

Roll No.

Total No. of Pages : 02

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B.Tech. (AI & DS / AI & ML / Block Chain / CSE / Cyber Security / IOT / CSD / IT / Robotics & Artificial Intelligence / Internet of Things and Cyber Security including Block Chain Technology) (Sem.–3)

DIGITAL ELECTRONICS

Subject Code : BTES301-18

M.Code : 76435

Date of Examination : 24-12-2024

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) Why 1's and 2's complements are required? Discuss.
 - b) What do you mean truth table? Write down the truth table of Exclusive-OR gate.
 - c) Compare combinational circuits with sequential circuits.
 - d) Discuss the significance of multiplexer.
 - e) List the advantages of QM method.
 - f) What is Race around Condition? Discuss.
 - g) What do you mean by PROM and EPROM? Discuss.
 - h) What are the advantages of Dual slope A/D converter? Discuss.
 - i) List the various characteristics of FPGA.
 - j) Explain the term resolution w.r.t. converters.

SECTION-B

2. Explain the working of a SR flip-flop. Also mention its advantages and disadvantages.
3. What is the need of K-Map? Reduce the following expression to simplest Sum of product form using K-Map.
$$F(a,b,c,d) = \sum m(0, 1, 3, 5, 7, 10, 11, 12)$$
4. Prove that NAND and NOR are known as universal gates.
5. Draw the logical diagram and explain the working of 4 bit ring counter.
6. Discuss the working of weighted type D/A converter in detail by considering a suitable example.

SECTION-C

7. **Discuss :**
 - a) Successive approximation A/D converter
 - b) Classification of memory .
8. Discuss in detail the design procedure of binary half adder and binary full adder.
9. **Explain :**
 - a) QM method
 - b) RAM organization and its comparison with ROM.

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.