

Bachelor of technology (Information)
Schemes of Studies / Examination (Semester-7th w.e.f 2006-2007)

S.No	Course No.	Subject	Teaching Schedule				Examination Schedule			Total marks	Duration of Exam (Hours)
			L	T	P	Total	Theory	Sessional	Practical		
1	IT-451	Linux for Information Technology Applications	4	1	0	5	75	50	0	125	3
2	IT-453	Broad Band Communication	4	1	0	5	100	40	0	140	3
		Elective-I	4	1	0	5	100	40	0	140	3
		Elective-II	3	1	0	4	100	40	0	140	3
3	IT-455	Compiler Design	3	1	0	4	75	50	0	125	3
4	IT-457	Linux Lab	0	0	3	3	0	40	25	65	3
5	IT-459	SSP Lab	0	0	3	3	0	40	25	65	3
6	IT-461	Broad Band Communication Lab	0	0	3	3	0	40	25	65	3
7	IT-463	Minor Project	0	0	3	3	0	40	25	65	3
8	IT-465	Training Report	0	0	0	0	0	70	0	70	3
Total			18	5	12	35	450	450	100	1000	30

Elective –I

IT-467 Neuro Fuzzy Computing

IT-469 E-Commerce

Elective - II

IT-471 Image Processing

IT-473 Artificial Intelligence

VII Semester B.Tech (Information Technology)

IT-451 Linux for Information Technology Applications.

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Exam	Sessional	Duration
100	40	3 hrs

Unit-1

Introduction: Basic concepts of the operating system. Commands, shells and processes; users and groups; file system and directories. System installation, configuration and upgrade
Installation stages; network installation; disk partitioning; post-install system customization and upgrade; dpkg and APT package installation, remove, upgrade and query; semi-automatic system installation.

Kernel

Kernel tasks; managing kernel modules at runtime; kernel configuration and compilation boot loaders GRUB and LILO;

Unit-2

Linux Networking

Basic concepts of networking: Network packets, TCP/IP protocol suit, address resolution protocol (ARP); IP addresses and network mask; subnets and routing; IPV4 and Network classes; ports. Configuring Linux machine on the network; arp, ipconfig and netstat commands. Network services and tools; telnet, rsh, ftp, rcp, ssh, rsync, inetd.conf; opening and closing ports.

Network File system (NFS)

File system sharing or the network; remote procedure call (R P C) services; NFS server and client sides; NFS installation & configuration; and statistic mount and auto mount configuration; when trouble shooting NFS; security and optimization

Network information service (NIS)

Centralized authentication systems; sharing user and host information or the network;
NIS server and client sides and configuration; compatibility mode; net group; security issues.

Unit -3

Integrating Linux and Windows

Elements of windows networking; Net BIOS SMB \ \ CIFS protocols; domain controller; Samba server on Linux for centralized window logon; file sharing and printing, samba client; samba installation and configuration; Unix and windows password. Dual Boot: running windows and Linux on the same PC; GRUB and NT Boot loaders; accessing windows files systems from Linux and vice versa;

Light Weight Directory Access Protocol (LDAP)

Overview of Unix authentication and naming service; introduction to LDAP: Domain component (DC); organizational Unit (OU); common names (CN); Schemas; IDIF format; services; polls and commands; server and client sides; Open LDAP installation and configuration; LDAP applications. Shell scripting, syntax of brash; looping; case statement; function; command substitution; awk, grep, sed. Startup and Run Levels. Scheduled jobs. Boot up and login process sequence; run levels; startup scripts; scheduling jobs with at and cron.

Unit-4

Linux Security

System vulnerabilities; port scanning; encryption, encrypted services and connections; PGP/GPG Intrusion protection: tcp-wrappers, IP-firewalls (iptables), NAT and DMZ; Intrusion detection systems: tripwire; Secure system management practices.

Email Server

Steps of Email transaction; Email envelope and headers; SMTP servers; IMAP and POP3 servers; E-mail relay; Postfix configuration; Spam and viruses,

Linux Computational Clusters

Overview of Linux cluster and clustering tools; High performance Computational Clusters; Message Passing Interface (MP) for parallel programming; MPI compilation and installation; Scheduling and queue systems. Sun Grid Engine (SGE); cluster management tools.

Domain Name Server (DNS)

Host name resolution; domain name hierarchy; DNS zones; configuration of master, slave and caching DNS servers with BIND 9.

