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Question Paper Code: U2205

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Second Semester

Computer Science and Engineering

21UCS205- Digital Electronics

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

- Hexadecimal Value for 15 is equal to _____ CO1- U
(a) A (b) B (c) D (d) F
- A combinational circuit is one where the output at any time depends only on the _____ combination of inputs CO2- U
(a) Present (b) Finite (c) In-finite (d) Continious
- In the case of a J-K flip-flop with active _____ inputs, the output of the flip-flop toggles CO3- U
(a) High (b) Low (c) Half (d) Parcials
- The SR latch consists of _____ CO4- U
(a) 1 input (b) 2 input (c) 3 input (d) 4 input
- For programmable logic functions, which type of PLD should be used? CO5- U
(a) PLA (b) PAL (c) CPLD (d) SLD

PART – B (5 x 3= 15Marks)

- Construct K Map for $F(A,B)=\Sigma(0,3)$? CO1- App
- Define multiplexer CO2- U
- What is a master-slave flip-flop? CO3- U
- What are the steps for the design of asynchronous sequential circuit? CO4- U
- Define Static RAM and dynamic RAM. CO5- U

PART – C (5 x 16= 80Marks)

11. (a) Formulate the Boolean theorems and prove the following. CO1-App (16)
(i) $A+BA=A$
(ii) $A+A'B=A+B$
(iii) $AB+BC+B'C=AB+C$
Or
(b) Express the following function in a simplified manner using K map CO1-App (16)
technique.
 $F(X,Y,Z)=\Sigma(0,1,2,6,7)$.
12. (a) Design Full Adder and derive expression for Sum and Carry in CO2-App (16)
 $C_{in}(X,y)$ with circuit diagram?
Or
(b) Design a logic circuit that accepts a 4-bit binary code and converts CO2-App (16)
it to 4-bit Gray code with input(B_3,B_2,B_1,B_0) and
output(G_3,G_2,G_1,G_0)?
13. (a) Analyze the operation of JK flip-flops with suitable diagrams? CO3-Ana (16)
Or
(b) Construct a clocked SR flip-flop with neat diagram and also discuss CO3-App (16)
its performances?
14. (a) Explain in detail about Hazards and its types with example? CO4-App (16)
Or
(b) Explain in detail about races and types of races with suitable CO4-App (16)
example?
15. (a) Explain in detail about Static and dynamic RAM with neat CO5-U (16)
diagram?
Or
(b) Explain in detail about EEPROM and EAPROM with neat CO5-U (16)
diagram?