

4E1324

Roll No. _____

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B. Tech. IV - Sem. (Main / Back) Exam., - 2025
Electrical & Electronics Engineering
4EX4-08 Digital Electronics
EE, EX

Maximum Marks: 70

Time: 3 Hours

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL

2. NIL

[10×2=20]

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory

- Q.1 Define positive logic and negative logic system.
Q.2 Write down the characteristics of Digital ICs.
Q.3 What is a half adder?
Q.4 What is meant by K-Map or Karnaugh Map?
Q.5 Differentiate between Latch and Flip-flop.
Q.6 What is synchronous counter?
Q.7 Mention the various types of A/D converters in the increasing order of speed of operation.
Q.8 What are the specification of A/D converters?
Q.9 Give the different types of RAM.
Q.10 What is a PLA? Describe its uses.

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PART - B

(5×4=20)

Attempt any Five questions.

1. Perform each of the following conversions :
 - a. $(444.456)_{10}$ in to octal number.
 - b. $(A3B)_{16}$ in to decimal number.
 - c. $(2D5)_{16}$ in to binary number. (4)
 - d. $(115)_{10}$ in to hexadecimal number. (4)
2. Compare the characteristics of TTL and CMOS logic families. (4)
3. Using K-map, minimize the expression
 $F(A, B, C, D) = \sum m(1, 5, 7, 9, 11, 13, 15)$. (4)
4. Explain 4 - bit serial in parallel out register. (4)
5. Draw the logic diagram and timing sequence of a 4 - bit ring counter. (4)
6. Explain the terms accuracy and resolution for D/A converter. (4)
7. Differentiate EPROM and PROM. (4)

PART - C

(3×10=30)

Attempt any Three questions.

1. Define the following with one example :
 - a. Error correcting codes.
 - b. Gray code.
 - c. Hamming distance.
 - d. Even and odd parity code. (10)
2. Using the Quine - McCluskey method, obtain the minimal sum of product expression of the following function.
 $F(A, B, C, D) = \sum m(0, 1, 3, 7, 8, 9, 11, 15)$. (10)
3. a. Convert J-K flip - flop to S-R flip - flop. (5)
b. Design a 4 - bit synchronous counter. (5)
4. With a neat block diagram, describe the working of a successive approximation A/D converter and illustrate it with a suitable example. (10)
5. Write a notes on FPGA (field programmable gate array) with a neat diagram. (10)