Chhattisgarh Swami Vivekanand Technical University, Bhilai

SCHEME OF TEACHING & EXAMINATION

FOURTH SEMESTER MCA

S.NO	Board of Study	Subject Code	SUBJECT	Period Per Week			Scheme of Exam Theory / Practical			Total Marks	Credit L + (T+P)/2
				L	T	P	ESC	CT	TA		
1	Computer Applications	521411(21)	Artificial Intelligence and Expert System	4	1	0	100	20	20	140	5
2	Computer Applications	521412(21)	Compiler Design	4	1	0	100	20	20	140	5
3	Computer Applications	521413(21)	Internet and Web Technology	4	1	0	100	20	20	140	5
4	Computer Applications	521414(21)	Unix Operating System and Shell programming	4	1	0	100	20	20	140	5
5	Refer Table - I		Information Technology Elective-I	4	1	0	100	20	20	140	5
6	Computer Applications	521421(21)	Artificial Intelligence Lab	0	0	4	50	_	25	75	2
7	Computer Applications	521422(21)	Unix Lab	0	0	4	75	_	25	100	2
8	Computer Applications	521423(21)	Project-II	0	0	4	75	_	25	100	2
9	Computer Applications	521424(21)	Report Writing and Seminar	0	0	3	_	_	25	25	2
			TOTAL	**20**	**5**	**15**	**700**	**100**	**200**	**1000**	**33**

ESE: End Semester Examination CT: Class Test TA: Teacher's Assessment L: Lecture T: Tutorial P: Practical

** The Seminar must include new trends and emerging topics*

** An industrial training of atleast 2 weeks is to be completed during summer vacation and at the end of fourth semester*

Table 1

Information Technology Elective I

S.No.	Board of Study	Code	Subject
1	Computer Applications	521431(21)	Neural Network & Fuzzy Logic
2	Computer Applications	521432(21)	Logic & Functional programming
3	Computer Applications	521433(21)	Network Programming
4	Computer Applications	521434(21)	Modeling & Simulation
5	Computer Applications	521435(21)	Design &Analysis of algorithms

Note (1) - Choice of elective course once made for an examination cannot be changed for future examinations.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: IV
Subject: Artificial Intelligence And Expert Systems
Total theory periods: 40
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

Branch: Computer Application
Code: 521411(21)
Total Tutorial periods: 10

UNIT-1 **General Issues and overview of AI:** The AI problems; what is an AI technique; Characteristics of AI applications Problem Solving, Search and Control Strategies General Problem solving; Production systems; Control strategies: forward and backward chaining Exhaustive searches: Depth first Breadth first search.

UNIT-2 **Heuristic Search techniques:** Hill climbing; Branch and Bound technique; Best first search and A* algorithm; AND/OR Graphs; Problem reduction and AO* algorithm; Constraint Satisfaction problems Game Playing Minmax search procedure; Alpha-Beta cutoffs; Additional Refinements

UNIT-3 **Knowledge Representation** First Order Predicate Calculus; Skolemnisation; Resolution Principle and Unification; Inference Mechanisms Horn's Clauses; Semantic Networks; Frame Systems and Value Inheritance; Scripts; Conceptual Dependency AI Programming Languages Introduction to LISP, Syntax and Numeric Functions; List manipulation functions; Iteration and Recursion; Property list and Arrays, Introduction to PROLOG.

UNIT-4 **Natural Language Processing and Parsing Techniques**; Context - free Grammar; Recursive Transition Nets (RTN); Augmented Transition Nets (ATN); Semantic Analysis, Case and Logic Grammars; Planning Overview - An Example Domain: The Blocks Word; Component of Planning Systems; Goal Stack Planning (linear planning); Non-linear Planning using constraint posting ; Probabilistic Reasoning and Uncertainty; Probability theory; Bayes Theorem and Bayesian networks; Certainty Factor.

UNIT-5 **Expert Systems**: Introduction to Expert Systems, Architecture of Expert Systems; Expert System Shells; Knowledge Acquisition; Case Studies: MYCIN, Learning, Rote Learning; Learning by Induction; Explanation based learning.

