UNIVERSITY OF CALICUT
Faculty of Engineering
Curriculum, Scheme of Examinations and Syllabi for B.Tech Degree Programme with
effect from Academic Year 2000-2001

CS : Computer Science & Engineering

EIGHTH SEMESTER

Code	Subject	Hours/Week			Sessional Marks	University Examination	
		L	T	P/D		Hrs	Marks
CS2K 801	Economics	3	1	-	50	3	100
CS2K 802	Computer Graphics & Multimedia	3	1	-	50	3	100
CS2K 803	Artificial Intelligence	3	1	-	50	3	100
CS2K 804	Electronic Commerce	3	1	-	50	3	100
CS2K 805	Elective IV	3	1	-	50	3	100
CS2K 806(P)	**Networks Lab**	-	-	3	50	3	100
CS2K 807(P)	**Project**	-	-	7	100	-	-
CS2K 808(P)	**Viva Voce**	-	-	-	-	-	100
TOTAL		**15**	**5**	**10**	**400**	**-**	**700**
Aggregate marks for 8 semesters = 8250					**2950**		**5300**

Elective IV

CS2K 805A - Concrete Mathematics

CS2K 805B - Parallel Architectures & Algorithms

CS2K 805C - Neural Networks & Fuzzy Logic

CS2K 805D - Management Information Systems

CS2K 805E - Advanced Topics in Algorithms

CS2K 805F - Pattern Recognition

CS2K 801 : ECONOMICS

(common with AI2K/EC2K/EE2K/IC2K/IT2K 801)

3 hours lecture & 1 hour tutorial per week

Module I (13 hours)

Definition of economics - nature and scope of economic science - nature and scope of managerial economics - basic terms and concepts - goods - utility - value - wealth - factors of production - land - its peculiarities - labour - its peculiarities and division of labour - capital and capital formation - organisation or enterprise - economies of large and small scale - consumption - wants - its characteristics and classification - law of diminishing marginal utility - relation between economic decision and technical decision - economic efficiency and technical efficiency

Module II (13 hours)

Demand - demand schedule - demand curve - law of demand - elasticity of demand - types of elasticity - factors determining elasticity - measurement - its significance - supply - supply schedule - supply curve - law of supply - elasticity of supply - time element in the determination of value - market price and normal price - perfect competition - monopoly - monopolistic competition

Module III (13 hours)

Forms of business - proprietorship - partnership - joint stock company - cooperative organisation - state enterprise - mixed economy - money and banking - nature and functions of money - theory of money - inflation and deflation - banking - kinds - commercial banks - central banking functions - control of credit - monetary policy - credit instrument

Module IV (13 hours)

International trade - distinction between internal and international trade - theory of international trade - free trade v/s protection - balance of trade and balance of payments - exchange control - trade policy of the Government of India - national income - concepts - measurement - difficulties in the measurement its significant - features of underdeveloped economy with special reference to India - taxation - canons of taxation - direct and indirect tax - impact and incidence of the tax - working capital - factors affecting - sources

Reference books
1. *Dewett K.K. & Varma J.D., Elementary Economic Theory , S Chand*
2. *Barthwal R.R., Industrial Economics An Introductory Text Book , New Age*
3. *Jhingan M.L., Micro Economic Theory , Konark*
4. *Samuelson P.A., Economics - An Introductory Analysis, McGraw Hill*
5. *Adhikary M., Managerial Economics*

Sessional work assessment
2 Tests	*2 x 15*	*= 30*
2 Assignments	*2 x 10*	*= 20*
Total marks		*= 50*

University examination pattern
Q1 - 8 short type questions of 5 marks, 2 from each module
QII - 2 questions A and B of 15 marks from module I with choice to answer any one
QIII- 2 questions A and B of 15 marks from module II with choice to answer any one
QIV- 2 questions A and B of 15 marks from module III with choice to answer a ny one
QV - 2 questions A and B of 15 marks from module IV with choice to answer any one

CS2K 802 : COMPUTER GRAPHICS & MULTIMEDIA

3 hours lecture and 1 hour tutorial per week

Module I (13 hours)

Introduction to computer graphics - basic raster graphics algorithms for drawing 2D primitives - scan converting lines - circles - generating characters - geometrical transformations - 2D transformations - homogeneous coordinates and matrix representation of transformations -

window-to-viewport transformation - input devices and interactive techniques - interaction hardware - basic interaction tasks - 3D graphics - viewing in 3D - projections - basics of solid modelling - 3D transformations

