Course Code: 1930413 SET 1 MLRS- R19

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Regular End Examination, March 2021

DIGITAL SYSTEM DESIGN

(ECE)

Time: 3 Hours. **Max. Marks: 70**

Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	Convert the following numbers to required form: i) 197.54 to binary ii) 2035 octal to hexadecimal	7M	CO1	BL2
	b)	i) Find the 12 bit 2's compliment of -197.5 ii) Generate 12 bit Hamming code for the given 8 bit data word 10111001 that corrects and detects single error.	7M	CO1	BL2
2	a)	Simplify the following function: f(A,B,C)= (A+B)(A+C')+A'B'+A'C'	7M	CO2	BL2
	b)	Prove that NAND and NOR gates are Universal gates	7M	CO2	BL2
3	a)	Simplify the following logic expression using K map: ΠM(1,4,5,11,12,14) + D(6,7,15)	7M	CO2	BL2
	b)	Design a 3 bit adder/subtractor logic circuit.	7M	CO3	BL3
4	a)	Describe the Flip-Flop operational characteristics viz. propagation delay time, set-up time, hold time, max clock frequency etc.	7M	CO3	BL3
	b)	Convert a T flip flop to S-R flip-flop	7M	CO3	BL3
5	a)	Design a 4 bit comparator using AND. OR, NOT gates.	7M	CO3	BL3
	b)	Draw the timing waveform of 3 bit ripple counter, what is the effect of propagation delay in it, and convert this counter into a ring counter.	7M	CO3	BL3
6	a)	Design an even parity bit generator using T flip-flops.	7M	CO3	BL3
	b)	Design a Modulo-7 counter using J K flip-flops.	7M	CO3	BL3
7	a)	List out the steps in designing a sequential circuit as a Mealy FSM and as Moore's FSM.	7M	CO3	BL1
	b)	Compare the basic features of the following logic families: DTL, RTL, TTL and CMOS.	7M	CO4	BL2
8	a)	How are integrated circuits classified? Give brief working of CMOS transmission gate.	7M	CO4	BL2
	b)	Explain the process of TTL logic driving the CMOS logic.	7M	CO4	BL2

---oo0oo---