Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 82439

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Second Semester

VLSI Design

VL 9221/VL 921/10244 VL 203 — CAD FOR VLSI CIRCUITS

(Common for M.E. Applied Electronics, M.E Digital Electronics and Communication Engineering and M.E. VLSI Design and Embedded systems)

(Regulation 2009/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What are the different domains in VLSI design? Represent them using 'Y' chart.

2. What is an adjacency list data structure?

3. Under which situation layout compaction could be applied?

4. State the significance of longest path algorithm used for DAGs?

5. What are the types of routing problems? List any two.

6. What are the important steps in Lee's area routing algorithm?

7. State different levels of abstractions in simulation.

8. Compare compiler driven and event driven simulations.

9. For the program segment, while $(a > b)\ a \leftarrow a - b$; sketch a DFG using selector and distributer nodes.

10. What are the issues in data dominated applications?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Compare computational and space complexities of algorithms. Illustrate with examples. (6)

(ii) Using pseudo code, describe Prim's algorithm for minimum spanning tree. (10)

Or

(b) (i) Compare data structures used in breadth-first and depth-first algorithms. (4)

(ii) Is it possible to convert breadth —first algorithm into shortest path algorithm? Explain with pseudo code. (12)

12. (a) (i) Show with illustrative example, how a layout with redundant space could be compacted. (8)

(ii) What is the justification for longest path algorithm for DAGs? Explain. (8)

Or

(b) (i) What are the critical and non-critical issues in compaction algorithms? Explain. (6)

(ii) Compare Bellman-Ford and Liao-Wong algorithms. (10)

13. (a) (i) How placement of cells is done in building block layout style? Illustrate with example. (8)

(ii) Describe briefly, the steps used in Kernighan-Lin algorithm. (8)

Or

(b) (i) What are the important parameters in routing? Explain. (6)

(ii) Describe with pseudo code, the left-edge algorithm used for channel routing. (10)

14. (a) (i) What is the data structure used for event-driven simulation? Explain. (6)

(ii) Describe event-driven simulation with an example. (10)

Or

(b) (i) What are the methods used to model signals at switch level simulation? (6)

(ii) Describe switch level simulation with an example. (10)

15. (a) (i) What is ROBDD? Illustrate how reduction is achieved for the same. (8)

(ii) Illustrate simple data flow for a short program segment. (8)

Or

(b) (i) Compare mobility driven and force driven scheduling algorithms. (8)

(ii) Describe high level synthesis with an example. (8)