Module II (10 hours)

Introduction to multimedia - media and data streams - properties of a multimedia system - data stream characteristics - information units - multimedia hardware - platforms - memory and storage devices - input and output devices - communication devices - multimedia software - multimedia software tools - multimedia authoring tools

Module III (12 hours)

Multimedia building blocks - audio - basic sound concepts - music - speech - MIDI versus digital audio - audio file formats - sound for the web - images and graphics - basic concepts - computer image processing - video and animation - basic concepts - animation techniques - animation for the web - multimedia building blocks - audio - basic sound concepts - music - speech - MIDI versus digital audio - audio file formats - sound for the web - images and graphics - basic concepts - computer image processing - video and animation - basic concepts - animation techniques - animation for the web

Module IV (12 hours)

Data compression - storage space and coding requirements - classification of coding/compression techniques - basic compression techniques like JPEG, H.261, MPEG and DVI - multimedia database systems - characteristics of multimedia database management system - data analysis - data structure - operations on data - integration in a database model

Text books
1.   Foley J.D., Van Dam A., Feiner S.K., & Hughes J.F.,   *Computer Graphics Principles and Practice* , Addison Wesley
2.   Steinmetz R. & Nahrstedt K.,   *Multimedia: Computing, Communications and Applications*   , Pearson Education

Referenc e books
1.   Newmann W & Sproull R.F.,   *Principles of Interactive Computer Graphics*   , McGraw Hill
2.   Rogers D.F.,   *Procedural Elements for Computer Graphics*   , McGraw Hill
3.   Hearn D. & Baker P.M,   *Computer Graphics* , Prentice Hall India
4.   Koegel Buford J.F.,   *Multimedia System* , Addison Wesley
5.   Vaughan T.,   *Multimedia: Making it Work* , Tata McGraw Hill

Sessional work assessment	
Assignments	2x10 = 20
Tests	2x15 = 30
Total marks	= 50

University examination pattern
Q I   - 8 short type questions of 5 marks each, 2 from each module
Q II   - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 803 : ARTIFICIAL INTELLIGENCE

3 hours lecture and 1 hour tutorial per week

Module I (16 hours)

Introduction - definition and basic concepts - aims - approaches - problems in AI - AI applications - perception and action - representing and implementing action functions - production systems - networks - problem solving methods - forward versus backward reasoning - search in state spaces - state space graphs - uninformed search - breadth first search - depth first search - heuristic search - using evaluation functions - general graph-searching algorithm - algorithm A* - admissibility of A* - the consistency condition - iterative deepening A* - algorithm AO* - heuristic functions and search efficiency - alternative search formulations and applications - assignment problems - constraint satisfaction - heuristic repair - two agent games - the mini-max search - alpha beta procedure - games of chance

Module II (14 hours)

Knowledge representation - the propositional calculus - using constraints on feature values - the language - rules of inference - definition of proof - semantics - soundness and completeness - the PSAT problem - meta-theorems - associative and distributive laws - resolution in propositional calculus - soundness of resolution - converting arbitrary wffs to conjunctions of clauses - resolution refutations - horn clauses - the predicate calculus - motivation - the language and its syntax - semantics - quantification - semantics of quantifiers - resolution in predicate calculus - unification - converting arbitrary wffs to clause form - using resolution to prove theorems - answer extraction - knowledge representation by networks - taxonomic knowledge - semantic networks - frames - scripts

Module III (12 hours)

Neural networks - introduction - motivation - notation - the back propagation method - generalisation and accuracy - reasoning with uncertain information - review of probability theory - probabilistic inference - bayes networks - genetic programming - program representation in GP - the GP process - communication and integration - interacting agents - a modal logic of knowledge - communication among agents - speech acts - understanding language strings - efficient communication - natural language processing - knowledge based systems - reasoning with horn clauses - rule based expert systems

Module IV (10 hours)

Programming in LISP - basic LISP primitives - definitions - Predicates - conditionals - and Binding - recursion and iteration - association lists - properties and data abstraction - lambda expressions - macros - I/O in LISP - examples involving arrays and search

