Question Paper Code: R18A22EC04

R18

# ANURAG Engineering College

## (An Autonomous Institution)

## II B.Tech II Semester Supplementary Examinations, December – 2024

## SWITCHING THEORY AND LOGIC DESIGN

## (ELECTRICAL AND ELECTRONICS ENGINEERING)

**Time: 3 Hours** **Max. Marks: 75**

### Section – A (Short Answer type questions) (25 Marks)

| Answer All Questions | | Course Outcome | B.T Level | Marks |
|---|---|---|---|---|
| 1. | Find 2's complement of $(10100011)_2$ | CO1 | L1 | 2M |
| 2. | Give the classification of binary codes. | CO1 | L1 | 3M |
| 3. | Implement the given expression using logic gates F=AB+CD'+B'C | CO2 | L2 | 2M |
| 4. | Simplify using k-map F(A, B, C)=$\sum$ m(0,1,2,3,4,5,6,7). | CO2 | L2 | 3M |
| 5. | Give the comparison between combinational and sequential circuits | CO3 | L2 | 2M |
| 6. | Convert JK flip flop to T flip flop. | CO3 | L2 | 3M |
| 7. | Define state diagram and state table. | CO4 | L1 | 2M |
| 8. | Distinguish Moore and Mealy FSMs. | CO4 | L2 | 3M |
| 9. | What is Merger chart? | CO5 | L1 | 2M |
| 10. | Mention the limitations of FSM. | CO5 | L1 | 3M |

### Section B (Essay Questions)

**Answer all questions, each question carries equal marks.** **(5 X 10M = 50M)**

| | | | | |
|---|---|---|---|---|
| 11. A) | Convert the following binary numbers to Decimal, Hexadecimal and octal forms<br>i) $(101101.1101)_2$ ii) $(11011011.100101)_2$ | CO1 | L3 | 10M |
| | **OR** | | | |
| B) | Implement the following using NAND-NAND realization.<br>i) AC+ABC+A'BC+AB+D ii) F=A'B'+A'C+B'C | CO1 | L3 | 10M |
| 12. A) | Draw and explain 4-Bit comparator. | CO2 | L3 | 10M |
| | **OR** | | | |
| B) | Draw and explain 16 to 1 multiplexer. | CO2 | L3 | 10M |
| 13. A) | What is racing problem and explain how it is overcome in JK flip flop. | CO3 | L3 | 10M |
| | **OR** | | | |
| B) | What is excitation table with the excitation tables explain the operation of JK, RS, D and T flip flops. | CO3 | L3 | 10M |
| 14. A) | Explain clearly design aspects of synchronous sequential FSMs. | CO4 | L2 | 10M |
| | **OR** | | | |
| B) | Design and explain clearly the procedure of single mode counter. | CO4 | L2 | 10M |
| 15. A) | Draw and explain clearly about weighing machine with a neat flow chart. | CO5 | L2 | 10M |
| | **OR** | | | |
| B) | Explain clearly data path subsystem for binary Multiplier. | CO5 | L3 | 10M |