Code No: R2021042 **R20** SET - 1

II B. Tech I Semester Supplementary Examinations, July - 2022
SWITCHINNG THEORY AND LOGIC DESIGN
(Com to ECE, EIE, ECT)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1	a)	Convert the following (i) $(123.589)_{10} = (\quad)_8$. (ii) $(1011011111101.10101)_2 = (\quad)_{16}$	[7M]
	b)	Represent +35 and -35 in sign magnitude, sign 1's complement and sign 2's complement representation.	[4M]
	c)	Convert $(525)_{10}$ into its Excess-3 code.	[3M]
		Or	
2	a)	Find the complement of the following and show that F.F'=0 and F+F'=1 (i) F=XY'+X'Y (ii) F=(X+Y'+Z)(X'+Z')(X+Y)	[8M]
	b)	What are universal gates? Why these gates are called as universal gates?	[3M]
	c)	What are the applications of Boolean algebra?	[3M]
3	a)	Find the minimal sum of products for the Boolean expression, $f = \sum m(1,2,3,5,7,8,9,10,12,14,15)$, using the K-Map.	[10M]
	b)	What is the advantage of tabular method?	[2M]
	c)	Explain the term prime implicant.	[2M]
		Or	
4	a)	Design and implement 4-bit Binary Adder/subtractor.	[10M]
	b)	What is a full/subtractor? Write its truth table.	[2M]
	c)	List the applications of full adders.	[2M]
5	a)	With the help of a logic diagram and a truth table, explain a 3-line to 8-line decoder.	[7M]
	b)	Draw the pin diagram of an IC 7447 and also write its truth table.	[4M]
	c)	What is multiplexer? List the applications of multiplexers.	[3M]
		Or	
6	a)	Design a combinational circuit using PROM that accepts 3-bit binary number and generates its equivalent excess-3 code.	[10M]
	b)	Briefly explain about PLDs.	[4M]
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7 a) Design a 4-bit synchronous counter with T flip-flops. [10M]

b) Write a short notes on [4M]
(i)IC 7490 (ii)IC 74121

Or

8 a) Convert SR flip-flop to JK flip-flop with an example. [10M]

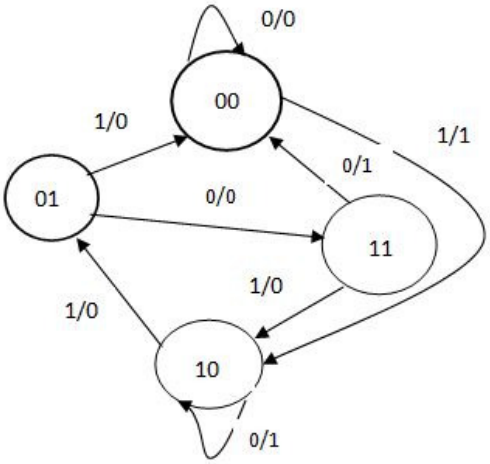
b) Write the differences between combinational and sequential circuits. [4M]

9 a) With the help of State table and State diagram explain the operation of Sequence generator. [7M]

b) With an example explain the procedure for conversion of Moore machine to Mealy machine. [7M]

Or

10 a) A sequential circuit has one input and one output .The state diagram is shown below. Design the sequential circuit with RS flip-flop. [10M]



b) Distinguish between Moore and Mealy Machines. [4M]