Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**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**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EC2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Digital Electronics** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **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)=Σm(0,1,2,8,10,11,14,15) | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Simplify the following function using kmap   1. f(a,b,c,d)=Σ(5,6,7,13,14,15) 2. f(a,b,c)=Σm(1,2,4)+d(0,3,7) | CO1 | 10 |
| b. | Using Boolean algebra techniques, simplify the following expressions.   1. F=X . Y + X (Y + Z) + Y (Y + Z) 2. Y=(AB)'(A'+B)(B'+B) | CO1 | 10 |
| 3. | a. | Implement the following expressions using 8X1 and 16X1 multiplexer .  f (a,b,c)=∑m(0,2,5,6)  f(w,x,y,z)= ∑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  E:\official\LMS\moore.png | 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 |
|  | | **Compulsory:** |  |  |
| 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)=Ʃm(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.**