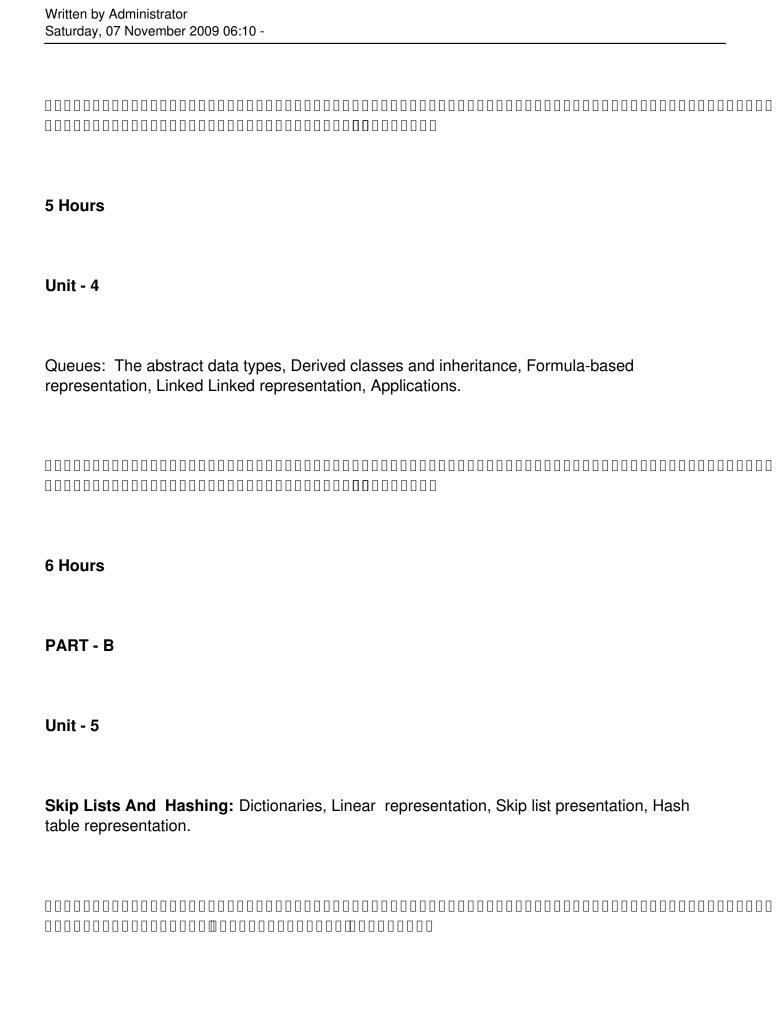
Written by Administrator Saturday, 07 November 2009 06:10 -		
Data Structure Using C++		
Subject Code		:
IA Marks	: 25	
No. of Lecture Hrs/Week		: 04
Exam Hours	: 03	
Total no. of Lecture Hrs.		: 52
Exam Marks	: 100	

Written by Administrator Saturday, 07 November 2009 06:10 -PART - A Unit - 1 Introduction: Functions and parameters, Dynamic memory allocation classis, Testing and debugging. Data Representation, Introduction, Linear lists, Formula-based representation linked representation, Indirect addressing simulating pointers. 9 Hours Unit - 2 Arrays And Matrics: Arrays, Matrices, Special matrices spare matrices. 

#### 6 Hours

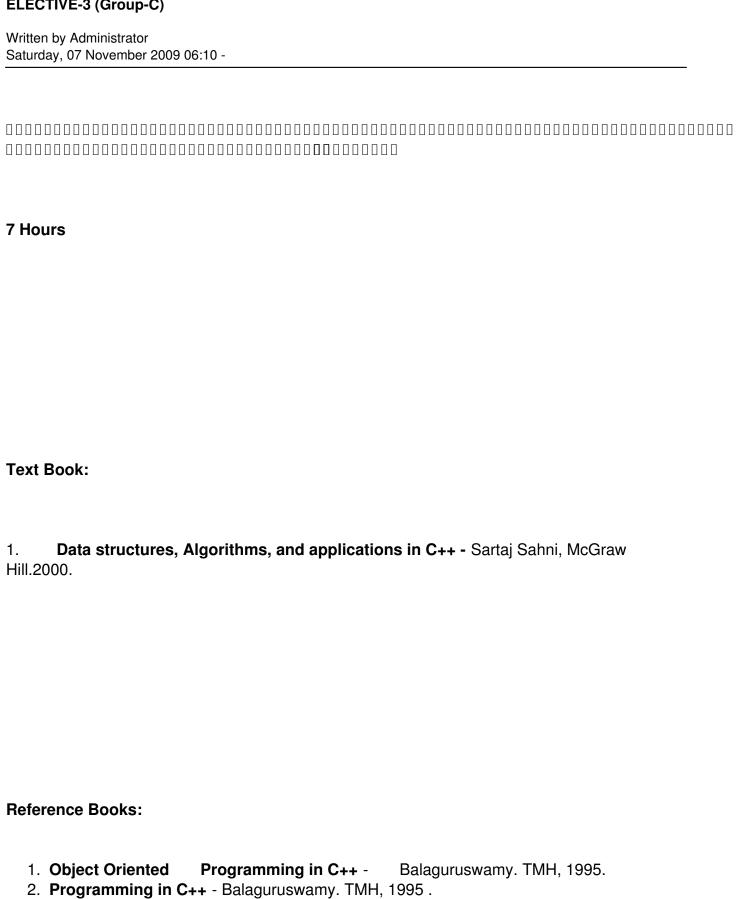
Unit - 3

**Stacks:** The abstract data types, Derived classed and inheritance, Formula-based representation, Linked representation, Applications.