Text Book:

1. Elaine Rich and Kevin Knight: Artificial Intelligence- Tata McGraw Hill.
2. Dan W.Patterson, Introduction to Artificial Intelligence and Expert Systems- Prentice Hall of India.

Reference Books:

1. Nils J.Nilsson: Principles of Artificial Intelligence- Narosa Publishing house.
2. Artificial Intelligence : A Modern Approach, Stuart Rusell, Peter Norvig, Pearson Education, 2nd Edition
3. Artificial Intelligence, Winston, Patrick, Henry, Pearson Education
4. Artificial Intelligenece by Gopal Krishna , Janakiraman

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: Compiler Design
Code: 521412(21)
Total theory periods: 40
Total Tutorial periods:10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

UNIT-1 **Introduction:** Introduction to Compiler, single and multi pass compilers, Translators, Phases of Compilers, Compiler writing tools, Bootstrapping, Back patching.

Finite Automata and Lexical Analysis: Role of Lexical Analyzer, Specification of tokens, Recognition of tokens, Regular expression, Finite automata, from regular expression to finite automata, transition diagrams, Implementation of lexical analyzer, Tool for lexical analyzer – LEX, Error reporting.

UNIT-2 **Syntax Analysis and Parsing Techniques**: Context free grammars, Bottom-up parsing and top down parsing, Top down Parsing: elimination of left recursion, recursive descent parsing, Predictive Parsing; Bottom Up Parsing: Operator precedence parsing, LR parsers, Construction of SLR, canonical LR and LALR parsing tables, Construction of SLR parse tables for Ambiguous grammar, the parser generator – YACC, error recovery in top down and bottom up parsing.

UNIT-3 **Syntax Directed Translation & Intermediate code generation:** Synthesized and inherited attributes, dependency graph, Construction of syntax trees, bottom up and top down evaluation of attributes, S-attributed and L-attributed definitions.

Postfix notation; Three address code, quadruples, triples and indirect triples, Translation of assignment statements, control flow, Boolean expressions and Procedure Calls.

UNIT-4 **Runtime Environment:** Storage organization, activation tree, activation record, allocation strategies, Parameter passing, symbol table, dynamic storage allocation.

UNIT-5 **Code Optimization & Code Generation:** Basic blocks and flow graphs, Optimization of basic blocks, Loop optimization, Global data flow analysis, Loop invariant computations.

Issues in the design of Code generator, register allocation, the target machine, and a simple Code generator.

Text Books:

1. Compilers-Principles, Techniques and Tools by Alfred V. Aho, Ravi Sethi and J.D.Ullman , Addison Wesley.
2. Principles of Compiler Design, Alfred V.Aho, and J.D.Ullman ,Narosa Publication.

Reference Books:

1. Compiler design in C by A.C.Holub, Prentice Hall of India.
2. Compiler construction (Theory and Practice) by A.Barret William and R.M.Bates (Galgotia Publication).
3. Compiler Design, Kakde, Compiler Design, Galgotia Publication.

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: IV
Branch: Computer Application
Subject: Internet and Web technology
Code: 521413(21)
Total theory periods: 40
Total Tutorial periods: 10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted: 2

UNIT-1 **Introduction to Internet**: Evolution of Internet, Internet applications. TCP/IP, introduction to REC, addressing in Internet –IP and domains, Internet service providers, connectivity such as dial up, leased line, VSAT etc.

UNIT-2 **E-Mail and list servers:** E-mail networks, E-mail protocols (X-400, SMTP, UUCP). Format of E-Mail messages, description of E-Mail headers, E-mail Contents and encoding. Email routing list server, e-mail client, POP-3, Imap- 4 – file Transfer protocol introduction to FTP, public domain software, types of FTP servers (including anonymous), FTP clients common command.

UNIT-3 **Telnet.:** Telnet protocol, server domain, telnet client, tem1inal emulation. Usenet and internet relay chat, Web Publishing tools. Technology overview? website planning, where to host your website , multiple sites on one server, maintaining a web site, publishing tools. WWW servers, HTTP & URL's, how to register a web site on search engines & maintenance.

