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Paper Id: 1 3 1 8 2 2

Sub Code:NEC-042

Roll No.

B TECH (SEM-VIII) THEORY EXAMINATION 2017-18 DIGITAL SYSTEM DESIGN USING VHDL

Time: 3 Hours Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief.

 $2 \times 10 = 20$

- a. Differentiate the Signal and Variable.
- b. Write the full form of IEEE.1164.
- c. Listed the various data types of VHDL.
- d. Write VHDL code for half Adder using style of modeling.
- e. What is the Inertial delay?
- f. Explain the sequential statement with respect to VHDL.
- g. What are the Binding alternatives?
- h. What do you mean by Test bench?
- i. Explain the Guarded Signal Assignment.
- j. Listed the applications of generics.

SECTION B

2. Attempt any *three* of the following:

 $10 \times 3 = 30$

- a. Implement D-flip-flop using structural style of modeling.
- b. Differentiate between the conditional assignment statement and single statement with respect to 8:1 multiplexer.
- c. (i) Explain the advantages and applications of VHDL.
 - (ii) Explain the importance of compilation and simulation in VHDL code.
- d. Explain the design of Binary Multiplier with example.
- e. Write the VHDL code and draw the SM chart for 486 bus interface unit.

SECTION C

3. Attempt any *one* part of the following:

 $10 \times 1 = 10$

- (a) What is the package body and package declaration? Explain with the suitable example.
- (b) Write a VHDL code for 4-bit PIPO shift register.

4. Attempt any *one* part of the following:

 $10 \times 1 = 10$

- (a) Explain the coding format and different functions of UART.
- (b) Explain the logic behind floating point Multiplication.

5. Attempt any *one* part of the following:

 $10 \times 1 = 10$

- (a) What is Guarded signal assignment? Explain with suitable examples.
- (b) What is the scan based design? Explain its testing sequence and general structure.

6. Attempt any *one* part of the following:

 $10 \times 1 = 10$

- (a) What are the Multiple concurrent drivers? Explain different resolving methods.
- (b) Explain the basic structure of Xilinx 4000 Series FPGA's.

7. Attempt any *one* part of the following:

 $10 \times 1 = 10$

- (a) What do you mean by Testing? What are different issues related to design the test?
- (b) Explain the various IEEE 754 floating point formats.