

CS/EB/EC/EE/EI/IT 701 INDUSTRIAL ORGANIZATION AND MANAGEMENT

Module 1

Organisation: Introduction, definition of organization, system approach applied to organization, necessity of organization, elements of organization, process of organization, principles of organization, formal and informal organization, organization structure, types of organization structure .

Forms of business organization: Concept of ownership organization, types of ownership. Individual ownership, partnership, joint stock Company, private and public limited company, co-operative organizations, state ownership, public corporation

Module 2

Basic concept of management: Introduction, definitions of management, characteristics of management, levels of management, management skills

Management theory: Scientific management, contribution of Gilbreth. Gantt, Neo-classical theory, modern management theories

Functions of management: Planning, forecasting, organizing, staffing, directing, motivating, controlling, co-coordinating, communicating, decision making.

Module 3

Personnel management: Introduction, definition, objectives, characteristics, functions, principles and organization of personnel management

Markets and marketing: Introduction, the market, marketing information, market segmentation, consumer and industrial markets, pricing, sales, physical distribution, consumer behaviour and advertisement.

Financial management: the basics , financial accounts, inflation, profitability, budgets and controls, cost accounting, valuation of stock, allocation of overheads, standard costing ,marginal costing

Module 4

Productivity and production: Measurement of productivity, productivity index productivity improvement procedure

Materials management and purchasing: Objectives, functions, importance of materials management. Stores and storekeeping

Inventory control: Classification, functions, inventory models, inventory costs, EOQ, Materials requirement planning

References:

1. Fraidoon Mazda, Engineering Management-, Addison -Wesley
2. Koontz and O'Donnell, Essentials of Management, Mc Graw Hill
3. Kotlar P, Marketing Management, Prentice Hall India
4. Prsanna Chandra , Finance Management, TMH.5th ed.,
5. Monks J.G Operations Management ,MGH

Type of questions for University Examination

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

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

CS 702 ADVANCED ARCHITECTURE & PARALLEL PROCESSING

Module 1

Introduction to Parallel Processing-Shared Memory Multiprocessing-Distributed Memory-Parallel Processing Architectures- Introduction-Parallelism in sequential Machines—Abstract Model of Parallel Computer – Multiprocessor Architecture- Array Processors.

Module 2

Pipelining and Super Scalar Techniques-Linear Pipeline Processors-Non-Linear Pipeline processors-Instruction pipeline design-Arithmetic pipeline Design- Super Scalar and Super pipeline Design.

Module 3

Programmability Issues-An Overview-Operating system support-Types of Operating Systems-Parallel Programming models-Software Tools-Data Dependency Analysis-Types of Dependencies-Program Transformations- Shared Memory Programming

Module 4

Thread –based Implementation-thread Management-Attributes of Threads- Mutual Exclusion with Threads- Mutex Usage of Threads- Thread implementation-Events and Conditions variables-Deviation Computation with Threads-Java Threads Distributed Computing –Message Passing Model-General Model-Programming Model- PVM- Algorithms for Parallel Machines- Debugging Parallel programming –Other Parallelism Paradigms .

Text Books:

1. Kai Hwang, “Advanced Computer Architecture: Parallelism, Scalability, Programmability”, McGrawHill International Edition, 1993.
2. M.Sasikumar, et.al., "Introduction to Parallel Processing", PHI, New Delhi, 2000

References:

1. P. Pal Chaudhuri , “Computer Organisation and Design”, PHI, New Delhi, 1994.
2. William Stallings, “Computer Organisation and Architecture”, PHI, New Delhi, 1996.
3. “Proceedings of Third International Conference on High Performance Computing”, IEEE, Computer Society Press , California, USA, 1996.
4. 4.“Parallel Processing”, Learning Material Series, Indian Society for Technical Education, New Delhi, 1996.
5. 5.V.Rajaraman, C. Siva Ram Murthy, "Parallel Computers Architecture and Programming", PHI, New Delhi, 2000
6. Parthasarathi, “Advanced Computer Architecture”, Thomson Learning.

