Roll No. .... Total Pages : 2

BT-3/D-21 **43158**

DIGITAL ELECTRONICS AND LOGIC DESIGN
Paper–ES-217 A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit.

UNIT–I

1. (a) Perform the following operation using 2's compliment : 45–28.

   (b) State and prove De-Morgan's theorem for Boolean algebra. Prove A(A'+C) (A'B+C') = 0.

   (c) Design a BCD to Gray code converter. (5×3=15)

2. (a) Discuss in brief about error detection and correction codes. 5

   (b) Minimize the following expression using K-Map and realist the obtained expression using NAND gates only : F(A, B, C, D) = Σm (0, 2, 3, 5, 7, 8, 9, 13). 10

UNIT–II

3. (a) Design a full adder using two half adders. 7

   (b) Explain working of 4:1 MUX. Realize the following expression using 8:1 Mux :

   Y = Σm (0, 1, 2, 3, 6, 7, 9, 10, 11, 12, 15). 8

4. (a) What is encoder ? Design and explain working of BCD to binary encoder. 7

(b) What is demultiplexer ? How is it different from decoder? Design 1:8 demultiplexer. 8

UNIT–III

5. (a) What is flip flop? Draw logical diagram of SR flip-flop. Explain its working. Mention the problem associated with SR flip-flop. 8

(b) Convert SR flip-flop to JK flip-flop. 7

6. (a) Design mod 6 asynchronous counter. 7

(b) What are registers? Mention different types of registers. Explain their working. 8

UNIT–IV

7. (a) Explain working of weighted resistor D/A converter.
8

(b) Describe the specifications of D/A converter. 7

8. (a) Draw diagram of successive approximation type A/D converter. 8

(b) Explain working of PAL logic device. 7

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