| Question Paper Code | 12855 |

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024
Third Semester
Electronics and Communication Engineering
20ECPC301 – DIGITAL ELECTRONICS
Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks	K-Level	CO
1.	Give details about "maxterm" and "minterm".	2	K2	CO1
2.	Convert the given decimal number to their binary equivalent 108.364 and 268.025.	2	K2	CO1
3.	Draw the full adder circuit using half adder.	2	K2	CO2
4.	Define priority Encoder.	2	K1	CO2
5.	Draw the state table and excitation table of the T flip flop.	2	K2	CO3
6.	Differentiate between the edge triggering and level triggering.	2	K2	CO3
7.	State the types of sequential circuits	2	K1	CO4
8.	Define synchronous sequential circuit	2	K2	CO4
9.	List the major differences between PLA and PAL	2	K2	CO6
10.	Define power dissipation and propagation delay.	2	K1	CO6

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

				Marks	K-Level	CO
11.	a)	Use Quine Mccluskey method to simplify the given expression and verify your result using K-map. $F(A,B,C,D) = \sum(0,2,3,5,7,9,11,13,14)$		13	K3	CO1
		OR				
	b) (i)	Express the Boolean functions F=A+B'C in a sum of minterms.		6	K2	CO1
	(ii)	Express the following boolean expression in a simplified form using Boolean algebra. a) x'y'z+x'yz+xy' b) xyz+x'z+yz		7	K2	CO1
12.	a)	Construct a 4 bit BCD adder using full adder and explain its structure and compute the circuit to add 1001 and 0101.Write the sum and carry output of the given binary number.		13	K2	CO2
		OR				

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **12855**

	b)	Construct a 4-bit comparator using logic gates.	13	K2	CO2

13. a) Explain the operation of master slave flip flop and show how the race around condition is eliminated.   13   K2   CO3

OR

  b) (i) Convert JK flip flop to T flip flop.   7   K2   CO3

    (ii) Explain the operation of D flip flop with neat diagram.   6   K2   CO3

14. a) Construct a MOD-10 synchronous counter using JK flip flops. Write an execution table and state table.   13   K2   CO4

OR

  b) Explain the different hazards in Combinational and sequential circuit.   13   K2   CO4

15. a) Use PLA to Implement the following functions.   13   K2   CO6
$$A(x,y,z) = \sum m(1,2,4,6)$$
$$B(x,y,z) = \sum m(0,1,6,7)$$
$$C(x,y,z) = \sum m(2,6)$$

OR

  b) Compare PROM, EPROM and EEPROM technologies.   13   K3   CO6

PART - C (1× 15 = 15 Marks)

16. a) An asynchronous sequential has two internal states and one output. The excitation and output functions describing the circuit are   15   K3   CO5
$$Y1 = X_1 X_2 + X_1 Y_2' + X_2' Y_1$$
$$Y2 = X_2 + X_1 Y_1' Y_2 + X_1' Y_1$$
$$Z = X_2 + Y_1$$
(i) Draw the logic diagram of the circuit
(ii) Give the transition table and output map
Give a flow table of the circuit.

OR

  b) An asynchronous sequential circuit is described by the excitation and output functions.   15   K3   CO5
$$Y = X_1 X_2' + (X_1 + X_2')Y$$
$$Z = Y$$
(i) Draw the logic diagram of the circuit
(ii) Give the transition table and output map
Give a flow table of the circuit