Type of questions for University Examination

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

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

CS/IT 703 ADVANCED COMPUTER NETWORKS

Module 1

Network Technologies : -WAN and LAN - Ethernet Technology: Fast And Gigabit Ethernet -10/100/1000 Ethernet -Properties of an Ethernet - interoperability & collision domains – Ethernet Hardware Addresses - Ethernet Frame Format - Extending An Ethernet With Bridges - Switched Ethernet -VLAN. Classful Internet Addresses: The Original Classful Addressing Scheme Dotted Decimal Notation - Subnet And Classless Extensions - IP Multicast Addresses .ARP: Resolution Through Direct Mapping - Resolution Through Dynamic Binding - ARP Protocol Format- ARP Implementation . RARP.

Module 2

Internet Routing: Routing Between Peers (BGP)-Routing Within An Autonomous System (RIP, OSPF).Internet Multicasting : Ethernet Multicast- IP Multicast- IGMP-DVMRP-PIM. Understanding Router Components: Ports-Queueing- Scheduling-shaping-policing-marking. QoS in IP networkk. IPv6: Frame formats-Comparison with IPv4. Introduction to ICMP,DHCP and NAT. Network Management: SNMP and RMON models

Module 3

Wireless transmission: Frequencies for radio transmission-Signals-Antennas-Signal propagation-Multiplexing-Modulation-Spread spectrum-Cellular systems. Medium access control: SDMA-FDMA-TDMA-CDMA-Comparison of S/T/F/CDMA.

Module 4

Telecommunications systems. GSM,-System Architecture, Radio Interface, Protocols, Addressing-Call management and Handover. GPRS and UMTS networks. Wireless LAN(WiFi): Infrared vs radio transmission-Infrastructure and ad-hoc network-IEEE 802.11a,b,g, 802.15 and 802.16 protocol standards –Bluetooth - Principle of WiMax . Mobile IP.

Text Books:

1. Douglas E.Comer, *Internetworking With TCP/IP Volume 1: Principles Protocols, and Architecture*, 5/e ,Prentice Hall,2006. (Module I and II)
2. Schiller, *Mobile Communication*, 2/e , Addison Wesley, 2005 (Module III and IV)

References:

1. Youlu Zheng and Shakil Akhtar, *Networks for Computer Scientist and Engineers*, Oxford University Press,2006
2. James.F.Kurose & Keith W.Ross , *Computer Networking –A Top Down approach featuring Internet*, 3/e, Pearson Education,2005.
3. Douglas E.Comer, *Computer Network and Internets*, 2/e, Person education ,2003.
4. Andrew S.Tanenbaum, *Computer Networks* ,5/e Edition,Pearson education,2003
5. William Stallings, *Wireless Communicatuion Networks*, 2/e, Pearson Education,2003.
6. Nathan J. Muller, *Bluetooth Demystified*, McGraw-Hill Professional Publishing,2000

Type of questions for University Examination

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

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CS/IT 704 DISTRIBUTED COMPUTING

Module 1

Characterization of Distributed systems – Introduction- Examples of Distributed Systems- Challenges-System Models –Architectural models-Fundamental Models – Interprocess communication-The API for the Internet protocols-External Data representation and Marshalling-Client Server Communication- group communication. Interprocess communication in UNIX. Distributed Objects and Remote Invocation – Communication between distributed objects-Remote Procedure Call- Events and Notifications- Java RMI, Case study

Module 2

Operating System Support-The Operating system layer – Protection- Processes and Threads-Operating System architecture
Distributed file Systems-Introduction-File Service architecture– Case study sun NFS.
Name service SNS and DNS.

Module 3

Time and co-ordination. Synchronizing physical clocks -logical time and logical clocks. Distributed co-ordination –distributed mutual exclusion – elections. Replication – basic architectural model –consistency and request ordering.