UNIT-4 **HTML & JAVASCRIPT & XML Characteristics of Markup Languages**- Examples of Markup Languages- Documents overview , header elements , section headings , Block headings , lists inline elements , visual markup , hypertext links , uniform resource locators , images , forms , tables , frames (simple), special characters , DHTML, CSS- Introduction to CSS,ID and Class selector . Overview of Interactivity tools .

Core Java Script – Variables-Constant – Expressions, Conditions- Relational Operators- Data Types – Flow Control – Functions & Objects-events and event handlers – Data type Conversion & Equality – Accessing HTML form elements

XML :- What is XML – The data revolution-Breaking beyond data display- Well Formed Documents - Valid Documents - Writing DTDs - Styling XML – XSL. XML Parsers - W3C Document Object Model - Creating XML documents from a Web Page - Creating XML from a Relational Database - Data Binding.

UNIT-5 **Internet security:** Internet security threats, firewalls, introduction to AAA, E-Commerce, An introduction, concepts & technology in E-Commerce, Advantages, Limitations, various electronics payment system. Introduction to EDI.

Text Books:

1.The Complete Reference – Second Edition Thomas A. Powell – 2000
2.Alexis Leon and Mathews Leon – Internet for Every One , Tech World.

REFERENCE BOOKS

1. Eric Ladd, Jim O'Donnel –"Using HTML 4, XML and JAVA"-Prentice Hall of India - 1999.
2."Beginning Java Script " – Paul Wilton – SPD Publications –2001.
3.Frontiers of Electronics of Commerce , Ravi kalakota & Andrew B. Whinston Addison Wesley
4.Professional Java Script 2nd Edition – April 2002 (Chapter 2,4,5)

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: Unix Operating Systems and Shell Programming
Code: 521414(21)
Total theory periods: 40
Total Tutorial periods:10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

UNIT-1 **Introduction:** Introduction to multi-user system, history of UNIX, features & benefits, versions of UNIX, Unix file system, concept of inode table, links, commonly used commands like who, pwd, cd, mkdir, rm, rmdir, ls, mv, ln, chmod, cp, grep, sed, awk, tr, yacc etc. getting started (login/logout)

Vi editor: Introduction to text processing, command& edit mode invoking vi, deleting &inserting line, deleting &replacing character, searching for strings, yanking, running shell command macros, set window, set auto indent, set no., introduction to exrc file.

UNIT-2 **Introduction To Shell Scripts & Awk Programming:** Bourne shell, C shell, shell variables, scripts, Meta characters and environment, if and case statements, for while and until loops., Awk pattern scanning and processing language, BEGIN and End patterns, AWK arithmetic and variable built in variable names and operators, arrays, strings.

UNIT-3 **General Overview Of The System:** System structure, user perspective, O/S Services assumption about Hardware, The kernel and buffer cache architecture of Unix O/S, System concepts, Buffer headers, Structure of the buffer pool, scenarios for retrieval of the buffer, Reading and writing disk Blocks, advantage and disadvantage of buffer cache.

UNIT-4 **Internal Representation Of Files System Calls For The System:** INODES, structure of regular Directories, conversions of a path name to an inode, super block, inode assignment to a new file, allocation of disk blocks. OPEN , READ WRITE, CLOSE , file and record locking, File creation, Operation of special files , change directory and change root, change owner and change mode, STAT and FSTAT, PIPES, Mounting and unmounting file system, Link , Unlink.

UNIT-5 **Structures Of Processes And Process Control:** Process states and transitions layout of system memory, the context of a process, manipulation of process address space, sleep process creation/termination,. The user ID of a process, changing the size of a process. The SHELL.

