PEOPLE'S UNIVERSITY, BHOPAL

PROGRAMME: B. Tech. (CSE) **SEM: IV**

Subject Title	Subject Code	Credits		Theory		
		L	T	Externals (70)	Internals (30)	Total (100)
Mathematics-III	BT 401	3	1	Min: 28 (D Grade)	Min: Nil	Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal - Max Marks: 30

Best of Two Mid Semester Test –Max Marks: 20
Assignment / Attendance – Max. Marks: 10

Unit	Contents *(Theory)*
I	**FUNCTIONS of COMPLEX VARIABLES:** Analytic functions, Harmonic Conjugate, Cauchy – Riemann Equations, Line integral, Cauchy's theorem, Cauchy's Integral formula, Singular points, Poles and Residues, Residue theorem and Evaluation of Real Integral
II	**NUMERICAL ANALYSIS:** Difference operators, Errors and Approximations, Interpolation, Inverse interpolation, Numerical differentiation, Numerical Integration by using Simpson's method, Weddel's rule and Trapezoidal Rule.
III	**SOLUTION OF ALGEBRIAC & SIMULTANEOUS EQUATIONS :** Solutions of algebraic and transcendental equations(Regular False, Newton-Raphson, Iterative, Graffe's root squaring methods) and Solutions of simultaneous algebraic equations (Gauss Elimination, Gauss Jordan, Gauss Iterative, Jacobi,Gauss Seidel and Crout's Traingularization).
IV	**SOLUTION TO DIFFERENTIAL EQUATIONS:** Solutions of ordinary differential equations (Taylor's Series, Picard's Method, Euler Method, Modified Euler's method, Runge Method and Runge Kutta Method).
V	**OPTIMIZATION by LINEAR PROGRAMMING:** Introduction, 2 Variable Problems, Solution by Graphical and Simplex Methods, Concept of Degeneracy and Duality, Simple 3 Variable Transport and Assignment Problems and Modeling into LPP.

TEXT BOOKS:

1. Higher Engineering Methematics by B.S. Grewal,Khanna Publications
2. D.C. Aggarwal "Engineering Mathematics II
3. Mathematical Methods by KV Suryanarayan Rao, SCITECH Publuication

REFERENCES :

1. Numerical Methods using Matlab by J.H.Mathews and K.D.Fink, P.H.I.
2. Numerical Methods for Scientific and Engg. Computation by MKJain, Iyengar and RK Jain, New Age International Publication
3. Numerical Methods using Matlab by Yang,Wiley India
4. Pobability and Statistics by Ravichandran ,Wiley India
5. Mathematical Statistics by George R., Springer

PEOPLE'S UNIVERSITY, BHOPAL

PROGRAMME: B. Tech. (CSE) **SEM: IV**

Subject Title	Subject Code	Credits			Theory		
		L	T	P	Externals (70)	Internals (30)	Total (100)
Computer System Organization	BT 412	3	1	-	Min: 28 (D Grade)	Min: Nil	Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal - Max Marks: 30

Best of Two Mid Semester Test –Max Marks: 20
Assignment / Attendance – Max. Marks: 10

Unit	Contents *(Theory)*
I	Computer Basics and CPU Von Newman model, various subsystems, CPU, bus organization, computer memory, Memory registers, I/O, Register Transfer Language, Instruction Fetch, decode and execution, data movement and manipulation, Instruction formats and addressing modes of basic computer, Flynn's and Handler's Classification of parallel computing structures.
II	Control Unit, Organization, Hardwired control unit, Micro and nano programmed control unit, Control Memory, Address Sequencing, Micro Operations & Instruction formats, horizontal and vertical micro instruction, Micro program sequencer, Data and control hazards and method to resolve them, Arithmetic and Logic Unit, Arithmetic Processor, Addition, subtraction, multiplication and division, Floating point and decimal arithmetic and arithmetic units and design of arithmetic unit.
III	Input Output Organization & Modes Of Data Transfer Program controlled, interrupt driven & direct memory access, I/O Interface, programmed I/O, I/O addressing & instruction, I/O processor, I/O Synchronization, I/O processors, DMA, Data transfer – Serial / parallel, synchronous / asynchronous, simplex / half duplex and full duplex, Interconnection networks, Parallel Algorithms for array processors and Search algorithms
IV	Memory & 8085 Microprocessor Memory Hierarchy, Cache Memory - Organization and mappings, Associative memory, Virtual memory, semiconductor memories (RAM, ROM), memory allocation and management policies, 8085 I/O structure, Assembly Language, instruction set and basic programming and Data communication.
V	Multiprocessors Pipeline and Vector processing, Instruction and arithmetic pipelines, Vector and array processors, Interconnection structure and inter-processor communication structure of multiprocessors, parallel processing and pipeline processing, SIMD & MIMD multiprocessor

