2021

Computer Application (Honours)

2nd Semester Paper DC - 4

Digital Logic System

[CBCS]

Full Marks: 32 **Time: 2 hours**

The figures in the margin indicate full marks.

Group -A (2 x 6 = 12)

Answer any Six questions.

1. a. Distinguish between mux and demux.
   b. What is Race around Condition?
   c. Draw a truth table for the equation given below:

   $Y = A (B + C + \bar{D}) + CD$

   d. Reduce the given Boolean expression.

   $Y = A\bar{B}C (BD + CDE) + A\bar{C}$

   e. Apply DeMorgan's theorem to the following expression.

   $\bar{B}(D + BDE) + AB\bar{C}$

   f. What is priority encoder?
   g. What is gray code?

Group -B (5 X 4 = 20)

Answer any four questions.

2. Design an adder/ subtractor circuit that performs addition/ subtraction depending on the user's choice. Explain it briefly.

3. Design a Master Slave J-K Flip Flop using NAND gates only.

4. What is full subtractor? Realize a full adder circuit using a 3 x 8 decoder. 1+4=5

5. Design a Mod-5 Counter and explain it briefly.

6. Using the K-map method, obtain the minimal sum of product expression of the following function.

   $Y = \sum(0, 2, 3, 6, 7, 8, 10, 11, 12, 15) + d(5, 9, 13)$ 2+3=5

7. Differentiate between sequential circuit and combinational circuit.