

Gondwana University, Gadchiroli



Choice Based Credit System (CBCS) Syllabus of B.Sc. (Computer Science) - III Semester – V & VI Optional Subject (Three Years Degree Course) 2019-2020

**B.Sc.-III (Computer Science)
SEMESTER-V**

B.Sc.(Computer Science)– III (Semester-V)											
Subject	Paper Code	Paper Name	Total Period /Week	Cre dit	Theory(Th) Assessment			Practical (Prac.)		Total (Th +Prac)	
					IA	UE	Total	Min. Passing (40%)	UE		Min. Passing (40%)
Discipline Specific Elective Course (DSEC-I)	USCST09.1	(Select any Two) <ul style="list-style-type: none"> • E-Commerce & Web Designing • Database Programming with Oracle • Scripting Languages • Software Engineering 	6T + 1Tu (Per Batch)	6	10	50	60	48 Marks	30	12	150
	USCST09.2										
	USCST09.3										
	USCST09.4				10	50	60				
Skill Enhance ment Course (SEC-I)	USCST010.1	(Select Any One) <ul style="list-style-type: none"> • Computers for Managers • A Certification Course from IIT Spoken Tutorial, Mumbai • Personality Development • Accounting & Office Management 	1	2				20	--	--	--
	USCST010.2										
	USCST010.3				50	--	50				
	USCST010.4										

*Student must appear for University Practical Examination otherwise he/she will be treated as fail. However their Internal marks will be carried forward.

Note:- In a Group, if any student remains absent in one of the paper then candidate result will be considered as fail in that group even though he/she has scored minimum passing marks in other paper of that group. Candidate need to appear in both the papers of that group

B.Sc.–III
SEMESTER–V
(Computer Science)
PAPER-9.1(Elective I) :E-Commerce & Web Designing
[Max. Marks: 50]

UNIT-I: Introduction to E-Commerce

Introduction, Definition, e-Commerce and Thread Cycle, Benefits, Applications, e-Commerce Implementation, Electronics Market, Usage of e-Market, Advantages and Disadvantages of e-Market, Future of e-Market.

UNIT-II: Basic of HTML and Tag

Introduction to HTML - Introduction, Features of HTML, Advantages & Disadvantages of HTML, HTML Editors, Step to Create and View HTML Document, Basic Structure of HTML Program **Tags & Attributes**- Nesting of Tags, Classification of HTML Tags, Block Formatting Tags. **List** - Introduction to Lists, Unordered List, Ordered List, Definition List, Nested List, Difference Between Ordered and Unordered List.

UNIT-III: Working with HTML

Linking - Introduction, Type of Hyperlink Creation, Working with Links, Pathname and Types, Types of Linking or Anchors. **Graphics in Web Page** - Image Tag, Align Images, Embedding Inline Images and External Images. **Tables** - Basic table tags and their related attribute **Frames**- Frames, <Frame> and <Frameset> tags and related attributes.

UNIT-IV: Advanced HTML

Form designs, Form Controls, Text controls, password fields, radio buttons, and check boxes. Reset and submit buttons, form control selection, option processing and text area. **Introduction to CSS**: Concept of CSS, Creating of Style sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts), Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model (Introduction, Border properties, Padding Properties, Margin properties).

Books:

- 1) Dr. S.B. Kishor, "E-Commerce & Web Designing", Das GanuPrakashan, ISBN-978-93-81660-52-2
- 2) C.Xavier, "Web Technology and Design", TMH, 2010, ISBN-13:978-81-224-1450-9
- 3) Thomas Powel, "HTML & CSS: The Complete Reference", Fifth Edition, McGraw-Hill, ISBN-978-0-07-174170-5

References:

- 1) Complete HTML, BPB, 2010, ISBN-13:978-0-07-070194-6.
- 2) David Whitely, "e-Commerce- Strategy, Technology and Applications", McGraw Hill Education, ISBN-13: 978-0-07-044532-1
- 3) Jon Duckett, "HTML and CSS: Design and Build Websites", John Wiley & Sons Inc., ISBN-978-1-118-00818-8

B.Sc.–III
SEMESTER–V
(Computer Science)
PAPER-9.2(Elective II): DATABASE PROGRAMMING WITH ORACLE

[Max. Marks: 50]

UNIT – I: Introduction

RDBMS Concept, Introduction to Oracle, SQL Tools, Oracle as multi-User System, SQL, SQL *Plus, Getting Started with SQL, Writing SQL Commands, Components of SQL, Data Types, Database Users, Database Objects, Elements of SQL.

UNIT – II: SQL Languages

Data Definition Language : Creation of Table, Viewing table Structure, Data Integrity through Constraints, Altering Table, Dropping Table, Truncating Table. **Data Retrieval:** Select Command, SQL Operators, Clauses- Group by Clause, Having Clause, Order By Clause. **DML Operation:** Insert Update and Delete.