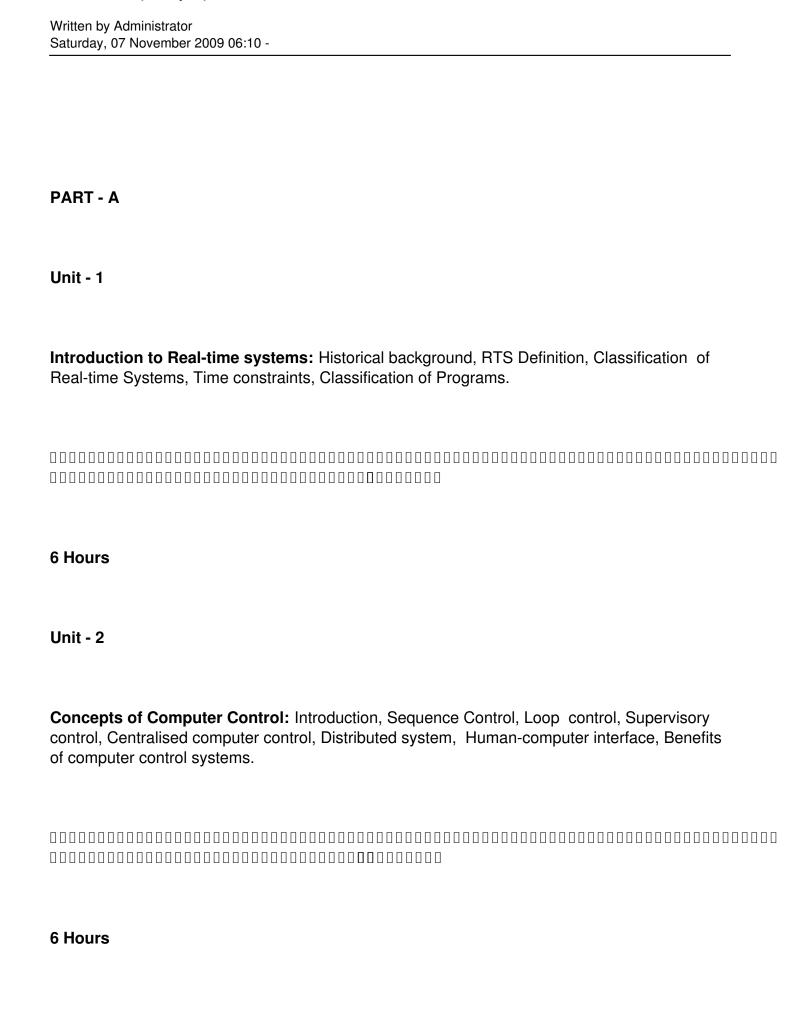


Written by Administrator

Saturday, 07 November 2009 06:10 -6 Hours Unit - 6 Binary And Other Trees: Trees, Binary trees, Properties and representation of binary trees, Common binary tree operations, Binary tree traversal the ADT binary tree, ADT and class extensions. 7 Hours Unit - 7 Pririty Queues: Linear lists, Heaps, Leftist trees. 6 Hours **Unit-8** Search Trees: Binary search trees, B-trees, Applications.



eal-Time Systems			
Subject Code		:	
A Marks	: 25		
lo. of Lecture Hrs/Week		: 04	
Exam Hours	: 03	·	
otal no. of Lecture Hrs.		: 52	



Written by Administrator	
Saturday, 07 November 2009 06:1	0 -

Unit - 3

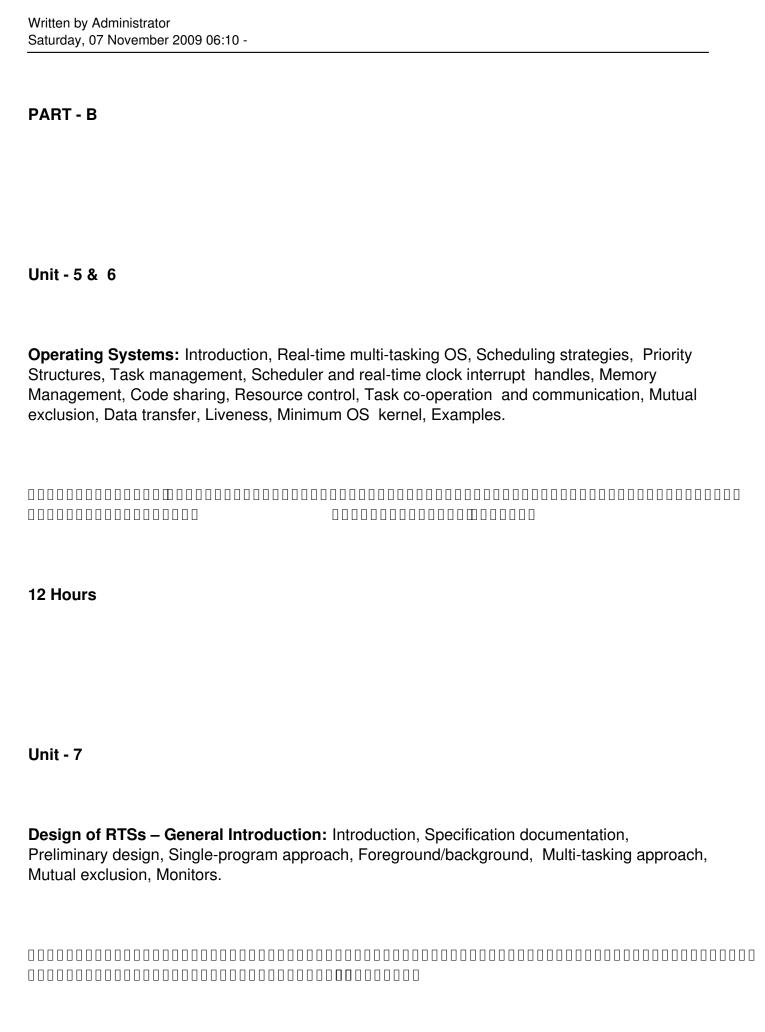
Computer hardware requirements for RTS: Introduction, General purpose computer, Single
chip microcontroller, Specialized processors, Process-related Interfaces, Data transfer
techniques, Communications, Standard Interface.

