

IT 601 FINANCIAL MANAGEMENT AND E-BANKING

MODULE I The basic concepts of Accounting: The separation of ownership and control, The users of accounts, Computers and users of accounts, Accounting concepts and conventions, Accounting equation, Balance sheet, Classifying items, The processing function. Book-Keeping: The double-entry system, Double-entry of expenses, Asset of stock, Capital and revenue expenditure, Balancing accounts on computers, The trial balance, The final accounts, Depreciation, Bad debts and provision for bad debts, Division of the ledger, Books of original entry, Source documents, Accounting systems, Interpretation of accounts.

MODULE II Costing: Cost Accounting, Classifying costs, The implications for programming, The operating statement, the cost of raw materials, the cost of direct labour, the cost of overheads, job costing, Break-even analysis, Break-even graphs, Budgeting, Standard costing, Variance analysis, Marginal costing. Ratio Analysis: Ratio meaning, profitability ratios, profit in relation to sales, profit in relation to investments, Liquid ratios, Solvency ratios, other ratios, Activity ratios, Eps, DuPont Financial analysis, ratios for predicating bankruptcy, Inter-firm comparison, ratios limitations.

MODULE III Fund Flow Statement : Meaning, Importance , Definition of terms, Funds and Flow, Sources and use of funds, Changes in working capital, Preparation of funds flow statements, cash flow statements, Sources and uses, preparation. Cost Reduction: Difference between cost control and cost reduction, Prerequisites for an effective cost reduction, Concept of value analysis- crux of the cost reduction, steps involved in introducing a cost reduction program, some examples of cost reduction, Common limitations.

MODULE IV E-BANKING Changing Dynamics in the Banking Industry, Changing Consumer Needs, Cost Reduction, Demographic Trends, Regulatory Reform, Technology Based Financial services products.Home Banking Implementation Approaches, Home Banking Using Bank's Proprietary Software, Banking via the PC Using Dial-Up Software, Banking via Online Services, Banking via the Web:Security First Network Bank.Open versus Closed Models, Management Issues in Online Banking, Differentiating Products and Services, Managing Financial Supply Chains, Pricing Issues

in Online Banking, Marketing Issues: Attracting Customers, Keeping Customers, Back-Office Support for Online Banking, Integrating Telephone Call Centers with the Web.

REFERENCES

1. Nand Dharmaja & K.S. Sastry Finance & Accounting for ,Managerial Competiveness Weeler Publishing, Allahabad
2. Eugene .F. Brigham & Joel F Houston - Fundamentals of Financial Management – Thomson Learning.
3. P.H. Bassett - Computerised Accounting, NCC Blackwell Ltd. , Oxford, 1994
4. M.C Shukla & T.S.Grewal, Advanced Accounts- S.Chand & Co. , New Delhi
5. Ravi Kalkota,Andrew B. Whinston,Electronic Commere A Manager's Guide - Pearson Education 2006.
6. Khan and Jain - Theory and Problems in Tata Mc Graw Hill Financial Management
7. I.M.Pandey - Financial Management ,Vikas Thomson Learning - Publishing, NewDelhi

Type of questions for University Examination

Question 1 - 8 short answer questions of 5 marks each. 2 questions from one module

Question 2-5 – There will be two choices from each module .Answer one question from each module of 15 marks

IT 602 INTERNET PROGRAMMING

Module I

Introduction to Web Programming, XML: Creating XML documents, Parsing an XML document, Writing well – formed Documents, Organizing elements with Namespaces, Defining elements in a DTD, Declaring Elements and Attributes in a DTD.

Module II

CGI/Perl: Creating link to a CGI script, Using a link to send data to a CGI script, Parsing data sent to a Perl CGI script, Using CGI script to process form data, Using Scalar variables in Perl, Using arithmetic operators in Perl, Associating a Form with a Script.

