CS8470

FPGA Programming Techniques

UNIT 1

Programmable logic devices – PLE, PAL and PLAs – SPLD Vs CPLD – Field programmable logic arrays –techniques to program: one-time programmable, in-system programmable techniques.

UNIT 2

VHDL- Modeling styles – Dataflow – Behavioral – structural designs - Design of simple / complex combinational circuits – sequential circuit design with clocking schemes.

UNIT 3

Verilog HDL - Modeling styles – Dataflow – Behavioral – structural designs – compiler directives – operands – operators – gate level modeling – user defined primitives – system tasks and functions – verification using test bench – waveform generation.

UNIT 4

Embedded C programming concepts – architectural design – editing – compiling – linking – loading - debugging programs - Introduction to C-to-Hardware Compilation Technology - Design of custom FPGA logic using C.

UNIT 5

Capture of the Design - Targeting the Design to the FPGA Device - Processing the Design - Using the Accumulator - Accelerating processing systems – Communication establishment using Ethernet port in FPGA – programs related to communication ports.

References:

1. J. Bhasker, "A VHDL primer", 3rd edition, Pearson Education, 2015.

2. J. Bhasker, "A Verilog HDL primer", BS publications, 2008.

3. David Pellerin, "Practical FPGA Programming in C", Prentice Hall, 2005.

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