



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 131852

Roll No.

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B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15
DIGITAL SYSTEM DESIGN USING VHDL

Time : 3 Hours]

[Total Marks : 100

Note: All questions are compulsory

1 Attempt **any four** parts: **5×4=20**

- (i) Define Lexical elements, signals, variables and constant with reference to VHDL.
- (ii) Explain compilation and simulation in VHDL code
- (iii) Write structural VHDL description of 4-bit adder.
- (iv) Write VHDL statement for Synchronous and Asynchronous D-Flip-flop.
- (v) Explain Nine-Valued logic System for IEEE-1164 standard logic.
- (vi) Differentiate between transport and Inertial delay model with examples.

- 2** Attempt **any two** parts: **10×2=20**
- (i) Design the serial adder by accumulator with state diagram representation.
 - (ii) Design a behavioral model for 4x4 binary multiplier using state machine chart.
 - (iii) Write short notes on linked state machine.
- 3** Attempt **any two** parts: **10×2=20**
- (i) Draw the state graph of Floating-point Multiplier with VHDL code using behavioral modelling.
 - (ii) Explain the logic behind floating point Multiplication.
 - (iii) Write short notes on XILINX-4000 FPGA.
- 4** Attempt **any two** parts: **10×2=20**
- (i) Draw the block diagram of RAM with state machine diagram.
 - (ii) Draw the SM chart of Intel 486 bus interface and explain its bus cycle.
 - (iii) Write behavioural VHDL code for RAM.
- 5** Attempt **any two** parts: **10×2=20**
- (i) Explain generic BIST scheme.
 - (ii) How fault can be detected using path sensitization method. Explain with example.
 - (iii) Explain Boundary Scan Testing.