

Roll No.

Total No. of Pages : 02

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B.Tech.(EE)/(Electrical & Electronics Engg.)
B.Tech. (Electronics & Electrical Engg.) (Sem.-4)

DIGITAL ELECTRONICS

Subject Code : BTEC-404

M.Code : 57103

Date of Examination : 02-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION 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. Answer briefly :

- a) Discuss the significance of signed and unsigned number systems.
- b) List the disadvantages of Boolean algebra for reduction of logical expressions.
- c) What do you mean by combinational circuits? Explain.
- d) Discuss the significance of D flip flop.
- e) Discuss why edge triggering is required in flip flops.
- f) Prove the Distributive Laws of Boolean algebra.
- g) What is VHDL? Discuss.
- h) List the advantages offered by Programmable Logic Devices.
- i) Explain the terms Fan-in and Fan-out w.r.t. logic families.
- j) List the advantages of successive approximation type A/D converter.

SECTION-B

2. Convert the 244.34 decimal number to binary, hexadecimal, octal and Gray code.
3. Two BCD numbers $A_0 A_1 A_2 A_3$ and $B_0 B_1 B_2 B_3$ are required to be added, resulting in a BCD number. What modifications/alterations are required to be made in the circuit of a 4-bit binary adder? Discuss. Mention the assumptions made, if any.
4. Draw and explain MOD-9 synchronous counter using T flip flops.
5. What is ROM? Explain its different types. Also, discuss the organization of a ROM.
6. Explain the working of counter type analog to digital converter. Support your answer with suitable diagrams, if required.

SECTION-C

7. Explain the working of :
 - a) Diode Transistor Logic
 - b) Series and parallel registers
8. a) Minimize the following expression using K-map or QM method
$$F(A,B,C,D) = \sum 1,2,3,5,6,9,11,13$$
 - b) Implement the following logic function using an 8 X 1 MUX
$$F(A,B,C,D) = \sum m(1,3,4,11,12,13,14,15)$$
9. Discuss the following :
 - a) Decision control structure using VHDL.
 - b) Programmable logic arrays.

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.