codes are required in Binary number system? Convert 1011 binary number into gray code.
2. (a) Explain Positive and Negative logic in binary with neat diagram.
(b) What is tri-state logic gates and what are their advantages?

SECTION B (10 each)

3. What is DTL Family? Explain the working of DTL family.
4. Minimize the given expression using tabulation method
 $F(A, B, C, D) = \sum m(4, 7, 9, 10, 12, 13, 14, 15)$

SECTION C (10 each)

5. Design the Full Adder with the help of Half Adder and OR Gate.
6. Implement the following function with a 4×1 Mux $F(x, y, z) = \sum m(2, 3, 5, 6)$

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SECTION D

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(10 each)

7. Differentiate between Synchronous and Asynchronous sequential circuits.
8. Draw and explain the logic diagram of 4-bit parallel UP Down counter.

SECTION E

(10×2=20)

9. Answer the following:
 - (a) Convert $(10)_8$ into binary.
 - (b) Add $288 + 799$ in BCD.
 - (c) What is hamming distance?
 - (d) Give one application of AND Gate.
 - (e) What are prime implicants?
 - (f) Name characteristics of logic family.
 - (g) Differentiate encoder and decoder.
 - (h) Differentiate between flip-flop and Latch.
 - (i) Draw excitation table of T-flipflop.
 - (j) Explain PIPO Shift register.