NOTIFICATION

No. 45 / 2018 Date: 7/ 6 /2018

Subject : Introduction of new syllabi for M.Sc. Part-II (Sem. III & IV)(Computer Software), which to be implemented from the academic session 2018-19.

It is notified for general information of all concerned that the authorities of the University has introduced new syllabi for M.Sc. Part-II (Sem. III & IV)(Computer Software), which to be implemented from the academic session 2018-19. Hence the page Nos. 9 to 17, appearing in prospectus No. 20161210 be substituted respectively by the **"APPENDIX"**, which is appended with this notification.

Sd/-
(Dr.A.P.Deshmukh)
Registrar,
Sant Gadge Baba Amravati University

APPENDIX

Syllabus prescribed for M.Sc. Part II (Semester-III & IV) (Computer Software) to be implemented from the Academic Session 2018-19 & onwards.

M.Sc.-Part II (Semester III & IV) Computer Software
Theory

Semester	Paper	Title of Paper
III	3S1 3S2 3S3 3S4	Data Warehouse and Data Mining PHP Programming Mobile Computing with Android Elective: 1. Computer Graphics 2. Compiler Construction
IV	4S1 4S2 4S3 4S4	Cyber Security & Digital Forensic Soft Computing Web Content Management System Elective: 1. Cloud Computing 2. Design and Analysis of Algorithms

Practical:

Semester-III	Lab-1	Practical Based on Paper- 1 & 2
	Lab-2	Practical based on Paper- 3 & 4
Semester-IV	Lab-1	Practical Based on Paper- 1 , 2 & 3
	Lab-2	Project

Syllabus Prescribed for M.Sc. [Computer Software]
Semester-III
Paper-3S1 – Data warehouse & Data Mining

Unit I: Recent amendments in IT Act, internet & web technologies, web hosting and development, attributes in cyberspace and legal framework of cyberspace, hacking, virus, obscenity, pornography, programme manipulation, Copyright, Patent, software piracy, intellectual property rights, trademark, domain disputes, and computer security, etc.

Unit II: Encryption and Decryption methods. Search and seizures of evidence. Investigation of cyber crimes and tools for analysis. Information security: Domains, Common Attacks, Impact of Security Breaches. Protecting Critical Systems (Information Risk Management, Risk Analysis etc) Information Security in Depth Physical security (Data security Systems and network security)

Unit III: Program Security: Secure programs, Non-malicious program errors, Viruses and other malicious code, Targeted malicious code, Controls against program threats File protection mechanism, Authentication: Authentication basics, Password, Challenge response, Biometrics. Network Security: Threats in networks, Network security control, Firewalls, Intrusion detection systems, Secure e-mail, Networks and cryptography, E ample protocols: PEM, SSL, IPsec.

Unit IV: Principles of network forensics, Attack Trace back and attributes, Critical Needs Analysis. IDS: Network based Intrusion Detection and Prevention Systems, Host based Intrusion Previnsion System. Cloud Computing-Its Forensic and Security Aspects.

Unit V: Cyber Crime Investigations: Where Evidence Resides on Windows systems, Conducting a Windows investigation, File Auditing and Theft of information, Handling the Departing Employee, Steps in a Uni Investigation, Reviewing Pertinent Logs, Performing eywords Searches, Reviewing Relevant Files, Identifying Unauthorized User Accounts or Groups, Identifying Rogue Processes, Checking for Unauthorized Access Points, Analyzing Trust Relationships, Detecting Trojan Loadable ernel Models. Finding Network based Evidence, Generating Session data with TCP Trace, Reassembling sessions using TCP flow and Ethereal.

Unit VI: pen source tools for digital forensics and Registry Forensic- pen source, pen source e amination platform, preparing the e amination system, using LINU and Windows as host, Study of Sleuth it: Installing Sleuth it, Sleuth it tools (Volume layer tools, File system Layer tools, Data unit Layer tools, Metadata Layer Tools) Registry Analysis, Understanding Windows Registry and Registry Structure.

