Gondwana University, Gadchiroli

Choice Based Credit System (CBCS)

Syllabus
of
M.Sc. (Computer Science) - I

(Two Years Degree Course)

Computer Science
Board

2016-2017

M.Sc. (Computer Science) – I (Semester - I)								
Subject	**Paper Code**	**Paper Name**	**Total Period /Week**	**Credit**	**% of Assessment**			
					IA	**UE**	**Total**	**Min. Passing (40%)**
Core	**PSCSCT01**	**Advanced Java**	4	4	20	80	100	40
	PSCSCT02	**Discrete Mathematics**	4	4	20	80	100	40
	PSCSCT03	**Data Warehouse & SQL**	4	4	20	80	100	40
	PSCSCT04	**Scripting Language & Information Retrieval**	4	4	20	80	100	40
Core Lab	**PSCSCP01**	**Practical based on PSCST01**	8	4	20	80	100	40
	PSCSCP02	**Practical based on PSCST03 & PSCST04**	8	4	20	80	100	40
Ability Enhancement	**PSCSCS01**	**Seminar**	2	1	25	-	25	10
		Total	**34**	**25**	**145**	**480**	**625**	**250**

- **Core:** Major theory papers in the concerned subject.
- **Discipline Specific Elective:** These papers will be specialization in the concerned subject.
- **Skill Enhancement course:** Student can choose this paper from any subject.
- From Elective Courses (Either Skill based and Discipline Specific), students need to select one paper form each.
- **IA**(Internal Assessment) :It will be evaluated by Internal Examiner appointed by College in consultation with the University. (Refer Appendix 1)
- **UE**(University Examination): It will be evaluated by External Examiner appointed by University. (Refer Appendix 1 & 3)
- **Period:** Each period is of 48 minutes or as per Government direction from time to time.
- In Paper Code
  - 1st Letter (U) : Represent it a Under Graduate Course.
  - 2nd Letter (S) : Represent it is Science Faculty
  - Next 3 Letter (CSC) : Represent the subject Computer Science
  - Next Letter (T/P) : T : Represent Theory Paper (Refer Appendix 1)
    P : Represent Practical/Project (Refer Appendix 1 & 2)

S : Represent Seminar (Refer Appendix 1)

- Last two letter : Represent Paper No. for Ex. 01 Represent Paper no. 1

- **Lab* :**

1) Not more than two students should be allowed to do practical on one machine.

2) Wherever possible Practical's should be perform using Open Source Software.

Note: Student must appear for University Practical Examination.

Note : Direction and Scheme of course is available in the website of Gondwana University, Gadchiroli (www.gondwana.digitaluniversity.ac)

M.Sc. (Computer Science) – I (Semester - II)								
Subject	**Paper Code**	**Paper Name**	**Total Period /Week**	**Credit**	**% of Assessment**			
					IA	**UE**	**Total**	**Min. Passing (40%)**
Core	**PSCSCT05**	**Theory of Computatio & System Programming**	4	4	20	80	100	40
	PSCSCT06	**VB.NET**	4	4	20	80	100	40
	PSCSCT07	**Web Technologies**	4	4	20	80	100	40
	PSCSCT08	**Software Engineering**	4	4	20	80	100	40
Core Lab	**PSCSCP03**	**Practical based on PSCST06**	6	4	20	80	100	40
	PSCSCP04	**Practical based PSCST07**	6	4	20	80	100	40
Ability Enhancement	**PSCSCS02**	**Seminar**	2	1	25	-	25	10
		Total	**32**	**25**	**145**	**480**	**625**	**250**

M.Sc. - I (Computer Science)

SEMESTER – I

M.Sc. (Computer Science) - I (SEMESTER – I)
Paper Code : PSCSCT01
PAPER – I : ADVANCED JAVA

Credit : 4] **[Max. Marks: 80**

UNIT – I : Introduction of Java with OOPs Concepts

Introduction of Java: Features of Java, Data Types, Operators, Variables, Conditional and looping Statements, Arrays

Classes: Oops Concepts of Java, Declaring Objects, Methods, Constructor, Overloading Constructor, Garbage Collection, Finalize() Method, Uses of Static and Final Variable, Uses of Packages.

Exception Handling: Uncaught Exception, Try -Catch Block, Multiple Catch, Nested Try, Throw, Throws, Finally, Built-in and User- Defined Exception.

Multithreading: Life Cycle, Thread Class and Runnable Interface, Type Priorities, Synchronization and Interthread Communication.

UNIT – II : Applet, AWT and Swings

Applet: Applet Class, Architecture, Life Cycle, Display Methods, HTML Applet Tag, And Passing Parameter to Applet.

AWT: Working with Windows (Frames and Panel), Controls (Label, TextField, Button, Checkbox, ScrollBar, List, Choice) **Layout Managers :** Border Layout, Flow Layout, Grid Layout. Menus.

Swings: Introduction and Event Handling.