Text book
Nilsson N.J., Artificial Intelligence - A New Synthesis , Harcourt Asia Pte. Ltd.
Reference books
1. *Luger G.F. & Stubblefield W.A., Artificial Intelligence , Addison Wesley*
2. *Elain Rich & Kevin Knight, Artificial Intelligence , Tata McGraw Hill*
3. *Tanimotto S.L., The Elements of Artificial Intelligence , Computer Science Press*
4. *Winston P.H., LISP , Addison Wesley*

Sessional work assessment

Assignments	*2x10 = 20*
Tests	*2x15 = 30*
Total marks	*= 50*

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice   to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 804 : ELECTRONIC COMMERCE

(common with IT2K 804, AI2K/EC2K/EE2K/IC2K 805F)

3 hours lecture and 1 hour tutorial per week

Module I (14 hours)

Web commerce concepts - electronic commerce environment - electronic marketplace technologies - web based tools for e-commerce - e-commerce softwares - hosting services and packages - modes of e-commerce - EDI - commerce with WWW/ internet

Module II (12 hours)

Security issues - threats to e-commerce - approaches to safe e-commerce - secure transactions and protocols - intruder approaches - security strategies and tools - encryption - security teams - protecting e-commerce assets - protecting client machines - servers and channels - transaction integrity

Module III (12 hours)

Electronic payment systems - types of e-payment - internet monetary payment and security requirements - payment and purchase order process - electronic cash - electronic wallets - smart cards - credit and charge cards - risks - design of e-payment systems

Module IV (14 hours)

Strategies for marketing - creating web presence - identifying and reaching customers - web branding - sales on the web - strategies for purchasing and support activities - EDI - supply chain management - softwares for purchasing - strategies for web auctions - virtual communities and web portals - international - legal - ethical and tax issues - planning and managing e-commerce projects

Text books
1.   *Kalakota R. & Whinston A.B.,   "Frontiers of Electronic Commerce   ", Addison Wesley*
2.   *Schneider G.P. & Perry J.T.,   Electronic Commerce, Course Technology*
Reference boo ks
1.   *Westland J.C. & Clark T.H.K., "   Global Electronic Commerce"   , University Press*
2.   *Minoli D. & Minoli E., "   Web Commerce Technology Handbook"   , Tata McGraw Hill*

3.   Stallings W., " Cryptography and Network Security Principles and pra   ctice", Pearson
      Education Asia
4.   Treese G.W. & Stewart L.C., " Designing Systems for Internet Commerce   ", Addison Wesley

Sessional work assessment

Assignments	2x10 = 20
Tests	2x15 = 30
Total marks	= 50

University e xamination pattern

Q I   - 8 short type questions of 5 marks each, 2 from each module
Q II   - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV   - 2 questions of 15marks each from module III with choice to answer any one
Q V   - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 805A : CONCRETE MATHEMATICS

(common with IT2K 805A)

3 hours lecture and 1 hour t utorial per week

Module I (10 hours)

Recurrent problems - tower of Hanoi - lines in the plane - the Josephus problem - sums - notation - sums and recurrences - manipulation of sums - multiple sums - general methods - finite and infinite calculus - infinite sums

Module II (18 hours)

Integer functions - floors and ceilings - applications - floor / ceiling recurrences - mod - the binary operation - floor / ceiling sums - number theory - divisibility - primes - prime examples - factorial factors - relative primality - mod - the congruence relation - independent residues - additional applications - phi and mu

Module III (12 hours)

Binomial coefficients - basic identities - basic practice - tricks of the trade - generating functions - hypergeometric - functions - hypergeometric transformations - partial hypergeometric sums - mechanical summations

Module IV (12 hours)

Special numbers - stirling numbers - eulerian numbers - harmonic numbers - harmonic summation - bernoulli numbers - fibonacci numbers - continuants

Text book
Graham R.L., Knuth D.E. & Patashnik O.,   Concrete Mathematics , Addison Wesley
Reference books
1.   Melzak Z.A., Mathematical Techniques for Various Applications   , Wiley
2.   Melzak Z.A., Mathematical Ideas, Modelling and Appl   ications , Wiley

University examination pattern
Q I   - 8 short type questions of 5 marks each, 2 from each module
Q II   - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV   - 2 questions of 15marks each from module III with choice to answer any one
Q V   - 2 questions o f 15marks each from module IV with choice to answer any one

CS2K 805B : PARALLEL ARCHITECTURES & ALGORITHMS

(common with IT2K 805B)

