GURUDAS COLLEGE
DEPARTMENT OF COMPUTER SCIENCE
SEM – I
PAPER –CMS-A-CC1-TH

Time: 1 hour **Full marks:30**

Answer Question 1 and any four from Question 2 to 9

1. **ANSWER ANY FOUR .** 1.5 X 4 = 6
   a. What is a maxterm?
   b. A staircase light is controlled by two switches, one at the top of the stairs another at the bottom of the stairs. Design a truth table for this system.
   c. Subtract $(0111)_2$ from $(0011)_2$ using 1's complement method.
   d. Show that bubbled NOR gate is equal to AND logic function.
   e. Write down the Huntington postulates.
   f. What is the difference between a pulse and clock?
   g. What are non-weighted reflective codes? Give examples.
   h. What is floating point representation?

2. What is Gray code? Design a circuit which converts 3 bit binary to gray code. 6

3. $Y=\Sigma m(0,2,3,7,8,9,12,15) + \Sigma d(1,5,6)$,Simplify the function using K-Map and write down the SOP. 6

4. Construct a JK flip flop using T flip flop. Show the steps clearly. 6

5. What is Race around condition? How can we prevent this? 2+4

6. Design a circuit that will convert 2-4-2-1 to Excess -3 code. 6

7. Design a 2 bit magnitude comparator. 6

8. Design 8x1 Multiplexer using 2x1 multiplexer. 6

9. Implement the function $Y=\Sigma(0,2,3,5,8,10,12,14,15)$ using a 4x1 multiplexer and other logic gates. 6