UNIT – III : JDBC ODBC

Database Programming: Design of JDBC, JDBC Configuration, Types of Drivers, Executing SQL Statements, Query Execution, Scrollable and Updatable Result Sets, Rowset, Metadata, Transactions, Sample example of JDBC connectivity with MS-Access and ORACLE.

Collections: Introduction to the Collection Framework (Interfaces, Implementation)

UNIT – IV : Servlet and JSP

Servlet: Introduction to Servlet(Http Servlet),Life Cycle of Servlet, Handing Get and Post Request(Http),Data Handling Using Servlet, Creating and Cookies, Session Tracking Using Http Servlet,

JSP: Getting Familiar with JSP Server, First JSP, Adding Dynamic Contents via Expressions Scriptlet, Mixing Scriptlet and HTML, Directives, Declaration, Tags and Session.

Books:

1) Dietal, "Java How to Program", Pearson Education Inc, 6th Ed., 2007, ISBN 81-317-0954-X
2) Herbert Schield, "Java2 Complete References", TMH, 7th Ed., 2007, ISBN 0-07-063677-X
3) Steven Horlzner ,"Java 2 Programming Black Books", ISBN-13: 978-1588800978

References:

1) Jason Hunter, William Crawford, "Java Servlet Programming", O'reilly Media Inc., 2th Edition, ISBN- 0596000405

M.Sc. (Computer Science) - I (SEMESTER – I)
Paper Code : PSCSCT02
PAPER-II : DISCRETE MATHEMATICS

Credit : 4] **[Max. Marks: 80**

UNIT – I : Fundamental of Sets and Mathematical Logic

Fundamental: Sets and Subsets, Operations on Sets, Sequence, Matrices.

Logic-Proposition and Logical Operation Conditional Statements, Methods of Proof, Mathematical Induction

Mathematical Logic- Statements and Notation, Equivalence of Formulas, Duality, Connectives, Normal Forms, Principle Disjunctive Normal Form, Principle Conjunctive Normal Form, Theory of Inference for the Statement Calculus, Inference Theory of the Predicate Calculus.

UNIT – II : Counting, Relation and Diagraph

Counting: Permutation, Combination, Pigeonhole Principle, and Recurrence Relations.

Relational and Digraphs- Product Sets and Partitions, Relations and Digraphs, The Matrix of a Relation, Paths in Relations and Digraphs, Properties of Relations, Equivalence Relations, Computer Representation of Relations and Digraph, Manipulation of Relations, Transitive Closure and Warshall"s Algorithm.

UNIT – III : Graph Theory, Lattices and Boolean-Algebra

Graph Theory: Basic Concept of Graph Theory, Euler Paths and Circuits, Hamiltonian Paths and Circuits.**Additional Relations and Structure**-Partially Ordered Sets, Lattices, Hasse Diagram, Principle of Duality, Distributive Lattice, Sub Lattice, Complemented Lattice, **Boolean-Algebra:** Introduction, Functions of Boolean algebra's, Boolean Function as Boolean Polynomials

UNIT – IV : Groups, Languages and Finite State Machines

Groups : Binary Operations, Products and Quotients of Groups, Subgroup, Abelian Group, Normal Subgroup, Semi Groups, Products and Quotients of Semi Groups.

Languages: Definition, Languages of Machine, Grammar, Derivation Trees

Finite-State Machines: Introduction to Finite State Machine, Moore Machines

Books:

1) Dr. S.B. Kishor, "Discrete Mathematics", Das Ganu Prakashan, 2014, ISBN-978-93-81660-21-8

2) Bernard Kolman, Robert C. Busby, Sharon C. Ross, "Discrete Mathematical Structures", Prentice Hall Publication, "6th Edition", Year-2008, ISBN No.–0132297515.

3) Discrete Mathematical Structures with Application to computer science, Publication Tata McGraw –Hill, Year-2003, ISBN-0-07-065142-6,

References:

1) Goodaire, "Discrete Mathematics with Graph Theory", PHI Publication, Year-1997, ISBN No-0136020798.

2) J.K. Sharma, "Discrete Mathematics", McMillan Publication, Copyright Year-2011, ISBN No-9780230322301.

3) Rajendra Akerkar, "Discrete Mathematics", Publication Pearson

M.Sc. (Computer Science) - I (SEMESTER – I)
Paper Code : PSCSCT03
Paper-III : DATA WAREHOUSE AND SQL

Credit : 4] **[Max. Marks: 80**

UNIT – I : (Data Warehousing and OLAP)

Introduction to Data Warehousing: Characteristics of a Data Warehouse, Data Warehouse Architectural Strategies, Design Considerations, Data Content, Building a Data Warehouse, Metadata, Tools for Data Warehousing, Performance Considerations, Crucial Decisions in Designing a Data Warehouse, Different Case Studies. Various Technological Considerations: OLTP and OLAP Systems, Data Modeling, Managed Query Environment (MQE).

UNIT – II : (Data Mart and Data Mining Tools)

Data Mart: Data Mart, Type of Data Mart, Loading a Data Mart, Metadata for a Data Mart, Data Model for a Data Mart, Software Component for a Data Mart, Tables in Data Mart, Security in Data Mart.

