18CS/IT204

Hall Ticket Number:

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I/IV B.Tech(Regular / Supplementary) DEGREE EXAMINATION

November, 2020 — Common to CSE & IT

First Semester — Digital Logic Design

Time: Three Hours — Maximum:50 Marks

Answer ALL Questions from PART-A. (1X10 = 10 Marks)

Answer ANY FOUR questions from PART-B. (4X10=40 Marks)

Part - A

1. Answer all questions (10X1=10 Marks)
   a) Find 10's complement for $(4069)_{10}$? 1M
   b) Add $(1010)_2$ and $(1101)_2$. 1M
   c) Write truth tables for Universal gates. 1M
   d) What is an encoder? 1M
   e) List the applications for multiplexers. 1M
   f) Write the truth table for Half-Subtractor. 1M
   g) Define flip-flop. 1M
   h) Write the characteristic table for SR flip-flop. 1M
   i) How we perform error correcting in digital systems? 1M
   j) Define the counter. 1M

Part – B

2. Express the following numbers in decimal: 10M
   1. $(10101)_2$ to decimal
   2. $(10101011)_2$ to hexadecimal
   3. $(378)_{10}$ to octal
   4. $(2598)_{10}$ hexadecimal
   5. $(4BAC)_{16}$ to binary.

3. a) Minimize the following function using K-map 4M
   $F(A,B,C) = \sum m\,(0,2,3,4,5,6)$
   b) Minimize the following function using K-map 6M
   $F(A,B,C,D) = \sum m\,(0,2,4,6,7,8,10,12,13,15)$

4. Using the tabular method, obtain the minimal expression for $f=\sum m(1,2,3,5,6,7,8,9,12,13,15)$ 10M

5. With neat sketch explain Full Adder. 10M

6. a) List the differences between combinational and sequential circuits. 5M
   b) Explain SR NOR latch with truth table. 5M

7. Explain D flip-flop in detail and write the characteristic and excitation table. 10M

8. Draw and explain Serial-In Serial-Out shift registers. 10M

9. a) Write about binary ripple counter with a neat sketch. 5M
   b) What is a ROM? Explain different types of ROM. 5M