Transaction Control Language: Commit, Rollback, SavePoint. **Data Control Language:** Grant, Revoke.

UNIT - III: SQL Function and Database Objects

Sql *functions: Character Function, Case Manipulation, Numeric Functions, Date Function, Conversion Function, Conditional Functions, Nested Functions, Group Functions. **Database Objects:** Views, Sequence, Synonym. **Joins, Clusters, Set Operators, Locks and Sub query.**

UNIT - IV: PL/SQL

Basic Elements of Programming, Select. Into Statement, Exception Handling: Predefined Exception, When Other Exception, Cursor: Explicit Cursor, Explicit Cursor Attributes, Subprogram and Packages, Types used in Packages, Triggers.

Books:

- 1). Kevin Loney, Marlene Theriault, "Oracle 9i: DBA Handbook", TMH, ISBN: 78-0-07-048674-4.
- 2) Dr. S.B. Kishor, "Oracle (PL/SQL) Programming", Das GanuPrakashan, ISBN 978-81-921757-5-1
- 3) Ivan Bayross, " Oracle Developer 2000", BPB, 2006, ISBN : 8/7029-899-7

References:

- 1) Paul Hipsley, "Developing Client / Server Applications with oracle Developer/2000 TM", Techmedia, 1997, ISBN – 81-87150-02-X
- 2) Ivan Bayross, " Commercial Application Development using Oracle Developer 2000 Forms 6i", BPB, 2003, ISBN : 81-7656-742-6

B.Sc.–III
SEMESTER–V
(Computer Science)
PAPER-9.3(Elective III): SCRIPTING LANGUAGES

[Max. Marks: 50]

UNIT I: INTRODUCTION TO JAVA SCRIPT

Features of JavaScript, Structure and Basic Syntax of JavaScript, Data Types, Operators Supported By JavaScript, Control Structure, Dialog Boxes Supported By JavaScript, Functions In JavaScript Built In Function, User Defined Function, Recursion, Arrays. **JavaScript Document Object Model** - Built-In Objects In JavaScript, String Object, MathObject, Date Object, Boolean Object, Number Object, User Defined Objects, Handling (WEB PAGE) Events Using JavaScript.

UNIT II: INTRODUCTION TO VBSCRIPT

Features of VBScript, Data Types in VBScript, Elements of VBScript: Identifiers, Operators, Control Statements, Control Structure. **Functions** - Variant Function, Math Function, Formatting Function, String ManipulationFunction, Type Conversion Methods Supported By VBScript, Arrays in VBScript, Regular Expression.

UNIT III: CSS

Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, ControllingFonts) Working with Block elements and Objects, Working with Lists and Table, CSS Id and Class Box Model(Introduction, Border properties, Padding Properties, Margin properties),CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector),CSS Color Creating page Layout and Site Designs.

UNIT IV: INTRODUCTION TO XML

What is XML, XML verses HTML, XML Terminology, XML Standards,XML Syntax Checking, the idea of mark-up, XML Structure, Organizing information in XML, Creating well-formed XML, and XML Namespaces. **DTD** - Introduction to DTD, Document Type Declaration, Element Type Declaration, Attribute Declaration, Conditional Section, Limitations of DTD.

Books:

- 1) Dr. S.B. Kishor, S.S. Gudelliwar, Dr.Rajani D. Singh, “WEB DESIGNING (HTML, JAVA SCRIPT & VB SCRIPT”, Das GanuPrakashan, ISBN- 978-93-81660-05-08.
- 2) Beginning CSS: Cascading Style Sheets for Web Design, Wiley India, author Ian Pouncey, Richard York, and ISBN: 978-0-470-89152-0.

References:

- 1) NIIT, “Building Web Application”, Prentice Hall of India, ISBN 81-203-2714-4.
- 2) Lee Purcell, Mary Jane Mara, “The ABCs of JavaScript”, ISBN 81-7029-826-1.

**B.Sc.–III
SEMESTER–V
(Computer Science)
PAPER-9.4(Elective IV): SOFTWARE ENGINEERING**

[Max. Marks: 50

UNIT - I: INTRODUCTION TO SOFTWARE ENGINEERING

Introduction to Software Engineering: The Evolving Role of Software, Changing Nature of Software, Software myths. **A Generic view of process:** Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

UNIT - II: PROCESS MODELS

Process Models:The waterfall model, Incremental process models, Evolutionary process models, The Unified process. **Software Requirements:** Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document. **Requirements engineering process:** Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management.

UNIT - III: SYSTEM MODELS

System Models:Context Models, Behavioral models, Data models, Object models, structured methods. **Design Engineering:** Design process and Design quality, Design concepts, the design model. **Creating an architectural Design:** Software architecture, Data design, Architectural styles and patterns, Architectural Design.

