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 :** | **16PH2004** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SEMICONDUCTOR LOGIC DEVICES** | **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. | Convert Binary (110010110) to decimal. | CO1 | 4 |
| b. | Convert decimal (345) to binary. | CO1 | 4 |
| c. | Binary addition: 1011.111 + 1111.011. | CO1 | 4 |
| d. | Binary subtraction :11.01111-10.00000. | CO1 | 4 |
| e. | Convert decimal (1508) to hexa. | CO1 | 4 |
| (OR) | | | | |
| 2. |  | Draw the symbol, timing diagram and truth table for the following gates:  AND, OR, NOT, Ex-OR,NOR and NAND. | CO3 | 20 |
| 3. | a. | Obtain the Boolean expression using K-Map .  f (A,B,C,D)= Σ (0,1,2,3,4,6,8,9,10,11) | CO3 | 14 |
|  | b. | Obtain the Boolean expression using K-Map.  f(A,B,C) =∏ (0,1,6,7) | CO3 | 6 |
| (OR) | | | | |
| 4. | a. | Draw the circuit diagram, truth table and derive the K-map for half and full subtractor. | CO3 | 16 |
|  | b | Write the Boolean expression for the following circuit  C:\Users\admin\Desktop\1.png | CO3 | 4 |
| 5. | a. | Write down the various steps involved in QuineMcluskey method. | CO1 | 10 |
|  | b. | Obtain the Boolean expression for SOP and POS from the following table.  C:\Users\admin\Desktop\screen-16.30.40[09.11.2016].png | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Design a 4 bit even parity generator with a neat circuit diagramand truth table . | CO2 | 15 |
|  | b. | Define combinational circuit. | CO2 | 2 |
|  | c. | C:\Users\admin\Desktop\screen-16.47.41[09.11.2016].png. | CO1 | 3 |
| 7. | a. | Derive the expression for 4:1 Multiplexer and draw the circuit diagram. | CO2 | 10 |
|  | b. | Implement the following Boolean function using 8:1 Mux  F(A,B,C,D) = Σm (0,2,6,10,11,12,13) + d (3,8,14). | CO2 | 10 |
| (OR) | | | | |
| 8. | a. | Tabulate Hexadecimal to binary encoder. | CO2 | 10 |
|  | b. | Design a full substractor using 1:8 demultiplexer. | CO2 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Difference between latches and Flip flops. | CO2 | 4 |
|  | b. | Discuss in detail the different types of flip flops with a neat diagram and truth table. | CO2 | 16 |