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Reg. No. : | | | | | | | | | | | | |

Question Paper Code: R2205

B.E./B.Tech. DEGREE EXAMINATION, MAY 2024

Second Semester

Computer Science and Engineering

R21UCS205- DIGITAL ELECTRONICS

(Common to Cyber Security Engineering branch)

(Regulations R2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

1. Binary addition 0+1 is equal to_____ CO1- U

   (a) 1 (b) 0 (c) 2 (d) 3

2. The Full adder is a ____ input and____ output combinational Circuit CO1- U

   a)2 and 1 (b) 2 and 2 (c)3 and 3 (d) 3 and 2

3. When both inputs of a J-K flip-flop cycle, the output will _____ CO1- U

   (a) Be invalid (b) Change (c) Not change (d) Toggle

4. The complexity of the asynchronous circuit is involved in timing problems of CO1- U

   (a) inputs (b) Latches (c) feedback path (d) clock pulses

5. Which type of device FPGA are? CO1- U

   (a) SLD (b) SROM (c) EPROM (d) PLD

PART – B (5 x 3= 15Marks)

6. What is Boolean algebra? CO1- U
7. Define Half adder and write its Truth table CO1- U
8. What is the application table of a D flip-flop? CO1- U
9. What is hazard? CO1- U
10. Define PROM. CO1- U

PART – C (5 x 16= 80Marks)

11.	(a)	Solve the following: (i) $(1001010.1101001)_2$ to base10 (ii) $(12.32)_{10}$ to base2 (iii) $(101FA)_{16}$ to base10	CO2 -App	(16)
		Or		
	(b)	Plot the following Boolean function in Karnaugh map and simplify it in SOP $F(w,x,y,z) = \sum(7,9,10,11,12,13,14,15)$	CO2 -App	(16)
12.	(a)	Design Full subtractor and derive expression for difference and borrow. Cin(X,Y) with circuit diagram .	CO2- App	(16)
		Or		
	(b)	Design Full Adder and derive expression for Sum and Carry in Cin(X,y) with circuit diagram.	CO2- App	(16)
13.	(a)	Design of 4 bit Ring counter with the help of state diagram, state table, Excitation table and maps.	CO2- App	(16)
		Or		
	(b)	Design of Ripple counter with the help of logic diagram and truth table.	CO2- App	(16)
14.	(a)	Why Hazards may happens in the asynchronous sequential circuits and discuss how to avoid Hazards ?	CO1- U	(16)
		Or		
	(b)	Explain in detail about races with suitable example?	CO1- U	(16)
15.	(a)	Explain the Characteristic function of RTL and ECL circuits in Logic families.	CO1- U	(16)
		Or		
	(b)	Discuss in detail about Programmable Logic Devices With the help of its block diagram.	CO1- U	(16)