Roll No. | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 09

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 l's and 2's complements arc 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.
   $F(a,b,c,d) = \sum m(0, l, 3, 5, 7, 10, 11, 12)$

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.