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



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

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| **Code :** | **18EC2003 (FOR MEDIA STUDENTS)** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DIGITAL SYSTEM DESIGN** | **Max. Marks :** | **100** |

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| **Q. No.** | **Questions** | | **Course Outcome** | **Marks** |
| **PART – A (10X1 = 10 MARKS)** | | | | |
| 1. | | Convert binary number 11011110 into its decimal equivalent. | CO1 | 1 |
| 2. | | Draw the logic diagram of OR gate using universal gates. | CO1 | 1 |
| 3. | | Identify the combinational circuit that has only one input and many outputs. | CO2 | 1 |
| 4. | | Express Gray code 10111 into binary numbers. | CO2 | 1 |
| 5. | | Define state diagram. | CO3 | 1 |
| 6. | | How should a JK flip flop be connected to function as a divide by 2-element? | CO3 | 1 |
| 7. | | What is the cause for essential Hazard? | CO4 | 1 |
| 8. | | Differentiate stable and unstable state. | CO5 | 1 |
| 9. | | Expand TTL. | CO6 | 1 |
| 10. | | What is an EPROM? | CO6 | 1 |

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| **PART – B (6 X 3 = 18 MARKS)** | | | |
| 11. | Subtract the following binary number using 1’s complement method:  1100 from 1111. | CO1 | 3 |
| 12. | State Demorgan’s theorem. | CO2 | 3 |
| 13. | Write the excitation table of SR and D flip flop. | CO3 | 3 |
| 14. | State the advantages and disadvantages of TTL. | CO4 | 3 |
| 15. | List the advantages of look ahead carry. When should it be used? | CO5 | 3 |
| 16. | Distinguish between latch and flip-flop. | CO6 | 3 |

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| **PART – C (6 X 12 = 72 MARKS)**  **(Answer any five Questions from Q.no 17 to 23. Q.No 24 is a Compulsory Question)** | | | | | |
| 17. |  | Find a minimal SOP representation for f(A,B,C,D,E)=Σm(1,4,6,10,20,22,24,26)+ d(0,11,16,27) using K-map method. Draw the circuit of the minimal expression. | | CO1 | 12 |
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| 18. |  | Design and implement a 16:1 Multiplexer using two 8:1 multiplexers. | | CO1 | 12 |
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| 19. |  | Design a Mod 12 synchronous counter. | | CO2 | 12 |
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| 20. |  | Explain the operation of carry lookahead adder with neat diagram. | | CO2 | 12 |
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| 21. |  | Draw a 4 bit serial in parallel out (SIPO) and Parallel In Parallel Out (PIPO) shift register and explain its operation. | | CO3 | 12 |
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| 22. |  | Design a two bit Magnitude Comparator with each bit having two bits wide. | | CO4 | 12 |
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| 23. |  | Using D flip-flops, design a synchronous counter which counts in the sequence 000, 001, 010, 011, 100, 101, 110, 111, 000. | | CO5 | 12 |
|  |  | | **Compulsory:** |  |  |
| 24. | a. | Design a verilog code to implement Encoder. | | CO6 | 6 |
| b. | A combinational circuit is defined by the functions:  Question No.24 from Module 6  F1 = Σm(1,3,5) F2 = Σm(2,5,7)  Implement the circuit with a PAL having 3 inputs, 3 product terms and two outputs. | | CO6 | 6 |