#### 6 Hours

#### Unit - 4

Languages for Real-time Applications: Introduction, Syntax layout and readability, Declaration and Initialization of Variables and Constants, Modularity and Variables, Compilation, Data types, Control Structure, Exception Handling, Low-level facilities, Co routines, Interrupts and Device handling, Concurrency, Real-time support, Overview of real-time languages.

#### 8 Hours



Written by Administrator Saturday, 07 November 2009 06:10 -
8 Hours
Unit - 8
RTS Development Methodologies: Introduction, Yourdon Methodology, Requirement definition for Drying Oven, Ward and Mellor Method, Hately and Pirbhai Method.
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6 Hours
Text Books:
1 Pool Time Computer Control An Introduction Stuart Depart and Edg Degrees
<ol> <li>Real - Time Computer Control- An Introduction, Stuart Bennet, 2<sup>nd</sup> Edn. Pearson Education.</li> </ol>

Exam Hours

Written by Administrator Saturday, 07 November 2009 06:10 -

<ol> <li>Real-Time edition, PHI, 2005.</li> <li>Real-Time</li> <li>Embedded</li> </ol>	Systems Develo	n and Analysis, Phillip.  pment, Rob Williar amal, Tata Mc Graw	er. 2006.	
Radio Frequency	Integrated Circuit	s		
Subject Code			:	
IA Marks		: 25		
No. of Lecture Hrs	s/Week		: 04	

: 03

Written by Administrator Saturday, 07 November 2009 06:10 -

Total no. of Lecture Hrs.	: 52

Exam Marks : 100
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#### PART - A

#### Unit - 1

**Overview of Wireless Principles:** A brief history of wireless systems, Noncellular wireless applications, Shannon, Modulations & Alphabet Soup, Propagation.

**Passive RLC Networks:** Introduction, Parallel RLC Tank, Series RLC Networks, Other RLC networks, RLC Networks as impedance Transformers.

#### 7 Hours

#### Unit - 2

**Characteristics of passive IC components:** Introduction, Interconnect at radio frequencies: Skin effect, resisters, Capacitors, Inductors, Transformers, Interconnect options at high

Written by Administrator Saturday, 07 November 2009 06:10 -
frequency.
7 Hours
Unit - 3
A review of MOS device physics: Introduction, A little history, FETs, MOSFET physics, The long – channels approximation, operation in weak inversion (sub threshold), MOS device physics in the short – channel regime, Other effects.
<b>Distributed systems:</b> Introduction, Link between lumped and distributed regimes driving-point impedance of iterated structures, Transmission lines in more detail, Behavior of Finite – length transmission lines, summary of transmission line equations, artificial lines.
6 Hours

Written by Administrator Saturday, 07 November 2009 06:10 -

Unit - 4

**The SMITH chart and S-parameters:** Introduction, The smith chart, S-parameters, Band Width Estimation Techniques, Introduction, The method of open – circuit time constant, The method of short circuit time constant, Risetime, Delay and bandwidth.

# 6 Hours

**PART - B** 

Unit - 5

**High frequency amplifier design:** Introduction, Zeros as bandwidth Enhancers, The shunt –series amplifier, Bandwidth Enhancement with f <sub>T</sub> Doublers, Tuned amplifiers, Neutralization and unilateralization, Cascaded amplifiers, AM – PM conversion.

Written by Administrator		
Saturday, 07 November 2009 06:10 -		

6 Hours

Unit - 6

**Voltage references and biasing:** Introduction, Review of diode behavior, Diodes and bipolar transistors in CMOS technology, Supply –independent bias circuits, Bandgap voltage reference, Constant g m bias. **Noise**: Introduction, Thermal noise, Shot noise, Flicker noise, Popcorn noise, Classical two- port noise theory, Examples of noise calculations, A handy rule of thumb, Typical noise performance.

6 Hours

Unit - 7

**Low noise amplifier design:** Introduction, Derivation of intrinsic MOSFET two-port noise parameters, LNA topologies: Power match versus noise match, Power-constrained noise optimization, Design examples, linearity and large signal performance, Spurious – free Dynamic range. **Mixers:** Introduction, Mixer fundamental, Nonlinear systems as linear mixers.

**Reference Book:** 

1. Design

ELECTIVE-3 (Gloup-C)
Written by Administrator Saturday, 07 November 2009 06:10 -
7 Hours
Unit - 8
Multiplier – based mixers, Sub sampling mixers, Diode ring mixers, RF power amplifiers, Introduction, general considerations, Class A, AB, B and C power amplifier, Class D amplifiers, Class E amplifiers Class F amplifiers, Modulation of power amplifiers, summary of PA characteristics, RF PA design examples, additional design considerations, Design summery.
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7 Hours
Text book:
1. <b>The design of CMOS radio-frequency integrated circuit</b> , Thomas H. Lee, 2 <sup>nd</sup> edition Cambridge, 2004.

of Analog CMOS integrated circuit, Behzad Razavi, Tata Mc Graw Hill,

# **ELECTIVE-3 (Group-C)** Written by Administrator Saturday, 07 November 2009 06:10 -2005. **Wavelet Transforms**

: 25

: 03

Subject

IA Marks

No. of

Exam Hours

Code

Lecture Hrs/Week

: 04

Written by Administrator Saturday, 07 November 2009 06:10 -

Total no. of Lecture Hrs.	: 52

Exam Marks		: 100
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#### PART - A

## Unit - 1

**Continuous Wavelet Transform:** Introduction, C-T wavelets, Definition of CWT, The CWT as a correlation. Constant Q-Factor Filtering Interpolation and time frequency resolution, the CWT as an operator, inverse CWT.

