T.E. (Electronics & Telecommunication Engineering)
(Semester -VI) Examination, May - 2015
VLSI DESIGN
Sub. Code:45694

Day and Date : Monday, 11 - 05 - 2015

Time :2.30 p.m. to 5.30 p.m.

Total Marks : 100

Instructions :
1) All questions are compulsory.
2) Numbers to the right indicates full marks.
3) Assume suitable data wherever necessary.

SECTION - I

Q1) Solve any Three: [18]

a) Briefly elaborate with suitable example, the significance of 'configuration' in VHDL.

b) Which are the different types of 'Operators' that operate on signals variables and constants in VHDL? Summarize all types and with suitable examples. Elaborate 'Logical' operators.

c) Write a VHDL code for BCD up counter.

d) Explain briefly the different levels of abstraction.

Q2) Solve any two: [16]

a) Draw VLSI system design flow diagram and briefly explain each block.

b) Write a VHDL code for 4 bit ALU, which will perform following operations; addition, subtraction, AND-ing, OR-ing, XOR-ing, and reverse subtraction.

c) Explain the concept of meta-stability with suitable example. Which are the reasons because of which circuit enters in to meta-stable state?

P.T.O.

Q3) Solve any two: [16]

a) What is meant by 'Package' in VHDL? With the help of proper syntax briefly write about package body and package declaration.

b) Write a VHDL code for positive edge triggered 'D' flip-flop with enable and asynchronous active high set and clear inputs.

c) Draw a state diagram for a sequence detector '1010' which is realized as a Melay machine. Write a VHDL code for the above said Melay machine.

SECTION - II

Q4) Solve any three: [18]

a) Which are the different types of 'Attributes' to which VHDL supports? Elaborate 'Scalar' type of attributes with proper syntax and its function.

b) What is the role of simulators in VHDL code testing? Elaborate event based simulator with suitable example.

c) Which are the different types of delays used in VHDL programming? Explain any-one with suitable example and respective timing diagrams.

d) With the help of suitable circuit sketch briefly elaborate the role of LFSR in component testing.

Q5) Solve any two: [16]

a) Derive excitation equations for the various instructions used in general purpose microprocessor EC-2 using suitable state diagram and next-state implementation table.

b) Neatly draw and explain functional block diagram of XC9572 macrocell.

c) Explain briefly the concept of fault detection using path sensitization technique used in combinational logic circuit testing.

Q6) Solve any two:

a) With the help of typical boundary scan cell diagram and basic boundary scan architecture explain the concept of boundary scan testing.

b) Briefly write about Built-In-Self-Test used for testing digital ICs.

c) Using neat suitable block diagram explain the functionality of Input/Output block of Spartan-II FPGA.

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