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 – April/May – 2017**

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| **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 F(a,b,c,d)=Σ (0,1,2,8,10,11,14,15) | CO1 | 12 |
| b. | Covert the following in to canonical form and write truth table   1. Y=ABC+ACD'+A'BC 2. Q=AB+AC' | CO1 | 8 |
| (OR) | | | | |
| 2. | a. | Simplify the following using Kmap  f(a,b,c,d)=m(1,2,4,6,7,8,9,11,13,15)+d(0,3,12) | CO1 | 10 |
| b. | Convert (280.5)10 to its binary, octal and hexadecimal equivalent. | CO1 | 10 |
| 3. |  | Design 1x4 demultiplexer and 4x1 multiplexer and explain its function. | CO2 | 20 |
| (OR) | | | | |
| 4. | a. | Design a 3 bit gray to binary code converter. | CO2 | 12 |
|  | b. | Implement a Full adder circuit with a decoder and OR gates. | CO2 | 8 |
| 5. | a. | Implement the following Boolean function with a multiplexer with A, B and D connected to selection lines S2 , S1, and S0  respectively.  F(A,B,C,D) = ∑ (0,1,3,4,8,9,15) | CO2 | 10 |
|  | b. | Design a digital circuit to solve the given problem.  There are 4 input lines A,B,C,D and 2 output lines namely x and y. The output X should go high if C is high irrespective of other inputs. Both the outputs are high if the number of one’s is greater than number of zeros. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Draw the logic circuit, characteristic table and derive the characteristic equation of SR and D flip flop. | CO2 | 10 |
|  | b. | Implement the following using T flip flop.  E:\official\LMS\moore.png | CO2 | 10 |
| 7. | a. | Design a 3 bit synchronous binary up-down binary using T flip flop. | CO2 | 15 |
|  | b. | Derive excitation table for JK flip flop. | CO2 | 5 |
| (OR) | | | | |
| 8. | a. | Explain Johnson counter and ring counter with truth table and circuit. Diagram | CO2 | 12 |
|  | b. | Draw the block diagram of 4bit PISO shift register. | CO2 | 8 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Design and implement a 3 bit binary to gray code converter on PROM. | CO3 | 10 |
|  | b. | Draw and Explain NAND,NOT and NOR gate CMOS representation. | CO3 | 10 |