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#### 5 Hours

#### Unit - 2

# Introduction to Discrete Wavelet Transform And Orthogonal Wavelet Decomposition:

Introduction. Approximation of vectors in nested linear vector spaces, (i) example of approximating vectors in nested subspaces of a finite dimensional liner vector space, (ii) Example of approximating vectors in nested subspaces of an infinite dimensional linear vector space. Example MRA. (i) Bases for the approximations subspaces and Harr scaling function, (ii) Bases for detail subspaces and Haar wavelet.

Written by Administrator
Saturday, 07 November 2009 06:10 -

#### 8 Hours

# Unit - 3

Mra, Ortho Normal Wavelets And Their Relationship To Filter Banks: Introduction, Formal definition of an MRA. Construction of a general orthonormal MRA, (i) scaling function and subspaces, (ii) Implication of dilation equation and orthogonality, a wavelet basis for MRA. (i) Two scale relations for (t), (ii) Basis for the detail subspace (iii) Direct sum decomposition, Digital filtering interpolation (i) Decomposition filters, (ii) reconstruction, the signal.

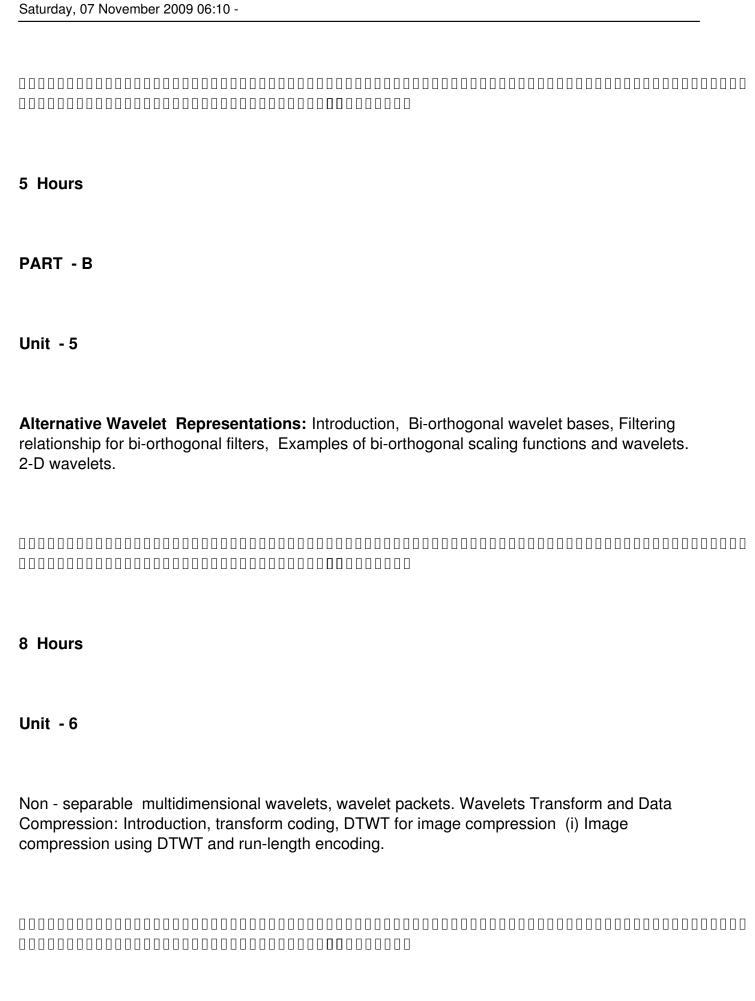
#### 8 Hours

#### Unit - 4

**Examples of Wavelets:** Examples of orthogonal basis generating wavelets, (i) Daubechies D<sub>4</sub> scaling function and wavelet. (ii) band

limited wavelets, Interpreting orthonormal MRAs for Discrete time MRA, (iii) Basis functions for DTWT.

Written by Administrator



6 Hours

Written by Administrator Saturday, 07 November 2009 06:10 -6 Hours Unit - 7 (i) Embedded tree image coding (ii) compression with JPEG audio compression (iii) Audio masking, (iv) Wavelet based audio coding. 6 Hours Unit - 8 Construction Of Simple Wavelets: Construction of simple wavelets like Harr and DB1. Other Applications of Wavelet Transforms: Introduction, wavelet de-noising, speckle removal, edge detection and object isolation, Image fusions, Object detection by wavelet transforms of projections. 

Written by Administrator Saturday, 07 November 2009 06:10 -

# Text book:

1. **Wavelet** transforms- Introduction to theory and applications, Raghuveer M.Rao and Ajit S. Bapardikar, Person Education, 2000.

# Reference Books:

- Wavelet transforms, Prasad and Iyengar, Wiley estern, 2001.
   Wave-let and filter banks. Gilbert Strang and Nguyen Wellesley Cambrido
- 2. **Wave-let** and filter banks, Gilbert Strang and Nguyen Wellesley Cambridge press, 1996

Written by Administrator
Saturday, 07 November 2009 06:10 -

# **Modeling and Simulation of Data Networks**

Subject Code				:
IA Marks		: 25		
No. of Lecture Hr	s/Week			: 04
(E. 1)			1	
Exam Hours		: 03		
Total no. of Lectu	re Hrs.			: 52
Exam Marks		: 100		

# PART - A

# Unit - 1&2

<b>Delay Models in Data Networks:</b> Queuing Models, M/M/1, M/M/m, M/M/¥, M/M/m/m and other Markov System, M/G/1 System, Networks of Transmission Lines, Time Reversibility, Networks of Queues.
14 Hours
Unit – 3&4
<b>Multi-access Communication:</b> Slotted Multi-access and the Aloha System, Splitting Algorithms, Carrier Sensing, Multi-access Reservations, Packet Radio Networks.
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12 Hours
PART - B
Unit – 5&6

Written by Administrator Saturday, 07 November 2009 06:10 -

**Routing in Data Networks:** Introduction, Network Algorithms and Shortest Path Routing, Broadcasting Routing Information: Coping with Link Failures, Flow models, Optimal Routing, and Topological Design, Characterization of Optimal Routing, Feasible Direction Methods for Optimal Routing, Projection Methods for Optimum Routing, Routing in the Codex Network.

