Written by Administrator Sunday, 08 November 2009 05:33 -

Multimedia Communications

Subject Code

:

	06EC841
IA Marks	

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25

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No. of Lecture Hrs/ Week

Written by Administrator Sunday, 08 November 2009 05:33 -

04

Exam Hrs

:

03

Total no. of Lecture Hrs.

:

52

Exam Marks

:

100

Written by Administrator Sunday, 08 November 2009 05:33 -

PART - A

Multimedia communications: Introduction, multimedia information representation, multimedia networks, multimedia applications, media types, communication modes, network types, multipoint conferencing, network QoS application QoS.

8 Hours

Multimedia information representation: Introduction, digital principles, text, images, audio, video.

5 Hours

Unit - 3

Text and image compression: introduction, compression principles, text compression, image compression.

Written by Administrator Sunday, 08 November 2009 05:33 -

6 Hours

Audio and video compression: introduction, audio compression, DPCM, ADPCM, APC, LPC, video compression, video compression principles, H.261, H.263, MPEG, MPEG-1, MPEG-2, and MPEG-4.

7 Hours

PART – B

Multimedia information networks: Introduction, LANs, Ethernet, Token ring, Bridges, FDDI High-speed LANs, LAN protocol.

7 Hours

Written by Administrator Sunday, 08 November 2009 05:33 -

The Internet: Introduction, IP Datagrams, Fragmentation, IP Address, ARP and RARP, QoS Support, IPv8.

7 Hours

Broadband ATM Networks: Introduction, Cell format, Switfh and Protocol Architecture ATM LANs.

6 Hours

Transport Protocol: Introduction, TCP/IP, TCP, UDP, RTP and RTCP.

6 Hours

Written by Administrator Sunday, 08 November 2009 05:33 -

Text book:

1. **Multimedia Communications: Applications, Networks, Protocols, and Standards** – Fred Halsall, , Pearson Education, Asia, Second Indian reprint 2002.

Reference Books:

1. Multimedia Information Networking –, Nalin K. Sharda, PHI, 2003.

2. Multimedia Fundamentals: Vol 1-Media Coding and Content Processing – Ralf Steinmetz, Klara Narstedt,

Pearson Education, 2004.

3. Multimedia Systems Design – Prabhat K. Andleigh, Kiran Thakrar, PHI, 2004.

Written by Administrator Sunday, 08 November 2009 05:33 -

Real Time Operating Systems

Subject Code

06TE842 IA Marks

25

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:

No. of Lecture Hrs/ Week

:

04

Exam Hrs

Written by Administrator Sunday, 08 November 2009 05:33 -

:

03

Total no. of Lecture Hrs.

:

52

Exam Marks

:

100

Part - A

Written by Administrator Sunday, 08 November 2009 05:33 -

Definition and Classification of Real time systems: Concept of computer control, sequence, loop and supervisor control, centralized, hierarchical and distributed systems, Human Computer interface, hardware requirement for real time applications, specialized processors, interfaces, communications.

6 Hours

Unit - 2

Special features of languages for real time application, review of data types, concurrency, exception handling, corountines, low-level facilities. Overview of Real time languages, modula 2 and Ada as a Real Time Languages.

6 Hours

Unit - 3

Real Time Operating Systems: (PSOS+ V_x WORKS). Scheduling strategies, priority structures, Task management, Real Time Clock Handler, Code sharing, Resource Control, Inter task Communication and Control, Example of Creating and RTOS based on modula 2 kernel; Practical Real Time Operating Systems.

10 Hours

Introduction to Design of Real Time Systems, Specification, Preliminary Design, multitasking Approach, monitors, Rendezvous.

5 Hours

PART - B

Unit - 5

Development Methodologies: Yourdon, Methodology, Ward and Mellor Method, HATLEY & Pribhai method, MASXOT, PAISLEY System.