Module 4

Distributed DBMS Architecture- Distributed Database Design –Query Decomposition and Data Localization -Distributed transactions – concurrency control in distributed transactions– distributed deadlocks – transaction recovery.

Text Book

1. George Coulouris, et. al., “Distributed Systems – Concepts and Design”, Third Edition., Addison Wesley, 2002

References

1. M.Tamer Ozsu,Patrick Valduriez, “Principles of Distributed Database Systems”, Second Edition ,Pearson Education.
3. C.A.R.Hoare, “Communicating Sequential Processes”, Prentice Hall, 1980
4. Dimitri P.Bertsekas, John N.Tsitiklis, “Parallel and Distributed Computation : Numerical Methods”,
5. Prentice Hall International, Inc., 1989
6. Douglas Comer and David L.Stevens, “Internetworking with TCP/IP Vol III: Client server Programming and Applications”, Prentice Hall, New York, 1990
7. Gerard Tel, “Introduction to Distributed Algorithms”, Cambridge University Press, 1994
8. H.S.M.Sedan, “Distributed Computer systems”, Butterworths, London, 1988
9. M.Sasikumar, et.al., "Introduction to Parallel Processing", PHI, New Delhi, 2000

Type of questions for University Examination

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

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

CS 705 A EMBEDDED SYSTEMS

Module 1

Overview of Embedded System:- Embedded System, Categories of Embedded System, Requirements of Embedded Systems, Challenges and Issues in Embedded Software Development, Applications of Embedded Systems in Consumer Electronics, Control System, Biomedical Systems, Handheld computers, Communication devices.

Module 2

Embedded Hardware & Software Development Environment: - Hardware Architecture, Microcontroller Architecture, Communication Interface Standards, Embedded System Development Process, Compilers and assemblers, Embedded Operating systems, Types of Embedded Operating systems.

Module 3

Introduction to Real Time Operating System : Task and task states,task and data, semaphore and shared data,message queues, mail boxes,pipes,time functions,events,Memory management,interrupt routines in RTOS environment, Basic Design Using RTOS: Principle ,encapsulating semaphores and queues,hard real-time scheduling consideration,saving memory space,saving power, Embedded software development tools: Host and Target machines, linker/ locator for embedded software,getting embedded software into a target system

Module 4

Real Time & Database Applications: - Real-Time Embedded Software Development, Sending a Message over a Serial Link, Simulation of a Process Control System, Controlling an Appliance from the RTLinux System, Embedded Database Applications using examples like Salary Survey, Energy Meter Readings.

Text Books:

1. K.V.K.K Prasad,*Programming for Embedded Systems*,Dreamtech Software Team, Wiley Dreamtech,2005
2. David E. Simon,*An Embedded Software Primer*, Pearson Education,2005

References:

1. Daniel W Lewis - Fundamentals of Embedded Software where C and Assembly Meet
3. K.V.K.K Prasad, *Embedded/RealTime systems: “Concepts, Design and programming”*, Dreamtech Software Team, Wiley Dreamtech

Type of questions for University Examination

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

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

CS/IT 705B INFORMATION RETRIEVAL

Module 1

Introduction – Information versus Data Retrieval. Modeling of Information retrieval. Formal characterization of Information retrieval – Alternate set theoretic models. Alternate algebraic models. Alternate probabilistic models. Structured text retrieval models. Models for Browsing. Retrieval Evaluation

Module 2

Query languages. Text Operations- Document pre processing. Text compression. Indexing and searching. Inverted files. Suffix trees and suffix arrays. Boolean queries. Sequential searching. Pattern matching. Structural queries. User interface and visualization.

Module 3

Parallel and Distributed Information Retrieval. Implementation of inverted files, suffix arrays and signature files in MIMD architecture. Implementation of Inverted files, suffix arrays and signature files in SIMD architecture.