Data Mining and Tools: Introduction, From Data Warehouse to Data Mining, Steps of Data Mining, Data Mining Algorithm, Database Segmentation, Predictive Modeling, Link Analysis, Tools for Data Mining.

UNIT – III : (SQL Server, Components and Queries)

SQL Server Architecture: SQL Server Data Storage Architecture, The Data Engine, System Databases.

SQL Components: SQL's Basic Object, Data Types, Transact-SQL Functions, Scalar Operators, Null Values. Data Definition Language, Data Manipulation Language, Queries, Modification of Table Contents, Stored Procedures and User-Defined Functions, Views.

UNIT – IV : (Data Integrity, User Security and Concurrency Control)

Managing Data Integrity: Data Integrity Controls, Working with Constraints, DML Triggers.

Managing User Security: Security Architecture, Implementing SQL Server Principles and Authentication, Implementing Permission in SQL Server.

Backup and Concurrency Control: Transaction Architecture, Locking, Backup Types, Performing Database Restore, Replication, Using Transaction Logs, Using Triggers, Replication Methods.

Books:

1. C.S.R. Prabhu, "Data Warehousing", PHI, 3rd Ed., 2010, ISBN-978-81-203-3421-2.
2. Dusan Petkovic, "Microsoft SQL Server 2008, Beginner S Guide", TMH Pub., 1st Edition, 2008, ISBN-0071540383.
3. Michel Lee, Gentry Bieker, "Mastering SQL Server 2008", Sybex Pub., 1st Ed., 2009, ISBN-047028904x.

References:

1. Jiawei Han, Micheline Kamber, Jian Pei, "Data Mining Concepts and Techniques", Elsevier Pub. 3RD Ed, 2011, ISBN-9780123814791.
2. Alex Berson, "Data Warehousing, Data Mining & OLAP", TMH, ISBN 0-07-058741-8
3. Robert Vieira, "Beginning Microsoft SQL Server 2008 Programming", Wrox Publication, 2009, ISBN-9780470257012.

M.Sc. (Computer Science) - I (SEMESTER – I)

Paper Code : PSCSCT04

Paper-IV : Scripting Language & Information Retrieval

Credit : 4] **[Max. Marks: 80**

UNIT – I : HTML and Linking

HTML - Introduction to HTML, Creating HTML Documents, Creating Web Pages with HTML **Tags:** HTML, Head, Title, Body ,Heading , Paragraph Tags, Alignment, formatting, Font Size, Attributes, List, Character formatting : Logical Verses Physical Style, Logical and Physical Style, Changing The Colors of The Fonts, Multiple Tags.

Linking: Relative Pathnames Verses Absolute Pathnames, URL, Links to Specific, Sections within the Current Document, Mailto. **Inline Images**: Images Size Attributes, Inline Images, Alternate Text Images, Images Hyperlink

Tables: Table Row and Columns, Creating Simple Tables, Spanning Row and Columns with HTML Tables, Spanning Rows and Columns, Table Alignment Properties.

UNIT – II : Java Script

Java Script: The Nature of Java Script, Script, Script Writing Basic, Auditioning of Interactivity to a Web Page. Creating Dynamic Web Pages, Java Scripting Your forms. Creating Scrolling Messages Animating a Graphics, Creating a Floating Toolbar, Setting Up Tool Bar, Window, Designing Image Map Navigation

UNIT – III : VB Script

Introduction VB Script: Evolution of Scripting Language, Introduction to VB Script, Features of VB Script, Data Types in VB Script, Elements of VB Script: Identifiers, Operators, Control Statements, Control Structure

Functions: Variant Function, Math Function, formatting Function, String Manipulation Function, Type Conversion Methods Supported by VB Script, Arrays in VB Script, Regular Expression

UNIT – IV : Information Retrieval

Information Retrieval- Boolean Retrieval ,The Term Vocabulary and Postings Lists, Dictionaries and Tolerant Retrieval, Index Construction, Index Compression, Scoring, Term Weighting and The Vector Space Model, Computing Scores in a Complete Search System, Evaluation in Information Retrieval, Relevance Feedback and Query Expansion, XML Retrieval, Probabilistic Information Retrieval

Books:

1. C.Xavier ,"Web Technology and Design", ISBN-812214508/9788122414509.
2. O'relly "Dynamic HTML" SPD, ISBN-978-56592-494-9.
3. Dr. S. B. Kishor, Rajani Singh, "Web Designing", Das Ganu Prakashan
4. Prabhakar Raghavan and Hinrich Schütze ,"Introduction to Information Retrieval Christopher D. Manning", ISBN-0521865719

References:

1. "Web Application", NIIT Prentice Hall of India, ISBN- 81-203-2714-4
2. "Dynamic HTML in Action", PHI, ISBN-978-81-203-3872-2.