4 Hours

Unit - 6

Design analysis: Introduction, Petrinets, Analysis of Petri Nets, Scheduling problem Real Time Database, Real Time Vs General Purpose Databases, Transaction priorities and Aborts, Concurrency Control, Disk Scheduling Algorithms, Maintaining Serialization Consistency.

10 Hours

Written by Administrator Sunday, 08 November 2009 05:33 -

Fault tolerance techniques: Introduction, Faults, Errors and Failures, Fault types, Detection and Containment, Redundancy, Integrated Failure Handling.

6 Hours

Unit - 8

Reliability evaluation: Introduction, Parameters, Reliability Models for Hardware, Software Error Models.

5 Hours

Text Book:

1. **Real Time Systems** – C. M. Krishna, Kang. G. Shin, , Mc Graw Hill, India, 1997.

Reference Books:

Written by Administrator Sunday, 08 November 2009 05:33 -

1. **Embedded systems** – Raj Kamal, , Tata Mc Graw Hill, India, 2005.

2. **Real-time systems design and analysis**– 2.Phillip. A. Laplante, , second edition, PHI, 2005.

3. Real time systems – Jane. W. S. Liu, , Pearson education, 2005.

PATTERN RECOGNITION

Subject Code



Written by Administrator Sunday, 08 November 2009 05:33 -

25

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No. of Lecture Hrs/ Week

04

:

Exam Hrs

:

03

Total no. of Lecture Hrs.

:

52

Written by Administrator Sunday, 08 November 2009 05:33 -

Exam Marks

:

100

PART - A

Introduction: Applications of pattern recognition, statistical decision theory, image processing and analysis.

2 Hours

Probability: Introduction, probability of events, random variables, joint distributions and densities, moments of random variables, estimation of parameters from samples, minimum risk estimators.

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8 Hours

Statistical Decision Making: Introduction, Bayes' theorem, multiple features, conditionally independent features, decision boundaries, unequal costs of error, estimation of error rates, the leaving-one-out technique, characteristic curves, estimating the composition of populations.

0 12 Hours 0 0 0

Nonparametric Decision Making: Introduction, histograms, kernel and window estimators, nearest neighbor classification techniques, adaptive decision boundaries, adaptive discriminant functions, minimum squared error discriminant functions, choosing a decision making technique.

9 Hours

Clustering: Introduction, hierarchical clustering, partitional clustering.

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5 Hours

Artificial Neural Networks: Introduction, nets without hidden layers, nets with hidden layers, the back propagation algorithm, Hopfield nets, an application.

7 Hours

Processing of Waveforms and Images: Introduction, gray level scaling transformations, equalization, geometric image scaling and interpolation, smoothing transformations, edge detection, Laplacian and sharpening operators, line detection and template matching, logarithmic gray level scaling, the statistical significance of image features.

9 Hours

Written by Administrator Sunday, 08 November 2009 05:33 -

Text BOOK:

1. **Pattern Recognition and Image Analysis** – Earl Gose, Richard Johnsonbaugh and Steve Jost,, Prentice-Hall of India, 2003.

GSM

Subject Code

:



:

25

Written by Administrator Sunday, 08 November 2009 05:33 -

No. of Lecture Hrs/ Week

:

04

Exam Hrs

:

03

Total no. of Lecture Hrs.

:

52

Exam Marks

:

Written by Administrator Sunday, 08 November 2009 05:33 -

100

PART - A

GSM architecture and interfaces: Introduction, GSM frequency bands, GSM PLMN, Objectives of a GSM PLMN, GSM PLMN Services, GSM Subsystems, GSM Subsystems entities, GSM interfaces, The radio interface (MS to BSC), A

interface (BTS to BSC), A interface (BSC to MSC), Interfaces between other GSM entities, Mapping of GSM layers onto OSI layers.

5 Hours

Radio link features in GSM systems: Introduction, Radio link measurements, Radio link features of GSM, Dynamic power control, Discontinuous transmission (DTX), SFH, Future techniques to reduce interface in GSM, Channel borrowing, Smart antenna.