3 hours lecture and 1 hour tutorial per week

Module I (11 hours)

Trends in parallel architectures - convergence of parallel architectures - fundamental design issues - parallel application case studies - the parallelization process - examples

Module II (14 hours)

Programming for performance - partitioning - data access and communications - orchestration for performance - performance factors - case studies - implications for programming models - workload-driven evaluation - scaling workloads and machines - evaluating a real machine - evaluating an architectural idea - illustrating workload characterization

Module III (15 hours)

Cache coherence - memory consistency design space for snooping protocols - assessing protocol design trade-offs - synchronization - snoop-based multiprocessor design - correctness requirements - single-level caches with an atomic bus - multilevel cache hierarchies - split-transaction bus - case studies - extending cache coherence

Module V (12 hours)

Scalable multiprocessors - scalability - realizing programming models - physical DMA - user-level access - dedicated message processing - shared physical address space - clusters and networks of workstations - implications of parallel software - synchronization - directory-based cache coherence - scalable cache coherence - directory-based approaches - assessing directory protocols and tradeoffs - design challengers for directory protocols - memory-based directory protocols - cache-based directory protocols - performance parameters - synchronization - hardware / software tradeoffs

Text book
1.   Culler D.E., Singh J.P. & Gupta A.,   *Parallel Computer Architecture: A Hardware/ Software Approach* , (Harcourt Asia) Morgan Kaufman

Reference books
1. *Sima D., Fountain T. & Kacsuk P., Advanced Computer Architectures , Addison Wesley*
2. *Hwang K., Advanced Computer Architecture , McGraw H ill*
3. *Quinn M.J., Parallel Computing Theory and Practice , McGraw Hill*

Sessional work assessment

Assignments	*2x10 = 20*
Tests	*2x15 = 30*
Total marks	*= 50*

University examination pattern

Q I - 8 short type questio ns of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module II I with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 805C : NEURAL NETWORKS & FUZZY LOGIC

(common with AI2K/EC2K/EE2K/IC2K/IT2K/ME2K/PM2K 805C)

3 hours lecture and 1 hour tutoria l per week

Module I (13 hours)

Introduction to artificial neural networks - biological neurons - Mc Culloch and Pitts modals of neuron - types of activation function - network architectures - knowledge representation - learning process - error-correction learning - supervised learning - unsupervised learning - single unit mappings and the perceptron - perceptron convergence theorem (with out proof) - method of steepest descent - least mean square algorithms - adaline/medaline units - multilayer perceptrons - derivation of the back-propagation algorithm

Module II (13 hours)

Radial basis and recurrent neural networks - RBF network structure - covers theorem and the separability of patterns - RBF learning strategies - K-means and LMS algorithms - comparison of RBF and MLP networks - recurrent networks - Hopfield networks - energy function - spurious states - error performance - simulated annealing - the Boltzman machine - Boltzman learning rule - the mean field theory machine - MFT learning algorithm - applications of neural network - the XOR problem - traveling salesman problem - image compression using MLPs - character retrieval using Hopfield networks

Module III (13 hours)

Fuzzy logic - fuzzy sets - properties - operations on fuzzy sets - fuzzy relations - operations on fuzzy relations - the extension principle - fuzzy measures - membership functions - fuzzification and defuzzification methods - fuzzy controllers - Mamdani and Sugeno types - design parameters - choice of membership functions - fuzzification and defuzzification methods - applications

Module IV (13 hours)

Introduction to genetic algorithm and hybrid systems - genetic algorithms - natural evolution - properties - classification - GA features - coding - selection - reproduction - cross over and mutation operators basic GA and structure

Introduction to Hybrid systems - concept of neuro-fuzzy and neuro-genetic systems

Reference books
1.   *Simon Haykins, "Neural Network a   - Comprehensive Foundation", Macmillan College, Proc, Con, Inc*
2.   *Zurada J.M., "Introduction to Artificial Neural Systems, Jaico publishers*
3.   *Driankov D., Hellendoorn H. & Reinfrank M., "An Introduction to Fuzzy Control", Narosa*
4.   *Ross T.J., "Fuzzy Logic with Engineering Applications", McGraw Hi   ll*
5.   *Bart Kosko. "Neural Network and Fuzzy Systems", Prentice Hall, Inc., Englewood Cliffs*
6.   *Goldberg D.E., "Genetic Algorithms in Search Optimisation and Machine Learning", Addison Wesley*
7.   *Suran Goonatilake & Sukhdev Khebbal (E   ds.), "Intelligent Hybrid Systems", John Wiley*

