

13/12/23



DOON UNIVERSITY, DEHRADUN
End Semester Examination, 1st Semester, 2023-24
Academic Year 2023-2024 (odd semester)
School of Technology Department name: Computer Science
Programme Name: B.Sc (Computer Science)
Course Code with Title : CSC-102 (Digital System Design)

Time Allowed 3.00 Hours

Maximum Marks: 50

SECTION: A

(Very Short Answer Type Questions) (5*2=10 marks)

- Q.1 . Convert the following. (i) $(BC)_{16} = ()_{10}$ (ii) $(647)_{10} = ()_{16}$
Q.2 Construct half subtractor using NAND gates.
Q.3 Mention any two differences between the edge triggering and level triggering.
Q.4 Explain Memory hierarchy.
Q.5 Difference between cache memory and Virtual memory.

SECTION: B

(Short Answer Type Questions) (5*4= 20 Marks)

- Q.6 Write the differences between combinational and sequential circuits.
Q.7 Minimize the following Boolean function $F(A, B, C, D) = \sum m(0, 3, 4, 5, 7, 9, 13, 14, 15)$
Q.8 Design a full adder by constructing the truth table and simplifying the output equations.
Q. 9 Define Decoder. Design & implement a 3 to 8 line Decoder.

SECTION: C

(Attempt any two questions)

(Long Answer Type Questions) Total marks: 20

- Q.10 (a) Draw the logic diagram of a JK – flip flop and explain its operation. (5+5)
(b) What is the need for Master Slave JK FF and explain its operation with neat diagrams.

Q.11 (a) Explain the difference between Ring and Johnson counters with neat sketch. (5+5)

(b) Draw the PIPO shift register

Q. 12 (a) Draw the logic diagram of a 4 line to 1 line multiplexer. (5+5)

(b) Write down the difference between demultiplexer and decoder.