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Question Paper Code: 53203

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Third Semester

Computer Science and Engineering

19UCS303 - DIGITAL ELECTRONICS

(Regulation 2019)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. In which code the successive code characters differ in only one bit position? CO1- U
(a) gray code (b) excess 3 code (c) 8421 code (d) algebraic code
2. Conversion of decimal number 5610 to it's binary number equivalent is CO1- U
(a) 1100112 (b) 110011102 (c) 1110002 (d) 111112
3. The process which eliminates inter stage carry delay is _____ CO2- R
(a) Look ahead carry addition (b) Propagation delay
(c) Transition (d) Clk
4. The simplified expression of full adder carry is _____ CO2- R
(a) $c = xy+xz+yz$ (b) $c = xy+xz$ (c) $c = xy+yz$ (d) $c = x+y+z$
5. The functional difference between SR flip-flop and JK flip-flop is that CO3-R
(a) JK flip-flop is faster than SR flip-flop
(b) JK flip-flop has a feedback path
(c) JK flip-flop accepts both inputs 1
(d) JK flip-flop does not require external clock
6. How many natural states will there be in a 4-bit ripple counter? CO3-R
(a) 4 (b) 8 (c) 16 (d) 32

7. In asynchronous circuit, the changes occur with the change of _____ CO3- R
 (a) input (b) output (c) clock pulse (d) time
8. The analysis of Asynchronous sequential circuits are used to obtain _____ CO3- R
 (a) a table (b) a diagram (c) graph (d) both a and b
9. For reprogrammability, PLDs use _____ CO4- R
 (a) PROM (b) EPROM (c) CDROM (d) PLA
10. An important characteristic of a CMOS circuit is the _____ CO5- R
 (a) Noise immunity (b) Duality (c) Symmetricity (d) Noise Margin

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Simplify the expression $Y = A'C(A'BD) + A'B C' D' + AB'C$ CO1- App (8)
12. Design a 4 bit magnitude comparator to compare two 4 bit numbers CO2 -App (8)
13. Realize a JK flip flop using SR flip flop CO3 -App (8)
14. An asynchronous sequential circuit is defined by the following CO3 -App (8)
 excitation and output function
 $Y = X_1X_2 + (X_1+X_2)Y$
 $Z = Y$
 i) Draw the logic diagram of the circuit
 ii) Derive the transition table and output map.
15. (a) Implement a full subtractor using suitable PLA CO4 -App (4)
 (b) Draw the circuit of CMOS inverter CO4 -U (4)