Module III

Event driven programming using Java applets, JavaServer Pages: JSP Scripting elements, Linking to external files, JSP declarations, JSP Expressions, JSP Scriptlets, Processing client requests, JavaBeans: Accessing and setting Bean properties, JavaBean scope, Accessing a database from JSP

Module IV

PHP: Defining PHP variables, Variable types, operators, control flow constructs in PHP, Establishing connection with MYSQL database, managing system data, Passing data between pages.

TEXT BOOKS:

1. Xue Bal et. al, The Web Warrior Guide to Web Programming, Thomson Learning.

REFERENCE:

1. H.M.Deitel, P.J.Deitel, A.B.Goldberg, Internet & World Wide Web- How to Programme, 3rd Edition, Pearson Education.
2. Kalata, Internet Programming with VBScript and JavaScript, Thomson Learning
3. Mohler, Designing Interactive Websites, Thomson Learning
4. Elliotte Rusty Harold, " XML bible", IDG Books
5. Ash Rofail; Tony Martin, "Building N-Tier Applications with COM and Visual Basic 6.0", John Wiley & Sons, Inc
6. Daniel. J. Berg, J. Steven Fritizihger, "Advanced Techniques for Java Development" Johnwiley & Sons, Inc.

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CS/IT 603 OPERATING SYSTEMS

Module I

Introduction to Operating Systems. Processes - Interprocess Communication - Race Conditions - Critical Sections – Mutual Exclusion - Busy Waiting - Sleep And Wakeup - Semaphores - Event Counters - Monitors - Message Passing. Process Scheduling - Round Robin Scheduling - Priority scheduling -multiple queues - Shortest Job First - Guaranteed scheduling - Two- level scheduling.

Module II

Memory management. Multiprogramming. Multiprogramming and memory usage - Swapping - multiprogramming with fixed and variable partitions - Memory management with bit maps, linked lists, Buddy system - allocation of swap space. Virtual memory - paging and page tables, associative memory - inverted page tables. Page replacement algorithms.

Module III

File systems and I/O files. Directories - File system implementation - security and protection mechanisms.

Principles of I/O hardware - I/O devices - device controllers - DMA. Principles of I/O software - interrupt handlers - device drivers - Disk scheduling - clocks and terminals.

I/O Buffering - RAID- Disk Cache.

Module IV

Deadlock - conditions for deadlock. Deadlock detection and recovery. Deadlock avoidance - resource trajectories - safe and unsafe states - bankers algorithm. Deadlock prevention. Two phase locking – non-resource deadlocks - starvation.

Case Study: UNIX / LINUX operating system

Text Book

1. William Stallings, “Operating systems”, Pearson Education, Fifth edition
2. D.M.Dhamdhere, “Operating Systems”, 2nd Edition, Tata McGraw-Hill

Reference

1. Garry Nutt, “Operating Systems – A Modern perspective ”, Third Edition, Pearson Education
2. Andrew S. Tanenbaum, “Modern Operating Systems”, Prentice Hall
3. Bach, M.J., “Design of UNIX Operating System”, Prentice Hall
4. Charles Crowley, “Operating systems – A Design Oriented Approach”, Tata McGrawhill, 1997
5. Michel Palmer “Guide o Operating Systems”, Vikas Thomson Learning Publishing, NDelhi

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CS/IT 604 ANALYSIS AND DESIGN OF ALGORITHMS

Module 1

Analyzing Algorithms and problems. Classifying functions by their asymptotic growth rate. Recursive procedures. Recurrence equations - Substitution Method, Changing variables, Recursion Tree, Master Theorem. Design Techniques- Divide and Conquer, Dynamic Programming, Greedy, Backtracking

Module 2

Analysis of searching and sorting. Insertion sort, Quick sort, Merge sort and Heap sort. Binomial Heaps and Fibonacci Heaps, Lower bounds for sorting by comparison of keys. Comparison of sorting algorithms. Amortized Time Analysis. Red-Black Trees – Insertion & Deletion.

Module 3

Graphs and graph traversals. Strongly connected components of a Directed graph. Biconnected components of an undirected graph. Transitive closure of a Binary relation. Warshalls algorithm for Transitive closure. All pair shortest path in graphs. Dynamic programming. Constructing optimal binary search trees.