Boo s:

1. C. P. Pfleeger, and S. L. Pfleeger, —Security in Computing||, Pearson Education.
2. Computer Forensic Investigating Data and Image Files, EC Council Press
3. Robert ones, Internet Forensics Using Digital Evidence to Solve Computer Crimes, Reilly Media Publication
4. Forouzan Data Communication and Networking McGraw Hill
5. Stallings, —Cryptography And Network Security: Principles and practice||
6. evin Mandia, Chris Prosise and Matt Pepe, Incident response and computer forensics, McGraw Hill Publication
7. Cory Altheide, Harlan Carvey, Digital Forensics with pen source Tools, Syngress Publication
8. Michael E Whitman and Herbert J Mattord, —Principles of Information Security||, Vikas Publishing House, New Delhi, 2003
9. Micki Krause, Harold F. Tipton, — Handbook of Information Security Management||, Vol 1-3 CRC

Paper-3S2 – P P Programming

UNIT-I - Introduction to PHP: Features of PHP, Server Introduction of PHP, Installation & Configuration of PHP, PHP Ethics , Fundamentals of PHP: eywords in PHP, Variables (Predefined, User defined), Constants, data types in PHP , perators in PHP: Arithmetic/math operators, Assignment perators, Comparison perators, Logical perators, Bitwise perators, String perator

UNIT-II - Control Structures in PHP: if, if..else, if..else..if, Loops in PHP: while, do.. while, for, foreach, Functions in PHP: Introduction to Functions in PHP, function Declaration, Function calling, predefined functions in PHP (crypt (), move up loaded file (), isset(), empty(),include(), re uire())

UNIT-III - Introduction to arrays in PHP: What is array, Declaration of array, Types of array: Numeric array, Associative array, Multidimensional Array, Array Functions: print r(), e plode (), implode (), array merge(), array sum(),array search(), array push(), array pop()

UNIT-IV- String Handling: Introduction to strings in PHP, Manipulation on string: Concatenation perator for string, strlen(),strrev(),substr(),strops(), Receiving input from user: Introduction to HTML forms, GET & P ST methods with HTML forms, File Upload in PHP using file attributes (name, type, size, tmp name)

UNIT-V - Sessions, Cookies in PHP, mail(),Error Handling, Bugs debugging, Date and Time File Handling in PHP: pening file, closing file, writing data into file, reading data from a file,

UNIT-VI – PHP with MyS L : Introduction to Mys1 database: Database connection with PHP , functions of MyS L: mys 1 connect() , mys 1 select db(), mys 1 uery(), mys 1 result(), mys 1 fetch array(),mys 1 error(), mys 1 num rows()

Boo s:

1. The Complete Reference PHP :
2. Learning PHP , My S L & ava Script Robin Nicson (relly)
3. PHP for Web Visual uickstart Guide- Larry Ullman
4. PHP & My S L Web Development A.Martin, S. Mathews

Paper-3S3 – Mobile Computing with Android
Unit –I

Getting an verview of Android : Fundamentals of ava for Android Application Development , System Re uirements for Windows, Mac S and Linu , Installing ava ,Installing ava for Windows S ,Installing ava for Mac S ,Installing ava for Linu ,Installing Android Studio, Installing Android Studio for Microsoft Windows 10 , Installing Android Studio for Mac S , Installing Android Studio for Linu , Launching Android Studio for the First Time , Welcome to Android Studio, Stand-alone, SD Installation.

Unit-II
Working with the User Interface, Using Views and View Groups, Handling Pictures and Menus with Views Android Studio Basics, Creating a New Sample Project, Using Different SDKs, Android Project Structure, Building and Running a Project, Android Emulator, Installing HAXM, Creating a New Android Virtual Device, Using ADB, Migrating Projects from Eclipse.

Unit –III
Storing the Data Persistently, Emailing and Networking in Android,Working with Location Services and Maps, Working with Graphics and Animation, Audio, Video and Camera, Threads and Services, Android Application Development with Android Studio, Android Projects, Creating a New Android Projec, Creating a Project with Multiple Target Devices, Launching Android Applications, Android Activities, The Intent Event Handler, Android Modules.