Books Recommended:

1. Red Hat Linux 9 – Bell & Duff- Pearson
2. Complete Reference, Red Hat Linux-Richard L. Peterson – TMH
3. Linux N/W Administration Guide by Tery Dawson, Gregor N. Purdy, Tony Bautts – OREILLY
4. Red Hat Linux 9 Bible-Christopher Negus by WILEY publishing
5. Linux Configuration & Installation by Patrick Volker Ding, Kevin Richard, Eric Foster-Johnson BPB publication
6. Linux Programming Bible by John Goerzen-Wiley Dream Tech India (P) Ltd.

Note: 8 questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

VII Semester B.Tech. (Information Technology)

IT – 453 Broad bands Communication

L	T	Exam	Sessional	Duration
4	1	100	40	3Hrs.

Unit –1 Introduction:

Introduction to optical communication-Fibers and their characteristics. Propagation of Light in optical fibers: modal dispersion, material dispersion and attenuation, numerical. Aperture, figure of merit. Single mode, multimode step index and graded index fibers.

Unit –2 Fiber manufacture. Light sources. Light emitting diodes and their characteristics. Switching speed, spectral and spatial distribution of output, modulation response. Basic of lasers. Semiconductor lasers. Transmitters and receivers. Optical multipliers and demultiplexers Optical amplifiers and repeaters. Photo detectors.

Introduction to DWDM. ITU channel specification. DWDM Network Topologies

Unit –3 ISDN Overview – A conceptual view of ISDN – ISDN standards – services capability- teleservice protocol architecture – facsimile – Teleflex. Message handling systems.ISDN Interfaces and functions- Transmission structure – user network interface Configuration- ISDN protocol architecture – ISDN connection – terminal adaptation. Addressing networking.

ISDN Physical layer – line coding techniques, basic user network interface – primary rate. User network interface – U interface.

ISDN Data Link Layer – LAPD, bearer channel link control 1.465/120. Frame mode Bearer service and protocol. ISDN call control, frame relay connection control.

Signaling system number 7: SS7 architecture. Signaling data link level, signaling link level. Signaling network level, signaling connection control part **Unit -4**

ATM Networking – ATM as an asynchronous technology, ATM cell and its structure. ATM Networks. ATM position in the OSI reference model, B-ISDN protocol reference. Model, ATM functions and layers, ATM signaling principles, ATM performance, merging voice, audio, data and video, ATM signaling principles, ATM operation and maintenance, ATM reference configurations.

ATM protocol stack – the lower layers: Fiber based network. Fiber based network, advantages, and fiber modes. ATM physical layer media ATM transmission convergence sub layer. The ATM layer. ATM Switching principle, ATM OAMN functions. signaling. Upper Layers: ATM adaptation layer functions, ATM services.

Books Recommended:

1. ISDN and Broadband ISDN –William Stallings McMillan pub co.
2. Broadband communication-Balaji Kumar-Mc Graw Hill
3. Integrated broadband networks-Handel & Huber Addison Wesley.
4. Introduction to ATM networking-Walter J Goral ski-MC Graw Hill inc.
5. Optical Network –A Practical Perspective, Rajiv Ramaswami, Kumar Sivaranjan-Morgan Kaufmann
6. High Speed Digital Transmission Networking-filberts held John Wiley sons
7. Introduction to DWDM Technology S.V.Kartalopoulos, IEEE Press.

Note: 8 questions will be set in all by the examiners taking at least one question from each unit.

Students will be required to attempt five questions in all.

VII Semester B.Tech. (Information Technology)

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IT – 467 Neuro-Fuzzy Computing
Exam Sessional. Duration
100 40 3Hrs.

Unit -1

Basic concepts of neurocomputing :

Artificial Neural Networks (ANN) and their biological roots and motivations. ANNs as numerical data/signal/image processing devices. Encoding (training phase) and decoding (active phase). Taxonomy of neural networks: feed forward and recurrent networks with supervised and unsupervised learning laws. Static and dynamic processing systems. Basic data structures: mapping of vector spaces, clusters, principal components.

Basic terminology related to an artificial neuron:

A summing dendrite, synapses and their weights, pre- and post-synaptic signals, activation potential and activation function. Excitatory and inhibitory synapses. The biasing input. Types of activating functions.

Unit -2

The Perceptron

The Perceptron and its learning law. Classification of linearly separable patterns.

Linear Networks

Adaline- -the adaptive linear element. Linear regression. The Wiener- Hopf equation. The Least –Mean-Square (window-Holf) learning algorithm. Method of steepest descent. Adaline as a linear adaptive filter. A sequential regression algorithm.

