'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 1st Semester Examination, 2021

CC2-COMPUTER SCIENCE (13)

COMPUTER SYSTEM ARCHITECTURE

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.
All symbols are of usual significance.

1. Answer any ***five*** questions: 1×5 = 5

   (a) Write the name of basic logic gates.
   (b) Define Boolean algebra.
   (c) Which one is faster between the RISC and CISC architecture?
   (d) Convert the given binary number $(10100110)_2$ to decimal number.
   (e) Write the full forms of VLSI and CMOS.
   (f) Define the term micro-operation.
   (g) What is a flip-flop?
   (h) How many minterm are there in an *n* variable truth table?

2. Answer any ***three*** questions: 5×3 = 15

   (a) Compare the Combinational circuits and Sequential circuits.
   (b) Convert the given number with the indicated base $(4012)_5$ to decimal and binary.
   (c) Discuss the arrangements of Three-variable and Four-variable K-map.
   (d) Write a note on SR flip-flop.
   (e) Write a note on Hit ratio.

3. Answer any ***two*** questions: 10×2 = 20

   (a) What is multiplexer? With appropriate diagram explain in detail a 4-to-1-line multiplexer.
   (b) Discuss the SOP form of Boolean expression. Reduce the following Boolean expression in SOP form using K-map.

   $$F(A, B, C, D) = \Sigma(0, 1, 2, 3, 4, 5, 10, 11, 15)$$

   (c) Explain Half-Adder and Full-Adder with suitable Truth tables and Logic diagrams.
   (d) Discuss Cache memory and explain the Associative mapping with suitable example.

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