M.Sc. (Computer Science) - I (SEMESTER – I)

Paper Code : PSCSCP01

Practical

(Practical based on PSCST01)

[Max. Marks: 80

Practical List of Advanced Java

1. Write a java program to create a class " Student" with rollno,sub1,sub2,sub3 as data members and getData() and printData() as member functions.
2. Write a java program to create a class " Box" with width, height and length as data members and getBox() and printBox() as member functions.
3. Write a java program to design a Box Class with overloaded constructor
4. Default constructor
5. Constructor with one argument.
6. Constructor with three arguments.
7. Design a package "MyPackage" and write two class MyClass1 and MyClass2 with appropriate members and add these classes to MyPackage Package.
8. Design a Interface "MyInter" and add two methods sum() and mult() for two integers in it.
9. Write a java program to demonstrate the try…catch mechanism.
10. Write a java program to show use of throw, throws and finally keyword.
11. Write a java program to demonstrate Threads using Thread class and also with Runnable interface.
12. Write a java program which shows the use of synchronization.
13. Design a user interface using applet to accept two values and calculate sum of these numbers.
14. Design a user interface using applet which accepts a number and program will calculate square and cube of given number and also display in respective textbox.
15. Write a java program to which read a data from a file and print contents of a file on VDU.
16. Write a java program to read the contents of a one file and copied to another.
17. Write a java program to read the contents from given URL.
18. Write a java program to create Client and Server program to communicate each other.

Practical List of Discrete Mathematics (Practical Should Perform on C++)

1. A PROGRAM FOR UNION OF SETS (A U B)
2. A PROGRAM FOR INTERSECTION OF SETS (A B)
3. A PROGRAM FOR DIFFERENCE OF SETS (A-B)
4. A Program to find addition of two matrix
5. A Program to find multiplication of two matrix
6. A Program to find transpose matrix

M.Sc. (Computer Science) - I (SEMESTER – I)

Paper Code : PSCSCP02

Practical

(Practical based on PSCST03 & PSCST04)

[Max. Marks: 80

Practical List of SQL and PL/SQL

A. Create table DONAR with following fields (Dno, Dname, City, Age, Sex, BG, Quantity, date).
B. Insert the following records into the table DONAR.

Dno	Dname	City	Age	Sex	BG	Quantity	Date
101	RAJESH RAO	CHANDRAPUR	28	M	O+ve	100	25-AUG-11
102	ANAND SHARMA	NAGPUR	20	M	O+ve	200	26-AUG-11
103	VISHAL DESHPANDE	HYDERABAD	23	M	O-ve	250	26-AUG-11
104	SHRUTI RAKHUNDE	CHANDRAPUR	22	F	A+ve	100	27-AUG-11
105	ANUSHREE DHAKATE	-	22	F	A-ve	200	26-AUG-11
106	VIJETA DHAKATE	BALLARPUR	22	F	O+ve	100	25-AUG-11
107	AAMIR TAJA	CHANDRAPUR	21	M	O+ve	250	27-AUG-11
108	AMIR KHAN	DURGAPUR	25	M	O+ve	100	25-AUG-11

C] Perform following queries on above table.

1. Find all donars whose name starts between alphabets ‘A’ to ‘S’.
2. Find all donars who belongs to city CHANDRAPUR.
3. Find all donars who does not belongs to CHANDRAPUR city.
4. Find all donars who belongs to either CHANDRAPUR or NAGPUR city.
5. Find all donars whose city value contains NULL.
6. Arrange all donars in the sorted order whose age is between 18 and 22.
7. Find all male donars.
8. Find all male donars having O+Ve blood group.
9. Find all donars who donated the blood between 25-AUG-10 and 26-AUG-11.

10. Find all donars who donated more than 100 ml of blood.

11. Find all female donars who belong to city CHANDRAPUR having blood group 'O+Ve' in the sorted order of city?

12. Display all donars according their age.

13. Display the donar list in recent order of donation date.

14. Display all distinct blood group type.

15. Update the age of all donars by 1.

16. Mr. RAJESH RAO changed his name as RAMESH RAO and he is shifted to DURGAPUR. Note the above changes in the table.

17. Due to certain reason all the donars who donated the blood on date '26-AUG-11' are rejected. Hence delete their information.

18. Find the donars names whose first name starts with letter 'A' and ends with 'D' irrespective of case letter.

19. Find the donar names whose last name starts between alphabets 'D' to 'S' (Ex. DESPANDE, SHARMA)

20. Find total number of donars having O+Ve group.

21. Find total quantity of blood of group A+Ve.

22. Average age of female donar of O+Ve group by rounding the age to next digit.

23. Display all donars who name pronounces like 'AAMIR';

24. Find the donars who donated the blood in the month of AUG.

25. Find the donars who donated the blood on 15th Aug. of year.

Practical List of Scripting Language

1. Demonstrate of Logical Format Tag.
2. Demonstrate of Physical (Formatting) style tag
3. Demonstration of Level of Headings
4. Demonstration of Block Alignment
5. Demonstrate the Font Face, Color and Size.
6. Demonstrate the Alignment
7. Demonstrate the Scrolling tab using Mercury.
8. Demonstrate of Order List

9. Write a program to embed VBScript in HTML Document.
10. Write a program to illustrate Option Explicit Statement in VBScript.
11. Write a program to add an ActiveX Control in HTML Document.
12. Write a program to set properties to ActiveX Control.
13. Write a program to illustrate Client-Server Program using VBScript.
14. Write a JavaScript program to associate the Method with the Object.
15. Write a JavaScript program to illustrate the different properties of Document Object.
16. Write a JavaScript Program to Create a Dynamic Web Page.
17. Write a JavaScript Program to Generate User ID at Runtime.