Unit-IV
Bluetooth, NFC, and Wi-Fi, Telephony and SMS, Hardware Sensors, Debugging Android Code, Android Debug Bridge, Wireless Debugging, Start Debugging, Android Monitor, Using log cat, Using Memory Monitor, Using CPU Monitor, Using GPU Monitor, Using Network Monitor, Android Device Monitor, Android Virtual Device Extended Controls, Using Lint, Testing Android Code and Application UIs, Unit Tests, Integration Tests, UI Tests, Performance Testing, Performance Tests Task. Introduction to GIT, Understanding GIT, Installing GIT, Using GIT, Using the GitHub Client, Using GIT in Android Studio, GIT Flow.

Unit-V
Working with ND : Hardware Sensors, Widgets and Live Wallpapers in Android, Introduction to Android ND , Android Studio ND Integration, Android ND Installation on Linu , Android ND Installation on Windows 10, Android ND Installation on Mac S , Android ND with Android Studio Projects, Importing a Sample ND Project, Migrating an E isting ND Project, Building Android ND Projects, Android ND Projects Release and Deployment, Multi vs. Fat Android Application AP s, Publishing, Monetizing and Distributing Android Applications.

Unit-VI
Developing For Android Tablets and Smart phones, The Relational Model and SQLITE, Android Database Support, Content Providers Rest, Content Providers, Concurrency, Networking and Sync Adapters, Service Development, Mobile and the Cloud, Complex Device-Based Data: Android Contacts, Generic Data Synchronization: Project Migrate and the Web data
API, Web data Applications Building Human Interfaces for Data.

Books:

1. Android Application Development (With itkat Support), Black Book
   by ogent Learning Solutions Inc. Pradeep othari
2. E pert Android Studio by Murat ener, nur Dundar
3. Enterprise Android: Programming Android Database Applications for the Enterprise
   by igurd Mednieks, G. Blake Meike, Laird Dornin, ane Pan.

Paper-3S - Electi e

1. Computer Graphics

Unit I : Geometry and line generation: Introduction, points and lines, planes and coordinates, Line segments, perpendicular line segments, vectors, pi els and frame buffers, vector generation, character generation, displaying the frame buffer. Graphics primitive: Introduction, display devices, primitive operations, the Display-File Interpreter, normalized device coordinates, Display-file structure, Display control, Te t line style primitives.

Unit II : Polygon: Introduction, Polygon , Polygon representation, Entering polygon, An inside test, filling polygon, initializing. Transformations: Introduction, matrices, scaling transformations, sin and cos, sum of angles, identifiers, rotation, homogeneous coordinates and translation, rotation about an arbitrary point, other transformations, display procedures.

Unit III: Segments: Introduction, the segment table, segment creation, closing a segment, deleting a segment, renaming a segment, visibility, image transformations, saving and showing segments, other display file structures, some rater techni ues, Windowing and clipping: Introduction, viewing transformation, implementation, clipping, clipping the polygon, adding clipping to the system, a voiding division, generalized clipping, position relative to an arbitory line, multiple windowing,

Unit IV: Interaction : Introduction, hardware, input devices, handling algorithm, event handling, sample devices, the detectability attributes, simuating a locator with a pick and pick with a locator, Echoing, Interactive techni ues. Three dimension: Introduction, 3D Geometry, primitives and transformations, rotation about an arbitrary a is, parallel projection, perspective projection, viewing parameters, conversion to view plane coordinates, The 3D viewing transformation, , special projection.

Unit V : Hidden surfaces and lines: Introduction, back face removal, the painter algorithm, collection of polygons, remembering the style, the hidden surface check, decomposition into triangles, comparing two triangles, The minima test, verlapping edges, containment of points, finding a point in the triangle plane, comparing of the entire triangle, establishing depth order, geometrical sorting, linked list, sorting the triangles.