TEXT BOOKS:

1. Morris Mano: Computer System Architecture, PHI.
2. Advanced Computer Architecture: A System Design Approach- Kain, PHI Publication.
3. Computer Architecture and Parallel Processing- Hwang And Briggs, TMH.
4. Tanenbaum: Structured Computer Organization, Pearson Education

References

1. Gaonkar: Microprocessor Architecture, Programming, Applications with 8085; Penram Int.
2. William Stallings: Computer Organization and Architecture, PHI
3. K.M.HebBTr: Computer Architecture, Macmillan Publishers India LTD
4. J P Hayes, Computer Architecture and Organisations, Mc- Graw Hills, New Delhi

PEOPLE'S UNIVERSITY, BHOPAL

PROGRAMME: B. Tech. (CSE) **SEM: IV**

Subject Title	Subject Code	Credits			Theory		
		L	T	P	Externals (70)	Internals (30)	Total (100)
Analysis & Design of Algorithms	CST 403	3	1	2	Min: 28 (D Grade)	Min: Nil	Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal - Max Marks: 30

Best of Two Mid Semester Test –Max Marks: 20
Assignment / Attendance – Max. Marks: 10

Unit	Contents *(Theory)*
I	**Basics of Algorithms and data types:** - Algorithms, Abstract Data Type, The Running Times Of a Program, Use of the Big-Oh, small o, Big-omega and small omega notation, Inequalities involving such notation: data structures like linked lists, Basic algorithms like quick sort, depth and breadth first search in graphs.
II	**Trees and Sorting:** Basic terminology, Implementation of tree, An Array Representation of Trees, Representation of Trees by List of Children, Binary trees, Deterministic selection and sorting, Optimality of algorithms for sorting and selection, Randomized algorithms like randomized quick sort, and expected linear time randomized selection.
III	**Divide and Conquer Technique:** Divide and Conquer with examples such as Sorting, Matrix Multiplication, Convex hull and Searching. Greedy methods with examples such as Optimal Reliability Allocation, Knapsack, Minimum Spanning trees – Prim's and Kruskal's algorithms, Single source shortest paths - Dijkstra's and BEllman Ford algorithms.
IV	**Dynamic programming:** Dynamic programming with examples such as Kanpsack, All pair shortest paths – Warshal's and Floyd's algorithms, Resource allocation problem. Backtracking, Branch and Bound with examples such as Travelling Salesman Problem, Graph Coloring, n-Queen Problem, Hamiltonian Cycles and Sum of subsets.
V	**NP Complete Problem:** Introduction to NP Problem, Polynomial-time, Abstract Problems, Encoding, NP-Completeness and Reducibility, NP-Completeness, Circuit Satisfiability, NP-Complete Problems, The Vertex-cover Problem, The Subset-sum Problem, The Hamiltonian-cycle Problem, The Traveling-salesman Problem.

