

30/11/2024 EXTC SEM-III C SCHEME DSD QP CODE: 10064634

(3 Hours)**Total Marks: 80**

- N.B.**
1. **Question No. 1 is Compulsory**
 2. **Out of remaining questions, attempt any three**
 3. **Assume suitable data if required**
 4. **Figures to the right indicate full marks**

1. (a) Compare SRAM and DRAM [5]
 (b) Compare Sequential Circuits and Combinational circuits with Suitable Examples [5]
 (c) State the Boolean Laws [5]
 (d) Draw XOR Gate using NAND gates and write the expression for output at each gate [5]
2. (a) Prove that NAND and NOR Gates are universal Gates [10]
 (b) Perform following
 i) Express $(125)_{10} = ()_8 = ()_{16}$ [5]
 ii) Subtract using two's complement $(10)_{10} - (15)_{10}$ [5]
3. (a) Design a 4 bit Binary to Gray code converter and Implement using XOR Gates only. [10]
 (b) Implement the given function using NAND gates only [10]
 $F(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 8, 9, 10, 11, 12, 13)$
4. (a) Minimize the following expression using Quine McClusky Technique [10]
 $F(A, B, C, D) = \sum m(2, 6, 7, 8, 9, 10, 11, 14, 15)$
 (b) Convert JK FF to D FF [5]
 (c) Convert JK FF to T FF [5]
5. (a) Explain a 4-bit Johnson counter. Sketch output at each flipflop [10]
 (b) Write a VHDL program to design a 2:1 Mux [5]
 (c) Write a VHDL program to design a full adder [5]
6. (a) Design a lockout free synchronous mod 6 up counter using JK FF [10]
 (b) Write a note on PLDs [10]