Text Books:

1. Design of Unix O.S. , Maurice Bach, Prentice Hall of India.
2. Unix Concepts and Applications, Sumitabha Das, Tata McGraw Hill

Reference Books:

1. The UNIX Programming Environment , B.W. Kernighan & R. Pike, , Prentice Hall of India, 1995.
2. Advance UNIX by Steven Prata, a Programming Guide, BPB publication, New Delhi.
3. Unix Bible, Lepage, Yves & Iarrera, Paul, IDG Books, India

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

IT ELECTIVE 1

Semester : IV
Branch: Computer Application
Subject: **Neural Network and Fuzzy Logic**
Code: 521431(21)
Total theory periods: 40
Total Tutorial periods:10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

UNIT-1 **Introduction to Artificial Neural Networks:** Elementary Neurophysiology, Models of a Neuron, Neural Networks viewed as directed graphs, Feedback, from neurons to ANN, Artificial Intelligence and Neural Networks; Network Architectures, Single-layered Feed forward Networks, Multi-layered Feedforward Networks, Recurrent Networks, Topologies.

UNIT-2 **Learning and Training :** Activation and Synaptic Dynamics, Hebbian, Memory based, Competitive, Error-Correction Learning, Credit Assignment Problem: Supervised and Unsupervised learning, Memory models, Stability and Convergence, Recall and Adaptation.

UNIT-3 **A Survey of Neural Network Models :** Single-layered Perceptron – least mean square algorithm, Multi-layered Perceptrons – Back propagation Algorithm, XOR – Problem, The generalized Delta rule, BPN Applications, Adalines and Madalines – Algorithm and applications.

UNIT-4 **Applications :** Talking Network and Phonetic typewriter : Speech Generation and Speech recognition, Neocognitron - Character Recognition and Handwritten Digit recognition, Pattern Recognition Applications.

UNIT-5 **Neural Fuzzy Systems :** Introduction to Fuzzy sets, operations, relations, Examples of Fuzzy logic, Defuzzyfication, Fuzzy Associative memories, Fuzziness in neural networks and examples ,

Text Books:

1. Artificial Neural Networks by B. Yagna Narayan, PHI
2. Neural Network Design by Hagan Demuth Deale Vikas Publication House.

Reference Books:

1.Neural Networks by James A. Freeman and David M. Strapetus, Pearson Education.
2. Neural Network & Fuzzy System by Bart Kosko, PHI.

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: Logic and Functional programming
Code: 521432(21)
Total theory periods: 40
Total Tutorial periods:10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

Unit 1 **Introduction of logic & functional paradigm** :-prepositional logic , prepositional concepts, natural deduction & axiomatic system, semantic tableaux & resolution . FOPL : predicate calculus, Prenex normal forms & skolemization, Herbrand universe & H- interpretation .

Unit 2 **logic programming** : -Execution of query in logic program; programming in PROLOG (overview) meta level & non deterministic programming, second order program in prolog, logic grammars.

Unit 3 **Functional programming** :-Multi argument function, expression composition & Equality, higher order functions, curried functions; Introduction to SMIL a Functional language, List, tree, graph manipulation in SML, Recursive data type declaration.

Unit 4 **Lambda calculus :** Pure Lambda calculus, Currying of function , 1- conversion rules, Applied Lambda calculus, Function definition using 1- notation.

Unit 5 **Lazy evaluation**: Programming with lazy evaluation & delay of unnecessary Computation, infinite data structure, eager evaluation & reasoning, Interactive Functional program.

Text Books:

1) Logic & Prolog programming, Saroj Kaushik, LPE
2) Element of functional Programming, Reade Chris, AWL.

References books :

1) The essence of logic, K. John, PHI

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: **Network Programming**
Code: 521433 (21)
Total theory periods: 40
Total Tutorial periods:10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

UNIT-1 Communication protocols, internet protocols, system network architecture, UUCP, XNS, IPX/SPX for LANs, protocol comparisons, TCP & IP headers, IPv4 & v6 address structures.

