

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Electronics)
Semester: IV
Syllabus with Effect from: June - 2014

Paper Code: PS04EELE01	Total Credit: 4
Title Of Paper: Design of VLSI Systems	

Unit	Description in detail	Weightage (%)
I	An overview of VLSI, VLSI Design Methodology, Design Flow, VLSI Road Map, Logic Design with MOSFET, Elements of Physical Design. System level physical design: Large scale physical design, Interconnectivity, Delay model, Cross talk, Floor Planning & Routing, I/O Circuits, Power Distribution & Consumption, Clock Distribution	25%
II	Reliability & testing of VLSI Circuits: Introduction to Testing of VLSI Circuits, Fault Models, Gate level testing, Boundary Scan testing, Ad-hoc Testing, Test Generation Methods, D-Algorithm, Introduction to ATPG.	25%
III	System Specification using HDL, Introduction to HDL, VHDL modeling concept, Scalar data type & operations in VHDL, Sequential statements, Composite data type, Basic Modeling Constructs.	25%
IV	Subprogram in VHDL, Packages & USE Clauses, VHDL standard package-1164, Alias, Constants, Components and configurations, Files and Input/Output. Designing with Programmable Logic Devices, Digital Design with State Machine chart, Designing with FPGAs & CPLDs, VHDL model for memory buses.	25%

Basic Text & Reference Books:-

- **Introduction to VLSI Circuits & Systems**
John P. Uyemura, John Willey & sons (Asia) Pvt Ltd. NY,(USA)
- **The Designer guide to VHDL**
Peter J Ashenden, Harcourt India Pvt. Ltd., N.Delhi (INDIA)
- **Digital logic design principles**
Norman Balabanian & Bradely Carlson,
John Willey & Sons Pvt. Ltd. . NY,(USA)
- **Modern VLSI Design : System on Silicon**
Wayne Wolf, Pearson education - Prentice Hall ,New Delhi (INDIA)
- **Principles of CMOS VLSI Design : A system perspective**
Neil H.E. Weste and Kamran Eshraghian
Pearson Education -Prentice Hall New Delhi (INDIA)
- **Digital Integrated Circuits : A Design Perspective**
Jan M. Rabeay, Anantha Chandrakasan and Borivoje Nikolic
Prentice Hall of India (EEE), New Delhi (INDIA)
- **Digital Systems Design using VHDL**
Charles H. Roth Jr., Thomson Brooks/ Cole (USA)