UNIT - IV: TESTING STRATEGIES

Testing Strategies:A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. **Product metrics:** Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. **Metrics for Process and Products:** Software Measurement, Metrics for software quality.

Books:

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education.
3. Software Engineering- K.K. Agarwal&Yogesh Singh, New Age International Publishers

Reference:

1. Software Engineering, an Engineering approach- James F. Peters, WitoldPedrycz, John Wiely.
2. Systems Analysis and Design- ShelyCashmanRosenblatt,Thomson Publications.
3. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill Companies

(Select Any One)
B.Sc.–III
SEMESTER–V
(Computer Science)
Paper -10.1(Elective I) -: Computers for Managers

[50 Marks

Unit I

History of Internet, Internet Applications, Introduction to MIS, Structure of MIS, ERP, CRM, SCM.

Unit II

Business Intelligence, Business Analytics: Online Analytical Processing Reporting and Querying, Online Analytical Processing.

Unit III

Data Text Web Mining and Predictive Analytics, Text Mining, Web Mining, Predictive Analytics.

Unit IV

Data Visualization, Geographic Information Systems (GIS), Virtual Reality, Real-Time Business Intelligence (BI), Competitive Intelligence (CI), the Role of Scorecards and Dashboards in Performance Management.

Books:

1. Computer for Manager, Dr. S. B. Kishor, Dr. Niyaz Sheikh, Dr. ChitraDhawale, Dr. Rajani Singh, Publication Das Ganu
2. System Analysis and Design, E. Award, 2ND Edition, Galgotia Publication.

**B.Sc.–III
SEMESTER–V
(Computer Science)**

**Paper -10.2(Elective II) -: A Certification Course from IIT Spoken Tutorial, Mumbai
[Max. Marks: 50**

Enroll and Select any one course from IIT Spoken Tutorial, Mumbai

B.Sc.–III
SEMESTER–V
(Computer Science)
Paper -10.3(Elective III) -: Personality Development

[Max Marks: 50

UNIT- I SPOKEN ENGLISH BASIC COURSE

Improve accuracy in Grammar, Expand vocabulary, Tenses, Prepositions, Modals, Voices, Direct/Indirect Speech, Adverbs, Adjectives. **Interpersonal skills:** Introduction to Interpersonal Relations, Analysis of Life position.

UNIT-II COMMUNICATION SKILLS

Introduction to Communication, Flow of Communication, Listening, Barriers of Communication, How to overcome barriers of communication. **Stress Management:** Introduction to Stress Causes of Stress, Impact Management Stress, And Managing Stress.

UNIT –III GROUP DYNAMICS &TEAM BUILDING

Group Dynamics, Importance of groups in organization, Team Interactions in group, How to build a good team? **Personality Development:** Inner Personality Development, Role of motivation & body language, Filling the GAP- Grooming, Attitude, Personality. **Creative Thinking:** Express creativity in everyday situations, know the creative thinking process, and develop a positive attitude.

UNIT-IV BUSINESS WRITING

Use of Simple structure while writing, apply a positive tone in business communication. **Time Management:** Time as a Resource, Identify Important Time, Management Wasters, Techniques for better Time Management. **Motivation:** Introduction to Motivation, Relevance and types of Motivation.

Books:

- Vijay Agrawal, "Personality Development for Students", Paperback, 1stEdⁿ, ISBN:9789382419259,938241925X
- Sourav Das , " The Personality Development Book"

Reference:

- BarunMitra , "Personality Development and Soft skills", Oxford publications
- "Soft skill Development", SaiJyoti publications, Prashant A. Dhanwalkar, S.R.Sharma, Gunjan Sharma

B.Sc.–III
SEMESTER–V
(Computer Science)
Paper -10.4(Elective IV) -: ACCOUNTING & OFFICE MANAGEMENT
[Max. Marks: 50

UNIT I: CONCEPT OF OFFICE MANAGEMENT

Meaning and definition of office, Importance of office, Functions of Modern office, Sections and function of office departments, Meanings and definitions of Management, Functions of management, Meaning and definitions of office management, Approach of office management 1) Conventional office Management 2) Artistic office management 3) Scientific office management, Principles of office management, Functions of office management.

UNIT II: OFFICE ORGANIZING

Meaning and definition of office organization, Importance of office organization, Principles of office organization, Types of office organization, Meaning and definition of Delegation of Authority, Responsibility, Importance, features and factors of delegation of authority and responsibility, Principles of Delegation of Authority and responsibility, Problems in Delegation of Authority and responsibility, Job specialization, Job analysis and Job description, Meaning and Importance of organizational Relationship, Meaning of Span of Authority, Informal Organization, Conflict in Organization, Causes of organizational change.

