Exam. Code : 105702
Subject Code : 1528

B.Sc. Information Technology Semester—II
PRINCIPLES OF DIGITAL ELECTRONICS
Paper–III

Time Allowed—3 Hours]   [Maximum Marks—75

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

1. Using K-map, simplify :

   $F(A, B, C, D) = \sum(0,2,3,6,7,8,10,12,21,25,27,29,31)$.
   Also design the circuit using NAND gates only.

2. Do the following :

   (i)   (250-213) using 1's complement.

   (ii) Convert 100110101001 into octal code.

   (iii) Convert $(57.12)_8$ into hexa-decimal.

   (iv) Multiply $(234)_8$ with $(12.25)_8$.

3. (i)   Convert ABC+AB+BC+ABD to POS form.

   (ii) Simplify $F = \sum(1,2,4,6,8)$ using Boolean algebra.

   (iii) Convert $(A + B + \overline{C})(\overline{A} + B)(\overline{A} + \overline{B} + C)$ to SOP
         form.

3054(2517)/STB-14025   (Contd.)

4. (i) Implement a full-adder with two 4×1 multiplexers.

   (ii) Design a binary of BCD encoder.

5. Design a Modulo-6 counter and explain its working. What are the limitations of ripple counters ?

6. Discuss the limitations of SR flip flop and explain the working of master-slave flip-flop.

7. Write a note on PROMs. How is the address of a memory location selected when 4 memory chips each of size 4 Kbytes and 2 of size 16 Kbytes are connected.

8. (i) Differentiate EPROM and ROM.

   (ii) Differentiate static and dynamic RAM.