Subject Code : P8IE6

MICROCONTROLLER AND INTERFACING

Unit I:

Introduction Microprocessors and Microcontrollers-comparison microprocessor and Microcontrollers-Microcontroller survey- 4,8, 16,32bit Microcontrollers-8051 architecture-internal memory-input, output pins, ports-External memory –Addressing modes.

Unit II:

Logical separation of program and data memory – timers/counters and programming of counters and timers-register in serial data input/output – serial data Transmission modes-Various types of interrupts –Assembly language Programming –Programming tool and techniques.

Unit III:

Assembly Language programming for 8051 microcontroller family-Data transfer Instruction-Arithmetic instruction –Branch Instructions- Bit manipulation instruction-rotate Instruction-Instructions stack operation-calls and subroutines-Interrupts and returns –multiplication-division – programmes-greatest-smallest no in an array-ascending and descending order- Evaluating simple expression –string manipulation-pattern comparision –alphabetical order-delay –routines-calculation of time delay.

Unit IV:

Microcontrollers design –External Memory and Memory space decoding – Memory -Mapped i/o –Memory decoding –Testing the Design –Timing subroutines-Time delay using software and timer-Look up tables-Serial data transmission –Character Transmission by polling –Interrupt –Driven Character Transmission and reception.

Unit V

Application:- Interfacing Keyboard-A Scanning program for small keyboards-Interfacing Large Matrix keyboard-Interfacing LED, LCD display –Pulse measurement And pulse width measurement-A/D –D/A interfacing - Multiple Interrupts-stepper motor interfacing –Data acquisition system using a Microcontrollers-Temperature measurement and control using a Microcontrollers.

BOOKS FOR STUDY:

1. The 8051 Microcontroller Architecture, Programming & Applications, Kenneth J. Ayla -Penram International Publishing (India) – Unit I,II,III, IV and V)
2. Microprocessor Architecture Programming and application by Goankar.(UNIT V)
3. Microprocessor and Interfacing: DOUGLAS V. HALL Mc Graw-Hill INTERNATIONAL EDITIONS.