TEXT BOOKS:

1. Horowitz & Sahani; Analysis & Design of Algorithm
2. V.V.Muniswamy; Design and Analysis of Algorithm,I.K International Publishing House PVT. LTD, New Delhi
3. Shanthi, Design and Anaysis of Algorithm, Scitech Publication PVT.LTD. Chennai

REFERENCES

1. Coremen Thomas, Leiserson CE, Rivest RL; Introduction to Algorithms; PHI.
2. Ullmann; Analysis & Design of Algorithm

Subject Title	Subject Code	Credits	Practical		
Analysis & Design of Algorithms	**CST 403**	**P**	**Externals (35)**	**Internals (15)**	**Total (50)**
		2	Min: 12 (D Grade)	Min: Nil	Min: 20 (D Grade)

Practical Internal - Max Marks: 15

Lab Performa, Lab Record & Viva –Max Marks: 10
Assignment – Max. Marks: 05

PRACTICALS:

Suggested list of experiments (expandable)

1. Write a program to show linear Search.
2. Write a program for Binary Search.
3. Write a program for Merge Sort.
4. Write a program for Quick Sort.
5. Write a program for minimum spanning trees using Kruskal's algorithm.
6. Write a program for minimum spanning trees using Prim's algorithm.
7. Write a algorithm for Floyd-Warshall.
8. Write a program for traveling salesman problem.

PEOPLE'S UNIVERSITY, BHOPAL

PROGRAMME: B. Tech. (CSE) **SEM: IV**

Subject Title	Subject Code	Credits			Theory		
		L	T	P	Externals (70)	Internals (30)	Total (100)
Data Communication	**CST 404**	3	1	2	Min: 28 (D Grade)	Min: Nil	Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal - Max Marks: 30

Best of Two Mid Semester Test –Max Marks: 20
Assignment / Attendance – Max. Marks: 10

Unit	Contents *(Theory)*
I	**Introduction to Data Communication** Data Communication System, Elements of Data Comm. System, Introduction to Transmission Modes, Types, Line Configuration, Types, Introduction to Serial Transmission, Parallel Transmission, Synchronous Transmission v/s Asynchronous Transmission, Introduction to Topology and Types, Introduction to Multiplexing, FDM, TDM, Types, WDM and CDMA.
II	**Transmission Medium and Modulation** Introduction to Transmission Medium, STP, UTP, Co Axial Cables, Optical Fibre Cables, Introduction to Wireless Mediums and Satellite Comunication, Introduction to Data Compression, Data Compression Techniques, Run Length Encoding, Lampel Ziv Welch Encoding, Introduction to Modulation, AM, FM, PM, Introduction to Shift Keying Techniques, ASK, BSK, PSK, QAM and PCM.
III	**Encodings & Information Theory** Introduction to Encoding Techniques, Polar, Unipolar and Bipolar Encoding Techniques, Introduction to Spread Spectrum, Direct Sequence Spread Spectrum and Frequency Hopping Spread Spectrum, Introduction to Channel, Channel Capacity, S/N Ratio, Shannon Fano's Coding Technique and Huffman's Coding Techniques
IV	**Error Correction & Detection** Introduction to Errors, Types, Error Correction, Error Detection, VRC, CRC, LRC, Checksum, Internet Checksum and Hamming Codes, Introduction to Modems and DTE-DCE Interfaces, RS232 and Other Interfacing Devices
V	**Error Control & Flow Control** Introduction to Error Control and Flow Control, Flow Control Techniques, Stop & Wait Protocol, Go Back N Protocol, ENQ / ACK, Polling, Selecting, Sliding Window Protocol, Selective Repeat, Selective Reject, ARQ and its Techniques, Introduction to Congestion Control and Congestion Control Techniques.

TEXT BOOKS:

1. Data Communications by William Stallings, Prentice Hall
2. Data Communications by BEhrouz Forouzan, Tata Mc Graw Hill Publications

REFERENCES

1. Communication Systems by Singh & Sapre, Tata McGraw Hill Publications
2. Communication Systems by B. P. Lathi, Oxford University Press

Subject Title	Subject Code	Credits	Practical		
Data Communication	**CST 404**	**P**	**Externals (35)**	**Internals (15)**	**Total (50)**
		2	Min: 12 (D Grade)	Min: Nil	Min: 20 (D Grade)

Practical Internal - Max Marks: 15

Lab Performa, Lab Record & Viva –Max Marks: 10
Assignment – Max. Marks: 05

PRACTICALS:
Suggested list of experiments (expandable)

