

8E4093

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B. Tech. VIII Sem. (Main/Back) Exam., April, 2015

Electronics & Communication Engineering

8EC4.2 VHDL

Common for 8EX4.2 & 8EC4.2

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks: 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL

2. NIL

UNIT – I

- Q.1 (a) Explain the history of various hardware description language. [6]
(b) Draw the schematic for ASIC design flow and explain every step in brief. [10]

OR

- Q.1 (a) Differentiate between behavioral and structural style of modeling using suitable example. [10]
(b) Explain the following:- [6]
(i) Entity declaration
(ii) Architecture declaration

UNIT – II

- Q.2 (a) Write VHDL code for 2 to 1 multiplexer using structural style modeling. [6]
(b) Write VHDL code for 2-input Ex-NOR gate design with minimum number(s) of 2-input NAND gate (only) as a component using structural modeling. [10]

OR

Q.2 Write hierarchical code for 16 to 1 multiplexer using structural modeling. [16]

UNIT – III

Q.3 (a) Draw FSM for (i) D-Flip Flop (ii) J-K Flip Flop & write VHDL code. [12]

(b) Write about concurrent, sequential and concurrent plus sequential VHDL statements. [4]

OR

Q.3 (a) Write VHDL code for modulo-10 up counter with synchronous reset. [10]

(b) Compare level triggered & edge trigger systems. [6]

UNIT – IV

Q.4 (a) Draw FSM and write VHDL code for a system which has a single bit input 'X' and two single bit outputs 'Y' and 'Z'. The output of system is asserted logic 1 to 'Y' and 'Z' when system detects in input stream of serial bits 1001 or 1010 respectively. [16]

OR

Q.4 (b) Write VHDL code for serial adder. [8]

(b) Compare Mealy & Moore Type FSM. [8]

UNIT – V

Q.5 Explain the following:-

(a) Clock Synchronization [8]

(b) Design example of divider [8]

OR

Q.5 Q.5 Explain the following:-

(a) Memory organization [8]

(b) CPU organization [8]