5 Hours

GSM logical channels and frame structure: Introduction, GSM logical channels, Allowed logical channel combinations, TCH multi frame for TCH/H, CCH multi frame, GSM frame structure, GSM bursts, Normal burst, Synchronization burst, Frequency correction channel burst, Access burst, Data encryption in GSM, Mobility management, Location registration, Mobile identification.

6 Hours

Speech coding in GSM: Introduction, Speech coding methods, Speech code attributes, Transmission bit rate, Delay, Complexity, Quality, LPAS, ITU-T standards, Bit rate, Waveform coding, Time domain waveform coding, Frequency domain waveform coding, Vocoders, Full-rate vocoder, Half-rate vocoder. MESSAGES, SERVICES, AND CALL FLOWS IN GSM: Introduction, GSM PLMN services.

8 Hours

PART - B

GSM messages, MS-BS interface, BS to MSC messages on the A interface, MSC to VLR and HLR, GSM call setup by an MS, Mobile-Terminated call, Call release, Handover. Data services, Introduction, Data interworking, GSM data services, Interconnection for switched data, Group 3 fax, Packet data on the signaling channel, User-to-user signaling, SMS, GSM GPRS.

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8 Hours

Privacy and security in GSM: Introduction, Wireless security requirements, Privacy of communications, Authentication requirements, System lifetime requirements, Physical requirements, SIM cards, Security algorithms for GSM, Token-based authentication, Token-based registration, Token-based challenge.

5 Hours

Planning and design of a GSM wireless network: Introduction, Tele traffic models, Call model, Topology model, Mobility in cellular / PCS networks, Application of a fluid flow model, Planning of a wireless network, Radio design for a cellular / PCS network, Radio link design, Coverage planning, Design of a wireless system, Service requirements, Constraints for hardware implementation, Propagation path loss, System requirements, Spectral efficiency of a wireless

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system, Receiver sensitivity and link budget, Selection of modulation scheme, Design of TDMA frame, Relationship between delay spread and symbol rate, Design example for a GSM.

10 Hours

Management of GSM networks: Introduction, Traditional approaches to NM, TMN, TMN layers, TMN nodes, TMN interface, TMN management services, Management requirements for wireless networks, Management of radio resources, Personal mobility management, Terminal mobility, Service mobility management, Platform-centered management, SNMP, OSI systems management, NM interface and functionality, NMS functionality, OMC functionality, Management of GSM network, TMN applications, GSM information model, GSM containment tree, Future work items.

8 Hours

Text Book:

1. **Principles of Applications of GSM** – Vijay K. Garg & Joseph E. Wilkes, Pearson education, 1999.

Reference BookS:

1. Z. Zvonar Peter Jung.

2. **GSM**: Evolution towards 3rd Generation Systems, (Editor), Karl Kammerlander Spring er; 1 edition 1998.

3. The Creation of Global Mobile Communication – <u>Friedhelm Hillebrand</u>, GSM & UMTS,

John Wiley & Sons; 2001.

Written by Administrator Sunday, 08 November 2009 05:33 -

AD HOC WIRELESS NETWORKS

Subject Code

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25

06EC845 IA Marks

No. of Lecture Hrs/ Week

:

04

Exam Hrs

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Written by Administrator Sunday, 08 November 2009 05:33 -

03

Total no. of Lecture Hrs.

:

52

Exam Marks

100

:

PART - A

Ad hoc Networks: Introduction, Issues in Ad hoc wireless networks, Ad hoc wireless Internet.

6 Hours

MAC Protocols for Ad hoc wireless Networks: Introduction, Issues in designing a MAC protocol for Ad hoc wireless Networks, Design goals of a MAC protocol for Ad hoc wireless Networks, Classification of MAC protocols, Contention based protocols with reservation mechanisms.

7 Hours

Unit - 3

Contention-based MAC protocols with scheduling mechanism, MAC protocols that use directional antennas, Other MAC protocols.