1. Simulation of ISO-OSI reference model.
2. Simulation of Data Link Protocol: HDLC
3. Implementation of multiplexers.
4. To study FDM modulation techniques.
5. To study TDM modulation techniques
6. To study WDM modulation techniques
7. To study various transmission media like twisted pairs, co-axial cables, optical fiBErs

PEOPLE'S UNIVERSITY, BHOPAL

PROGRAMME: B. Tech. (CSE) **SEM: IV**

Subject Title	Subject Code	Credits			Theory		
		L	T	P	Externals (70)	Internals (30)	Total (100)
Computer Graphics and Multimedia	CST 405	3	1	2	Min: 28 (D Grade)	Min: Nil	Min: 40 (D Grade)

Duration of Theory (Externals): 3 Hours

Theory Internal - Max Marks: 30

Best of Two Mid Semester Test –Max Marks: 20
Assignment / Attendance – Max. Marks: 10

Unit	Contents *(Theory)*
I	**Introduction to Computer Graphics**: Introduction to raster & random graphics fundamentals, Display devices & comparison Point plotting, line drawing & circle drawing & their algorithm like DDA & Bressenham's, Video Basics, Adapter Cards (MCA, CGA, EGA, VGA, etc.)
II	**2D Translation:**Translation,Rrotation,Scaling,Shearingreflection,Inverse transformation, Homogeneous co-ordinate system, Matrices transformation, Composite transformation, Windowing and clipping, World co-ordinate system,Screen co-ordinate system, Viewing traformation, Line clipping, Cohen Sudherland, Midpoint line clipping algorithms, Polygon clipping: sudherland- Hodgeman, Weliler-Atherton algorithms.
III	**3D translation:** Translation, Rotation, Scaling, Parallel and perspective projection, Types of parallel and perspective projection, Hidden surface elimination: Depth comparison, Back face detection algorithm, Painters algorithm, Z-buffer algorithm, Curve generation, BEzier and B-spline methods.
IV	Basic Illumination Model, Diffuse reflection, Specular reflection, Phong Shading, Gourand shading, ray tracing, color models like RGB, YIQ, CMY, HSV.
V	**Multimedia System:** An Introduction, Multimedia hardware, Multimedia System Architecture. Data & File Format standards. i.e RTF, TIFF, MIDI, JPEG, DIB, MPEG,Audio: digital audio, MIDI, processing sound, sampling, compression. Video: Avi, 3GP,MOV, MPEG , compression standards, compression through spatial and temporal redundancy. Multimedia Authoring .

TEXT BOOKS:

1. Donald Hearn and M.P. BEcker "Computer Graphics" Pearson Pub.
2. Pradeep K.Bhatia " Computer Graphics",I.K International Publishing House PVT.LTD
3. Sinha and Udai , "Computer Graphics", Tata McGraw Hill

REFERENCES

1. Principles of Interactive Computer Graphics by William M. Newman
2. Rogers, "Procedural Elements of Computer Graphics", Tata McGraw Hill
3. Folay Vandam, Feiner, Hughes "Computer Graphics Principle & Practice" , Pearson Pub.
4. Parekh "Principles of Multimedia" Tata McGraw Hill
5. Prabhat k Andleigh, Kiran Thakral , "Multimedia System Design " PHI Pub.
6. James E. Shuman, "Multimedia in Action" Thomson / Vikas Publishing House.
7. Tay Vaughan " Multimedia: making it work" Tata McGraw Hill 1999, 4th Edition
8. Buss,3D Computer Graphics, Cambridge University Press,New Delhi

Subject Title	Subject Code	Credits	Practical		
Computer Graphics and Multimedia	**CST 405**	**P**	**Externals (35)**	**Internals (15)**	**Total (50)**
		2	Min: 12 (D Grade)	Min: Nil	Min: 20 (D Grade)

Practical Internal - Max Marks: 15

Lab Performa, Lab Record & Viva –Max Marks: 10
Assignment – Max. Marks: 05

PRACTICALS:

