

# MICROCONTROLLERS (Common to EC/TC/EE/IT/BM/ML)

Written by Administrator  
Friday, 06 November 2009 14:30 -

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**Sub Code**

:

**06ES42**

**IA Marks**

:

**25**

**Hrs/ Week**

:

**04**

:

**Exam Hours**

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:

03

**Total Hrs.**

:

52

:

**Exam Marks**

:

100

**PART – A**

**UNIT 1:**

Microprocessors and microcontroller. Introduction, Microprocessors and Microcontrollers, A Microprocessors survey. RISC & CISC CPU Architectures, Harvard & Von-Neumann CPU architecture.

The 8051 Architecture: Introduction, 8051 Microcontroller Hardware, Input / Output Pins, Ports and Circuits

External Memory, Counter and Timers, Serial Data Input / Output, Interrupts.

7 Hours

**UNIT 2:**

Addressing Modes and Operations: Introduction, Addressing modes, External data Moves,

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Code Memory, Read Only Data Moves / Indexed Addressing mode, PUSH and POP Opcodes, Data exchanges, Example Programs; Byte level logical Operations, Bit level Logical Operations, Rotate and Swap Operations, Example Programs. Arithmetic Operations: Flags, Incrementing and Decrementing, Addition, Subtraction, Multiplication and Division, Decimal Arithmetic, Example Programs.

7 Hours

UNIT 3:

Jump and Call Instructions: The JUMP and CALL Program range, Jumps, calls and Subroutines, Interrupts and Returns, More Detail on Interrupts, Example Problems

6 Hours

UNIT 4:

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8051 programming in C: Data types and time delays in 8051C, I/O programming, logic operations, data conversion programs, accessing code ROM space, data serialization.

6 Hours

PART – B

UNIT 5:

Timer / Counter Programming in 8051: Programming 8051 Timers, Counter Programming, programming timers 0 and 1 in 8051 C

6 Hours

UNIT 6:

8051 Serial Communication: Basics of Serial Communication, 8051 connections to RS-232, 8051 Serial communication Programming, Programming the second serial port, Serial port programming in C.

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7 Hours

### UNIT 7:

Interrupts Programming: 8051 Interrupts, Programming Timer Interrupts, Programming External Hardware Interrupts, Programming the Serial Communication Interrupts, Interrupt Priority in the 8051/52, Interrupt programming in C

6 Hours

### UNIT 8:

8051 Interfacing and Applications: Interfacing 8051 to LCD, Keyboard, parallel and serial ADC, DAC, Stepper motor interfacing, DC motor interfacing and PWM

7 Hours

Text Books:

1. "The 8051 Microcontroller Architecture, Programming & Applications", 2e Kenneth J. Ayala ;, Penram International, 1996 / Thomson Learning 2005
2. "The 8051 Microcontroller and Embedded Systems – using assembly and C "-, Muhammad Ali Mazidi and Janice Gillespie Mazidi and Rollin D. McKinlay; PHI, 2006 / Pearson, 2006

Reference Books:

1. "Programming and Customizing the 8051 Microcontroller" Predko ;-, TMH
2. "Microcontrollers: Architecture, Programming, Interfacing and System Design", Raj Kamal, "Pearson Education, 2005
3. "Microcontrollers- Theory and Applications", Ajay V.Deshmukh; TMH,2005
4. "Microcontroller and its applications", Dr.Ramani Kalpathi and Ganesh Raja; Sanguine Technical publishers,Bangalore-2005

**Question Paper Pattern:** Student should answer FIVE full questions out of 8 questions to be set each carrying 20 marks, **selecting at least TWO questions from each part.**

**Coverage in the Text books:**

UNIT 1:Text 1 – Chapter 1( excluding 1.2 and 1.4) and chapter 3, R1 - chapter 1

UNIT 2:Text 1-chapters 5, 6 & 7

UNIT 3: Text 1 - chapter 8

UNIT 4:Text 2 – chapter 7

UNIT 5: Text 2 – chapter 9

UNIT 6: Text 2 – chapter 10

UNIT 7: Text 2 – chapter 11



UNIT 8: Text 2 – chapter 12, chapter 13(13.1&13.2), chapter 17 ( except 17.1 )