M.Sc. (Computer Science) - I (SEMESTER – I)

Paper Code: PSCSCS01

SEMINAR

[Max. Marks: 25

Refer Appendix -I

M.Sc. - I (Computer Science)

SEMESTER – II

M.Sc. (Computer Science) - I (SEMESTER – II)

Paper Code : PSCSCT05

PAPER - I : THEORY OF COMPUTATION & SYSTEM PROGRAMMING

Credit : 4] **[Max. Marks: 80**

UNIT - I : Finite Automation and Regular Expression

Finite Automation and Regular Expression : Finite State Systems, Basic Definitions, Non - Deterministic Finite Automata, Finite Automata with Moves, Regular Expressions, Two Way Finite Automata, Finite Automata with Output, Application on Finite Automata.

Properties of Regular Sets: The Pumping Lemma for Regular Sets, Close Properties of Regular Sets, Decision Algorithms for Regular Sets.

Context Free Grammars : Motivation and Introduction, Context Free Grammar, Derivation Tree, Simplification of Context Free Grammars, Chomsky Normal form, Greibach Normal form, The Existence of Inherently Ambiguous Context Free Languages.

UNIT - II : Push Down Automata and Turing Machine

Push Down Automata: Informal Description, Definitions, Push Down Automata and Context Free Languages.

Turing Machine : Introduction, The Turing Machine Model, Computable Languages and Functions , Techniques Turing Machine Construction, Modification of Turing Machines, Church's Hypothesis, Turing Machine As Enumerators, Restricted Turing Machine Equivalent to The Basic Model. **Chomsky:** Regular Grammars, Unrestricted Grammars, Context Sensitive Languages, Relation between Classes of Languages.

UNIT – III : Introduction to Device Drivers

Introduction to Device Drivers: Role of Device Drivers, Splitting The Kernel, Classes of Devices and Modules, Security Issues, Version Numbering, Building and Running Modules Kernel Modules Vs. Applications, Compiling and Loading, Kernel Symbol Table, Preliminaries, Interaction and Shutdown, Module Parameters, Doing It in User Space.

UNIT - IV: (Assembly and Machine Languages)

Assembly and Machine Languages: CPU Architecture of 8086 Family, Function, Procedure and General Purpose Registers, Memory Segmentation and Address Computation, Addressing Modes, Instructions Set and formats. Different Types of Instruction, Processing of Binary, ASCII and BCD Data, Stacks, Calls, Returns, Near and Far Procedures. Interrupts and Their Routines, Definitions and Recursive Macros, Assemblers, Overview of Compilation Process. **Loaders and Linkers:** Loading Schemes, Linking, Relocation and Program Relocation.

Books:

1. Donovan J.J, "Systems Programming", New York, TMH, ISBN-0-07-460482-1
2. Dhamdhere D.M., "System Programming", TMH, ISBN-0-7-133311-8
3. John E. Hoperott and Jeffery D.Ullman, "Introduction to Automata Theory, Languages and Computation".
4. E. V. Krishmamoorty, "Theory of Computer Science", ISBN-088791255x.

References:

1. Adam Hoover, "System Programming with C and UNIX", Pearson, ISBN-0136076602.
2. D. I. A. Cohen," Introduction to Computer Theory", ISBN-0-471-13772-3.
3. H.R. Lewis and C.H. Papadimitrion, "Elements of Theory of Computation", PHI, ISBN-0132624788

M.Sc. (Computer Science) - I (SEMESTER – II)
Paper Code : PSCSCT06
PAPER – II : VB.NET

Credit : 4] **[Max. Marks: 80**

UNIT – I : Introduction to .NET

Introduction to .Net Framework, Basic Functionality of CLR, MSIL, About Platform Independency, Language Interoperability, CTS and CLS, .Net Languages, Assemblies, Garbage Collection, Architecture of GC and Application Domain.

UNIT – II : Visual Studio.NET

WPF Designer and Windows form Integration, Multi-Framework Targeting, Better Intelligent Support, Refactoring and Enhancements, Visual Studio Split View, Debugging The .Net Source Code

VB.Net Language: Features of VB.Net, Writing Programs in VB.Net, Compiling and Execution from Command Prompt

Data Types, Expressions and Operators: Option Statements, Basic Element of Programming (Data types, Variable, Constant, Control Flow Statement), Type Casting, Boxing and Unboxing, Built-in Functions in VB.Net, Sub Programs and Working with Arrays

UNIT – III : Object oriented Programming with VB.NET

Principles of OOP, Data Encapsulation, Data Abstraction, Properties, Method Overloading, Constructors, Inheritance, Overloading and Overriding, Shadowing, Abstract Classes and Sealed Class, Polymorphism,

Delegate- Unicast and Multicast, Events, Collections, Directories, Strings, String Builders, Attributes, Namespaces and Generics

Windows Applications: Introduction to System.Windows.forms.Dll, Basic Controls and Event Driven Programming, Programming with Advanced Controls.

