Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE – SEMESTER – V (NEW) EXAMINATION – WINTER 2015**

**Subject Code: 2151007** **Date:10/12/2015**

**Subject Name: Digital Design**

**Time:10:30am to 1:00pm** **Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | Write a brief note on VHDL language and the difference between programming languages and HDL. | **07** |
| | **(b)** | Write brief note on VHDL data types. | **07** |
| **Q.2** | **(a)** | Write a brief note on generics and configuration. | **07** |
| | **(b)** | Write VHDL code for 4*1 multiplexer using structural modeling. | **07** |
| | | **OR** | |
| | **(b)** | Write a VERILOG code for 3*8 decoder using gate level modeling | **07** |
| **Q.3** | **(a)** | Explain briefly variable assignment and signal assignment statement with example. | **07** |
| | **(b)** | Explain process statement briefly and write VHDL code for SR FLIPFLOP using behavioral. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain wait statement briefly and also explain term “wait for 0ns” with waveform. | **07** |
| | **(b)** | Write a VHDL code for 4-bit ripple carry full adder using for loop. | **07** |
| **Q.4** | **(a)** | Write a VHDL code for pulse counter. | **07** |
| | **(b)** | Write a VHDL code for barrel shifter. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Write a VHDL code for generic priority encoder. | **07** |
| | **(b)** | Explain modeling of MOOREY FSM with state diagram and code. | **07** |
| **Q.5** | **(a)** | Explain modeling of MEALY FSM with state diagram and code. | **07** |
| | **(b)** | Draw and explain digital design flow for FPGA. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Write a VERILOG code for NOR gate and CMOS inverter using switch level modeling. | **07** |
| | **(b)** | Write a short note on FPGA and also list out the difference between CPLD and FPGA. | **07** |

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