C **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: R2205

B.E./B.Tech. DEGREE EXAMINATION, NOV 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. Hexadecimal Value for 15 is equal to_____ CO1- U

   (a) A (b) B (c) F (c) D

2. How many AND gates required for 1 to 8 MUX? CO2- AP

   (a) 2 (b) 3 (c) 4 (d) 8

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. In synchronous circuit , the present state is determined by CO1- U

   (a)unclocked flip-flops (b) clocked flip-flops (c) flip-flops (d) latches

5. For programmable logic functions, which type of PLD should be used? CO1- U

   (a) PLA (b) PAL (c) CPLD (d) SLD

PART – B (5 x 3= 15 Marks)

6. Define Number system. CO1- U
7. Define Encoder. CO1- U
8. What are the different types of flip-flop? CO1- U
9. Define Asynchronous sequential circuit? CO1 -U
10. Define address of a memory. CO1- U

PART – C (5 x 16= 80 Marks)

11.	(a)	Solve the following: i) $(1001010.1101001)_2$ to $base_{10}$ ii)$(15.32)_{10}$ to $base_2$ iii)$(1011DA)_{16}$ to $base_{10}$	CO2- AP	(16)
		Or		
	(b)	Simplify the expression using k-map F(A,B,C,D) =∑(0,2,4,6,12,14,15,8,10)	CO2- AP	(16)
12.	(a)	Design Full Adder and derive expression for Sum and Carry in Cin(X,y) with circuit diagram.	CO2- AP	(16)
		Or		
	(b)	Design a logic circuit that accepts a 4-bit binary code and converts it to 4-bit Gray code with input(B3,B2,B1,B0) and output(G3,G2,G1,G0) .	CO2- AP	(16)
13.	(a)	Explain the operation of clocked JK flip-flops with suitable diagrams?	CO1- U	(16)
		Or		
	(b)	Explain the following Shift Registers in detail a)SIPO b)PISO c)PIPO	CO1- U	(16)
14.	(a)	Explain in detail about asynchronous sequential with neat block diagram and also discuss design procedure with its suitable example.	CO1- U	(16)
		Or		
	(b)	Explain in detail about Hazards and its types with example?	CO1- U	(16)
15.	(a)	Explain in detail about the classification of memories with neat block diagram?	CO1- U	(16)
		Or		
	(b)	Explain the Characteristic function of TTL and CMOS circuits in Logic families.	CO1- U	(16)