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Question Paper Code : 11915

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Second Semester

VLSI Design

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

(Common to M.E. Applied Electronics)

(Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the methods of representing a graph in a computer?
2. Differentiate NP-hard and NP-complete problems.
3. Mention the applications of layout compaction.
4. Write the role of circuit partitioning in VLSI design.
5. What is the use of shape function in floor planning?
6. Distinguish between local and global routing.
7. List the most important delay models.
8. State the importance of binary decision diagram.
9. What are the goals of high level synthesis?
10. Draw the data flow graph (DFG) for iterative dataflow with example.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe in detail the tools needed for VLSI design process. (10)
(ii) With the help of a graph, show how Breadth-first search technique works. (6)

Or

- (b) (i) Formulate an efficient algorithm for finding the shortest path in graph and explain with examples. (10)
(ii) What are the various data structures used to store the components of layout? What are the advantages and limitations of those structures (6)

12. (a) Write the pseudo code of Kernighan-Lin partitioning algorithm and explain it with suitable example. (16)

Or

- (b) List out the factors to be considered for partitioning and explain how can simulate annealing be applied to placement problems. (16)

13. (a) (i) Explain the Lee's algorithm with a pseudo-code and explain its applications in area routing. (10)
(ii) Give a brief note on shape functions. (6)

Or

- (b) Describe the algorithms for global routing. (16)

14. (a) (i) Explain the approach of compiler-driven simulation with a simple example. (8)
(ii) Give a brief note on combinational logic synthesis. (8)

Or

- (b) (i) Explain an algorithm for switch level simulation. (8)
(ii) Discuss the principle of ROBDD. (8)

15. (a) Explain mobility based and force directed scheduling. (16)

Or

- (b) Write explanatory notes on :
(i) Assignment (8)
(ii) High level transformation. (8)