UNIT-2 **Berkeley Sockets:** Overview, socket address structures, value result arguments, byte ordering, byte manipulation & address conversion functions, elementary socket system calls – socket, connect, bind, listen, accept, fork, exec, close, TCP ports (ephemeral, reserved)

UNIT-3 **Berkeley Sockets:** I/O asynchronous & multiplexing models, select & poll functions, signal & fcntl functions, socket implementation (client & server programs), UNIX domain protocols, passing the descriptors

IPC: - PIPES, FIFOS, STREAMS & MESSAGES, Semaphore, Shared Memory.

UNIT-4 **Winsock Programming: w**indows socket API, window socket & blocking I/O model, blocking sockets, blocking functions, timeouts for blocking I/O, DLL & new API's, DLL issues

UNIT-5 **Programming Applications:** Time & date routines: Internet Time & Date Client, Network Time Synchronization, Trivial file transfer protocol: Data Formats UDP Implementation, TCP Implementation, Remote login, Ping.

Text Books:

1. Window Socket Programming by Bobb Quinn and Dave Schutes
2. Steven.W.R: UNIX Network Programming, PHI (VOL I& II)

Reference Books:

1. Davis.R.: Windows Network Programming, Addison Wesley
2. NETWORK PROGRAMMING With Windows Socket By Baner .P., PH New Jersey

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: **Modeling and Simulation**
Code: 521434 (21)
Total theory periods: 40
Total Tutorial periods:10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

UNIT-1 System Models: Concept of a system, system environment, stochastic activities, continuous discrete system modeling, system modeling, type of models, stric and dynamic systems, principles used in modeling, system studies.

UNIT-2 System Simulation: Techniques of simulation, monte carlo method, comparison of simulation and analytical methods, numerical computation techniques for continuous and discrete models, distributed leg models, cobweb models, simulation study.

UNIT-3 Continuous system simulation: Continuous system models, differential equation, analog computer, analog methods, digital analog simulation, CSSLS, CSMPIII Language.
System dynamics: Historical background exponential, Growth and decay models, modified exponential growth models, logistic curves and generalization of growth models, system dynamics diagrams, dynamo language.

UNIT –4 Discrete system simulation: Discrete events, representation of time, generation of arrival patterns, simulation of telephone system, delayed calls, simulation programming tasks, gathering statistics, and discrete simulation language.

UNIT-5 Simulation Language: Classification of simulation languages, Introduction to GPSC, general description, action times, choice of paths, simulation of a manufacturing shop, facilities and storage, program control statements, priorities and parameters, numerical attributes, functions, simulation of a supermarket transfer models, GPSS model applied to any application, simulation programming techniques like entry types.

Text Books:

1 W.A. Spriet – Computer Oriented Modeling and Simulation
2 G. Gordan-Systems Simulations, PHI, 1995

Reference Books: -

1 T.A. Payer – Introduction to Simulation
2 Barnes – Modeling and Performance Measurement of computer systems.
3 V. Rajaraman " Analog Simulation" PHI
4 Banks & Carson

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: **Design and Analysis of Algorithms**
Code: 521435(21)
Total theory periods: 40
Total Tutorial periods: 10
Total marks in End Semester Exam: 100
Minimum no. of Class tests to be conducted : 2

UNIT-1 **Introduction & Analysis:** Analyzing algorithms, Growth function : Asymptotic notation, Standard notation & common functions, Recurrence relation heaps and introduction to 2-3 trees, Algorithms for manipulating 2-3 trees, Representation of heaps using 2-3 trees, Heap sort , Amortized Analysis.

UNIT-2 **Dynamic Programming Paradigm:** The basic dynamic programming paradigm, Viewing shortest path algorithms from that perspective, Dynamic programming solution to the optimal matrix chain multiplication and the longest common subsequence problems, Top down recursive algorithms using tables of solutions of sub problems as an alternative to bottom up general dynamic programming. Greedy Paradigm :The basic greedy strategy & computing minimum spanning trees, Algorithms of Kruskal and Prim, Use of Union Find Algorithm in implementation of Kruskal's algorithms, The relationship in Dijkstra's and Prim's algorithms, Use of greedy strategy in algorithms for the Knapsack problem and Huffman trees.