Sessional work assessment

Test	2 x 15 = 30
Assignment	2 x 10 = 20
Total marks	= 50

University examination pattern

Q I - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 805D : MANAGEMENT INFORMATION SYSTEMS

(common with AI2K/IC2K/IT2K 805D)

3 hours lecture and 1 hour tutorial per week

Module I (12 hours)

Information systems - functions of management - levels of management - framework for information systems - systems approach - systems concepts - systems and their environment - effects of system approach in information systems design - using systems approach in problem solving - strategic uses of information technology

Module II (10 hours)

An overview of computer hardware and software components - file and database management systems - introduction to network components - topologies and types - remote access - the reasons for managers to implement networks - distributed systems - the internet and office communications

Module III (14 hours)

Application of information systems to functional - tactical and strategic areas of management, decision support systems and expert systems

Module IV (16 hours)

Information systems planning - critical success factor - business system planning - ends/means analysis - organizing the information systems plan - systems analysis and design - alternative application development approaches - organization of data processing - security and ethical issues of information systems

Text book
Schultheis R. & Mary Sumner, Management Information Systems -The Manager's View, Tata McGraw Hill
Reference books
1.   Landon K.C. & Landon J.P., Management Informati on Systems - Organization and Technology, Prentice Hall of India
2.   Sadagopan S., Management Information Systems,   Prentice Hall of India
3.   Basandra S.K., Management Information Systems   , Wheeler Publishing
4.   Alter S., Information S ystems: A Management Perspective   , Addison Wesley

Sessional work assessment
Assignments   2x10 = 20
Tests   2x15 = 30
Total marks   = 50

University examination pattern
Q I   - 8 short type questions of 5 marks each, 2 from eac   h module
Q II   - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any on   e
Q V   - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 805E : ADVANCED TOPICS IN ALGORITHMS

3 hours lecture and 1 hour tutorial per week

Module I: Advanced data structures (13 hours)

Balanced binary search trees - AVL trees - red black trees - B/B+ trees - priority queues - binomial heaps - Fibonacci heaps - mergeable heap operations - disjoint set representation - path compression algorithm - hashing - chaining - open addressing - hash functions - probing - double hashing - universal hashing - graph algorithms - review - DFS - BFS - connected Components - topological sorting - strong connectivity - minimal spanning tree - kruskal and prim algorithms - shortest path problem - Dijkstra's and bellman - ford algorithms - Johnson's algorithm for sparse graphs - flow networks - ford fukerson algorithm - maximum bipartite matching - preflow push and lift to front algorithms

Module II (13 hours)

Introduction to parallel algorithms - PRAM models - EREW, ERCW, CREW and CRCW - relation between various models - handling read and write conflicts - work efficiency - Brent's

theorem - parallel merging, sorting, and connected components - list rank - Euler tour technique - parallel prefix computation - deterministic symmetry breaking

Module III: Distributed algorithms (13 hours)

Distributed models - synchronous algorithms - leader election - BFS - shortest path - maximal independent set - minimal spanning tree - consensus algorithms with link and process failures - byzantine agreement problem - asynchronous algorithms - Dijkstra's mutual exclusion algorithm - bakery algorithm - randomized algorithm for dining philosophers' problem

Module IV Selected topics (13 hours)

Polynomials and FFT - representation of polynomials - DFT and FFT - divide and conquer FFT algorithm - efficient parallel FFT implementations - pattern matching - finite automata based methods - Rabin Karp algorithm - Knuth Morris Pratt algorithm - Boyer Moore heuristic - computational geometry - two dimensional problems - line segment intersection convex hull - Graham's scan - Jarvis's march technique - closest pair of points in a set

Text book
1.   Cormen T.H., Leiserson C.E., Rivest R.L.,   *Introduction to Algorithms* , *Prentice Hall of India*
Reference bo oks
1.   *Brassad G. & Bratley P.,   Fundamentals of Algorithmics , Prentice Hall of India*
2.   *Basse S., Computer Algorithms - Introduction to Design and Analysis , Addison Wesley*
3.   *Lynch N.A., Distributed Algorithms , Harcourt Asia (Morgan   Kaufman)*

