BACHELOR OF TECHNOLOGY (C.B.C.S.) (2021-COURSE)
B. Tech. Sem - II E&TC :SUMMER- 2022
SUBJECT : DIGITAL ELECTRONICS

Day : Monday

Time : 10:00 AM-01:00 PM

Date : 1/8/2022

S-24101-2022

Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Use of non-programmable calculator is **allowed**.
4) Assume suitable data **WHEREVER** necessary.
5) Draw neat diagram **WHEREVER** necessary.

Q.1 Convert following numbers (10)
$(11001101.11)_2 = ( )_{10}$
$(45.2)_{10} = ( )_{10}$
$(453)_8 = ( )_{16}$
$(897)_{10} = ( )_8$
$(674)_{10} = ( )_{16}$

OR

Q.1 Perform following using binary arithmetic (10)
(01100 - 000111) using 2's compliment method
(01000 - 01001) using 2's compliment method
(23 - 48) using 1's compliment method
(59 - 32) using 1's compliment method.

Q.2 Solve and implement minimal expression for the following logic expression using Quine Mc-Cluskey method (10)
$Y = \sum_m (1,5,6,12,13,14) + d(2,4)$.

OR

Q.2 Prove De-morgan's Theorem and Duality Theorem. (10)

Q.3 Explain in detail the design of look ahead carry generator. (10)

OR

Q.3 Design 2 bit magnitude Comparator and draw realization using logic gates. (10)

Q.4 Explain difference between combinational circuits and Sequential Circuits with appropriate block diagram. Explain operation of SR Flipflop with circuit diagram and Truth Table. (10)

OR

Q.4 Draw block diagram and truth table of following flip flops. (10)
i) MS JK flipflop
ii) T flipflop
iii) D flipflop.
Explain any one application of flipflop

Q.5 Design Asynchronous 3 bit binary UP / Down counter with mode control line. (10)

OR

Q.5 Differentiate between following terms : (10)
i) Moore and Mealy State Machine
ii) Synchronous and Asynchronous sequential circuits.

Q.6 Draw circuit diagram and explain working of 2 input TTL NAND Gate. (10)

OR

Q.6 Implement the following function using PLA (10)
F1 = $\sum m$ (0 1 2 4)
F2 = $\sum m$ (1 3 5 6)
Explain how to specify the size of PLA.

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