Windows Control Library Error Handling: Structured Error Handling, Error Categories, Debug and Trace Classes, Code Optimization, Testing Phases and Strategies.

UNIT – IV : Data Access with ADO.NET

Introduction to Access Libraries DAO, RDO, ADO, Limitation of ADO, ADO.Net Objects and Usage, ADO.Net Managed Providers, Data Reader, Data Adapter and Dataset, Data Relation and Dataset, Data Binding, Connected and Disconnected Environments, Connection Pooling, ADO.Net Exceptions, Using Stored Procedures, N-Tier Database Application, ADO.Net and XML. File Stream, Windows Services, Crystal Reports

Books:

1) David I. Schneider, “an Introduction to Programming Using Visual Basic .Net”, PHI, ISBN-81-203-2159-6
2) Shirish Chavan, “Visual Basic .Net”, Pearson, ISBN-81-317-1391-1
3) Mastering Crystal Report, BPB.

References:

1) Jeffrey R. Shapiro, “The Complete References -Visual Basic .Net”, TMH, ISBN-0-07-049511-4
2) Anne Prince and Doug Lowe, “March’s VB.Net Database Programming with ADO.Net”.
3) Crystal Report – The Complete References, TMH

M.Sc. (Computer Science) - I (SEMESTER – II)
Paper Code : PSCSCT07
PAPER – III : WEB TECHNOLOGIES

Credit : 4] **[Max. Marks: 80**

UNIT – I : Introduction to Core PHP
Introduction to PHP, Why PHP, Hardware & Software Requirements, Advantages of PHP Why PHP is better alternative, PHP Syntax, Data Types, Variables, Operators, Conditional Statements, Loops; Super Globals, String Manipulation, Working with Array, PHP functions, Working with Forms, MySQL Database MySQL Database - What is Database, Database Models, Tables, Records and Files, SQL Language, MySQL Command-Line, Working with PHP MyAdmin,

UNIT – II : Advanced PHP Programming Cookies
What is Cookie? Cookie Syntax, How to Create, Store, Retrieve and Delete Cookie. PHP File Upload – Create an Upload-File Form, Upload Script and Save Uploaded file, putting restrictions on uploads.
PHP File Handling – Opening and Closing of a File, Check End-of-file, Reading a File – Line by Line and Character by Character.
Session – What is Session? Creating, Storing and Destroying Sessions.
Classes & Object – OO Concepts, Define Class, Class Attributes, An Object, Creating an Object, Object Properties & Methods, Object constructors and destructors, Static Method, Class Inheritance, Abstract Class, Implement Inheritance.

UNIT – III : Introduction To Python
Basic Concept, Python Identifiers And Reserved Words, Lines And Indentation, Multi-Line Statements, Comments, Print And Raw_Input()/Input, Command Line Arguments And Processing, Command Line Arguments, Standard Data Types - Basic, None, Boolean (True & False), Numbers, Python Strings, Data Type Conversion, Python Basic Operators (Arithmetic, Comparision, Assignment, Bitwise Logical), Python Membership Operators (In & Not In), Python Identity Operators (Is & Is Not), Operator Precedence, Control Statements, Python Loops, Mathematical Functions And Constants (Import Math), Random Number Functions

UNIT – IV : Python strings, Concept, Slicing, escape characters, String special operations, String formatting operator, Triple quotes, Raw String, Unicode strings, Built-in String methods. Python Lists - concept, creating and accessing elements, updating & deleting lists, basic list operations **Python tuples and sets -** Concept (immutable), creating & deleting tuples, accessing values in a tuple, updating tuples, delete tuple elements, basic tuple operations, Indexing, slicing and Matrices, builtin tuple functions. Sets - Concept, operations.
Python Dictionary - Concept (mutable), creating and accessing values in a dictionary , updating dictionary, delete dictionary elements, properties of dictionary keys, built-in dictionary functions and methods, Object Oriented Programming in Python, Classes and Objects, Create new objects, Overload Operators, and utilize Python Special Methods.

Books:

1. Larry Ullman, "PHP 6 and MYSQL 5 for Dynamic Web Sites: Visual Quick Pro Guide", Peachpit Press, ISBN- 978-0321525994
2. Bill Lubanovic, "Introducing Python", Shroff Publication

References

1. Joseph Joyner, "Python Programming for Begnners", ISBN 13-9781633830394

M.Sc. (Computer Science) - I (SEMESTER – II)

Paper Code : PSCSCT08
PAPER- IV : SOFTWARE ENGINEERING

[Credit : 4] **[Max. Marks: 80**

UNIT – I : Introduction to Software Engineering
The Role of Software Engineering, History of Software Engineering, The role of Software Engineering, The Software Life cycle, The Relationship of Software Engineering to Other Areas of Computer Science. The Relationship of Software Engineering to other Disciplines.
Software: Its Nature and Qualities- Classification of software Qualities, Representative Qualities, Quality Requirements in different application Areas, Measurement of Quality.