1. "**Data Networks**" Dimitri Bertsekas and Robert Gallager, 2<sup>nd</sup> edition, Prentice Hall of India, 2003.

Written by Administrator Saturday, 07 November 2009 06:10 -

2. "High-Speed Networks and Internets"	William Stallings,	Pearson Education	on (Asia) Pte.
Ltd, 2004.			

3. "High Performance Commu	ınication Networks" J. Walrand	and P. Varaya, 2nd
edition, Harcourt India Pvt. Ltd. &	Morgan Kaufman, 2000.	

Cnaach	Droos	. aina
Speech	Proces	ssına

Code

Subject

Exam Hours

A Marks	: 25		
No. of Lecture Hrs/Week		: 04	

: 03

Written by Administrator Saturday, 07 November 2009 06:10 -

Total no. of Lecture Hrs.	: 52

Exam Marks	: 100

#### PART - A

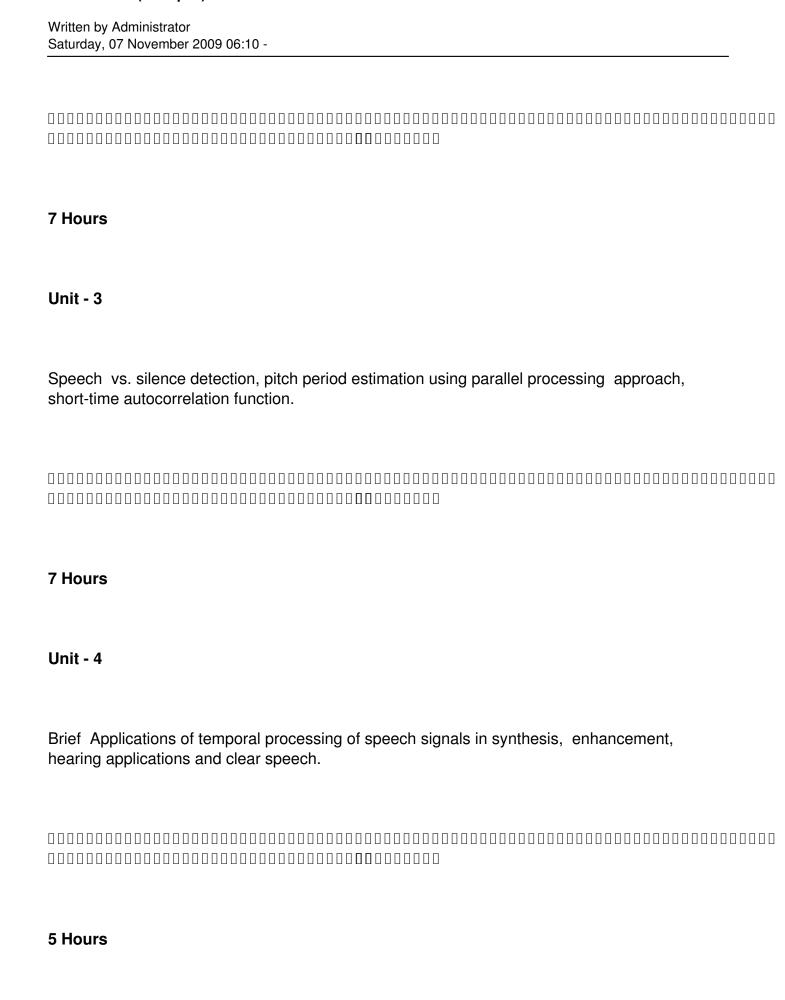
#### Unit - 1

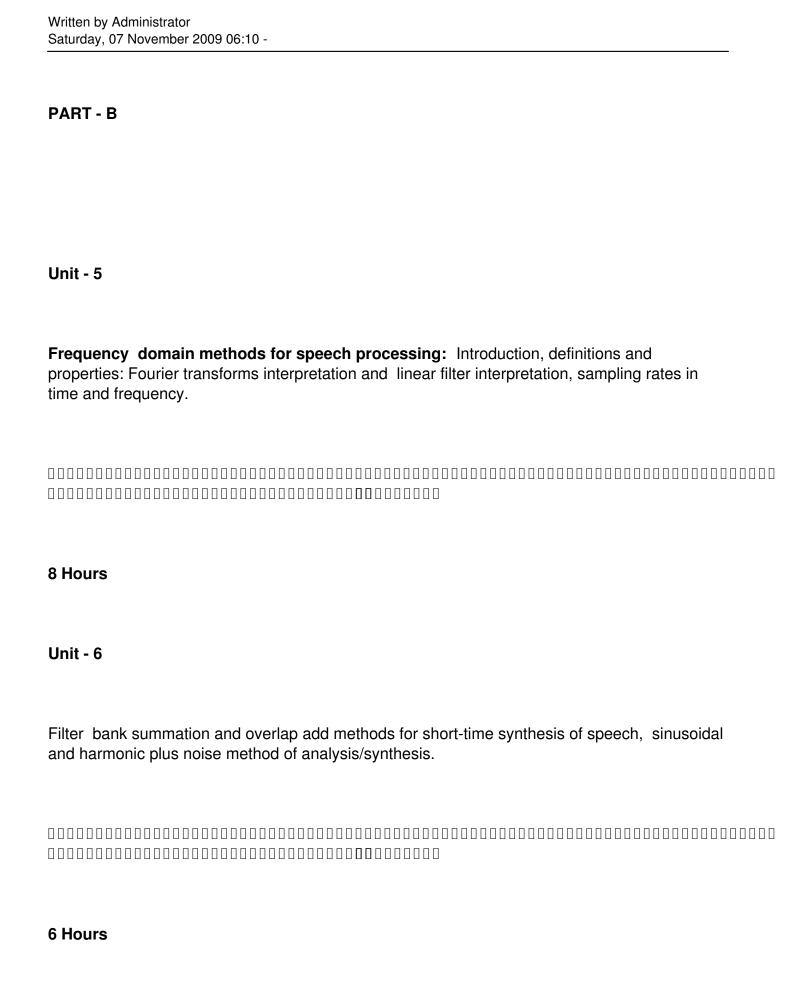
**Production and classification of speech sounds:** Introduction, mechanism of speech production. Acoustic phonetics: vowels, diphthongs, semivowels, nasals, fricatives, stops and affricates.

