

CBCS SCHEME

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18ELD31

Third Semester M.Tech. Degree Examination, Jan./Feb. 2021 Synthesis and Optimization of Digital Circuits

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain synthesis with a help of Y- chart. (08 Marks)
b. Explain optimization with different criterion. (06 Marks)
c. Discuss semicustom design taxonomy. (06 Marks)

OR

- 2 a. Give distinctive features of Hardware Language. (06 Marks)
b. Write UDL/Code by using construct called automation to realize finite state machine. (07 Marks)
c. Explain data flow based and control flow based transformation. (07 Marks)

Module-2

- 3 a. Explain greedy algorithm. Explain greedy scheduling also give its pseudo code. (08 Marks)
b. Explain Liao-Wong algorithm with an example also give its pseudo code. (07 Marks)
c. Explain dynamic programming. (05 Marks)

OR

- 4 a. Explain ITE operator. (08 Marks)
b. For the given function $f = ab + bc + ac$, find Boolean difference, consensus and smoothing with respect to a. (06 Marks)
c. What are perfect graph? Give an example to it. (06 Marks)

Module-3

- 5 a. Explain list oriented manipulation. (08 Marks)
b. What are TAUTOLOGY? Explain its six rules of simplifying it. (07 Marks)
c. Discuss Boolean relation with an example. (05 Marks)

OR

- 6 a. Explain algebraic model. Give its pseudo code. (08 Marks)
b. For the expression $f = ace + bce + de + g$, find rectangle and co-rectangle. (06 Marks)
c. Explain controllability for CDC set. (06 Marks)

Module-4

- 7 a. Explain finite state machine decomposition. (08 Marks)
b. Explain cycle-time minimization by retiming. (06 Marks)
c. Explain state minimization for completely specified machine. (06 Marks)

OR

- 8 a. Explain implicit state minimization. (08 Marks)
- b. Explain state minimization for incompletely specified finite state machine. (07 Marks)
- c. Discuss area minimization by retiming. (05 Marks)

Module-5

- 9 a. Discuss ALAP scheduling algorithm. (07 Marks)
- b. Explain loop folding. (06 Marks)
- c. Explain relative scheduling. (07 Marks)

OR

- 10 a. Explain sharing and binding for resource-dominated circuits. (10 Marks)
- b. Explain Register Sharing with an example. (10 Marks)