Suggested list of experiments (expandable)

1. A Brief Study of Various Types of Input and Output Devices
2. Introduction on Graphics Programming and Graphics Functions
3. Program to Implement a Line Using Slop Intercept Formula
4. Program to Implement Line Using DDA Algorithm
5. Program to Implement Line Using Bresenham's Algorithm
6. A Program to Implement Circle Using Midpoint Algorithm
7. Program to Implement Translation of a line and Triangle
8. Program to Implement Rotation of Line and Triangle
9. Program to Implement Cohen Sutherland Line Clipping algorithm.
10. Program to draw BEzier Curve

PEOPLE'S UNIVERSITY, BHOPAL

PROGRAMME: B Tech (CSE)

SEM:IV

Subject Title	Subject Code		Credits		practical		
		L	**T**	**P**	**Externals (35)**	**Internals (15)**	**Total (50)**
Java Programming	**BT-477**	-	-	2	Min: 12 (D Grade)	Min: Nil	Min: 20 (D Grade)

Practical Internal - Max Marks: 15

Lab Performa, Lab Record & Viva –Max Marks: 10
Assignment – Max. Marks: 05

Unit	Contents *(Practical)*
I	**Introduction to java programming**: Introduction to java, Fundamentals of objects oriented programming, Object and classes , Data abstraction and encapsulation , Inheritance, Polymorphism , dynamic Binding , Java Features compiled and Interprets , Platform Independent and portable ,object orients Distributes , Multithreaded and interactive , High Performance , constant , Variables and data Types, Scope and Variable Operators and Expression , Statements LOPs ,Jumps in Loops (Break continue)
II	**Object oriented Programming with Java Classes and Objects**: Classes, Objects and methods Defining a class, creating object, Accessing class members, visibility control constructor , Methods overloading Static Member <Inheritance ,Overriding Methods ,Final Variable and Methods ,Final classes ,Abstract Method and classers , Array , interfaces, Multiple Inheritance Defining Interface <Extending Interfaces, Accessing Interface Variable ,Packages : Putting classes together system package , Using system package ,Naming convection , certain package accessing a package , using a package , adding a classes a package
III	Advance java features :Multithreading : threads states priorities and thread scheduling , life cycle of a thread synchronization, creating and executing threads , multithreading with GUI , monitors and monitors lock Network ng : Manipulating URLs , reading a file on a web server , socket programming , Security and the networks , RMI , Networking accessing database with JDBC , relational database ,SQL,MYSQL,Oracle,
IV	Advance Java Technologies :Servlets: Overview and architecture, Setting up the apache tomcat server , Handling ,HTTP get requests Deploying a web application , multitier application s, using JDBC form a servlelts java Server pages (JSP),Overview ,First jsp examples , implicit objects ,Scripting Standard Action Directives ,Multimedia : APPlets and application loading , displaying and Scaling , animating a series of iMages ,Loading and Playing audio clips
V	Advanced web/Internet programming (overview):J2ME, J2EE,EJB and XML

References:

1. NaUGHTON & Scghildt " The complete reference java 2 " , Tata McGraw hill
2. Deitel" JAa – How to program " Pearson Education , asia
3. Horstmann & Cornell " Core java 2 " Vaol (I & II) , Sun microsystem .
4. Ivan BNayross " Java 2.0 :BPB publication

PRACTICALS:

Suggested list of experiments (expandable)

1. Introduction of J2SDK
2. Program to show scope of Variables
3. Program to show concept of CLASS in java
4. Program to show Type Casting in Java
5. Program to show Inheritance
6. Program to Show Polymorphism
7. Program to show Access Specifies(Public, Private, Protected) in java
8. Program to show use and advantage of Contractor
9. Program to show interfacing between two classes
10. Program to add a class to a package
11. Program to show life Cycle of a Thread
12. Program to demonstrate AWT
13. Program to show Hide a Class
14. Program to show Data base Connectivity using Java
15. Program to show "Hello Java" in Explorer using Applet
16. Program to show Connectivity using JDBC
17. Program to demonstrate multithreading using Java
18. Program to demonstrate applet life Cycle
19. Program to demonstrate concept of Servlet

