

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : **14EC2001**
 Sub. Name : **Digital Electronics**

Semester : **2016-17 ODD**
 Duration : **3hrs**
 Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Simplify the following equation using Quine-Mc-Cluskey method and verify the same using K-map. $f(a,b,c,d)=\sum m(0,1,2,8,10,11,14,15)$	CO1	20
(OR)				
2.	a.	Simplify the following function using kmap i. $f(a,b,c,d)=\sum(5,6,7,13,14,15)$ ii. $f(a,b,c)=\sum m(1,2,4)+d(0,3,7)$	CO1	10
	b.	Using Boolean algebra techniques, simplify the following expressions. i. $F=X \cdot Y + X(Y+Z) + Y(Y+Z)$ ii. $Y=(AB)'(A'+B)(B'+B)$	CO1	10
3.	a.	Implement the following expressions using 8X1 and 16X1 multiplexer. $f(a,b,c)=\sum m(0,2,5,6)$ $f(w,x,y,z)=\sum m(0,1,2,3,6,8,9,10,12,15)$	CO2	12
	b.	Design 1X4 demultiplexer circuit.	CO2	8
(OR)				
4.	a.	Design Binary to gray code converter.	CO2	15
	b.	Draw 4 bit parallel adder diagram.	CO2	5
5.	a.	Derive excitation table for RS,JK,D and T flip flop	CO2	12
	b.	Explain different types of triggering techniques.	CO2	8
(OR)				
6.	a.	Implement the following circuit using T flip flop <pre>graph TD 00_0((00/0)) -- 1 --> 01_0((01/0)) 01_0 -- 1 --> 10_0((10/0)) 10_0 -- 1 --> 11_1((11/1)) 11_1 -- 1 --> 00_0 00_0 -- 0 --> 00_0 01_0 -- 0 --> 01_0 10_0 -- 0 --> 10_0 11_1 -- 0 --> 11_1</pre>	CO2	20
7.	a.	Draw Johnson counter circuit and explain.	CO2	10
	b.	Explain Parallel in serial out shift register	CO2	10
(OR)				

8.	a.	Design 3 bit synchronous up down counter using T flip flop.	CO2	20
		<u>Compulsory:</u>		
9.	a.	Draw and Explain NAND,NOT and NOR gate CMOS representation.	CO3	15
	b.	Implement the following function using PROM $f(A,B,C,D)=\Sigma m(0,1,3,5,7,9,12,14)$	CO3	5

ALL THE BEST

CO1.The student understands number systems, binary codes and the basic postulates of Boolean algebra.

CO2.The students acquire knowledge to design various combinational and sequential circuits.

CO3.The student gains better understanding in the implementation of digital circuits in programmable logic devices and about different logic families.