Roll No. ....

2104

B. E. (4th Semester) (ECE)
Examination – December, 2011

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 complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions out of *eight* questions.

1. (a) Design all Basic and Universal gate using transistor.   **10**

   (b) Release X-OR gate using 4 NAND gate.   **6**

   (c) Perform :

      (i) $11001 - 10110$

      (ii) $11011 - 11001$ using 2's complements.   **4**

2. (a) The code 101101010 is received. Correct any error. There are four parify bits and add parify is used.

                                           10

(b) Simplify the following : **10**

   (i) $\overline{A}\,\overline{B}\,\overline{C} + \overline{A}B\overline{C} + A\,\overline{B}\,\overline{C} + AB\overline{C}$,

   (ii) $\overline{(A+B)\overline{C}\,\overline{D} + E + \overline{\overline{F}}}$ and   implement   with gates.

3. Reduce the following expression using quine - Mc-Cluskey method :   **20**

$Y\,(A,\,B,\,C,\,D) = \Sigma m\ (1,\,3,\,5,\,7,\,8,\,9,\,12,\,13,\,14,\,15)$ and implement using NAND gate only.

4. (a)   Why multiplexer is known as a Data selector. Design and explain the 8 ×1 MUX ?   **10**

   (b)   Design a BCD adder, explain its working.   **10**

5. (a)   Design Mod-10 synchronous counter using J-K Flip Flop.   **10**

   (b)   What do you mean by Shift Register ? Explain the working of PISO shift register.   **10**

6. (a)   Explain why the outputs of the standard TTL should not be wired together ? Under what condition is wiring permissible.   **10**

   (b)   Compare the advantages and disadvantages. of MOS logic over bipolar logic.   **10**

7. (a)   Explain Dual slop ADC with detail.   **10**

   (b)   What is the requirement of converting digital data to analog ? Draw and explain weighted register concept for such condition.   **10**

8. Write short notes on the following :

    (a) ROM and PROM,   20

    (b) PAL and PLA.