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EE8018 MICROCONTROLLER BASED SYSTEM DESIGN

DETAILED SYLLABUS

OBJECTIVES:

To impart knowledge about the following topics:

- Architecture of PIC microcontroller
- Interrupts and timers
- Peripheral devices for data communication and transfer
- Functional blocks of ARM processor
- Architecture of ARM processors

UNIT I INTRODUCTION TO PIC MICROCONTROLLER

Introduction to PIC Microcontroller–PIC 16C6x and PIC16C7x Architecture–IC16cxx–-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 Variability 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

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" PearsonEducation,3rdEdition, 2004.

2. Furber, S., "ARM System on Chip Architecture" Addison Wesley trade Computer Publication, 2000.

REFERENCES

1. Mazidi, M.A., "PIC Microcontroller" Rollin Mckinlay, Danny causey, Prentice Hall of India, 2007.