

Roll No. ....

**2013**

**B. E. 3rd Semester (I.T.)  
Examination – December, 2012**

**DIGITAL ELECTRONICS**

**Paper : EE-204-E**

**Time : Three hours ]**

**[ Maximum Marks : 100**

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complain in this regard, will be entertained after examination.*

**Note :** Attempt any *five* questions. All questions carry equal marks.

1. Design AND, OR, NOT and EX-OR gates using NAND gate. 20
2. (a) Convert  $(CD42)_{16}$  to Decimal.  $4 \times 5 = 20$   
(b) Convert  $(27 / 32)_{10}$  to Binary.  
(c) Convert 101101 binary to Gray.  
(d) Construct an even parity 7-bit Hamming code for 0100.  
(e) Prove that  $A \oplus B \oplus A.B = A + B$ .

3. (a) Design the circuit after minimizing using K-map : 10

$$f(A, B, C, D) = \Sigma(0, 1, 2, 5, 7, 8, 9, 13) + \Sigma(10, 15)$$

- (b) Explain full adder with truth table and circuit. 10

4. (a) Design a BCD to 7 segment decoder. 10

- (b) Explain 3 - 8 decoder. 10

5. (a) Explain S - R, J - K, D and T type flip flop. 15

- (b) Give differences between combinational and sequential circuits. 5

6. Explain bi-directional shift register. 20

7. (a) Design a MOD-7 synchronous counter. 10

- (b) Synthesize a T - FF using J - K FF. 10

8. Explain any two :

$$10 \times 2 = 20$$

- (a) R-2R ladder network A/D converter.

- (b) PLA.

- (c) TTL.