

[Total No. of Ques.02]

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G. H. Raisoni College of Engineering and Management, Pune.
(An Autonomous Institution affiliated to Savitribai Phule, Pune University)

F. Y. B.Tech. Department

CAE-1: Term I (2025-26)

Digital Logic Design (23UESL1105)

[Time: 01 Hour]

[Max. Marks-20]

Instructions to the candidates:

- 1) All questions compulsory.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

| Q.No. | Sub Question | CO | Marks | BL |
|-------|---|-----|-------|----|
| Q.1 | a) Perform following Number conversions. | | | |
| | i) $(101111)_2 = (?)_8 = (?)_{16}$ | CO1 | [2M] | L2 |
| | ii) Convert Decimal to Binary number and Hexadecimal number. $(125)_{10} = (?)_2 = (?)_{16}$ | CO1 | [2M] | L2 |
| | iii) $(1011)_2 = (?)_{\text{Grey}}$ | CO1 | [1M] | L2 |
| | OR | | | |
| | b) i) $(1111)_{\text{Grey}} = (?)_{\text{Binary}}$ | CO1 | [1M] | L2 |
| | ii) Convert Hexadecimal to Decimal & Binary $(1FB)_{16} = (?)_{10} = (?)_2$ | CO1 | [4M] | L2 |
| | c) How the Negative numbers are represented Perform subtraction using 1s & 2 ^s complement method | CO1 | [5M] | L2 |
| | i) $(7-9)_{10}$ | | | |
| | ii) $(8-2)_{10}$ | | | |
| | OR | | | |
| | d) Simplify using Boolean algebra, Implement with logic gates. | CO1 | [5M] | L2 |
| | i) $(A, B, C,) = (\overline{A}.\overline{B} + \overline{A} + A.B)$ | | | |
| | ii) $(A, B, C,) = (\overline{A}.\overline{B}.C + \overline{A}.\overline{B}.C + \overline{A}.\overline{B}.(\overline{A}.\overline{B}.C + B.C))$ | | | |
| Q.2 | a) Convert following equations into standard/ canonical SOP form, $(A, B, C,) = (\overline{A} + \overline{A}.\overline{B} + \overline{A}.\overline{B}.C)$ | CO2 | [5M] | L3 |
| | OR | | | |
| | b) Solve the following equation using K-map, implement using Logic gates. $f(A, B, C, D) = \sum m(0,2,4,6,8,9,11) + d(1,3,10,15)$ | CO2 | [5M] | L3 |
| | c) Differentiate between Combinational and Sequential circuits. | CO2 | [5M] | L2 |
| | OR | | | |
| | d) Describe Multiplexers. Design 8:1 MUX using 4:1 MUX. | CO2 | [5M] | L2 |