Unit -3

Multi-Layer Feed Forward Neural Networks

Aka Multi-Layer Perceptrons. Supervised Learning. Approximation and interpolation of functions. Radial-Basis functions. Back-propagation Learning law. Fast training algorithms. Applications of multilayer perceptions: Image coding, Paint-Quality inspection,Nettalk.

Self-Organizing systems.

Unsupervised Learning. Local learning laws. Generalized Hebbian Algorithm. The Oja's and Sanger's rules. Principal component analysis __ Karhunen-Loeve transform.

Unit –4

Competitive Learning:

MinNet and MaxNet networks. Clustering, Learning Vector Quantisation. Codebooks. Application in data compression.

Self-Organising Feature Maps

Kohonen networks.

Recurrent Networks

Hopfield networks.

Fuzzy Logic Systems

Basic definitions and operations.

Fuzzy relations.
Fuzzy rules
Fuzzy inference
Fuzzification and de- fuzzification
Adaptive Neuro-Fuzzy Inference Systems

Recommended references:

- Simon Haykin, Neural Networks – a Comprehensive Foundation, Prentice Hall, 2nd ed., 1999, ISBN 0-13- 273350-1
- Martin T. Hagan,. H. Demuth, M. Beale, Neural Netywork Design, PWS Publishing, 1996, ISBN 0-534-94332-2
- A. Konar, Computational Intelligence Principles, Techniques and Applications. Springer, 2005, ISBN: 3-540-20898-4
- Neural Networks & Fuzzy Systems by KOSKO-PHI
- Fuzzy Logic to engineering applications- Timothy J.Ross
- Fuzzy Control –Drianlcov
- Fuzzy modeling & Contolby Yagar

Note: 8 questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

VII Semester B.Tech (Information Technology)
IT-469 E-Commerce

Exam 100 Sess. 40 Duration 3 hrs

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Unit-1

ELECTRONIC COMMERCE ENVIRONMENT AND OPPORTUNITIES

Evolution of E-Commerce- its setbacks and potential. Types of E-Commerce, business models in B2C, B2B and C2C areas. Categories of E-Commerce, Specific Business benefits of E-Commerce.

Background-Electronics commerce environment- electronics market place technologies-modes of electronic commerce-electronic data interchange-migration to open EDI-Electronics commerce with WWW/Internet.

Unit-2

ELECTRONIC COMMERCE PROTOCOLS AND PAYMENT SCHEMES

Secure transport protocols-secure transaction-Secure Electronic Payment Protocol (SEPP)- Secure Electronic Transactions (SET)- Authentication – Security on Web servers and enterprise networks.

Internet Monetary payment and security requirements- Payment and purchase order-On-line electronic cash. and micro payments.

Unit-3

INTERNET /INTRANET SECURITY ISSUES AND SOLUTIONS

Security Need for computer security – threats in the E-Commerce environment.

Intruder approaches – strategies- tools- Encryption- access to Internet- Antivirus program security teams.

Unit- 4

TECHNOLOGIES FOR ELECTRONICS COMMERCE

Master card/Visa secure electronic transaction- E-mail and secure E-mail-MIME-S/MIME-MOSS- Internet and web site establishment- Internet resources- technologies- tools- applications- charges – Access and architecture – searching.

APPLICATIONS

Advertising on the internet-Issues and technology –Electronic publishing issue approaches legalities and technologies.

Books Recommended:

TEXT BOOK:

1. “Web Commerce Technology Handbook” by Daniel Minoli and Emma Minoli, Tata McGraw Hill Publishing Company limited, New Delhi, 1999 – Chapters: 1,2,3,4,5,6,7,8,10,11.

References:

1. Electronics Commerce – Security, Risk management and Control by Greenstein and Feinman, Tata McGraw Hill Publishing Company limited, New Delhi,2000.

2. E-security and You by Sundeep Oberoi, Tata McGraw Hill Publishing Company Limited, New Delhi, 2001.
3. E-Commerce – Business, Technology and Society – Addison Wesley, 2002: Laudon and Traver.
4. “E-Business and E-Commerce – How to Program” Prentice Hall, 2001: Dietal, Dietel and Nieto.
5. “E-Commerce” John Wiley Publ: H. Chan, R.Lee, T. Dillon and E.Chang.
6. Several papers from journals, conference proceedings and the net.

Note: 8 question will be set in all y examiners taking at least one question from each unit student will required to attempt five questions in all

VII Semester B.Tech (Information Technology)

IT-471 Image Processing

L	T	Exam	Sess.	Duration
3	1	100	40	3 hrs

Unit-1

Digital image fundamentals, application of digital image processing, elements of digital image processing systems, vidicon camera, Line scan CCD sensor, area sensor, flash A/D converter display – elements of visual perception, structure of the human eye, Luminance, brightness, contrast, Mach band effect, image fidelity criteria, color models, - RGB, CMY, HIS mathematical preliminaries of 2D systems, convolution, Fourier transform – ZS transform – toeplitz and circulant matrices, orthogonal and unitary matrices.