Unit VI: Shading: Introduction, diffusion, illumination, point source illumination, specular reflection, transparency and shadows. Curves: Introduction, curve generation, implementation, interpolating polygons, E-splines, B-Splines and Curves.

Books:

1. Computer Graphics A Programming approach - Steven Harington.
2. Interactive Computer Graphics - Newmann and Sproul
3. Computer Graphics - Rogers.

2. Compiler Construction

Unit I : Introduction to Compilers**:** verview, typical compiler Structure, Implementation. Programming Language Grammars: Elements of formal language grammars, derivation, reduction, synta tree, ambiguity, regular grammars and e pressions.

Unit II : Scanning and Parsing Techni ues: The scanner, top-down and bottom-up parsing, synta directed translation, Symbol table organization, Hash table organization, Linked List and Tree structured symbol tables, symbol table organization for structures and records.

Unit III : Memory Allocation: Static and dynamic memory allocation,array allocation and access, allocation for strings, structure allocation, common and e□uivalence allocation. Compilation of e□pressions.

Unit IV : Compilation of control structures: Control transfers, procedural calls, conditional e□ecution, iteration control constructs.

Unit V : Error detection, indication and recovery. Compilation of I/□ statements: Compilation of I/□ list, compilation of F□RMAT list, the I/□ routine, file control.

Unit VI : Code optimization: Major issues, optimizing transformations,local optimizations, program flow analysis, Global optimization, writing compilers

Boo□s:

1. Compiler construction □D.M. Dhamdhere, Macmillan India Ltd.
2. Principles of Compiler Design □Alfred V. Aho, □effrey D. Ullman

3. The Theory and Practice of Complier Writing □□P. Trembly, P.G. Sorenson McGraw Hill Publication
4. Engineering a compiler □□.D.Cooper and Linda Torczon, Elsevier Direct Publ.

Syllabus Prescribed for M.Sc. [Computer Software]

Semester-IV
Paper-□S1-Cyber Security & Digital Forensic

Unit I: Recent amendments in IT Act, internet & web technologies, web hosting and development, attributes in cyberspace and legal framework of cyberspace, hacking, virus, obscenity, pornography, programme manipulation, Copyright, Patent, software piracy, intellectual property rights, trademark, domain disputes, and computer security, etc.

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Unit III: Program Security: Secure programs, Non-malicious program errors, Viruses and other malicious code, Targeted malicious code, Controls against program threats File protection mechanism, Authentication: Authentication basics, Password, Challenge response, Biometrics. Network Security: Threats in networks, Network security control, Firewalls, Intrusion detection systems, Secure e-mail, Networks and cryptography, E□ample protocols: PEM, SSL, IPsec.

Unit IV: Principles of network forensics, Attack Trace back and attributes, Critical Needs Analysis. IDS: Network based Intrusion Detection and Prevention Systems, Host based Intrusion Previnsion System. Cloud Computing-Its Forensic and Security Aspects.

Unit V: Cyber Crime Investigations: Where Evidence Resides on Windows systems, Conducting a Windows investigation, File Auditing and Theft of information, Handling the Departing Employee, Steps in a Uni□ Investigation, Reviewing Pertinent Logs, Performing □eywords Searches, Reviewing Relevant Files, Identifying Unauthorized User Accounts or Groups, Identifying Rogue Processes, Checking for Unauthorized Access Points, Analyzing Trust Relationships, Detecting Trojan Loadable □ernel Models. Finding Network based Evidence, Generating Session data with TCP Trace, Reassembling sessions using TCP flow and Ethereal.

Unit VI: □pen source tools for digital forensics and Registry Forensic- □pen source, □pen source e□amination platform, preparing the e□amination system, using LINU□ and Windows as host, Study of Sleuth □it: Installing Sleuth □it, Sleuth □it tools (Volume layer tools, File system Layer tools, Data unit Layer tools, Metadata Layer Tools) Registry Analysis, Understanding Windows Registry and Registry Structure.