# 7 Hours

#### Unit - 2

**Time-domain methods for speech processing:** time dependent processing of speech, short-time energy and average magnitude, short-time average zero crossing rate.





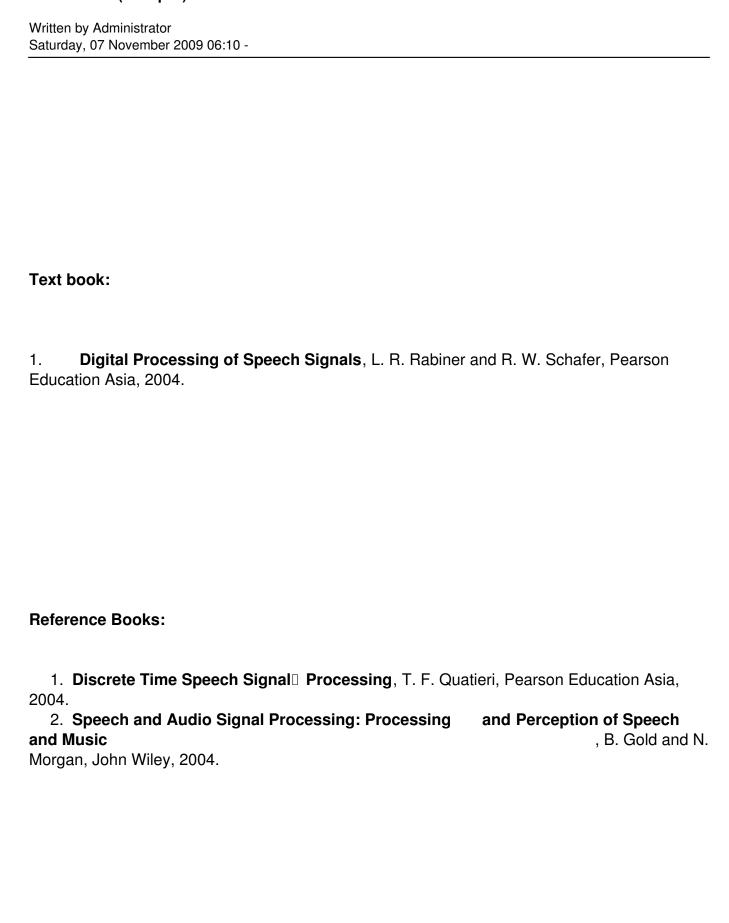
# ELECTIVE-3 (Group-C) Written by Administrator Saturday, 07 November 2009 06:10 Unit - 7 Homomorphic speech processing: Introduction, homomorphic system for convolution, the complex cepstrum of speech, homomorphic vocoder.

# 7 Hours

#### Unit - 8

**Applications of speech processing:** Brief applications of speech processing in voice response systems hearing aid design and recognition systems.

