1. **"Power Electronics"** - M. H. Rashid 3rd edition, PHI / Pearson publisher 2004.
2. **"Power Electronics"** - M. D. Singh and Kanchandani K.B. TMH publisher, 2nd Ed. 2007.

REFERENCE BOOKS:
1. **"Power Electronics, Essentials and Applications"**, L Umanand, John Wiley India Pvt. Ltd, 2009.
2. **"Power Electronics"** , Daniel W. Hart, McGraw Hill, 2010.
3. **"Power Electronics"**, V Nattarasu and R.S. Anandamurhty, Pearson/Sanguine Pub. 2006.

EMBEDDED SYSTEM DESIGN

Subject Code	: **10EC74**	IA Marks	: 25
No. of Lecture Hrs/Week	: 04	Exam Hours	: 03
Total no. of Lecture Hrs.	: 52	Exam Marks	: 100

UNIT 1:
Introduction to Embedded System: Introducing Embedded Systems, Philosophy, Embedded Systems, Embedded Design and Development Process.

UNIT 2:
The Hardware Side: An Introduction, The Core Level, Representing Information, Understanding Numbers, Addresses, Instructions, Registers-A First Look, Embedded Systems-An Instruction Set View, Embedded Systems-A Register View, Register View of a Microprocessor
The Hardware Side: Storage Elements and Finite-State Machines (2 hour)
The concepts of State and Time, The State Diagram, Finite State Machines-A Theoretical Model.

UNIT 3:
Memories and the Memory Subsystem: Classifying Memory, A General Memory Interface, ROM Overview, Static RAM Overview, Dynamic RAM Overview, Chip Organization, Terminology, A Memory Interface in Detail, SRAM Design, DRAM Design, DRAM Memory Interface, The Memory Map, Memory Subsystem Architecture, Basic Concepts of Caching, Designing a Cache System, Dynamic Memory Allocation.

UNIT 4:
Embedded Systems Design and Development : System Design and Development, Life-cycle Models, Problem Solving-Five Steps to Design, The

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Design Process, Identifying the Requirements, Formulating the Requirements Specification, The System Design Specification, System Specifications versus System Requirements, Partitioning and Decomposing a System, Functional Design, Architectural Design, Functional Model versus Architectural Model, Prototyping, Other Considerations, Archiving the Project.

UNIT 5 & 6:
Real-Time Kernels and Operating Systems: Tasks and Things, Programs and Processes, The CPU is a resource, Threads – Lightweight and heavyweight, Sharing Resources, Foreground/Background Systems, The operating System, The real time operating system (RTOS), OS architecture, Tasks and Task control blocks, memory management revisited

UNIT 7 & 8:
Performance Analysis and Optimization: Performance or Efficiency Measures, Complexity Analysis, The methodology, Analyzing code, Instructions in Detail, Time, etc. – A more detailed look, Response Time, Time Loading, Memory Loading, Evaluating Performance, Thoughts on Performance Optimization, Performance Optimization, Tricks of the Trade, Hardware Accelerators, Caches and Performance

Text Book:
1. **Embedded Systems – A contemporary Design Tool,** James K. Peckol, John Weily India Pvt. Ltd, 2008

Reference Books:
1. **Embedded Systems: Architecture and Programming,** Raj Kamal, TMH. 2008
2. **Embedded Systems Architecture – A Comprehensive Guide for Engineers and Programmers,** Tammy Noergaard, Elsevier Publication, 2005
3. **Programming for Embedded Systems,** Dreamtech Software Team, John Wiley India Pvt. Ltd, 2008

VLSI LAB

Subject Code	: **10ECL77**	IA Marks	: 25
No. of Practical Hrs/Week	: 03	Exam Hours	: 03
Total no. of Practical Hrs.	: 42	Exam Marks	: 50