Books:

1. C. P. Pfleeger, and S. L. Pfleeger, —Security in Computing||, Pearson Education.
2. Computer Forensic Investigating Data and Image Files, EC Council Press
3. Robert Jones, Internet Forensics Using Digital Evidence to Solve Computer Crimes, O'Reilly Media Publication
4. Forouzan Data Communication and Networking McGraw Hill
5. Stallings, —Cryptography And Network Security: Principles and practice||
6. Kevin Mandia, Chris Prosise and Matt Pepe, Incident response and computer forensics, McGraw Hill Publication
7. Cory Altheide, Harlan Carvey, Digital Forensics with Open source Tools, Syngress Publication
8. Michael E Whitman and Herbert J Mattord, —Principles of Information Security||, Vikas Publishing House, New Delhi, 2003
9. Micki Krause, Harold F. Tipton, — Handbook of Information Security Management||, Vol 1-3 CRC

Paper-IS2-Soft Computing

Unit-I: Soft Computing: Introduction to soft computing, requirement, different tools and techniques, Soft computing Constituents, Characteristics of Neuro Computing and Soft Computing, Difference between Hard Computing and Soft Computing, usefulness and applications.

Unit-II: Neural Networks Basics of Neural Networks: Introduction to Neural Networks, Biological Neural Networks, McCulloch Pitt model, Supervised Learning algorithms: Perceptron (Single Layer, Multi layer), Linear separability, Delta learning rule, Back Propagation algorithm, Un-Supervised Learning algorithms: Hebbian Learning, Winner take all, Self Organizing Maps, Learning Vector Quantization.

Unit-III: Artificial Neural Network: Introduction, basic models, Hebb's learning, Adaline, Perceptron, Multilayer feed forward network, Back propagation, Different issues regarding convergence of Multilayer Perceptron, Competitive learning, Self-Organizing Feature Maps, Adaptive Resonance Theory, Associative Memories, Applications.

Unit-IV: Fuzzy Logic : Crisp set and Fuzzy set, Basic concepts of fuzzy sets, membership functions. Basic operations on fuzzy sets, Properties of fuzzy sets, Fuzzy relation. Hybrid System and its applications. Fuzzy relations and relation equations, Fuzzy numbers, Linguistic variables, Fuzzy logic, Linguistic hedges, Applications, fuzzy controllers, fuzzy pattern recognition, fuzzy image processing, fuzzy database.

Unit V :Introduction Basics of MATLAB, General Commands, Interactive Computation: Matrices and Vectors, Input, Indexing(or subscripting),Matrix manipulation, Creating vectors, Matrix and Array operations: Arithmetic operations, Relational operations, Logical operations, Elementary math functions ,Matrix functions, Character string, Array operations: Vectorization, Command line functions, using built in functions and on-line help, saving and loading data, plotting simple graph

Unit VI: Programming in MATLAB: Scripts and Functions: Script Files, Function Files: Executing a function, More on functions, sub functions, compiled function, the profiler , Language-specific features: Comments, continuation, global variables, loops, branches and control flow, Interactive input, recursion ,input/output, Advanced Data objects: Multidimensional matrices, structures, cells.

Graphics: Basic 2-D Plots: Style options, Labels, title, legend and other text objects, Axis control, zoom in, zoom out, modifying plots with the plot editor, overlay plots, specialized 2-D plots, Using subplot for Multiple Graphs,3-D Plots ,Handling Graphics :object handles, object properties, modifying an existing plot, complete control over the graphics layout, saving and printing graphs, Animation.

Books:

1.Principals of Soft Computing S M Deepa & S N Sivanandam (Wiley)
2. "Neural Networks, Fuzzy Logic and Genetic Algorithms" S.Rajasekaran and G.A.Vijayalakshmi Pai (PHI Learning.)
3. "Neural Networks A Classroom Approach" Satish Kumar (Tata McGrawHill).
4. "Fuzzy Set Theory and its Applications" Zimmermann H.S (Kluwer Academic Publishers.)
5.Getting started with MATLAB7. Rudra Pratap (Oxford)
6.Essentials of matlab programming. Stephen Chapman.

