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

Question Paper Code: R2E05

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

Second Semester

Artificial Intelligence and Data Science

R21UAD205- DIGITAL LOGIC DESIGN

(Common to CSE(AI&ML) Engineering branches)

(Regulations R2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1.	To Perform Excess-3 Addition for the given number: 16 and 29	CO2-App
2.	What is meant by weighted and non-weighted coding?	CO1-U
3.	Write down the applications of Multiplexer	CO1-U
4.	Draw the circuit of half-adder.	CO1-U
5.	Define Shift Register	CO1-U
6.	Write short note on Bistable Multivibrator	CO1-U
7.	What do you mean by Race condition?	CO1-U
8.	What are the different types of shift type?	CO1-U
9.	Differentiate ROM and RAM	CO1-U
10.	Define EEPROM	CO1-U

PART – B (5 x 16= 80 Marks)

11.	(a)	Reduce the following 4 variable function to its minimum sum of products form: Y $=\bar{A}\bar{B}C\bar{D} + ABC\bar{D} + A\bar{B}C\bar{D} + A\bar{B}CD + A\bar{B}\bar{C}\bar{D} + AB\bar{C}\bar{D} + \bar{A}\bar{B}CD + \bar{A}\bar{B}\bar{C}\bar{D}$	CO2-App	(16)

Or

(b) 1.Hexadecimal to Octal Conversion – 4marks — CO2-App — (16)

i) (BC66.AF)16

ii) (9C)16

2. Decimal to Octal– 4 marks

i) (12.125)10

ii) (62.025)

3.Hexadecimal to binary – 4 marks

i. $(70)_{16}$

ii. $(B2F)_{16}$

4.Octal to Decimal- 4 marks

i) (7423)8

ii) (2345.23)8

12. (a) Implement the following Boolean function using 8:1 multiplexer — CO2-App — (16)
F(A,B,C,D)=$\overline{A}B\overline{D}$+ACD+$\overline{B}$CD+$\overline{AC}$D

Or

(b) Implement the following Boolean function using 8:1 multiplexer — CO2-App — (16)
F(A,B,C,D)=$\sum m(0,2,3,4,6,9,11,14,15)$

13. (a) Explain the steps in designing synchronous sequential circuits. — CO1-U — (16)

Or

(b) Discuss about Master Slave flip flop and Set Reset flip flop — CO1-U — (16)

14. (a) Briefly Explain about Threats and types — CO1-U — (16)

Or

(b) Discuss about State Reduction and flow table. — CO1-U — (16)

15. (a) Explain in detail about the classification of memories with neat diagram? — CO1-U — (16)

Or

(b) Explain in Detail about Error-Free data — CO1-U — (16)