Code: 20EE3403

II B.Tech - II Semester – Regular / Supplementary Examinations MAY - 2024

DIGITAL AND ANALOG CIRCUITS
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level   CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	What are the methods for converting Decimal to Binary conversion? Give some examples.	L2	CO1	6 M
	b)	Reduce the following function using k-map technique $f(A,B,C,D) = \sum m(0,1,4,8,9,10)$	L4	CO3	8 M
OR					
2	a)	Minimize the Boolean expression: $AB + ABC + ABC + ABC$	L3	CO2	7 M
	b)	Minimize the following expression in the POS form $f(A,B,C,D) = \pi M(0,2,3,8,9,12,13,15)$	L4	CO3	7 M

		UNIT-II			
3	a)	Construct a half adder and full adder using gates.	L3	CO2	7 M
	b)	Draw the logic diagram of BCD to Excess 3-code converter.	L4	CO3	7 M
		OR			
4	a)	Construct a 3 to 8 decoder.	L3	CO2	7 M
	b)	Implement a full adder using $8:1$ multiplexer.	L3	CO2	7 M

		UNIT-III			
5	a)	Explain in detail SR & D flip-flop with neat logic diagram.	L4	CO3	7 M
	b)	Design a 4-bit binary UP/DOWN ripple counter.	L4	CO3	7 M
		OR			
6	a)	Explain synchronous decade counter using JK flip-flop with block diagram.	L3	CO2	7 M
	b)	Draw and explain the working of universal shift register.	L3	CO2	7 M

		UNIT-IV			
7	a)	Draw the circuit of inverting amplifier using Op-Amp and derive the expression for the gain.	L3	CO4	7 M
	b)	Explain the operation of Op-Amp as an ideal active Differentiator.	L3	CO4	7 M
		OR			

8	a)	Discuss the first order low pass butter-worth filter and analyse the same by deriving the gain and phase angle equation.	L4	CO5	8 M
	b)	Draw the circuit diagram of RC phase Shift Oscillator using Op-Amp and explain its operation.	L4	CO5	6 M

UNIT-V

9	a)	Draw the schematic circuit diagram of dual slope A/D converter and explain its operation.	L4	CO5	7 M
	b)	List out various types of A/D converters and compare them with its merits and demerits.	L4	CO5	7 M

OR

10	a)	Illustrate the operation of sample and hold circuit with neat waveforms.	L3	CO4	7 M
	b)	Draw circuit diagram of R-2R Ladder type D/A converter and explain its operation.	L3	CO4	7 M