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Question Paper Code : 71879

M.E. DEGREE EXAMINATION, JUNE/JULY 2013.

Elective

VLSI Design

VL 9258/VL 958 — GENETIC ALGORITHMS AND THEIR APPLICATIONS

(Regulation 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Simple Genetic Algorithm.

2. Give an example for Inversion operation.

3. List out the various objectives of partitioning algorithm in VLSI design.

4. Give a neat sketch of standard cell layout style with macro blocks.

5. Define Location based GA encoding.

6. Mention three different crossover operators used to eliminate conflicts.

7. Draw the routing graphs for 6 cell macro cell.

8. Define fitness function used for Test Generation.

9. What is migration operator?

10. List out any four differences between GA and Conventional algorithm.

PART B — (5 × 16 = 80 marks)

11. (a) Explain Steady state algorithm. Compare Simple Genetic Algorithm and Steady State Genetic Algorithm. (16)

Or

(b) Mention the genetic operators. Explain them with examples. (16)

12. (a) (i) Define FPGA. List out the approaches for solving FPGA Mapping problem. (8)

(ii) List out the approaches involved in routing. Explain them in detail. (8)

Or

(b) Elaborate the concept of Circuit Partitioning by Genetic Algorithm. (16)

13. (a) What is GASP Algorithm? Explain it in detail along with meta-genetic optimization process. (16)

Or

(b) Briefly explain the application of unified algorithm for macro cell placement. Enumerate its limitations and enhancements. (16)

14. (a) Define Global Routing. Briefly explain the different routing phases with experimental results. (16)

Or

(b) List out the Deterministic / Genetic test generator hybrids. Explain them in detail. (16)

15. (a) Elaborate in detail the Genetic Algorithm that solves maximum power dissipation in large circuits. (16)

Or

(b) Explain the concept of Automatic Test Generation. Briefly describe how Genetic Algorithm can be used in ATG. (16)

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