6 Hours

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Routing protocols for Ad hoc wireless Networks: Introduction, Issues in designing a routing protocol for Ad hoc wireless Networks, Classification of routing protocols, Table drive routing protocol, On-demand routing protocol.

7 Hours

PART - B

Hybrid routing protocol, Routing protocols with effective flooding mechanisms, Hierarchical routing protocols, Power aware routing protocols.

6 Hours

Transport layer protocols for Ad hoc wireless Networks: Introduction, Issues in designing a transport layer protocol for Ad hoc wireless Networks, Design goals of a transport layer protocol for Ad hoc wireless Networks, Classification of transport layer solutions, TCP over Ad hoc wireless Networks, Other transport layer protocols for Ad hoc wireless Networks.

7 Hours

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Security: Security in wireless Ad hoc wireless Networks, Network security requirements, Issues & challenges in security provisioning, Network security attacks, Key management, Secure routing in Ad hoc wireless Networks.

6 Hours

Quality of service in Ad hoc wireless Networks: Introduction, Issues and challenges in providing QoS in Ad hoc wireless Networks, Classification of QoS solutions, MAC layer solutions, network layer solutions.

7 Hours

Text Book:

Ad hoc wireless Networks – C. Siva Ram Murthy & B. S. Manoj, Pearson Education, 2ⁿ
^d
Edition, reprint 2005.

Written by Administrator Sunday, 08 November 2009 05:33 -

Reference Books:

1. Ad hoc wireless Networks – Ozan K. Tonguz and Gianguigi Ferrari, Wiley.

2. Ad hoc wireless Networking – Xiuzhen Cheng, Xiao Hung, Ding-Zhu Du, Klu wer Academic publishers.

OPTICAL COMPUTING

Subject Code

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Written by Administrator Sunday, 08 November 2009 05:33 -

25

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No. of Lecture Hrs/ Week

:

04

Exam Hrs

:

03

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:

52

Written by Administrator Sunday, 08 November 2009 05:33 -

Exam Marks

:

100

PART - A

Mathematical and Digital Image FUNDAMENTALS: Introduction, Fourier Transform, discrete Fourier transform, basic diffraction theory, Fourier transform property of lens, sampling and quantization, image enhancement, image restoration.

6 Hours

Written by Administrator Sunday, 08 November 2009 05:33 -

Liner Optical Processing: Introduction, photographic film, spatial filtering using binary filters, holography, inverse filtering, Deblurring.

6 Hours

Analog Optical Arithmetic: Introduction, Halftone processing, nonlinear optical processing, Arithmetic operations.

6 Hours

Recognition using analog optical systems: Introduction, Matched filter, Joint transform correlation, Phase-only filter, Amplitude modulated recognition filters, Generalized correlation

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filter, Melllin transform based correlation.

8 Hours

PART - B

Digital optical computing devices: Introduction, Nonlinear devices, Integrated optics, Threshold devices, Spatial high modulators, Theta modulation devices.

6 Hours

Unit - 6

Shadow-casting and symbolic substitution: Introduction, Shadow casting system and design algorithm, POSC logic operations, POSC multiprocessor, Parallel ALU using POSC, Sequential ALU using POSC, POSC image processing, Symbolic substitutions, Optical implementation of symbolic substitution, Limitations and challenges.

7 Hours

Written by Administrator Sunday, 08 November 2009 05:33 -

Optical Matrix Processing: Introduction, Multiplication, and Multiplication using convolution, Matrix operations, Cellular logic architecture, and Programmable logic array.

6 Hours

Artificial Intelligent computations: Introduction, Neural networks, Associative memory, Optical implementations, Interconnections, Artificial Intelligence.

7 Hours

Text book :

1. **Optical Computing An Introduction –** Mohammed A. Karim – John Wiley & Sons,

Written by Administrator Sunday, 08 November 2009 05:33 -

1992.

Reference Books:

- 1. **Optical Signal Processing** Vanderlugnt John willy & sons NY 1992.
- 2. Signal Processing in Optics Bradly G Boore Oxford University Press 1998.