UNIT-3 **Divide and Conquer Paragidm:** Divide and Conquer recurrence equations and their solutions, Quick and merge sorting techniques from the perspective of their fitting into the divde and conquer paradigm, Linear time selection algorithm, The basic divide and conquer algorithm for matrix multiplication. Basic Graph Algorithms: Representational issues in graphs, Depth first search on graphs, Computation of biconnected components and strongly connected components using the depth first-search paradigm, Topological sorting of nodes of an acyclic graph. Shortest Path Algorithms on Graphs: Bellman-Ford shortest path problem, Dijkstra's algorithm & Analysis of Dijkstra's algorithm using Fibonacci heaps, Floyd-Warshall's all pairs shortest path algorithm and its refinement for computing the transitive closure of a graph.

UNIT-4 **String Matching Algorithms:** Modelling the general string problem as a finite automata, Motivation of the failure function in the Knuth Morris and Pratt Paradigm, Linear time analysis of the KMP algorithm, The Boyer-Moore refinement of the KMP algorithm, computation of the failure functions for the Boyer-Moore algorithm.

UNIT-5 **NP-Complete Problems:** Examples of problems like traveling salesman tour for which enumeration and back tracking seems to be the only method of finding the optimal solution, The notion of a non deterministic algorithm and its basic relationship to back tracking. The notion of a polynomial time nondeterministic algorithm, Polynomial time non deterministic algorithms for problems like satisfiability, clique problem, Hamiltonian path problems etc. , The definition of Np-hardness and Np-completeness, The statement of Cook's theorem and a discussion of its implications, The notion of polynomial transformation and reductions, Reductions to show that the clique problem, vertex cover, subset sum and Hamiltonian cycle problems are NP-complete.

Text Books:

1. Introduction to Algorithms (Second Edition) PHI, Corman, Lelserson, Rivert and Stein
2. Fundamentals of Algorithms, Galgotia, Sahni & Horowitz.
3. Analysis of Algorithms, Pearson Education, Hoffcroff.

Reference Books:

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester: IV **Branch**: Computer Application
Subject : **Artificial intelligence Lab** **Code**: 521421(21)
Total Practical periods: 36
Total marks in End Semester Exam: 50

Experiments to be performed: (minimum 10 experiments)

(i) Write a prolog program to find the rules for parent, child, male, female, son, daughter, brother, sister, uncle, aunt, ancestor given the facts about father and wife only.
(ii) Write a program to find the length of a given list
(iii) Write a program to find the last element of a given list
(iv) Write a program to delete the first occurrence and also all occurrences of a particular element in a given list.
(v) Write a program to find union and intersection of two given sets represented as lists.
(vi) Write a program to read a list at a time and write a list at a time using the well defined read & write functions.
(vii) Write a program given the knowledge base,
If x is on the top of y, y supports x.
If x is above y and they are touching each other, x is on top of y.
A cup is above a book. The cup is touching that book. Convert the following into wff's, clausal form; Is it possible to deduce that `The book supports the cup'.
(viii) Write a program given the knowledge base,
If Town x is connected to Town y by highway z and bikes are allowed on z, you can get to y from x by bike.
If Town x is connected to y by z then y is also connected to x by z.
If you can get to town q from p and also to town r from town q, you can get to town r from town p.
Town A is connected to Town B by Road 1. Town B is connected to Town C by Road 2.
Town A is connected to Town C by Road 3. Town D is connected to Town E by Road 4.
Town D is connected to Town B by Road 5. Bikes are allowed on roads 3, 4, 5.
Bikes are only either allowed on Road 1 or on Road 2 every day.Convert the following into wff's, clausal form and deduce that `One can get to town B from townD'.
(ix) Solve the classical Water Jug problem of AI.
(x) Solve the classical Monkey Banana problem of AI.
(xi) Solve the classical Crypt arithmetic problems such as DONALD + GERALD = ROBERT of AI.
(xii) Solve the classical Missionary Cannibals problem of AI.
(xiii) Solve the classical Travelling Salesman Problem of AI.
(xiv) Solve the classical Blocks World Problemof AI.
(xv) Write a program to search any goal given an input graph using AO* algorithm.

