

# CBCS SCHEME

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15EC53

## Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Verilog HDL

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing one full question from each module.*

### Module-1

- a. Explain a typical design flow for designing VLSI IC circuit using the block diagram. (06 Marks)  
b. Explain top down design methodology and bottom up design methodology. (10 Marks)

OR

- a. With a block diagram of 4-bit Ripple carry counter, explain the design hierarchy. (10 Marks)  
b. Explain the trends in Hardware Description Languages (HDLs). (06 Marks)

### Module-2

- a. With a neat block diagram, explain the components of verilog module. (06 Marks)  
b. Explain the following data types with an example in verilog:  
(i) Nets (ii) Register (iii) Integers (iv) Real (v) Time Register. (10 Marks)

OR

- a. Explain the port connection rules. (06 Marks)  
b. Explain the two methods of connecting ports to external signals with an example. (10 Marks)

### Module-3

- a. What are Rise, Fall and Turn-off delays? How they are specified in verilog? (06 Marks)  
b. Design a 2-to-1 multiplexer using bufifo and bufifl gates. The delay specification for these gates are as follows:

Delay	Min	Typ	Max
Rise	1	2	3
Fall	3	4	5
Turn-off	5	6	7

Write gate level description and stimulus in verilog.

(10 Marks)

OR

- a. Write a verilog dataflow level of abstraction for 4-to-1 multiplexer using conditional operator. (06 Marks)  
b. Write a verilog dataflow description for 4-bit Full adder with carry lookahead. (10 Marks)

### Module-4

- a. Explain the blocking assignment statements and non-blocking assignment statements with relevant examples. (08 Marks)  
b. Write a note on the following loop statements:  
(i) While loop (ii) forever loop. (08 Marks)

OR

- 8 a. Explain sequential and parallel blocks with examples. (08 Marks)  
b. Write a verilog program for 8-to-1 multiplexer using case statement. (08 Marks)

**Module-5**

- 9 a. Explain the synthesis process with a block diagram. (08 Marks)  
b. Write a VHDL program for two 4-bit comparator using data flow description. (08 Marks)

OR

- 10 a. Explain the declaration of constant, variable and signal in VHDL with example. (08 Marks)  
b. Write a VHDL program for half adder in behavioral description. (08 Marks)

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