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

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**End Semester Examination – Nov/Dec– 2018**

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| **Code :** | **17EC2001** | **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 Boolean function and implement the function using NAND gates. | CO1, CO2 | 10 |
| b. | Draw the multiple – level NOR circuit for the following expression: | CO2 | 10 |
| (OR) | | | |  |
| 2. | a. | Express the following division in decimal.  (i). (10110.0101)2 (ii). (26.24)8  (iii) (16.5)16 | CO1 | 6 |
| b. | Simplify the Boolean functions, using four- variable maps: | CO1, CO2 | 4 |
| c. | Draw the multiple – level NAND circuit for the following expression: | CO2 | 10 |
|  |  |  |  |  |
| 3. | a. | Design and implement a full adder with two half adders and an OR gate. | CO3 | 10 |
| b. | Draw a four-bit by three-bit binary multiplier. | CO3 | 10 |
| (OR) | | | |  |
| 4. | a. | Design a four – bit adder with carry lookahead. |  | 10 |
| b. | Implement the Boolean function with a multiplexer with three selection inputs. | CO3 | 10 |
|  |  |  |  |  |
| 5. | a. | Explain SR Latch with NOR and NAND gates. | CO4 | 6 |
| b. | Design a four-bit BCD counter. | CO4 | 10 |
| c. | What is the difference between an Ring and Johnson Counter | CO4 | 4 |
| (OR) | | | |  |
| 6. | a. | Explain Edge-Triggered D Flip-Flop. | CO4 | 8 |
| b. | Design a four-bit binary synchronous counter with D flip-flops. | CO4 | 12 |
|  |  |  |  |  |
| 7. | a. | Write a short note on ROM, EPROM, EEPROM and EAPROM. | CO5 | 8 |
| b. | Draw a PLA circuit to implement the functions | CO5 | 12 |
| (OR) | | | |  |
| 8. | a. | Draw a 4 x 4 RAM diagram and explain. | CO5 | 12 |
| b. | Explain with neat diagram the architecture of Xilinx Spartan and predecessor devices. | CO5 | 8 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Design an asynchronous sequential circuit with inputs A and B with output Y. The output Y =1 if A changes from 0 to 1, Y=0 if B changes from 0 to 1, and Z=0 otherwise. | CO6 | 14 |
| b. | Explain in detail about Races and Hazards with an example. | CO6 | 6 |