List of Equipments/Machine required :
(i) PC with Wndows xp
(ii) Visual prolog compiler

Recommended Books :
(i) Ivan Bratko : Logic & prolog programming.

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Semester : IV
Branch: Computer Application
Subject: **Unix Lab**
Code: 521422(21)
Total Practical periods: 36
Total marks in End Semester Exam: 75

Experiments to be performed : (minimum 10 experiments)

1. Write shell script for the following
   It should display menu for following
   - Display file contents with line number
   - display the file contents with page break
   - quit.

2 Write a shell script for accepting the following information and storing in file.
   i) customer name
   ii) item description
   iii) quantity
   iv) rate
   the user should get the facility to enter as many record as he wants.

3 Calculate factorial value of any number using awk command.

4 Write awk command to count the number of times each word occurs in a sorted list containning one word per line.

5 Suppose we have table with following structure
   item name no. of item sold,cost/item.write a shell script that will display
   i) Total no. of item sold
   ii) Total cost of individual item
   iii) Total cost of all item

6 Write c shell shell script to check the no is prime or not

7 Find greatest among three no. using c-shell script

8. Write interactive shell script to copy the contents of one file to another

9. Display the output of ls-l command in user friendly way.

10 Write a shell script to search a word in list of file .two arguments will be used ,one will contain words to searched and another will contain name of files.

11 Write menu driven shell script to execute 5 basic command of unix

12 Write shell script to check whether the string is vowel
   i) 'unix' or 'UNIX
   ii) it is two character long

13 Write shell script to perform following for each file of current directory
   iii) delete a file if its extension is .old
   iv) copy a file it its extension is .c
   v) move a file it its extension is .Cobol
   vi) display the contents of file if it has read permission

14 Delete one of one file if two file are similar, if not display proper message. write shell Script using command line argument ,without command line argument.

15 Write shell script to generate multiple answer type question .

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: **Project-II**
Code: 521423(21)
Total Practical periods: 4
Total marks in End Semester Exam: 75

1. Out of 40 periods allocated, in 10 periods of Introduction to ASP / JSP, connectivity to database must
be taught

2. Students are supposed to make a web based project

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Chhattisgarh Swami Vivekanand Technical University, Bhilai

Semester : IV
Branch: Computer Application
Subject: Report Writing & Seminar
Code: 521424(21)
Total No. of periods : 3 per week
Total Tutorial Periods : Nil
Total marks in End Semester Exam: Nil
Teacher's Assessment: 25 marks
Minimum Number of class test to be conducted: Two

Unit -I
Introduction to Technical Writing: how differs from other types of written communication Purpose of technical writing, Correspondence: prewriting, writing and rewriting Objectives of Technical Writing. Audience Recognition: High-tech audience, Low tech audience, Lay audience, Multiple Audience.

Unit - II
Correspondence: Memos, Letters, E-mails, Its differentiation, types of letters, Document Design, its importance, Electronic Communication: Internet, Intranet, extranet, Writing effective e-mail.

Unit - III
Summary: Report Strategies, Effective style of technical report writing: Structures: content, introduction, conclusions, references, etc., Presentation, Writing first draft, revising first draft, diagrams, graphs, tables, etc. report lay-out.

Unit -IV
Report Writing: Criteria for report writing, Types of Report: Trip report, Progress report, lab report, Feasibility report, project report, incident report, etc. Case Studies.

Unit -V
Proposals & Presentation: Title page, Cover letter, Table of Content, list of illustrations, summary, discussion, conclusion, references, glossary, appendix, Case Studies. Oral Presentation/ Seminar:

Text Books:

1. Sharon J. Gerson & Steven M. Gerson "Technical Writing - Process& Product", Pearson Education.

Reference Books:

1. Sunita Mishra, "Communication Skills for Engineers" Pearson Education
2. Davies J.W. "Communication for engineering students", Longman
3. Eisenberg, "Effective Technical Communication", Mc. Graw Hill.