Module 4

Complexity Theory - Introduction. P and NP. NP-Complete problems. Approximation algorithms. Bin packing, Graph coloring. Traveling salesperson Problem.

Text Books:

1. T. H. Cormen, C. E. Lieserson, R. L. Rivest, Introduction to Algorithms, Prentice Hall India, 2004
2. Allen Van Gelder, Sara Baase, "Computer Algorithms - Introduction to Design and Analysis", 3rd Edition, 2004

References:

1. Anany Levitin, "Introduction to the design and analysis of algorithms", Pearson Education
2. A.V.Aho, J.E.Hopcroft and J.D. Ullman, "The Design and Analysis of Computer Algorithms", Addison Wesley Publishing House, Reading, MA
3. E Horowitz and S Sahni, "Fundamentals of Computer Algorithms", Computer Science Press, Rockville
4. Jeffrey H.Kingston, "Algorithms and Data Structures - Design, Correctness and Analysis ", Addison Wesley, Singapore, 1990
5. Knuth, "Art of Computer Programming Vol II, Sorting and Searching," , Prentice Hall

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IT 605 OBJECT ORIENTED MODELLING AND DESIGN

Module I

Introduction to UML and Unified Process. Use case modeling: Actors and Use cases, Use case specification, Actor generalization, Use case generalization. Objects and classes, Relationships, Inheritance and Polymorphism, Packages.

Module II

Use case realization: Interactions, Sequence diagrams, Communication diagrams, Interaction occurrences. Activity diagrams: Activity semantics, activity partitions, Sending signals and accepting events, Interaction overview diagrams.

Module III

Design: Design workflow, well-formed design classes, Refining analysis relationships. Interfaces and components. State machine diagrams, Composite states, submachine states.

Module IV

Implementation workflow, Deployment, Introduction to OCL: Why OCL? OCL expression syntax, Types of OCL expressions. Introduction to Software Architecture, Architecture description language (ADL)

Text Book:

1. Jim Arlow and Ila Neustadt, UML 2 and the Unified Process: Practical Object oriented Analysis and Design, Second Edition, Pearson Education.

Reference:

1. Craig Larman, Applying UML and Patterns, 3rd Edition, Pearson Education.
2. Grady Booch, James Rumbaugh, Ivar Jacobson .A.W - The Unified Modeling Language User Guide
3. Bruegge, Object Oriented Software Engineering using UML patterns and Java, Pearson Education
4. James Rumbaugh et. al., Object Oriented Modelling and Design –PHI
5. Ivar Jacobson, Grady Booch, James Rumbaugh A.W, The Unified Software Development Process.
6. DeLillo, Object Oriented Design in C++, Thomson Learning

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CS/IT 606 COMPUTER NETWORKS

Module 1

Evolution of Computer Networks

Types of Networks: Broadcast and Point-to-point, LAN, MAN, WAN, Wireless networks. Protocols & Standardization, ISO/OSI Reference model, TCP/IP Reference Model.

Application Layer

Application layer protocols:-WWW and HTTP, FTP, DNS, SMTP, SNMP, RPC, P2P File sharing, Domain Name system (DNS)

Module 2

Transport layer and Network Layer

Transport Layer Services, Relationship with Network Layer, Relationship with Application Layer, Multiplexing and De multiplexing, UDP, TCP: Header ,Segment Structure, Services, Connection establishment and termination, Flow control and window size advertising, TCP time out and re-transmission, Congestion Control, TCP Fairness, Delay Modeling.