Paper-□S3-Web Content Management System

UNIT-I - Introduction to Content Management System(CMS), Web Content Management System(WCMS), features of WCMS, Types of CMS,
Wordpress: Introduction, Features, Installation & Configuration, Dashbord, WordPress Settings: Genaral, Writing, Reading, Discussion, Media, Permalink, Plugin, WordPress Categories: Add, Edit□□□□□□□□rr□□□□□□ □rd□r□□□□□□□□□ □rd□r□□□M□d□□□□ □rd□r□□□□□□□□□□□□□□□□ □ □□□□

UNIT-II - WordPress Plugins: View, Install, Customize, WordPress Users: User Roles, Add user, Edit user, delete users, WordPress Appearance, Host Transfer, Version Update, Spam Protection, Backup and restore, □ptimization, Reset password

UNIT-III - □oomla: Introduction, Installation & configuration, Control Panel, Toolbars, Menus: Create, Modify, Modules: Create, Breadcrumbs, Feed Display, Footer, Search, Random Image, Syndicate, □oomla Gobal Settings: System, Media, Language, Private, Mass E-mailing, Cash Management, User Settings, Debug

UNIT-IV - □oomla Advanced: Template Managere, Customization, Adding and Creating Templates, Customize logo, category management, adding content, formatting content, article metadata, adding banners, adding contacts, adding forums, Plugin manager, E□tension manager, Website Backup.

UNIT-V - Drupal: Introduction, Installation & configuration, Architecture, Main Menu, Blocks and Regions, Themes and layouts, Pages: Front and static, Create Blog, Create articles, Create Content, Modify Content, Publish Content, Manu Management, Ta□onomies, Comments, User Management, □ptimization, Site Backup, Site Upgrade

UNIT-VI- URL Alias, Site Search, Error Handling, Multilingual Content, Triggers and Actions, Social Networking, Internationalization, E□tension, Modules: Default Modules, Pane Modules, Book Module, Aggregator Module, Contact Module, Form Module, Poll Module, Site Security
Drupal E-Commerce- Setup Shopping Cart, Create Products, Create Categories, Setup Ta□es and Discounts, Receives Donations, Set up shipping, Set up payments, Invoice Generations, Email notifications, □rder History

Boo□s:

1. Word Press:Visual □uickstart Guide By Matt Beck, □essica Neuman Beck.
2. Professional wordpress: Design & Development By Brad Williams, David Damstra, Hal Sterm, Wro□Publication
3. WordPress Complete By Hasin Hayder, Packt Publishing
□□ Learning □oomla 3 E□tension Development-Third Edition - by Tim Plummer
□□ □oomla Programming By Mark De□ter & Louis Landry
□□ □oomla: Beginners Guide By Eric Tiggler
□□ The □fficial □oomla Book By □ennifer Marriot, Elin Waring
8. Mastering Drupal 8 □
9. Beginning Drupal 7- Tom Tomlison, Apress Publishing
10. Drupal-7 by David Mercer, PAC□T Publishing

Paper-□S□- Electi□e

1. Cloud Computing

Unit I: Cloud Computing Fundamental: History of cloud computing, Cloud Computing definition, private, public and hybrid cloud. Applications and challenges of cloud computing.
Types of Cloud Services: IaaS, PaaS, SaaS., Public Cloud Vs Private Clouds.

Unit II: Cloud Architecture: Introduction to Architecture, Benefits and challenges, Application availability, performance, security and disaster recovery□ future of Cloud Applications. Desktop and Device Management: Introduction- □bjectives, Desktop Virtualization- Across Industries Client Desktops, Desktop placement in the cloud Merits Desktop as a Service (DaaS), Desktop Management Watching the four areas Asset Management.