UNIT III: OFFICE COMMUNICATION

Meaning and definition of Communication, Importance of Communication, Features of Communication, Elements of Communication, Scope of Communication, Types and Media of communication, Principles of communication, Barriers in communication, Meaning, definition and principles of coordination, Relation between coordination and communication.

UNIT IV: OFFICE MANUALS

Meaning and definition of office Manuals, Purpose of office manual, Importance of office Manual, Types of Office Manual, Manual in use, Contents of Office manuals, Sources of Manual materials, Procedure of preparation of Office manual, Distribution revision and maintenance of office manuals, Evaluation of Office manuals, Advantages and Disadvantages of office manual, By use & purpose, Primary memory & Secondary memory, Input and output Devices, Merit and Demerit of computer, MS – Word, Excel, PowerPoint, Meaning, Applications Features Merit and Demerit, Introduction of Internet, Email- Creating receiving & sending Email.

Books

- 1) Introduction to Computers, Dr Darrell W Hajek, ISBN-10: 1545236461
- 2) Bank Financial Management,

B.Sc.–III
SEMESTER–V
(Computer Science)
Practical based on WEB DESIGNING

- 1) Demonstrate of Logical and physical (Formatting) style tags
- 2) Demonstration of Level of Headings and Block Alignment
- 3) Demonstrate the Font Face, Color and Size. And address tag
- 4) Demonstrate the HR Tag and Alignment
- 5) Demonstrate Ordered and unordered list
- 6) Demonstrate for internal linking
- 7) Demonstrate the use of table
- 8) Demonstration of browsing by category
- 9) Program for designing a simple form
- 10) Demonstrate the Master page to link another page
- 11) Demonstration of Link to Web Page
- 12) Demonstration of Compose Mail
- 13) Demonstrate to show or load inline image say waterfall.JPG
- 14) Demonstrate of Image Hyperlink
- 15) Demonstration of cell padding attributes
- 16) Demonstrate the use of element selector, id selector and class selector with CSS
- 17) Create a Navigation (with Dropdown) with CSS
- 18) Create a CSS Grid
- 19) Style the element which is not empty with CSS
- 20) Create a CSS based Zebra Striped table

PracticalbasedonDATABASE PROGRAMMING WITH ORACLE

- 1) Create following Tables and Execute the respective PL/SQL blocks.
 - i. Create table employee with the fields (empno,ename,job, hiredate, jadata&sal).
 - ii. Create table Math with fields (numb, square, cube &square_root).
 - iii. Create table Patient with fields (pname, age, prescription).
 - iv. Create table Musicalbum with fields (title, hero, singer, qth).
 - v. Create table Stu with fields (name & marks).
 - vi. Create table errorh with fields (error_no& description).
 - vii. Create a table DONAR where following fields(Donar no., donar name, city, age, Sex, Blood group, quantity of blood given, date of donation)
- 2) Write a PL/SQL block to accept employee number and display his/her job, joining date and salary of employee. Define the variable using %rowtype.
- 3) Write a PL/SQL block to accept three paper marks and display result if student scores more than 35 marks in each paper and also specify the class.
- 4) Write a PL/SQL block to find the square, cube, square root of nos.bet 1 & 25 using loop.
- 5) Write a program to divide a number by character number. If any error occurs it should be handled properly, and store the error number and its description in a table called error.
- 6) Write a PL/SQL block to accept and insert a valid data into the table patient. Write appropriate user defined exception.
- 7) Write a PL/SQL block, to display only title and quality of all album stored in the table MusicAlbum.
- 8) Write a PL/SQL block to delete the records from table MusicalAlbum where quantity is less than 4 using cursor.
- 9) Write a procedure to swap two numbers.
- 10) Write a function which is able to perform addition of two numbers.
- 11) Write a function which is able to perform addition of two numbers as well as addition of three number using default argument concepts.
- 12) Write a package, which contains two procedures.
- 13) Write trigger before inserting or updating a name into the table stud name will be automatically converted into uppercase.
- 14) Write a trigger on a table stud, that whenever user try to insert a marks of math either less than zero or greater than 100 a trigger must fire before insertion or updating of records.
- 15) Write a PL/SQL block to accept donor name and display the information of donor. If duplicate or no donor found then proper exception should be raised.
- 16) Create a procedure that displays the information of donor by accepting donor number.
- 17) Write a trigger which will not allow the user to work on table DONAR during period say 9 am to 9:30 am, on any day.
- 18) Use DONAR table and write a PL/SQL block to accept donar number and display the donar detail and find how many days it pass from the last donation.
- 19) Write a program to insert values into a table stud. Write a PL/Sql , main program to call the procedure stud insert.

