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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

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

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **09EE202/12EE220/EE257** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **DIGITAL ELECTRONICS** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | Convert (115)10 to hexadecimal number. | (1) |
| 2. | State DeMorgan’s law. | (1) |
| 3. | Draw the truth table of 2-input NOR gate. | (1) |
| 4. | What is meant by a decoder? | (1) |
| 5. | A flip-flop is capable of storing two bits of information. True/False. | (1) |
| 6. | What is a D flip-flop? | (1) |
| 7. | Sequential circuits without clock pulses are called -------------------------------. | (1) |
| 8. | Define state diagram. | (1) |
| 9. | ROM is used to store the information permanently. True/False. | (1) |
| 10. | State fan-in of a logic gate. | (1) |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11 | Simplify the given Boolean expression Y= | (3) |
| 12 | Realize the logic expression Y= using logic gates. | (3) |
| 13 | Differentiate combinational logic circuit and sequential logic circuit. | (3) |
| 14 | Neatly draw the block diagram of asynchronous sequential circuit. | (3) |
| 15 | Mention the advantages of ECL over other IC technologies. | (3) |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | a. | Express the function Y= in (i) canonical SOP and (ii) canonical POS form. | (5) |
| b. | Simplify the expression F(A,B,C,D)=Σm (7,9,10,11,12,13,14,15) using K-map method. | (10) |
| (OR) | | | |
| 17. |  | Using K-map, obtain the minimal SOP and POS expressions for the given function:  F(A,B,C,D)=Σm (0,2,3,6,7)+ Σd (8,10,11,15) | (15) |
| 18. |  | Design a full-adder circuit and draw its logic diagram. | (15) |
| (OR) | | | |
| 19. |  | Draw neatly and explain the truth table and logic diagram of 4-to-1 Multiplexer and 1-to-4 Demultiplexer. | (15) |
| 20. |  | List the different types of flip-flop. Using suitable diagrams and truth table explain the working of each one. | (15) |
| (OR) | | | |
| 21. | a. | Design a synchronous MOD-6 counter using J-K flip-flops | (10) |
| b. | Explain the working of serial-in serial-out (SISO) shift register with logic diagram and waveforms. | (5) |
| 22. | a. | Distinguish Mealy and Moore machines. | (8) |
| b. | Write the steps involved in the design of synchronous sequential circuits. | (7) |
| (OR) | | | |
| 23. |  | Design a sequence detector that produces a sequence 1011 010. | (15) |
| 24. |  | With neat diagrams, explain the function of Programmable Logic Array(PLA) and Programmable Array Logic (PAL). | (15) |
| (OR) | | | |
| 25. |  | Construct an inverter, NAND and NOR circuit using CMOS transistor and explain the operation of each one. | (15) |

ALL THE BEST