#### 5 Hours

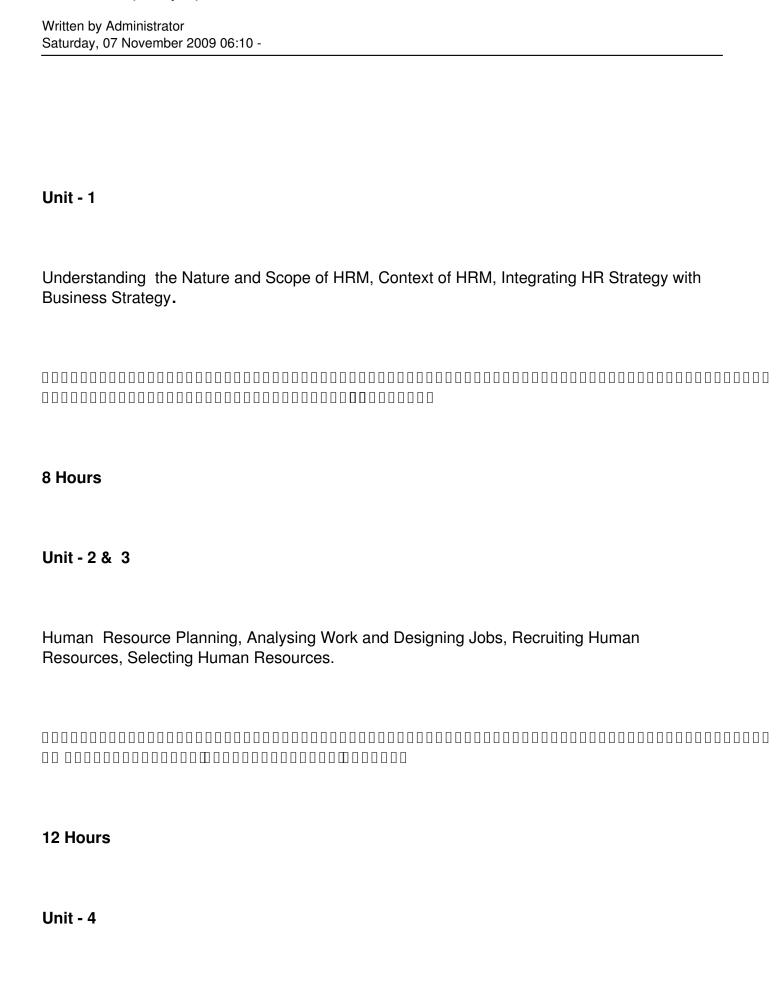


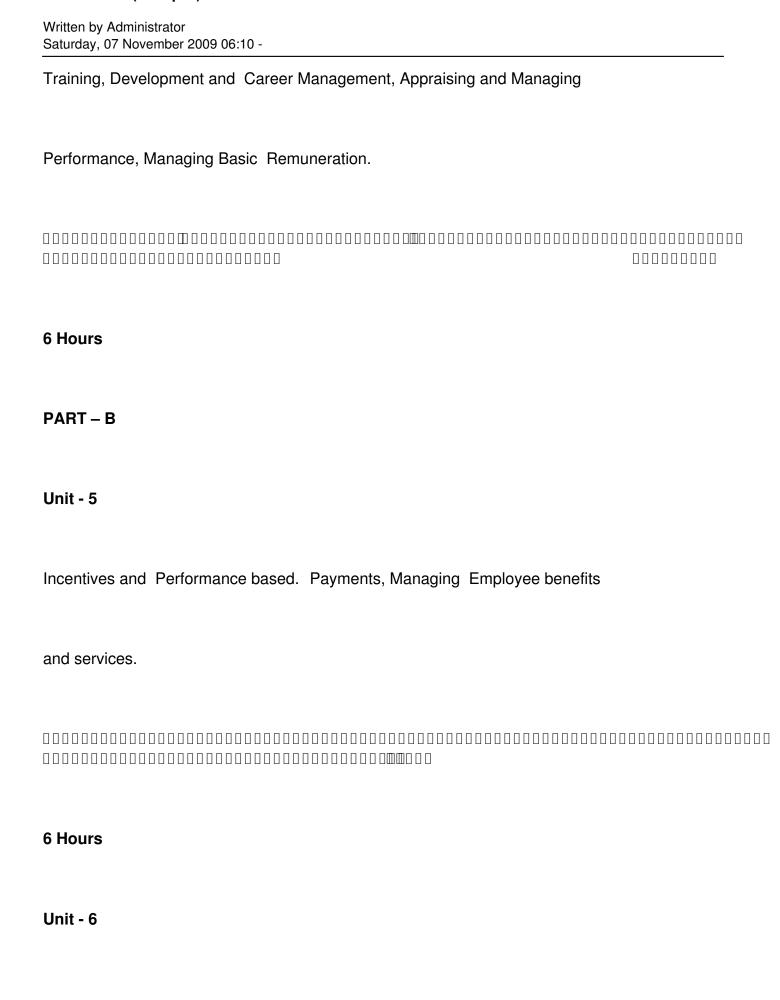
Written by Administrator Saturday, 07 November	r · 2009 06:10 -		
5	. <b>.</b>		
Human Resource I	Management		
Subject Code			:
IA Marks		: 25	
in this interest			
No. of Lecture Hr	s/Week		: 04
Exam Hours		: 03	
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Total n	o. of Lecture Hrs.	: 52

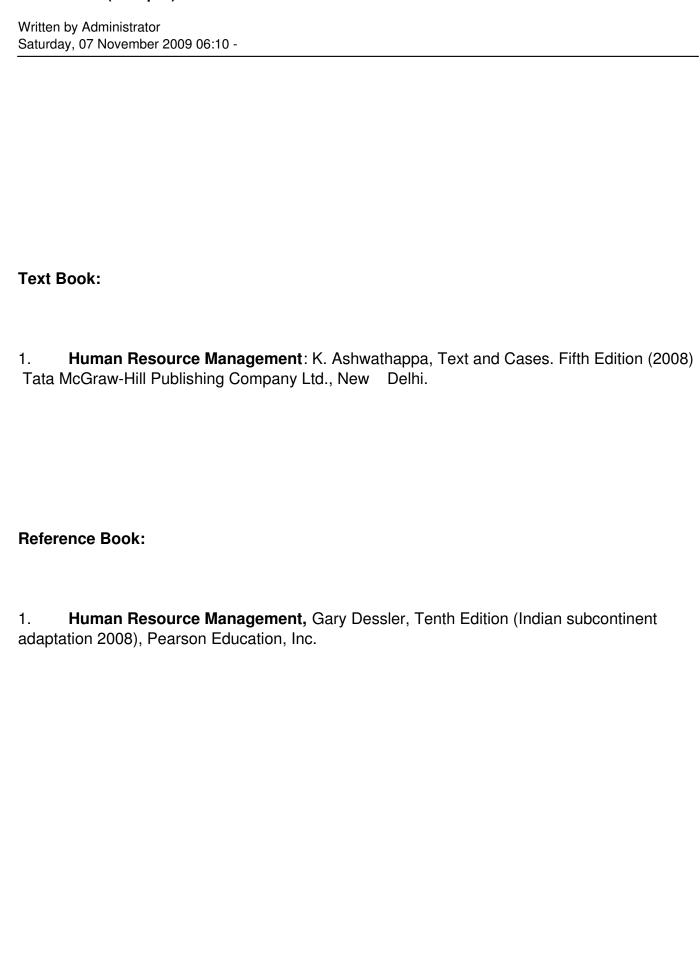
Exam Marks	: 100

# PART - A





Written by Administrator Saturday, 07 November 2009 06:10 -	
Managing Betterment work, Safe and Healthy Environment.	
6 Hours	
Unit - 7	
Industrial Relations, Trade Unions.	
6 Hours	
Unit - 8	
Managing Ethical Issues in HRM, Evaluating HRM Effectiveness, Contemporary issues in HRM, International issues in HRM. Case studies to be included in all chapters.	
8 Hours	



# ELECTIVE-3 (Group-C) Written by Administrator Saturday, 07 November 2009 06:10 -

# MICRO AND SMART SYSTEMS TECHNOLOGY

Subject Code

:

