

Roll No.

Total No. of Pages : 02

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**B.Tech.(AI&ML/ AI&DS/Block Chain/Cyber Security/CS&D/CSE/DS/
IT/(Internet of Things and Cyber Security including Block Chain
Technology) (Sem.–3)**

DIGITAL ELECTRONICS

Subject Code : BTES301-18

M.Code : 76435

Date of Examination : 16-06-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION - A

1. **Write briefly :**
 - a. Draw the logic symbol and write down the truth table of EX-OR gate.
 - b. What do you mean by signed binary numbers? Explain.
 - c. Differentiate between min term and max term.
 - d. State De-Morgan's theorems.
 - e. List the advantages of QM method.
 - f. Differentiate between PROM and EPROM.
 - g. What do you mean by excitation table? Discuss.
 - h. Discuss the significance of D/A converter.
 - i. What is parity? How is it useful? Discuss.
 - j. Discuss the advantages of edge triggering over level triggering.

SECTION - B

2. What is the significance of truth table? Prove that NAND and NOR gates are universal gates.
3. **Obtain the simplified expression in SOP form :**
$$F(A, B, C, D) = \sum m(6,7,8,9) + d(10,11,12,13,14,15)$$
4. Design a Binary Coded Decimal (BCD) adder.
5. **Distinguish between :**
 - a) Combinational and sequential circuits
 - b) Decoder and Demultiplexer
6. Compare RAMs and ROMs. Also, discuss (in detail) the read operation in RAM.

SECTION - C

7. **Draw the logic diagram and explain the working of following A/D converters :**
 - a) Successive approximation
 - b) Dual slope
8. Draw the logic diagrams and explain the working of SR, JK, D and T flip - flops.
9. **Discuss :**
 - a) 4-bit ripple down counter.
 - b) FPGA

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.