Module 4

Searching the web – modeling the web . Search engines –architecture, user interfaces, ranking, crawling, indices. Web Directories-Metadata- Metasearchers-Web as graph-Hubs and Authorities- Case study - google search engine

Text Books:

1. Ricardo Baeza-Yates and Berthier Ribeiro-Neto, “Modern Information Retrieval”, Addison Wesley Longman, 1999

References

1. Sergey Brin and Lawrence page, The anatomy of large scale hyper textual(Web) search engine, Computer Networks and ISDN systems, Vol 30,No 1-7
2. J Kleinberg, et. Al, The Web as a graph: Measurements, models and methods, Lecture notes in computer science , Springer Verlag, 1999

Type of questions for University Examination

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

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

CS/EB/IT 705 C ARTIFICIAL NEURAL NETWORKS

Module 1

Introduction to neural networks. Artificial neural networks. Biological neural networks-Comparison, Basic building blocks of ANN. Activation functions. McCulloch-Pitts Neuron Model, Hebb net. Learning Rules-Hebbian Learning Rules, Perceptron, Delta, Competitive, Boltzmann. Perceptron networks- single layer, multilayer –algorithm.

Module 2

Feedback Networks, Discrete Hopfield nets, Continuous Hopfield nets. Feed Forward Networks: Back Propagation Networks, Learning Rule, Architecture, training algorithm. Counter Propagation Network: Full CPN, Forward only CPN, architecture, training phases.

Module 3

Adaptive Resonance Theory, architecture, learning in ART, Self Organizing feature maps: Kohonen SOM, Learning Vector Quantization, Max net, Mexican Hat, Hamming net. Associative memory networks Algorithms for pattern association Hetero associative networks, Auto associative memory networks Bidirectional associative memory networks Energy Function.

Module 4

Special networks: Probabilistic neural networks, Cognitron, Simulated Annealing, Boltzmann machine, Cauchy machine, Support Vector Machine Classifiers. Application of Neural networks In Image Processing and classification. Introduction to Fuzzy systems, Neuro fuzzy systems.

Text books:

1. Laurene Fausett: “*Fundamentals of neural networks*”, Prentice Hall, New Jersey,1994.
2. James A. Freeman, David M. Skapura: *Neural Networks Algorithms, Applications and Programming Techniques*, Addison-Wesley, 1990.

References:

1. S N Sivanandan: “*Introduction to neural networks using “MATLAB”*”, TataMcGrawHill, New Delhi.,2004
2. Kevin Gruney: “*An Introduction to neural networks*”, CRC Press, 1997.
3. D. L.Hudson & M. E. Cohen: “*Neural Networks and Artificial Intelligence in Biomedical Engg.*”, Prentice Hall Of India, New Delhi.,1999
4. James A. Anderson, “*An Introduction to Neural Networks*”, Prentice Hall of India,1995.
5. Simon Haykin: “*Neural Networks*”, Pearson Education1998
6. Yegnanarayana: “*Artificial Neural Networks*”, Prentice Hall of India,2004.
7. Jack M. Zureda, *Introduction to Artificial Neural Systems*,1992

Type of questions for University Examination

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

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

CS 705D WEB-COMMERCE AND TECHNOLOGIES

Module 1

Introduction to SGML features HTML XML HTML vs XML simple XML documents XML tags , creating XML DTD s Displaying XML data in HTML Browser as HTML tables storing XML data in HTML document XML applications converting XML to HTML with XSL style sheets

Module 2

Java applets, java scripts, Java beans features ,designing Java Beans ,Properties of beans , creation of events , EJB basics ,types of beans ,development of session beans , steps creation and implementing interfaces

Module 3

Electronic payment systems electronic cash, wallets , smart cards ,web auction strategies , legal environment of e commerce SSL, Firewalls

Module 4

JSP creating JSP pages templating request and response objects, scriptlets .accessing beans via scriptlets