Unit- 2

Image transforms, Unitary transform, 2D, DFT, DCT, DST, Discrete wavelet transform, Discrete Hadamard, Walsh, Hostelling transform, SVD transform, Slant Haar transforms. Image Enhancement and Restoration: Contrast stretching, intensity level slicing, Histogram equalization, spatial averaging, directional smoothing, Median filtering, nonlinear filters, maximum, minimum, geometric mean, contra harmonic mean, LP mean filters, edge detection, Roberts, Sobel, Isotropic, Kirsch, Compass gradient, Laplacian operators.

Unit- 3

Degradation model- unconstrained and constrained restoration, inverse filtering, removal of blur caused by uniform linear motion, Wiener filtering, geometric transformations for image restoration.

Unit –4

Image compression- Huffman coding, truncated Huffman coding, Br, Binary codes, arithmetic coding, bit plane coding, contrast area coding, Run length encoding, transform coding JPEG and MPEG coding schemes.

Image Segmentation, pixel based approach, feature threshold, choice of feature, optimum threshold, threshold selection methods, region based approach, region growing, region splitting, region merging, split and merge.

Books Recommended:

1. Gonzalez, R.C. and woods, R.E., :Digital image processing”, Addison Wesley.
2. A.K.Jain, “ Fundamentals of Digital Processing”, PHI.
3. Umbaugh, S.E. Computer vision and image processing, Prentice Hall Int. NJ
4. W. Pratt, Digital Image Processing”, Wiley Inter-science

Note: 8 questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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VII Semester B.Tech (Information Technology)

**(IT-473) ARTIFICIAL
INTELLIGENCE**

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Exam
100

Sess.
40

Duration
3 Hrs

Unit-1

Introduction –foundation and history of AI, AI problems and techniques.

AI programming languages, Introduction to LISP and PROLOG.

Problem spaces and searches, Blind search strategies, Breadth first – Depth first – Heuristic search techniques Hill Climbing – Best first – A Algorithms AO* algorithm – game tress, Min-max algorithms, game playing – Alpha beta pruning.

Unit –2

Knowledge representation issues predicate logic – logic programming Semantic nets- frames and inheritance, constraint propagation; Representing Knowledge using rules, Rules based deduction systems.

Reasoning under uncertainly, Review of probability bays probabilistic interferences and Dempster Shafer theory, Heuristic methods, symbolic reasoning under uncertainty Statistical reasoning fuzzy reasoning, temporal reasoning non monotonic reasoning.

Unit – 3

Planning, Planning in situational calculus, Representation for planning, Partial order planning algorithm, learning from examples discovery a learning, Learning by analogy, Explanation based learning neural nets Genetic algorithms.

Unit – 4

Principles of natural languages processing rule based systems architecture, Expert systems, Knowledge acquisition concepts AI application to robotics, current trends in intelligent systems.

Books Recommended:

1. Elain Rich and Kevin Knight, “Artificial Intelligence”, Tata McGraw-Hill, New Delhi.
2. Stuart Russel and other Peter Norvig, “Artificial Intelligence – a Modern Approach”, Prentice Hall.
3. Patrick Henry Winston, “Artificial Intelligence”, Addison Wesley, third Ed.
4. Artificial Intelligence & Expert System By Patterson – PHI.

Note: 8 questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

VII Semester B.Tech (Information Technology)
(IT-455)
COMPILER DESIGN

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Exam Sess. Duration
75 50 3 Hrs

Unit-1

Introduction:

Compilers and translators, the structure of a compiler, different states in the construction of a compiler.

Unit-2

Finite automata and Lexical Analysis- language for specifying lexical analyzers, implementation of lexical analyzers.

Syntax specification of programming language, context free grammars, derivation and implementation of lexical analyzers.

Parsers, shift reduce parsing, operator-precedence parsing, top down parsing, predictive parsers, LR parsers, the canonical collection of LR(O) ITEMS, Costruction SLR parsing tables, construction Tables, implementation of LR parsing tables.

Unit-3

Syntax direct translation schemes: Implementation of syntax directed translation intermediate code, postfix notation, parse trees and syntax trees, three address code, quadruples and triple, translation of assignment statement, Boolean expressions, Control statements.

Symbol table, contents and data structure, and representation scope information.

