PVP 20

Code: 20EE3403

II B.Tech - II Semester – Regular / Supplementary Examinations
MAY - 2023

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)	Convert the following binary numbers to decimal, octal and hexadecimal number systems (i) 1011 (ii) 1101101.0110	L2	CO1	7 M
	b)	Convert the following decimal numbers to Gray code and Excess-3 code (i) 23 (ii) 246	L2	CO2	7 M
OR					
2	a)	Minimize the function using K-Map $F(A,B,C,D) = \Pi M (1,2,3,5,6,7,8,9,12,13)$ and draw the logic diagram.	L3	CO3	7 M
	b)	Design 2-input NAND and NOR gates using CMOS Logic.	L3	CO3	7 M

UNIT-II					
3	a)	Design a 4-bit Binary to Gray code converter.	L3	CO3	7 M
	b)	Implement the following logic function using an 8x1 MUX $F(A, B, C, D) = \Sigma m (1,3,4,11,12,13,14,15)$	L3	CO2	7 M
OR					
4	a)	Design a full adder using half-adders and OR gate.	L3	CO3	7 M
	b)	Design a 2-to-4 decoder and implement it using logic gates.	L4	CO3	7 M
UNIT-III					
5	a)	Explain the difference between a Latch and a Flip-Flop using Waveforms.	L3	CO2	7 M
	b)	Convert SR Flip-Flop to D-Flip-Flop.	L4	CO3	7 M
OR					
6	a)	Design a 3-bit synchronous Up-Counter using T-Flip-Flops.	L3	CO3	7 M
	b)	Explain the operation of 4-Bit SISO shift register.	L3	CO2	7 M
UNIT-IV					
7	a)	Explain about Inverting and Non-Inverting amplifiers.	L2	CO4	7 M
	b)	Illustrate how op-amp acts as a differentiator. Discuss in detail.	L4	CO4	7 M
OR					

8	a)	Draw first order low-pass filter using op-amp and explain.	L3	CO4	7 M
	b)	Discuss about the operation of RC Phase Shift Oscillator.	L4	CO4	7 M
UNIT-V					
9	a)	Draw the diagram of inverted R-2R DAC and explain its operation in detail.	L3	CO5	7 M
	b)	Draw the diagram of Sample & Hold circuit and explain its operation in detail.	L3	CO5	7 M
OR					
10	a)	Draw the diagram of dual slope ADC and explain its operation in detail.	L3	CO5	7 M
	b)	Draw the diagram of Successive Approximation type ADC and explain the operation of it.	L3	CO5	7 M