

EE6008 MICROCONTROLLER BASED SYSTEM DESIGN

DETAILED SYLLABUS

OBJECTIVES:

- To introduce the architecture of PIC microcontroller
- To educate on use of interrupts and timers
- To educate on the peripheral devices for data communication and transfer
- To introduce the functional blocks of ARM processor
- To educate on the architecture of ARM processors

UNIT I INTRODUCTION TO PIC MICROCONTROLLER

Introduction to PIC Microcontroller–PIC 16C6x and PIC16C7x Architecture–PIC16Cxx– Pipelining - Program Memory considerations – Register File Structure - Instruction Set - Addressing modes – Simple Operations.

UNIT II INTERRUPTS AND TIMER

PIC micro controller Interrupts- External Interrupts-Interrupt Programming–Loop time subroutine - Timers-Timer Programming– Front panel I/O-Soft Keys– State machines and key switches– Display of Constant and Variable strings.

UNIT III PERIPHERALS AND INTERFACING

I2C Bus for Peripherals Chip Access– Bus Operation-Bus subroutines– Serial EEPROM– Analog to Digital Converter–UART-Baud rate selection–Data handling circuit–Initialization - LCD and keyboard Interfacing -ADC, DAC, and Sensor Interfacing.

UNIT IV INTRODUCTION TO ARM PROCESSOR

ARM Architecture –ARM programmer’s model –ARM Development tools- Memory Hierarchy –ARM Assembly Language Programming–Simple Examples–Architectural Support for Operating systems.

UNIT V ARM ORGANIZATION

3-Stage Pipeline ARM Organization– 5-Stage Pipeline ARM Organization–ARM Instruction Execution- ARM Implementation– ARM Instruction Set– ARM coprocessor interface– Architectural support for High Level Languages – Embedded ARM Applications.

TEXT BOOKS:

1. Peatman. J.B, “Design with PIC Micro Controllers” Pearson Education, 3rdEdition, 2004.
2. Furber. S, “ARM System on Chip Architecture” Addison Wesley trade Computer Publication, 2000.

REFERENCE:

1. Mazidi, M.A, “PIC Microcontroller” Rollin Mckinlay, Danny causey Printice Hall of India, 2007.