B.Sc.(ComputerScience)– III(Semester-VI)

Subject	Paper Code	Paper Name	Total Period /Week	Credit	Theory(Th) Assessment			Practical (Prac.)		Total (Th +Prac)		
					IA	UE	Total	Min. Passing (40%)	UE		Min. Passing (40%)	
Discipline Specific Elective Course (DSEC-IV)	USCST11.1	(Select Any Two) • CORE JAVA • DATA COMMUNICATION WITH CLOUD COMPUTING • PYTHON PROGRAMMING • SOFTWARE TESTING	6T + 1Tu (Per Batch)	6	10	50	60	48 Marks	30	12	150	
	USCST11.2				10	50	60					
USCST11.3	USCST12.1		(Select Any One) • Media Management • A Certification Course from MOOC • E- Waste Management • PC- Maintenance	1	2	50	--	50	20	-	-	-
USCST11.4												
	USCST12.3											
	USCST12.4											

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Note:- In a Group, if any student remains absent in one of the paper then candidate result will be considered as fail in that group even though he/she has scored minimum passing marks in other paper of that group. Candidate need to appear in both the papers of that group

(Select Any Two)
B.Sc.–III
SEMESTER–VI
(Computer Science)
PAPER-11.1 (Elective I): CORE JAVA

[Max. Marks: 50]

UNIT – I: Introduction to Java

History of Java, Features of Java, JDK Environment, Java Virtual Machine, Garbage Collection

Programming Concepts: Identifiers and Keywords, Data Types in Java, Expressions in Java, Control structures, decision making statements, Arrays and its types.

UNIT – II: Objects and Classes

Object Fundamentals and Classes, Pass by value, ‘this’ reference, Data Hiding, Overloading, Overriding, Constructors, Finalization, Subclasses (Inheritance), Relationship between super class object and subclass object. **Language Features:** Scope rules, Static data, Static methods, Static blocks, Modifiers of Class, Method, Data Members and Variable, Abstract Classes, Interfaces, **Packages :** Importing Packages and Classes, User defined packages.

UNIT – III: Exception Handling & Multithreading

Exceptions, Types of Exceptions try, catch, finally, throw, throws keywords, creating your own exception
Multithreading: Multithreading Concept, Thread Life Cycle, Creating multithreading Application, Thread Priorities, Thread synchronization.

UNIT – IV: Abstract Window Toolkit & Applets

Abstract Window Toolkit: Components and Graphics, Containers, Frames and Panels, Layout Managers- Border Layout, Flow Layout, Grid Layout, Card Layout, AWT all Components, Event Delegation Model, Event Source and Handlers, Event Categories, Listeners, **Applets-**Applet Life Cycle, Applet Context, Inter applet communication.

Books:

- 1) E. Balaguruswamy, “Programming with Java - A Primer”, The Sun Micro Systems Press, New Delhi, ISBN 81-265-0931-7
- 2) Peter Van der Linden, “Just Java”, The Sun Micro Systems Press, New Delhi, ISBN, 0130897930
- 3) RashmiKanta Das, “Core Java For Beginners”, Vikas Publishing House PVT LTD ISBN-978-93259-6850-9

References:

- 1) Cay S Horstmann Gary Cornell, “Core JAVA 2 Vol -1, 2”, The Sun Micro Systems Press, New Delhi, ISBN-13: 978-0470105559
- 2) Herbert Schildt, “Java Fundamentals: A Comprehensive Introduction”, Tata McGraw-Hill, ISBN-13: 978-1-25-900659-3

B.Sc.–III
SEMESTER–VI
(Computer Science)
Paper-11.2(Elective II)
DATA COMMUNICATION WITH CLOUD COMPUTING

[Max.Marks: 50]

UNIT I: Data Communication

Data Transmission- Concept and Terminology, Analog and Digital Data Transmission, Transmission Impairment, Transmission Media. **Data Encoding :** Digital and Analog Data,

Signals: Digital and Analog Signal. Digital Data Communication- Asynchronous and Synchronous Transmission, Error Detection Technique, Interfacing. **Data Link Controls :** Line Configuration, Flow Control, Error Controls, Data Link Control Protocols. **Multiplexing :** Frequency Division Multiplexes, Synchronous Time Division Multiplexing.

UNIT II: Data Communication Network

Communication Network : Circuit Switching, Packet Switching - Packet Switching Principal, Virtual Circuit and Datagram, Message Switching, Single Node Network, Digital Network Concept. Routing, X.25. **LAN and MAN :** LAN, Types of LAN, MAN Technology. **Topologies:** Bus, Tress ,Star, Ring Medium Access Control Protocols, LAN/MAN Standards.

UNIT III: Communication Architecture

Protocols and Architecture: Protocol, The Layered Approach, OSI Model, TCP/IP Protocol Suite, System Network Architecture, WAN Architecture and Transmission Mechanism. **Internetworking:** Principles of Internetworking, The Bridge, Routing With Bridge, Connectionless Internetworking, Router-Level Protocol, Connection Oriented Internetworking.