O6MS769

IA Marks
:

No. of Lecture Hrs./ Week

Written by Administrator Saturday, 07 November 2009 06:10 -
04
Exam Hours
03
Total No. of Lecture Hrs.
52
Exam Marks
100

PART - A
UNIT - 1
Introduction to micro and smart systems:
a) What are smart-material systems? Evolution of smart materials, structures and systems. Components of a smart system. Application areas. Commercial products.
b) What are microsystems? Feynman's vision. Micromachined transducers. Evolution of micro-manufacturing. Multi-disciplinary aspects. Applications areas. Commercial products.
5 Hours
UNIT - 2
Micro and smart devices and systems: principles and materials:
a) Definitions and salient features of sensors, actuators, and systems.
b) Sensors: silicon capacitive accelerometer, piezo-resistive pressure sensor, blood analyzer, conductometric gas sensor, fiber-optic gyroscope and surface-acoustic-wave based wireless strain sensor.

comb-	uators: silicon micro-mirror arrays, piezo-electric based inkjet print-head, electrostatic drive and micromotor, magnetic micro relay, shape-memory-alloy based actuator, b-thermal actuator.
cabin.	tems: micro gas turbine, portable clinical analyzer, active noise control in a helicopter
8 Hou	rs
UNIT -	3
Micro	manufacturing and material processing:
a. wafer-	Silicon wafer processing, lithography, thin-film deposition, etching (wet and dry), bonding, and metallization.
b.	Silicon micromachining: surface, bulk, moulding, bonding based process flows.
C.	Thick-film processing:
d.	Smart material processing:
e.	Processing of other materials: ceramics, polymers and metals
f.	Emerging trends

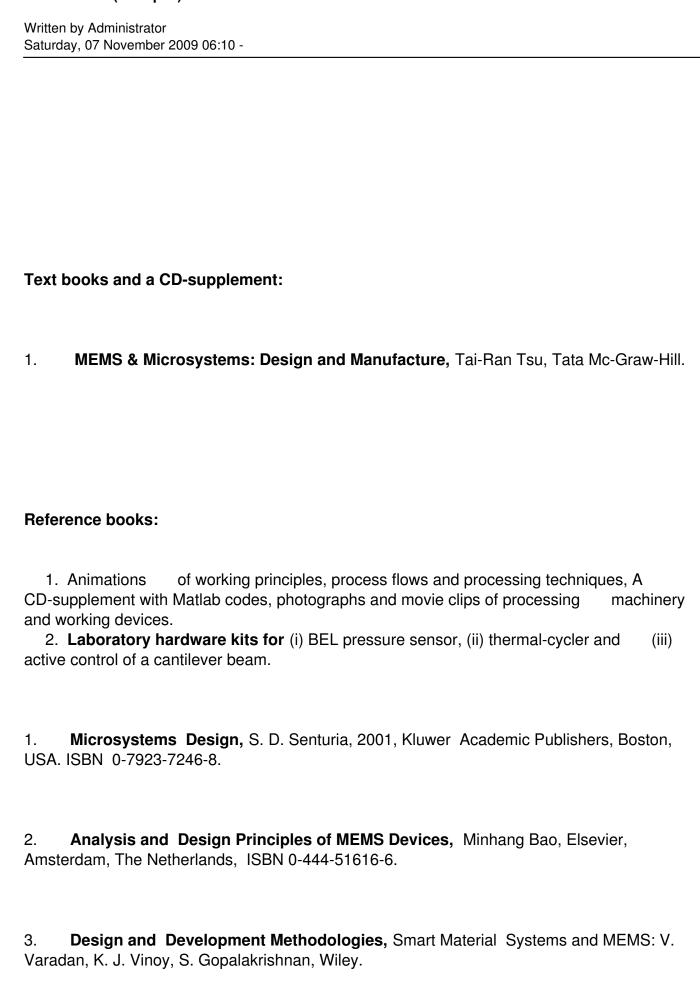
7 Hours
UNIT - 4
Modeling:
a. Scaling issues.
b. Elastic deformation and stress analysis of beams and plates. Residual stresses and stress gradients. Thermal loading. Heat transfer issues. Basic fluids issues.
c. Electrostatics. Coupled electromechanics. Electromagnetic actuation. Capillary electro-phoresis. Piezoresistive modeling. Piezoelectric modeling. Magnetostrictive actuators.
6 Hours
PART - B
UNIT - 5
Computer-aided simulation and design:

6 Hours

Saturday, 07 November 2009 06:10 -
Background to the finite element element method. Coupled-domain simulations using Matlab. Commercial software.
8 Hours
UNIT - 6
Electronics, circuits and control:
Carrier concentrations, semiconductor diodes, transistors, MOSFET amplifiers, operational amplifiers. Basic Op-Amp circuits. Charge-measuring circuits. Examples from microsystems. Transfer function, state-space modeling, stability, PID controllers, and model order reduction. Examples from smart systems and micromachined accelerometer or a thermal cycler.
8 Hours
UNIT - 7
Integration and packaging of microelectro mechanical systems:
Integration of microelectronics and micro devices at wafer and chip levels. Microelectronic packaging: wire and ball bonding, flip-chip. Low-temperature-cofired-ceramic (LTCC) multi-chip-module technology. Microsystem packaging examples.

Written by Administrator

Saturday, 07 November 2009 06:10 -**UNIT - 8** Case studies: BEL pressure sensor, thermal cycler for DNA amplification, and active vibration control of a beam. 4 Hours Part - C **UNIT - 9** Mini-projects and class-demonstrations (not for Examination) 9 Hours a) CAD lab (coupled field simulation of electrostatic-elastic actuation with fluid effect) b) BEL pressure sensor c) Thermal-cycler for PCR d) Active control of a cantilever beam



Written by Administrator Saturday, 07 November 2009 06:10 -

4. **MEMS-** Nitaigour Premchand Mahalik, TMH 2007