

G. H. Raisoni College of Engineering and Management, Pune.
(An Autonomous Institution affiliated to Savitribai Phule, Pune University)

F. Y. B.Tech. Department

CAE-1 : Term I(2024-25)

Digital Logic Design(23UESL1105)

[Time: 01 Hour]

[Max. Marks-20]

Instructions to the candidates:

- 1) All questions compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

Q.No.	Sub Question	CO	Marks	BL
Q.1	a) Perform following Number conversions.	CO1	[5M]	L3
	i) $(1111101)_2 = (?)_8 = (?)_{16}$		2M	
	ii) Convert Decimal to Binary number and Hexadecimal number. $(784)_{10} = (?)_2 = (?)_{16}$		2M	
	iii) Convert the following Gray code to Binary number 1001		1M	
	OR			
b)	i) Convert the Binary number to Gray code 1111	CO1	1M	L3
	ii) Enlist any two Boolean Algebra properties.....2M	CO1	4M	L3
	iii) State and prove De-Morgan's theorem2M			
c)	How the Negative numbers are represented Perform subtraction using 2^s complement method	CO1	[5M]	L3
	i) $(15-7)_{10}$			
	ii) $(7-9)_{10}$			
	OR			
d)	Simplify using Boolean algebra, Implement with logic gates.	CO1	[5M]	L3
	i) $f(A, B, C,) = (\bar{A} . \bar{B} . (\bar{A} . \bar{B} . C + B) + \bar{A} . \bar{B} .)$2M			
	ii) $f(A, B, C,) = (\bar{A} . \bar{B} . C + \bar{A} . \bar{B} . \bar{C} + \bar{A} . \bar{B} . (\bar{A} . \bar{B} . C + B))$3M			
Q.2	a) Convert following equations into standard/ canonical SOP form, $f(A, B, C,) = (\bar{A} . \bar{C} + \bar{A} . \bar{B} . + \bar{A} . \bar{B} . \bar{C})$	CO2	[5M]	L4
	OR			
b)	Solve the following equation using K-map, implement using Logic gates. $f(A, B, C, D) = \sum m(0,2,4,5,6,7,12,13) + d(1,9,10,15)$	CO2	[5M]	L4
c)	Design and implement Full Adder circuit using logic gates with K-map.	CO2	[5M]	L4
	OR			
d)	Explain 4:1 Multiplexer with its Block diagram, Truth table, logic equation and circuit diagram.	CO2	[5M]	L4