Total No. of Questions : 8 ] [ Total No. of Printed Pages : 2

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# EX–403(N)



## B. E. (Fourth Semester) EXAMINATION, June, 2011

**(Electrical & Electronics Engg. Branch)**

DIGITAL ELECTRONICS LOGIC DESIGN–I

**[EX–403(N)]**

*Time : Three Hours*

*Maximum Marks : 100*

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

1. (a) Perform the following operations by 9's and 10's complement method : 10
   (i) $110 - 87$
   (ii) $464 \cdot 8 - 279 \cdot 7$
   (b) Convert the following decimal numbers to octal : 10
   (i) 185
   (ii) $64 \cdot 25$

2. (a) Add the following in BCD code : 10
   (i) $185 + 396$
   (ii) $104 \cdot 7 + 185 \cdot 65$
   (b) Determine the single error correcting code for the BCD number 10110 for odd parity. 10

3. (a) Sketch the circuit for a simple bipolar transistor inverter. Sketch phase relationship between the inupt and output pulse wave forms. 10









   (b) Draw the logic diagram and construct the truth table for the following : 10
   (i) $AB\,(\overline{A + B}) + \overline{EF}$
   (ii) $\overline{\overline{A}\,B + C\,\overline{D} + ABC}$

4. (a) Reduce the following Boolean expression : 10
   $$(X + Y + Z)\,(\overline{X} + \overline{Y} + \overline{Z})\,X$$
   (b) Show that both NAND gate and NOR gate are universal gate. 10

5. (a) Obtain the minimal SOP expression for :
   $$\Sigma m\,(2, 3, 5, 7, 9, 11, 12, 13, 14, 15)$$
   and implement in NAND logic. 10
   (b) What do you mean by Min terms and Max terms of Boolean expression ? 10

6. (a) Design the 4 bit magnitude comparator with the help of logic diagram. 10



   (b) Draw truth table and logic diagram for BCD to Decimal Decoder. 10

7. (a) What do you mean by Flip-Flop ? How does JK flip-flop differ from S-R flip-flop ? 10
   (b) Implement a 3 bit ripple counter using flip-flop. 10

8. (a) What is ROM ? Explain different types of ROM and its uses. 10
   (b) With the help of neat diagram explain the working of successive approximation ADC. 10