

TEXT BOOKS:

1. "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
2. "MSP430 Microcontroller Basics", John Davies, Elsevier, 2008.

REFERENCE BOOKS:

1. "The 8051 Microcontroller Architecture, Programming & Applications", 2e Kenneth J. Ayala :, Penram International, 1996 / Thomson Learning 2005.
2. "The 8051 Microcontroller", V.Udayashankar and MalikarjunaSwamy, TMH, 2009
3. MSP430 Teaching CD-ROM, Texas Instruments, 2008 (can be requested <http://www.uniti.in>)
4. Microcontrollers: Architecture, Programming, Interfacing and System Design", Raj Kamal, "Pearson Education, 2005

CONTROL SYSTEMS (Common to EC/TC/EE/IT/BM/ML)

Sub Code	:	10ES43	IA Marks	:	25
Hrs/ Week	:	04	Exam Hours	:	03
Total Hrs.	:	52	Exam Marks	:	100

UNIT 1:

Modeling of Systems: Introduction to Control Systems, Types of Control Systems, Effect of Feedback Systems, Differential equation of Physical Systems -Mechanical systems, Friction, Translational systems (Mechanical accelerometer, systems excluded), Rotational systems, Gear trains, Electrical systems, Analogous systems

UNIT 2:

Block diagrams and signal flow graphs: Transfer functions, Block diagram algebra, Signal Flow graphs (State variable formulation excluded),



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UNIT 3:

Time Response of feed back control systems: Standard test signals, Unit step response of First and second order systems, Time response specifications, Time response specifications of second order systems, steady – state errors and error constants. Introduction to PID Controllers(excluding design)

UNIT 4:

Stability analysis: Concepts of stability, Necessary conditions for Stability, Routh- stability criterion, Relative stability analysis; More on the Routh stability criterion.

UNIT 5:

Root-Locus Techniques: Introduction, The root locus concepts, Construction of root loci.

UNIT 6:

Frequency domain analysis: Correlation between time and frequency response, Bode plots, Experimental determination of transfer functions, Assessment of relative stability using Bode Plots. Introduction to lead, lag and lead-lag compensating networks (excluding design).

UNIT 7:

Stability in the frequency domain: Introduction to Polar Plots, (Inverse Polar Plots excluded) Mathematical preliminaries, Nyquist Stability criterion, Assessment of relative stability using Nyquist criterion, (Systems with transportation lag excluded).

UNIT 8:

Introduction to State variable analysis: Concepts of state, state variable and state models for electrical systems, Solution of state equations.

TEXT BOOK :

1. J. Nagarath and M.Gopal, “Control Systems Engineering”, New Age International (P) Limited, Publishers, Fourth edition – 2005

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1. "Modern Control Engineering ", K. Ogata, Pearson Education Asia/PHI, 4th Edition, 2002.
2. "Automatic Control Systems", Benjamin C. Kuo, John Wiley India Pvt. Ltd., 8th Edition, 2008.
3. "Feedback and Control System", Joseph J Distefano III et al., Schaum's Outlines, TMH, 2nd Edition 2007.

SIGNALS & SYSTEMS
(Common to EC/TC/IT/BM/ML)

Sub Code	:	10EC44	IA Marks	:	25
Hrs/ Week	:	04	Exam Hours	:	03
Total Hrs.	:	52	Exam Marks	:	100

UNIT 1:

Introduction: Definitions of a signal and a system, classification of signals, basic Operations on signals, elementary signals, Systems viewed as Interconnections of operations, properties of systems.

UNIT 2:

Time-domain representations for LTI systems – 1: Convolution, impulse response representation, Convolution Sum and Convolution Integral.

UNIT 3:


Time-domain representations for LTI systems – 2: Properties of impulse response representation, Differential and difference equation Representations, Block diagram representations.

UNIT 4:

Fourier representation for signals – 1: Introduction, Discrete time and continuous time Fourier series (derivation of series excluded) and their properties .

UNIT 5:

Fourier representation for signals – 2: Discrete and continuous Fourier transforms(derivations of transforms are excluded) and their properties.


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