UNIT IV: Cloud Computing Basics

Cloud Computing : Overview , History, Characteristics/Capabilities of Clouds, Cloud Components, First stake holders of Cloud market, Virtualization, Cloud Computing Architecture. Cloud Computing Services :SaaS, PaaS, IaaS, Cloud Computing Deployment Models – Public, Private, Hybrid and others. Cloud Benefits and Limitations, Security concerns & benefits. Cloud Environment Roles, cloud vs. Distributed Computing, Regulatory issues with cloud.

Books:

- 1) C.S.V Murthy, “ Data Communication and Networking”, Himalaya Publishing House, ISBN-81-7866-181-0
- 2) Forouzan, ”Data Communication and Network”, TMH, ISBN-0-07-049935-7
- 3) Toby Velte, Anthony Velte, “Cloud Computing A Practical Approach”, McGraw-hill, ISBN : 0071626948.

References:

- 1) Tim Mather, SubraKumarsamy, ” Cloud Security and Privacy”, ISBN:0596802765
- 2) RajkumarBuyya, “ Mastering cloud computing”, TMH
- 3) Willam Stalling “Data and Computer Communication”, PHI, ISBN-81-7808-442-2

B.Sc.–III
SEMESTER–VI
(Computer Science)
Paper-11.3(Elective III)
PYTHON PROGRAMMING

[Max Marks:50]

UNIT - I: Features, basic syntax, Writing and executing simple program, Basic Data Types such as numbers, stringsetc Declaring variables, Performing assignments, arithmetic operations, Simple **Input-Output** :Printing on screen, reading data from keyboard.

UNIT –II: Sequence Control – Precedence of operators, Type conversion. **Conditional Statements:** if, if-else, nested if –else looping: for, while, nested loops, **Control statements:** Terminating loops, skipping specific conditions**String Manipulation:** declaring strings, string functions.**Manipulating Collections:** Lists, Tuples. Dictionaries – Concept of dictionary, techniques to create, update& delete dictionary items.

UNIT –III: Functions: Defining a function, calling a function, Advantages of functions, types of functions, function parameters, Formal parameters, Actual parameters, and anonymous functions, global and local variables. **Modules:** Importing module, Creating & exploring modules, Math module, Random module, Time module,

UNIT –IV: Exception Handling: Exception, Except clause, try and finally clause, user defined exception. **OOPs Concept:** Class and Object, attributes, Inheritance, Overloading, Overriding, Data hiding.

Books:

- 1) Charles Dierbach, Introduction to Computer Science using Python, Wiley, 2013
- 2) James Payne ,Beginning Python: Using Python 2.6 and Python 3, Wiley India, 2010

References:

1. Paul Gries , Jennifer Campbell, Jason Montojo, Practical Programming: An Introduction to Computer Science Using Python 3, Pragmatic Bookshelf, 2/E 2014
2. AdeshPandey, Programming Languages – Principles and Paradigms, Narosa, 2008

**B.Sc.–III SEMESTER–VI
(Computer Science)
Paper-11.4(Elective IV) SOFTWARE TESTING**

[Max Marks:50]

UNIT - I:

Introduction: Testing as an Engineering Activity, Testing as a Process, testing axioms, Basic Definitions Software Testing Principles, The Tester's Role in a Software Development Organization, Origins of Defects, cost of defects, Defect Classes, The Defect Repository and Test Design , Defect Examples, Developer/Tester Support for Developing a Defect Repository, Defect Prevention Strategies.

UNIT - II:

Test Case Design : Test Case Design Strategies, Using Black Box Approach to Test Case Design, Random Testing, Requirements based testing, Boundary Value Analysis, Decision tables, Equivalence Class Partitioning, State-based testing, Cause-effect graphing, Error guessing, Compatibility testing, User documentation testing, Domain testing Using White Box Approach to Test design, Test Adequacy Criteria, static testing vs. structural testing, code functional testing, Coverage and Control Flow Graphs, Covering Code Logic, Paths, Their Role in White-box Based Test Design, code complexity testing, Evaluating Test Adequacy Criteria.

UNIT - III:

Levels Of Testing : The Need for Levels of Testing, Unit Test, Unit Test Planning, Designing the Unit Tests, The Test Harness, Running the Unit tests and Recording results, Integration tests, Designing Integration Tests, Integration Test Planning, Scenario testing, Defect bash elimination.