References

1. XML by Example :Building E Commerce application SEAN Mcgrath Pearson Education, Asia
2. Joseph L Weber PHI ,Using JAVA 2 Platform Special edition Java2 AWT Swing XML Java Beans
3. Steven HolznerWiley Dream, Tech Programming Black Book
4. Java Server Pages Larne Pekowsky Pearson asia
5. JSP Barry Burd IDG Books India
6. Mastering Enterprise Java beans and the Java2 platform enterprise Edition EdRoman (Wiley computer publishing)
7. EJB Design Patterns Floyd Marinescu
8. Raj Kamal TMH ,Internet and Web Technologies
9. Frontiers of E commerce Kalakotia Addison Wesley Publication
10. James T Perry Electronic Commerce By Gary P Schineder and Course Technology Thomson Learning Cambridge

Type of questions for University Examination

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

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CS 706 LANGUAGE PROCESSOR LABORATORY

Students are expected to do the following exercises:

- Creation of Single Pass – Two Pass assembler – Macro processor.
- Generation of Lexical Analyzer using tools such as Lex
- Generation of Parser using tools such as YACC.
- Generation of LL(1) Parser
- Generation of intermediate code
- Creation of type checker
- Developing a compiler for a subset of a programming language.

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.

CS 707 NETWORK AND OPERATING SYSTEMS LABORATORY

1. Study of system level calls of a suitable multitasking operating system. Exercises involving the system calls. (E.g. fork(), exec(), create(), etc. in UNIX.)
2. Inter process communication. Shared memory, messages, Semaphores and monitors. Implementation of typical problems(E.g. Bounded buffer, Dining Philosophers. etc.)
3. Study of Communication protocols. TCP/IP or a suitable protocol. Client server programming. Distributed algorithms. performance modelling of networks.
4. Internet programming using a suitable programming language and Operating system (E.g. JAVA)

References

1. Douglas E.Comer, Hands on Networking with Internet Technologies, Pearson Education
2. Bach, M.J., “Design of UNIX Operating System”, Prentice Hall

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.

CS 708 SEMINAR

Each student shall individually prepare and present a seminar on a topic of current relevance on a stipulated time. He/she should also submit a report of the same. Few panels consisting of two or three teachers (internal) each, should evaluate the seminar report and the presentation. Marks should be awarded considering report preparation, presentation, technical content, depth of knowledge, brevity and references and the participation in the seminar. The time allotted for each presentation is 30 minutes.

Students shall individually prepare and submit a seminar report on a topic of current relevance related to the field of Computers either hardware or software. The reference shall include standard journals, conference proceedings, reputed magazines and textbooks, technical reports and URLs. The references shall be incorporated in the report following IEEE standards reflecting the state-of-the-art in the topic selected. Each student shall present a seminar for about 30 minutes duration on the selected topic. The report and presentation shall be evaluated by a team of internal experts comprising of 3 teachers based on style of presentation, technical content, adequacy of references, depth of knowledge and overall quality of the seminar report

CS 709 PROJECT DESIGN

The project work shall commence in the seventh semester shall be completed by the end of eighth semester. Students are expected to identify a suitable project and complete the analysis and design phases by the end of seventh semester. For those students who are doing real life projects in the industry should also have both an external guide in the industry and an internal guide in the department. The internal guides are responsible for the continuous evaluation.

Each batch comprising of 3 to 5 students shall identify a project related to the curriculum of study. At the end of the semester, each student shall submit a project synopsis comprising of the following.

- Application and feasibility of the project
- Complete and detailed design specifications.
- Block level design documentation
- Detailed design documentation including circuit diagrams and algorithms / circuits
- Bill of materials in standard format and cost model, if applicable
- Project implementation action plan using standard presentation tools

Guidelines for evaluation:

i) Attendance and Regularity	10
ii) Quality and adequacy of design documentation	10
iii) Concepts and completeness of design	10
iv) Theoretical knowledge and individual involvement	10
v) Quality and contents of project synopsis	10
<i>Total</i>	50 Marks

Note: Points (i)-(iii) to be evaluated by the respective project guides and project coordinator based on continuous evaluation. (iv)-(v) to be evaluated by the final evaluation team comprising of 3 internal examiners including the project guide.