

20PE008 - PROCESSOR APPLICATIONS IN ELECTRICAL ENGINEERING

UNIT – I

L- 10

Introduction to 8051

Micro controller 8051, Special Function Registers, Interfacing with external memory, programmable built in ports, on chip counters / timers, Serial Data Input / Output, Interrupts, assembly language Programming and applications.

UNIT – II

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Introduction to Digital Signal Processor (DSP TMS 320 F2812)

Need of Digital Signal Processor (DSP), Examples of TI DSP family. Comparison of different DSPs of TI, Architecture of DSP TMS 320 F2812, pin diagram, main features, Block diagram, peripherals as CPU timers, Event managers, ADC, Enhanced controller area network (eCAN), Serial communication interface modules, Digital i/o and shared pin functions, serial peripheral interface module, PIE block.

UNIT – III

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Register overview of DSP

Register Functional Overview, Register Bits I/O Mapping, PLL based Modes of Operation, PLL Control Register (PLLCCR) field Description, Peripheral Clock Control, High-Speed Peripheral Clock Prescaler (HISPCP) Register, Watchdog Block, EALLOW Protected Registers, All GP registers, GP Timers, Compare units, Timer operating modes, DBTCON register, PWM waveform generation and programming.

UNIT – IV

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Introduction to FPGA

FPGA based controller for PE and Drives.

UNIT – V

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Application of DSP and FPGA to power electronics and drives

Applications of Digital Signal Processor in Power Electronics converters and drives.

TEXT BOOKS:

1. eZdspTM F2812 technical reference
2. TMS320x281x DSP Data manual.
3. Muhammad Ali Mazidi , “The 8051 Microcontroller And Embedded Systems Using Assembly And C, 2/E”, Pearson Education India, 01-Sep-2007.

REFERENCES:

1. Ayala, J. Kenneth, “The 8051 Microprocessor Architecture, Programming and Applications”, Penram International, 1996.
2. TMS320x281x DSP Event Manager (EV) Reference Guide
3. Trevor Martin, "The Insider's Guide To The Philips ARM7-Based Microcontrollers", Published by Hitex (UK) Ltd, April 2005.