System Testing, Acceptance testing, Performance testing, Regression Testing, Internationalization testing, Ad-hoc testing - Alpha, Beta Tests, testing OO systems, Usability and Accessibility testing, Configuration testing, Compatibility testing, Testing the documentation, Website testing

UNIT - IV:

Test Management : People and organizational issues in testing, organization structures for testing teams, testing services, Test Planning, Test Plan Components, Test Plan Attachments, Locating Test Items – test management, test process, Reporting Test Results, The role of three groups in Test Planning and Policy Development, Introducing the test specialist, Skills needed by a test specialist, Building a Testing Group.

Reference Books:

1. SrinivasanDesikan andGopaldaswamy Ramesh, “Software Testing – Principles and Practices”, Pearson education, 2006.
2. Ilene Burnstein, “Practical Software Testing”, Springer International Edition,Process”, Pearson Education, 1995
3. Boris Beizer, “Software Testing Techniques” – 2nd Edition, Van NostrandReinhold New York, 1990.

B.Sc.–II SEMESTER–VI
(Computer Science)
Paper-12.1 (Elective I) –:Media Management
[Max. Marks: 50]

UNIT- I: PRINCIPLES OF MEDIA MANAGEMENT

Principles of media management and their significance. Media as an industry and profession.

UNIT- II: OWNERSHIP

Ownership patterns of mass-media in India: sole proprietorship, partnership, private limited companies, Public limited companies, trusts, co-operatives, religious institutions (societies) and franchises (chains).

UNIT –III: INDIAN MEDIA

Foreign equity in Indian media (including print media) and Press Commissions on Indian newspaper. Management structure, Organizational structure. Functions of different departments: General Administration, Editorial, Finance.

UNIT- IV: CIRCULATION AND MARKETING

Circulation (sales promotion), Marketing (Advertising), Human Resource and Production. Economics of print and electronic media.

BOOKS:

1. Media Management: Leveraging Content for Profitable Growth Andrej Vizjak, Max Josef Ringlstetter Springer Science & Business Media, 10-Dec-2002 Scott Basham, "Pagemaker in Easy Steps", Dream Tech, ISBN: 978-81-7722-0001
2. Kogent Learning Solution, "Corel Draw in Easy Steps", Dream Tech ISBN: 978-81-7722-960-8
3. "Photoshop in Easy Steps", Kogent Learning Solution, Dream Tech ISBN: 978-93-5004-078-2

**B.Sc.–III SEMESTER–VI
(Computer Science)
Paper-12.2 (Elective II) –:A Certification Course from MOOC**

[Max. Marks: 50]

Enroll and Select any one course from Certification Course from MOOC

**B.Sc.–III SEMESTER–VI
(Computer Science)
Paper-12.3 (Elective III) –:E- Waste Management**

[Max. Marks: 50

UNIT – I SOURCES, COMPOSITION AND CHARACTERISTIC

Sources, Composition and characteristic of hazardous waste, Hazardous Waste (Management and Handling) Rules, 1989 and amendments, Federal Hazardous Waste Regulations under RCRA, Superfund, CERCLA and SARA. Toxicology, public health impact, Protocols, issues and challenges in transportation of hazardous waste.

UNIT – II CHARACTERIZATION OF MEDICAL WASTE

Characterization of medical waste- Bio-medical wastes (Management and Handling) Rules, 1998, Amendments and guidelines, segregation, packaging, storage, transport of infectious waste. Techniques of Bio-medical waste management. Health and safety rules. Protocols, issues and challenges in transportation of Biomedical waste.

UNIT – III TREATMENT METHOD

Treatment method- Autoclave, Hydroclave, Microwave, Chemical Disinfection, Solidification and stabilization, Bioremediation, Thermal Conversion Technologies, accumulation and storage of hazardous waste, land disposal of hazardous waste, other treatment and disposal method. Common Hazardous Waste Treatment facilities (TSDF).

UNIT – IV E-WASTE

E-waste: Introduction, toxicity due to hazardous substances in e-waste and their impacts, domestic e-waste disposal, e-waste management, technologies for recovery of resource from electronic waste, guidelines for environmentally sound management of e-waste, occupational and environmental health perspectives of recycling e-waste in India.

Books:

1. Tchobanoglous G., Theisen H., Viquel S.A., “Integrated Solid Waste Management: Engineering, Principles and Management issues”, Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. CPHEEO Manual on Municipal Solid Waste Management.

Reference Books:

1. Peavy H.S., Rowe D.R., Tchobanoglous G., “Environmental Engineering”, Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. Cunningham W.P., Cunningham M.A., “Principles of Environmental Science”, Tata McGraw Hill Publishing Company Ltd., New Delhi.
3. Johri R., “E-waste: implications, regulations, and management in India and current global best practices”, TERI Press, New Delhi.
4. [R4] Krishnamoorthy B., “Environmental Management, Text Book and Cases”, PHI Learning (P) Ltd., New Delhi.

