



## Mechi Multiple Campus

B<sub>SC</sub>CSIT First Semester

CSC111-Digital Logic

Second Terminal Examination 2075 PM: 24 FM: 60

Time: 3 Hrs



*Candidates are required to answer all the questions in their own words as far as practicable.*

### Group “A”

Attempt any **TWO** Questions.

[2\*10=20]

1.
  - a) Implement Full adder circuit using decoder with truth table and logic diagram. [5]
  - b) Implement 4\*16 decoder using 2\*4 decoder. [5]
2.
  - a) List the applications of Multiplexer. Design 8\*1 MUX using 4\*1 MUX. [1+4]
  - b) Implement the given function with a multiplexer.  $F(A,B,C,D) = \sum(0, 1, 3, 4, 8, 9, 15)$ . [5]
3. What are weighted and non-weighted codes? Using truth table and K-MAPs, construct circuit diagram for BCD-to-excess3 code converter. [2+8]

### Group “B”

Attempt any **EIGHT** Questions.

4. State De Morgan's Law. Expand it for 3 variables and prove using the truth table. [2+1+2]
5. Implement 2 input XOR and XNOR gate using NAND and NOR gate respectively. [5]
6. Simplify the Boolean function  $F(w, x, y, z) = \sum(1, 3, 7, 11, 15) + D(0, 2, 5)$ . Implement the minimized expression using NAND only. [5]
7. Perform subtraction from  $(11111)_2$  to  $(1010)_2$  using  $r^s$  and  $(r-1)^s$  complement method. [5]
8. What is meant by canonical form? Express the Boolean Function  $F = A + \bar{B}C$  in a sum of minterms. [5]
9. Design a combinational circuit for 3 bit magnitude comparator and explain it. [5]
10. What do you mean by encoder? Design octal to binary encoder. [5]
11. What is meant by DEMUX? Implement full Subtractor using 1:8 DEMUX. [1+4]
12. Write short notes on:
  - a) Digital System
  - b) POS
  - c) Duality theorem[5]

~~~Best of Luck~~~