PEOPLE'S UNIVERSITY, BHOPAL

PROGRAMME: B. Tech. (CSE) **SEM: IV**

Subject Title	Subject Code	Credits			Practical		
		L	**T**	**P**	**Externals (35)**	**Internals (15)**	**Total (50)**
DOT NET	**CS 407**	-	-	2	Min: 12 (D Grade)	Min: Nil	Min: 20 (D Grade)

Practical Internal - Max Marks: 15

Lab work & Sessional –Max Marks: 10
Assignment / Quiz – Max. Marks: 05

Unit	Contents *(Practical)*
I	**INTRODUCTION:** Introduction to DOT NET Framework, its Architecture, Components, Languages, Application Development, Requirements and Features, Installation of DOT NET, IIS Server, Introduction to C#, Comparison of C, C++, Java and C#
II	**C# CONSOLE:** Introduction to C# Program Structure, Tokens, Expressions, Data Types, Conditional Statements, Loops, Switch Case, Functions, Strings, Arrays, File Handling, Exception Handling, C# as Object Oriented Language, Classes & Objects, Constructors, Inheritance, Polymorphism, C# Packages and Namespaces
III	**WINDOWS APPLICATIONS:** Introduction to HTML, HTML Tags, Introduction to CSS, Types, Introduction to Windows Applications, Use of C# Tools in Development of Windows Applications, Validation Controls, MDI Forms and Introduction to Crystal Reports
IV	**WEB APPLICATIONS:** Introduction to ASP.NET, Introduction to Web Page Designing, Web Development, Static Pages, Dynamic Pages, Introduction to SQL, SQL Queries, SQL Server, Introduction to ADO.NET, Development of Applications with Data Base, Front End – Back End Connectivity, Types, Data Base Controls, Introduction to Content Management System and CKE Editor
V	**ADDITIONAL TECHNOLOGIES:** Introduction to XML, Structure and Syntax of XML, Introduction to Java Scripts, Using Java Scripts on Web Forms, Introduction to AJAX, Application of AJAX in Web Design Applications and Development of a Small Project in ASP.NET using C#

TEXT BOOKS:

1. C# Programming by E.Balagurusamy, Tata Mc Graw Hill Publications
2. C# Complete Reference, Tata McGraw Hill Publications
3. DOT NET for BEginners by Wrox Publications

REFERENCES

1) DOT NET 4.0 by Harvey Dietal & Paul Dietal
2) DOT NET Technology by Daminni Grover, IK Publications

List of Practical:

Suggested list of experiments (expandable)

1. Program in C# to implement Conditional Statements, Looping Statements and Switch Case
2. Program in C# to implement Arrays, Functions and its Types
3. Program in C# to implement Exception Handling and File Handling
4. Program in C# to implement Classes and Inheritance
5. Program in C# to implement Polymorphism
6. Creating a Simple Window Application
7. Creating Static Web Pages using ASP.NET
8. Creating Dynamic Web Pages using ADO.NET
9. Study of XML and Java Script
10. Development of a Small Data Base Web Application

Subject Title	Subject Code	Credit			Practical		
		L	**T**	**P**	**External**	**Internal (50)**	**Total (50)**
Professional Skills –II	**BT- 406**	-	-	2	Nil	Min: 20 (D Grade)	Min: 20 (D Grade)

Practical internal - max marks: 50

Assignment / Attendance – max. Marks: 50

Contents
Elements of Effective Presentation: Body language and use of voice during presentation; dress, posture, gestures, eye contact and facial expression, connecting with the audience during presentation; projecting a positive image while speaking; planning and preparing a model presentation; organizing the presentation to suit the audience and context; basics of public speaking; preparing for a speech. **Stage Fright, Voice and Language:** Volume, pitch, inflection, speed, pause pronunciation, articulation, language, practice of speech. Use of Aids –OHP, LCD, projector, white board.