Network layer Services, Datagram and Virtual circuit services, IP datagram format and Types of Services, Datagram encapsulation and Fragmentation, Reassembly and fragmentation

Module 3

Routing and Datalink Layer

Routing: Link state routing, distant vector routing, hierarchical routing, multicast routing, Data link layer services: Error detect and correction techniques, Elementary Data link layer protocols, sliding window protocols, HDLC ,Multiple access protocols, TDM, FDM, CDMA Random access protocols: ALOHA, CSMA,CSMA/CD,CSMA/CA. Circuit and Packet Switching, Virtual Circuits, Switching Technology for LAN, Ethernet switches, Virtual LAN

Module 4

Physical Layer, High speed Networks and Network programming

Physical Layer services, Transmission media, Data encoding schemes. ISDN, BISDN, Frame relay, Fast Ethernet and Gigabit Ethernet, FDDI, SONET .NETBIOS programming, TCT/IP and Socket programming. Network Performance: Analytical Approaches-Network Traffic Monitoring-simulations

Text Book:

1. Youlu Zheng and Shakil Akhtar, *Networks for Computer Scientist and Engineers*, Oxford University Press,2006
2. James F. Kurose and Keith W. Ross, *Computer Networking – A Top-Down Approach Featuring the Internet*,2/e Pearson Education ,2003

References:

1. Larry L Peterson & Bruce S Dave, *Computer Networks*, 3rd Edn, Elsevier
2. S. Keshav, *An Engineering Approach to Computer Networking*, Pearson education ,2002
3. F. Halsall, *Data Communication, Computer Networks and Open Systems*, Addison Wesley, 1996
4. Andrew S. Tanenbaum, *Computer Networks* , 4/e, Pearson education, 2003
5. Behrouz A. Fourouzan ,*Data Communications and Networking*, 2/e Tat McGrawhill,2000
6. Leon-Garcia and I. Widjaja, *Communication Networks*, Tata McGraw Hill, 2000
7. Bertsekas and Gallagar , *Data Networks*, 2/e, PHI, 1992
8. Douglas E Comer ,*Computer Networks and Internet's*, 2/e Pearson Education,2004

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IT 607 COMPUTER GRAPHICS LAB

This lab exercises are to be done in JAVA language

1. Program to draw line using Bresenham's algorithm for all quadrants.
2. Program to draw a circle.
3. Program to draw an ellipse.
4. Program to draw a spiral using Bresenham's circle drawing algorithm.
5. Procedure to move a line around the circle.
6. Procedure to rotate a wheel.
7. Procedure to translate a circle.
8. Program to show 2D clipping and windowing.
9. Development of 2D graphics package.
10. Segmentation.

Note: 50% Marks is earmarked for continuous evaluation and 50% marks for end semester examination to be assessed by two examiners. A candidate shall secure a minimum of 50% marks separately for the two components to be eligible for a pass in that subject.

IT 608 MINI PROJECT – INTERNET BASED

Design and development of an online web oriented commercial site.

Concepts: Server side scripting through ASP or JSP or PHP, Client side scripting through Java Script or VBScript, Web servers like IBM Web Sphere or Tomcat or IIS or Apache, Web Application development framework using IBM Web sphere studio or PHP Triad or Visual studio .Net, Web concepts to mobile devices using WML, WAP, XML. Students can do any of the following sample projects or similar ones:

1. Online auction management system
2. Online ticket reservation system
3. Online banking
4. Online academic softwares like Tutors, Admission, Examination etc.
5. Mobile programming using web services. Here a web service can be a cricket score, weather forecast, railway timing and so on.
6. News aggregators
7. Download managers
8. Email software
9. Mobile – Website communication using SMS
10. Online file repositories.

Each batch comprising of 3 to 5 students shall design. Each student shall submit a project report at the end of the semester. The project report should contain the design and engineering documentation including the Bill of Materials and test results. Product has to be demonstrated for its full design specifications. Innovative design concepts, reliability considerations and aesthetics / ergonomic aspects taken care of in the project shall be given due weight.

Guidelines for evaluation:

i) Attendance and Regularity	10
ii) Work knowledge and Involvement	30
iii) End-Semester presentation & Oral examination	20
iv) Level of completion and demonstration of functionality/specifications	25
v) Project Report	15

Total 100 marks

Note: External projects and R&D projects need not be encouraged at this level. Points (i) & (ii) to be evaluated by the project guide & co-ordinator and the rest by the final evaluation team comprising of 3 teachers including the project guide.