VCD-12/02015   DC- F.Y.Bsc (I.T) – Sem-1   Marks -75 –Hrs-2 ½

Note: 1.All questions are compulsory.
2. Figure should be neat and labeled.
3. Write side indicates full marks.

Q.1 Attempt any 2 from the following.   (10 M)
1. Solve the following.
   I. $(45.54)_{10}= (?)_{2}$
   II. $(425.12)_{8}= (?)_{10}$

2. Find 1's compliment and 2's compliment of the following.
   I. $(34)_{10}$
        $(21)_{10}$

3. Solve the following using 2's compliment method.
   I. $(6 – 10)_{10}$

4. Represent the following number in signed magnitude, BCD, Excess-3, Gray code.
   I. $(253)_{10}$
   II. $(123)_{10}$

Q.2 Attempt any 2 from the following.   (10 M)
1. Construct Basic Gates using NOR Gate.
2. Explain De'Morgons 2nd law.
3. Prove the following.
   $(A+B)(\overline{A}+C)=AC+\overline{A}B$
4. Realize the equation, Draw the K-Map & circuit diagram by using SOP method.
   $F(A,B,C,D)= \sum m \ (0,1,2,3,6,7,,8,9,10,11)$

Q.3 Attempt any 2 from the following.   (10 M)
1. Write short note on Half Adder.
2. Write short note on Full Subtractor.
3. Write short note on Binary to Gray Code Convertor.
4. Draw 8:1 Multiplexer for the following.
   $y= \sum m \ (0, 2, 4 , 5 , 6, 7)$

Q.4 Attempt any 2 from the following.   (10 M)
1. Write short note on Counters.
2. Write short note on D-type and T-type Flip-Flop.
3. Write short note on Shift Registers.
4. What is Race Around Condition.

Q.6 Attempt any 2 from the following. (10 M)
1. Write short note on Real Time Operating System.
2. Write short note on Linux Operating System.
3. Write short note on Windows OS.
4. Write short note on Single User/Single tasking Operating System.

Q.7 Attempt any 3 from the following. (15 M)
1. Solve the following.
   I. $(101101)_2 * (111)_2 = (?)_2$
  II. $(11001)_2 / (101)_2 = (?)_2$
2. Explain De'Morgons 2nd law.
3. Write short note on Half Adder.
4. Explain Master-Slave J-K Flip-Flop.

5. Write short note on Hard Disk.
6. Write short note on I/O Devices.