Unit III: Virtualization: Introduction to Virtualization, Network virtualization techni□ues, Virtual Machine (VM), VM Components and process of converting physical to VMs, Block virtualization and file level storage virtualization, Virtual LAN (VLAN) and Virtual SAN (VSAN)

Unit IV: Cloud Application Development: Service creation environments, Development environments, Amazon, Azure, Google App. Cloud Applications: Technologies and the processes re□uired when deploying web services□Deploying a web service from inside and outside a cloud architecture, advantages and disadvantages. Accessing the Cloud Introduction-□bjectives, Platforms Web Application Framework- Web Hosting Services Proprietary Methods, Web Applications API□s in Cloud Computing, Browsers for Cloud Computing Internet E□plorer Mozilla Firefo□Safari Chrome.

Unit V: Cloud Services Management: Reliability, availability and security of services deployed from the cloud. Performance and scalability of services, tools and technologies used to manage cloud services deployment□Cloud Economics : Cloud Computing infrastructures available for implementing cloud based services. Economics of choosing a Cloud platform for an organization, based on application re□uirements, economic constraints and business needs (e.g Amazon, Microsoft and Google, Salesforce.com, Ubuntu and Redhat)

Unit VI: Cloud Security: Cloud Security □verview, Cloud Security Challenges and Secure Cloud Software Re□uirements. Risks: Risk Management, Privacy and compliance risk. Software-as-a-Service Security, Security Governance, Security Monitoring, Security Architecture Design. Data Security, Application Security, Virtual Machine Security, Identity Management and Access Control, Autonomic Security.

Boo□s:

1. Toby Velte, Anthony Velte, Robert Elsenpeter, Cloud Computing, A Practical Approach □ISBN: 0071626948□
2. Rajkumar Buyya, Christian Vecchiola, S.TamaraiSelvi, □Mastering Cloud Computing□,TMGH,2013.
3. GautamShroff, Enterprise Cloud Computing Technology Architecture Applications □ISBN: 978-0521137355□
4. Ronald L. □rutz, Russell Dean Vines, □Cloud Security □ A comprehensive Guide to Secure Cloud Computing□, Wiley □India, 2010.
5. □ohn W.Rittinghouse and □ames F.Ransome, □Cloud Computing: Implementation, Management, and Security□, CRC Press, 2010.
6. □umar Saurabh, □Cloud Computing □ insights into New-Era Infrastructure□, Wiley India,2011.

2. Design and Analysis of Algorithm

Unit I :
Divide and Con□uer: General Method, Binary Search, Finding the ma□imum and minimum, Merger Sort, □uick Sort, Selection sort, strassen□s matri□multiplication.
Unit II :
Greedy Methods, □ptimal storage, □napsack Problem, □ob se□uencing with deadline, □ptimal merge patterns, minimum spanning trees, single source shortest path algorithm.
Unit III :
Dynamic Programming: General Method, multistage graphs, all pair shortest paths, □ptimal Binary search trees, 0/1 □napsack. Reliability design. Traveling salesman problem. Flow shop scheduling.
Unit IV :
Basic search and traversal techni□ues: General Method, Code □ptimization, AND/□R graph, Game trees , Bi-connected Components, Depth first search techni□ue.

Unit V :
Backtracking: General Method, the 8- □ueens problem, Sum of subsets. Graph Coloring, Hamiltonian Cycles, □napsack problem.

Unit VI :
Branch and Bound Techni□ues: General Method, 0/1 □napsack Problem, Traveling salesperson problem, Efficiency Considerations. Lower bound theory: comparison trees for sorting and searching.

Boo□s :
1. E. Horowitz & S. Sahani : Fundamentals of Computer Algorithm, (Golgotia)
2. Aho & Ullman : Analysis and Design of Algorithm (Addison- Wesley)
3. Hopcroft : Analysis of Algorithm (Addison- Wesley)
4. D. □nuth : The art of Computer Programming Vol I,II,III (Narosa Publishing)
5. Corman : Design and Analysis of Algorithm (PHI)
6. Aho : data tructure & Algorithm (Addison- Wesley)

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