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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **18EC3032** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DIGITAL SYSTEM AND ASIC DESIGN** | **Max. Marks :** | **100** |

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| **ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)** | | | | |
| 1. | a. | Design a full adder circuit using MSI technology. | CO1 | 4 |
| b. | Design a MOD 6 synchronous counter using JK flip flop. | CO1 | 12 |
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| 2. | a. | Implement a 4 bit binary to gray code converter circuit on a PROM architecture. | CO2 | 8 |
| b. | Implement a MOD 3 synchronous counter on a PAL architecture using D flip flop. | CO2 | 8 |
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| 3. | a. | Discuss the different steps followed to design an ASIC with neat flowchart. | CO3 | 8 |
| b. | Define Logical Effort and estimate the delay of a fanout of  4 inverters. | CO3 | 8 |
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| 4. | a. | Illustrate the programming technology of Actel FPGA architecture. | CO4 | 8 |
| b. | With necessary diagrams, describe program, store and erase operation of EPROM programming technology. | CO4 | 8 |
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| 5. | a. | Describe the interconnect architecture of Actel ACT family FPGA. | CO5 | 8 |
| b. | Illustrate the Xilinx LCA interconnect architecture. | CO5 | 8 |
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| 6. | a. | Distinguish the different types of ASICs and explain its characteristics. | CO3 | 8 |
| b. | Illustrate the design of a negative edge triggered flip-flop using latches with neat waveforms. | CO3 | 8 |
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| 7. | a. | With neat diagram, describe Xilinx LCA configurable logic block structure. | CO4 | 8 |
| b. | Illustrate Altera MAX architecture with neat diagram. | CO4 | 8 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Mention the major problems associated with schematic entry and indicate how it was overcome. | CO6 | 6 |
| b. | List the various low level design languages and mention its differences. | CO6 | 6 |
| c. | Expand EDIF and mention its significance. List different versions of EDIF and indicate its important features. | CO6 | 8 |