UNIVERSITY OF NORTH BENGAL
BCA Honours 1st Semester Examination, 2021

CC2-BACHELOR OF COMPUTER APPLICATION

DIGITAL ELECTRONICS

Time Allotted: 2 Hours   Full Marks: 60

The figures in the margin indicate full marks.
Answer all questions with internal choices.
All symbols are of usual significance.

GROUP-A

Answer any *four* questions from the following   3×4 = 12

1. What are basic properties of Boolean algebra?

2. State De Morgan's theorem.

3. List the methods adopted to reduce Boolean function?

4. Which gates are called as the universal gates? What are its advantages?

5. Explain combinational circuit.

6. Explain half adder with logic diagram.

GROUP-B

Answer any *four* questions from the following   6×4 = 24

7. What are called don't care conditions? Explain with example.

8. Give the comparison between synchronous and asynchronous counters.

9. Prove that $(AB + C + D)(C' + D)(C' + D + E) = ABC' + D$.

10. Simplify the function using Karnaugh map.
    $$F(A, B, C, D, E) = \sum m(0, 2, 4, 6, 9, 11, 13, 15, 17, 21, 25, 27, 29, 31)$$

11. Write short notes on negative number representation in computer.

12. Implement $F = (A + B')(CD + E)$ using only NAND gates and show the truth table.

GROUP-C

Answer any *two* questions from the following   12×2 = 24

13.   Draw the state diagram and characteristics equation of T FF, D FF and JK FF.

14.   Explain in details about (SISO, PISO and PIPO) shift register.

15.   Differentiate between synchronous counter and ripple counter. Explain BCD ripple counter with logic diagram and timing diagram.

16.   Classify and explain different types of computer storage with their advantages and limitations.

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