Sessional work assessment	
Assignments	*2x10 = 20*
Tests	*2x15 = 30*
Total marks	*= 50*

University examination pattern
Q I   - 8 short type questions of 5 marks each, 2 from each module
Q II   - 2 question s of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V - 2 questions of 15ma rks each from module IV with choice to answer any one

CS2K 805F : PATTERN RECOGNITION

(common with IT2K 805F)

3 hours lecture and 1 hour tutorial per week

Module I (12 hours)

Introduction - introduction to statistical - syntactic and descriptive approaches - features and feature extraction - learning - *Bayes Decision theory* - introduction - continuous case - 2-category classification - minimum error rate classification - classifiers - discriminant functions - and decision surfaces - error probabilities and integrals - normal density - discriminant functions for normal density

Module II (12 hours)

Parameter estimation and supervised learning - maximum likelihood estimation - the Bayes classifier - learning the mean of a normal density - general bayesian learning - *nonparametric technic* - density estimation - parzen windows - k-nearest neighbour estimation - estimation of posterior probabilities - nearest - neighbour rule - k-nearest neighbour rule

Module III (12 hours)

Linear discriminant function s - linear discriminant functions and decision surfaces - generalised linear discriminant functions - 2-category linearly separable case - non-separable behaviour - linear programming procedures - clustering - data description and clustering - similarity measures - criterion functions for clustering

Module IV (16 hours)

Syntactic approach to PR - introduction to pattern grammars and languages - higher dimensional grammars - tree, graph, web, plex, and shape grammars - stochastic grammars - attribute grammars - parsing techniques - grammatical inference

Text books
1.   Duda & Hart P.E, *Pattern Classification And Scene Analysis*, John Wiley
2.   Gonzalez R.C. & Thomson M.G., *Syntactic Pattern Recognition* - An Introduction, Addison Wesley

Refer ence book
Fu K.S., *Syntactic Pattern Recognition And Applications*, Prentice Hall, Eaglewood cliffs

Sessional work assessment

Assignments	2x10 = 20
Tests	2x15 = 30
Total marks	= 50

University examination pattern

Q I   - 8 short type questions of 5 marks each, 2 from each module
Q II - 2 questions of 15marks each from module I with choice to answer any one
Q III - 2 questions of 15marks each from module II with choice to answer any one
Q IV - 2 questions of 15marks each from module III with choice to answer any one
Q V   - 2 questions of 15marks each from module IV with choice to answer any one

CS2K 806(P) : NETWORKS LAB

3 hours practical per week

Lab 1 : Implementation of PC to PC file transfer using serial port and MODEM.

Lab 2,3 : Software Simulation of IEEE 802.3, 802.4 and 802.5 protocols.

Lab 4,5 : Software Simulation of Medium Access Control protocols - 1) Go Back N, 2) Selective Repeat and 3) Sliding Window.

Lab 6 : Implementation of a subset of Simple Mail Transfer Protocol using UDP

Lab 7,8 : Implementation of a subset of File Transfer Protocol using TCP/IP

Lab 9   :   Implementation of "finger" utility using Remote Procedure Call (RPC)

Lab 10 : Generation and processing of HTML forms using CGI.

Reference books
1.   *Richard S.W., Unix Network Programming , PHI*
2.   *Comer D.E., Internetworking with TCP/IP , Vol.1, 2 & 3, PHI*
3.   *Campione et. al M., The Java Tutorial Continued , Addison Wesley*

Sessional work assessment	
Laboratory practical and record	*= 30*
Tests	*= 20*
Total marks	*= 50*

CS2K 807(P) : PROJECT

7 hours per week

 This project is the continuation of the seventh semester project - the eighth semester is for the development - testing and installation of the product - the product should have user manuals - a detailed report is to be submitted at the end of the semester - the assessment may be made individually and in groups

Sessional work assessment	
Design & development	*= 40*
Testing and installation	*= 40*
Report	*= 20*
Total mark	*= 100*

CS2K 808(P) : VIVA VOCE

There is only university examination for this - the university will appoint examiners for conducting the viva voce examination - the examiners will ask questions from subjects studied for the B.Tech course, mini project, project and seminar reports of the student - the relative weightages should be as follows

Sessional work assessment	
Subjects	*: 30*
Mini project	*: 20*
Project	*: 30*
Seminar	*: 20*
Total marks	*: 100*