

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.Tech (CSE)
Course Code with Title : CEC-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 . Represent 3851.2 and 349.8 in BCD.
Q.2 Construct half subtractor using NOR gates.
Q.3 Mention any two differences between the edge triggering and level triggering.
Q.4 Explain the functioning of D-Flip Flop with its circuit.
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 Using K-map simplify following Boolean expressions & give implementation of same using gates $F(w,x,y,z) = \sum m(3,4,5,6,7,11,12,14,15)$
Q.8 Design a full adder by constructing the truth table and simplifying the output equations.
Q. 9 Explain Cyclic redundancy check and checksum with the help of example.

SECTION: C

(Attempt any two questions)

(Long Answer Type Questions) Total marks: 20

- Q.10 (a)Draw the logic diagram of a SR – flip flop and explain its operation. (5+5)
(b) Explain about different types of shift registers

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

(b) What do you mean by ripple counter? Design and implement a ripple counter.

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

(b) Derive characteristics equations for SR, JK, D and T flip flops.