Run time storage administration, implementation of a simple stack allocation structured languages. Error detection and recovery –lexical, syntactic-phase error, semantic error, detection and recovery.

Unit-4

Code Optimization: The principal sources of optimization, loop optimization, The DAG Representation of basic blocks, value numbers and algebraic claws, global data flow analysis. Object programs, problems in code generation a machine model code generator, register allocation and assignment, code generation from DAG's peephole optimization.

Books Recommended:

1. Aho, a.v. and A.V. and Ullman J.D., “Principal of Compiler design”, Addison-Wesley.
2. Dhamdhare D M, “Compiler construction – Principal and practice, McMillan, India.
3. “Compiler construction”, Learning materials series, ISTE, New Delhi.
4. Allen Hoiub, “Compiler Design in C”, PHI.

Note: 8 questions will be set in all by the examiners taking at least one question from each unit. Students will be required to attempt five questions in all.

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7th Semester B.Tech. (Information Technology)

Linux Lab (IT-457)

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Sessional: 40
Exam: 25

1. Install Linux on the system dual boot with the windows Operating System.
2. Do the following tasks:-
 - a. Create, remove, resize various types of partitions through GUI as well as command line.
 - b. Configure printers in Linux through GUI as well as command line.
3. Creating, Removing of Swap space as well as swap files trough command line as well as GUI.
4. Implementation Disk Quotas- enabling, creating, mounting, configuring, assigning, disabling.
5. Managing Users and Groups in Linux- Adding, Modifying, Password aging.
6. Configuration Networks on Linux through GUI & Command Line- Ethernet, Modem, ISDN, Wireless.
7. Configuring NFS (Network File System) on Linux both GUI & Command Line.
8. Configuring Samba server on Linux both GUI & Command line.
9. Configuring D.N.S (Domain Name system) server on Linux both GUI & Command Line.
10. Configure an e-mail server in Linux-send mail.
11. Configuring Firewalls and Managing various services of Linux.
12. Configuring Log Server in Linux.

Note: Students should perform at least 10 experiments from the list.

**7th Semester B.Tech. (Information Technology)
Server Side Programming Lab (IT-459)**

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Sessional: 40
Exam: 25

1. Create a Subroutine with arguments passing & call the subroutine for specific no. of time.
2. Write a program in ASP which define an object & then display the properties of object with method.
3. Write a program in ASP to display present day, month & date. Also display digital clock.
4. Write a program in ASP which will check that a specific file, folder & drive exists or not. Also return the extension of file. Then use the read & write properties on a file using text-stream object.
5. Send information to the user after he submit the form using GET & POST method & implement form validation.
6. Write a program in ASP that has a form taking the user's name as input. Store this name in a permanent cookie & whenever the page is opened again, then value of the name field should be attached with the cookie's content.
7. Use ad-rotator to change advertisements on client side request.
8. Create a session dictionary using object tag. In session-on start add keys for time, user agent, remote I.P. & add appropriate values. Create a simple page to display the values.
9. Implement session tracking using user authentication.
10. Write a program to delete all cookies of your web site that has created on the client's computer.
11. Write a program in ASP to check the capabilities of the browser using browser capability component.
12. Using data base to store & retrieves values input by a user showing them & make updating & add new records to existing database.
13. Create two ASP pages, a form creation web page (selectprice.asp) and a form processing script (liststockbyprice.asp). In selectprice.asp, the user should be shown a form in which he can enter the item & desired maximum price. When it is submitted liststockbyprice.asp will return all the stocks from database whose cost are less than the price entered by user.

7th Semester B.Tech. (Information Technology)

BBC Lab (IT-461)

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Sessional: 40
Exam: 25

1. Setting Up Fiber Optic Analog Link & Fiber Optic Digital Link.
2. Propagation loss in Optical Fiber.
3. Measurement of Numerical Aperture.
4. Characteristics of E-O converter (LED).
5. Characteristics of F.O. communication Link.
6. Setting of Fiber Optic Voice Link using AM-FM & PWM.
7. Full Duplex Computer Communication using RS232 ports and software.
8. Set up hardware for ISDN and Study of ISDN Instruments 1. ISDN Telephone 2. Terminal Adaptor (For the interface of Analog Telephone and PC)
9. Software setup and programming of the ISDN equipment.
10. Establishing voice communication between ISDN phone & analog phone via Terminal Adaptor.
11. Study the basic Principle of Radio Frequency identification & Designing of RFID system.
12. Design & develop the program based on application of RFID.
13. To study Theoretical & Practical hardware Training on Bluetooth.

Note: Students should perform at least 10 experiments from the list.

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