**B.Sc.–III SEMESTER–VI
(Computer Science)
Paper-12.4 (Elective IV) –: PC-Maintenance**

[Max. Marks: 50

Unit I: Preventive Maintenance

Introduction, Need, Tools, Materials.Procedures : Active Hardware Maintenance, Active Software Maintenance, Passive Maintenance Procedures, Heat and Temperature Control, Dust and Pollution Control, EMI Electrostatic Discharge Control, Humidity and Corrosion Control, Preventive Maintenance Schedule. BIOS and CMOS, Working with the BIOS Setup Program.

Unit II: CPU and Monitor

History & Study of Different Types of CPUs, Terminology Used with CPU, Data Processing Inside CPU, RAM & ROM, Different Types of ROM, Virtual Memory, Installing and Removing Memory. Video Cards and Monitors, Display Resolution, Features, Video Driver, CRTs Working, LCDs Working, Monitor Resolution, Interfacing, Refresh Rate, Monitor Driver, Adjusting Display Settings in Windows

Unit III: Study of Drives

Study of Different Types of Drives, Hard Drive Interfaces- IDE, SCSI, SATA Hard Drive Performance, Installing Hard Drives, Partitioning, Disk Formatting, Common Hard Drive Problems. Installation of Operating System and Software: Installing Video Card, Installing The CD Rom Drive , Installing Key Board and Mouse, Installing Sound Card, Installing Modem, Installing the Motherboard , Installing the Power Supply.

Unit IV: Study of Printer, Formatting and Trouble Shooting

Printer Features, Printer Performance, Print Quality, Print Speed, Printer Types, Printer Working, Installation of Printer Driver, Cleaning a Printer, Common Printer Problems. **Formatting:** Formatting PC, Backup of Data Before Formatting, System Restore, Precautions for Formatting.

Trouble Shooting: Diagnostic and Repair Tools - Diagnostic Software Tools- Diagnostic Hardware Tools, Assembling and Disassembling PC. Troubleshooting Display Problems, Memory Troubleshooting, Power Supply Testing and Problems Troubleshooting. Cleaning and Trouble Shooting of Keyboards, Mouse, Front Panel Indicators and Speakers Troubleshooting.

Books:

- 1) Fundamentals of Computers - Raja Raman (Prentice Hall of India)), ISBN 81-203-2581-8
- 2) Basics of Computer Hardware - BPB Pub
- 3) Troubleshooting Your Pcs for Dummies 3rd Edition – Dan Gookin, Willey Publishing Inc. ISBN : 9780470230770

B.Sc.–III(Computer Science)
SEMESTER-VI
Practical based on: Core JAVA

1. Write a program using **else if ladder** for grading the students in an academic institute. The grading is done according to the following rules.

AVERAGE MARKS	GRADE
80 to 100	Honors
60 to 79	First division
50 to 59	Second Division
40 to 49	Third Division
0 to 39	Fail

2. Write an algorithm, draw a flow chart and write a program to find the **area** of the following using **switch case**.
- Addition
 - Subtraction
 - Multiplication
 - Division
 - Power
3. Write an algorithm, draw a flow chart and write a program to generate the following output:

a. 1	b. 5 4 3 2 1
1 2	5 4 3 2
1 2 3	5 4 3
1 2 3 4	5 4
1 2 3 4 5	5

- Write an algorithm, draw a flow chart and write a program to search a number in an array.
- Write an algorithm, draw a flow chart and write a program to for Constructor Overloading
- Write an algorithm, draw a flow chart and write a program to illustrate Call By Value and Call By Reference.
- Write an algorithm, draw a flow chart and write a program using concept of package.
- Write an algorithm, draw a flow chart and write a program to use different methods of string class (Equal(), indexOf(), compareTo(), concat(), replace(), trim())
- Write an algorithm, draw a flow chart and write a program to display Multiple Inheritance means interface.
- Write an algorithm, draw a flow chart and write a program to display simple Applet.
- Write an algorithm, draw a flow chart and write a program to demonstrate Border Layout.
- Write an algorithm, draw a flow chart and write a program for illustrate the concept of Threading
- Write an algorithm, draw a flow chart and write a program to use different methods of Thread class.
- Write an algorithm, draw a flow chart and write a program for Exception Handling.
- Write an algorithm, draw a flow chart and write a program for Throwing our own Exceptions.
- Write an algorithm, draw a flow chart and write a program for using frame object displaying:- menu as “FILE” with menu items “NEW”,”OPEN”,”CLOSE”,“EXIT” & “EDIT” with menu Items. “CUT”, “COPY”, “PASTE”.
- Write an algorithm, draw a flow chart and write a program for Demonstrating Panel and Text Area Using null Layout.

18. Write an algorithm, draw a flow chart and write a program for List Component for single and multiple options using Grid Layout.
19. Write an algorithm, draw a flow chart and write a program for Checkbox group using Flow Layout and display its state.