

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

**FY B.TECH (TERM/SEM II)**  
**ESE SUMMER 2024 (2023\_ Pattern)**  
**Digital Logic Design (23UECL1101)**

[Time:- 2.30 Hours]

[Max. Marks- 60]

*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.
- 5) Other Instructions, if any.

Q. No	Sub Questions	Questions	Marks	CO	BL
1	a)	Convert the following			
		i) $(125.10)_{10} = ( ? )_2$	[2]	CO1	L2
		ii) $(125.25)_8 = ( ? )_2$	[1]	CO1	L2
		iii) $(58)_{16} = ( ? )_2$	[1]	CO1	L2
	b)	iv) $(108)_8 = ( ? )_{16}$	[1]	CO1	L2
		State different methods to represent signed numbers (Negative numbers). Perform subtraction using 2's compliment method for the following $(15 - 11)_{10}$	[5]	CO1	L2
	c)	Convert the following function into canonical SOP form. $F(A,B,C,D) = AB + BCD + CD$	[5]	CO1	L2
		<b>OR</b>			
	d)	i) Write different types of codes. Explain in detail BCD code.	[3]	CO1	L1
		ii) Convert following Binary code to gray code $(1101)_2, (1000)_2$ .	[2]	CO1	L1
2	a)	Design full Subtractor circuit using 1:8 demux	[5]	CO2	L3
		Enlist different triggering methods used for Flipflops. Explain SR-FF and T-FF with circuit diagram and truth table.	[5]	CO2	L2
	<b>OR</b>				
c)	Design twisted ring counter along with State diagram, circuit diagram and timing waveforms.	[5]	CO2	L3	
3	a)	Write difference between Synchronous and Asynchronous counters(with proper block diagram).	[5]	CO2	L1
		Design mod 5 ripple up counter with state diagram, circuit diagram and timing cycle diagram.	[5]	CO2	L3
4	a)	Explain in detail steps for designing FSM. Explain in detail mealy machine with block diagram, state diagram and state table.	[5]	CO3	L2
		Design sequence detector for given sequence 0111. Draw state diagram and state table.	[5]	CO3	L3
	<b>OR</b>				
	c)	Compare mealy and moore machine with following points Block diagram, state diagram, definition, no. of states, simplicity to design.	[5]	CO3	L1
5	a)	Explain in detail syntax of following terms in VHDL with examples. a)Entity b)Architecture c)Library	[5]	CO4	L2
		Explain in detail different types of Architecture with examples.	[5]	CO4	L1
	b)	Write code for half adder in VHDL.	[5]	CO4	L3