UNIT – II : Software Engineering Principles
Rigor and Formality, Separation of Concern, Modularity, Abstraction, Anticipation of Change, Generality, Instrumentality.
Software Design- Software Design Activity and its Objectives, Modularization Techniques, Object- Oriented Design.

UNIT – III : Software Specification/ Verification
Software Specification – The Uses of Specification, Specification Qualities, Classification of Specification Styles, Verification of specifications, Operational Specification, Descriptive Specification.
Software Verification- Goals and Requirement of Verification, Approaches to Verification, Testing, Analysis, Symbolic Execution, Debugging, Verifying Other Software Properties.

UNIT - IV : Software Production Process & Management of Software Engineering
The Software Production Process – Software Production Process Models: Waterfall Model, Evolutionary Model, Transformation Model, and Spiral Model. Organizing the process.
Management of Software Engineering – Management Functions, Project Planning, Project Control, Organization, Risk Management.

Books:

1. Ghezzi, Jazayeri, Mandrioli, "Fundamentals of Software Engineering", PHI.
2. Pressman, "Software Engineering", Tata McGraw Hill

References:

1. Mall, "Fundamentals of Software Engineering", PHI.
2. Richard Fairley, "Software Engineering Concepts", Tata McGraw Hill.

M.Sc. (Computer Science) - I (SEMESTER – II)

Paper Code : PSCSCP03

Practical

(Practical based on PSCST06)

[Max. Marks: 80

Practical List of VB.NET

1. A console application to print star in triangular format.
2. A console application to convert a number into string.
3. Write a program for Binary Search.
4. Write a program to merge two different arrays.
5. Write a program add the graphics in given form.
6. Write a program to count character A to Z from given text.
7. Write a program to handle interaction of two forms.
8. Write a program to store two lists of names and merge them into third list.
9. Write a program to create histogram, a file should hold years and values.
10. Write a program to find the currency of selected country using database connectivity.
11. Write a program to save and load the table using database connectivity.
12. Write a program to handle three files at a time by differentiating using password.
13. Write a program to change the dimension of one array into another using Re Dim statement.
14. Write a program to insert Menu strip.
15. Write a program to access the data from the given database to the current working window using data grid.
16. Write a program to handle text file info in the given window.

M.Sc. (Computer Science) - I (SEMESTER – II)

Paper Code : PSCSCP04

Practical

(Practical based on PSCST07)

[Max. Marks: 80

Practical List of PHP

1. Write a PHP program to display the today's date and current time.
2. Write a PHP program to calculate sum of given number.
3. Write a PHP program to display the Fibonacci series.
4. Write PHP program to display current day using switch case.
5. Write a PHP program to prepare student Mark sheet using Switch statement.
6. Write a PHP program to demonstrate the use of array.
7. Write a PHP program to display the use of associative array.
8. Write a PHP program to display the use of multidimensional array.
9. Write a PHP program to generate the multiplication of matrix.
10. Write a PHP program for reading the content of file.
11. Write PHP program to copy the content of a file.
12. Write PHP program to append a file
13. Write a PHP Program for Create, Delete, and Copying file from PHP Script.
14. Write a PHP Program to Recursive Traversals of Directory.
15. Write PHP program to test for function's existence.
16. Write a program to build a simple HTML form.
17. Write a program to build an HTML form including multiple checkboxes.
18. Write a program to Add an Array Variable to a Session Variable.
19. Write a PHP program to send Mail from PHP Script.
20. Write a PHP program to read the employee detail using form component.
21. Write a PHP program to create a table in mysql database .
22. Write a PHP program to insert a record into a table in mysql
23. Write a PHP program to select a record from a table in mysql database .

Practical List of Python

1. Write a Python Program to Print Hello World !
2. Write a Python Program to add two Numbers.
3. Write a Python Program to find the Square root.
4. Write a Python Program to generate a Random Numbers.
5. Write a Python Program to check if a number is positive, negative or zero.
6. Write a Python Program to check number is odd or even
7. Write a Python Program to find sum of natural numbers
8. Programs on Python List, Dictionary, and Object Oriented Concepts

M.Sc. (Computer Science) - I (SEMESTER – II)

Paper Code: PSCSCS02

SEMINAR

[Max. Marks: 25

Refer Appendix -I

Appendix 1

Evaluation Rules

A) Internal Assessment:

1. The internal assessment marks shall be awarded by the concerned teacher.
2. The internal assessment marks shall be sent to the University after the Assessment in the prescribed format and direction by University.
3. General guidelines for Internal Assessment are:
   a) The internal assessment marks assigned to each theory paper on the basics of the performance in any two assignments (each of 10 marks) as described below selected by concerned teacher.
      1. Class Test / Sessional examination
      2. On-line Test
      3. Theory Assignments
      4. Programming Assignments
      5. Study tour
      6. Industrial visits
      7. Visit to educational institutions and research organizations, field work, Conference etc
      8. Group discussions
      9. Seminar Presentation
      10. Publishing Research Paper
      11. Review of Research Papers
      12. Participation in Departmental Activities
   b) There shall be no separate / extra allotment of work load to the concerned teacher related to above assignments. He/ She shall conduct the Internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
   c) The concerned teacher / department / college shall have to keep the record of all the above activities until six months after the declaration of the results of that semester.
   d) At the beginning of each semester, every teacher / department / college shall inform his / her students unambiguously the method he / she propose to adopt and the scheme of marking for internal assessment.
   e) Teacher shall announce the schedule of activity for internal assessment in advance in consultation with HOD.

B) Seminar

In seminar, the student will have to deliver a seminar on any topic relevant to the syllabus / subject encompassing the recent trends and development in that field / subject. The topic of the seminar will be decided at the beginning of each semester in consultation with the supervising teachers. The student has to deliver the seminar which will be followed by discussion.

The students should submit the seminar report typed and properly bound in one copy to the head of the department along with soft copy in CD. The said shall be evaluated by the concerned supervisor / head of the department. The concerned teacher / department / college shall have to keep the record of Seminar Reports until six months after the declaration of the

results of that semester.

C) Practical Assessment:

Time: Minimum 2 Hours 30 Min. for conducting the practical examination subject to the condition the availability of computers and printers at the center.

Marks Distribution: A practical mark will be allocated by Internal & External Examiner as per the following format

Sr. No.	Particulars	Max. Marks
a.	Writing, Execution and Printout of Program	32
b.	Writing Program	16
c.	Practical Record	16
d.	Viva Voce	16
	Total	**80**

Note : 1) The Written work should be completed within max. 45 minutes.
2) For execution and taking printout max. 45 minutes is reserved.

E) Theory Paper Assessment : Theory papers will be held as per the scheduled given by the university and examinee needs to score minimum 40% of marks to clear the paper including internal assessment marks.

F) Revaluation: There is also a provision for the Revaluation only for theory papers examination conducted by University (i.e. it is not applicable for Internal Assessment) as per the rules and fee structure prescribed by University.

Appendix 2

Practical Examination

1. Each practical carries 100 marks. The scheme of marking shall be as per given in the syllabi of respective subjects.
2. Practical performance shall be jointly evaluated by the External and Internal Examiner. In case of discrepancy, the External Examiner's decision shall be final.
3. Duration of practical examination will be Minimum 2 Hours 30 Min.
4. The Practical Record of every student shall carry a certificate as shown below, duly signed by the teacher-in-charge and the Head of the Department. If the student fails to submit his / her certified Practical Record duly signed by the Teacher-In-Charge and the Head of the Department, he / she shall not be allowed to appear for the Practical Examination and no Marks shall be allotted to the student.

5. The certificate template shall be as follows:

C E R T I F I C A T E

Name of the College / Institution : _

Name of the Department: _

This is to certify that this Practical Record contains the bonafide record of the practical work of Mr. / Mrs. / Ku. _of M.Sc.(Computer Science) _ _ _ _ Semester _ _ _ _ _ during the academic year _ _ _ _ _.

The candidate has satisfactorily completed the practical's prescribed for the course by Gondwana University, Gadchiroli for the subject _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Dated : _ _ / _ _ / _ _ _ _

Signature of the teacher who taught the examinee

1._ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

2._ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Head of the Department

Appendix-3

Pattern of Question Paper

General Rules and Regulations regarding pattern of question paper for the semester end examination is as given below:

1. There will be four units in each paper.
2. Maximum marks of each theory paper will be 80.
3. Question paper will consist of five questions, each of 16 marks.
4. Four questions will be based on four units with internal choice.
5. Fifth question will be compulsory with questions from each of the four units having equal weightage and there will be no internal choice.

Master of Science

M.Sc. (Computer Science) – [I / II] **Semester – [I / II/ III / IV]**

Paper Code: **Paper: Name of Paper**

Time: 3 Hours] **[Max. Marks: 80**

Note: 1) All questions are compulsory and carry equal marks.
2) Draw Neat and Labeled diagram and use supporting data wherever necessary.
3) Avoid vague answers and write specific points/answer related to questions.

Q1 Either (From Unit 1)	
a)	8
b)	8
Or	
c)	8
d)	8
Q2 Either (From Unit 2)	
a)	8
b)	8
Or	
c)	8
d)	8
Q3 Either (From Unit 3)	
a)	8
b)	8
Or	
c)	8
d)	8
Q4 Either (From Unit 4)	
a)	8
b)	8
Or	
c)	8
d)	8
Q5 Solve all questions	
a) (From Unit 1)	4
b) (From Unit 2)	4
c) (From Unit 3)	4
d) (From Unit 4)	4