Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Commerce & Management

CHOICE BASED CREDIT SYSTEM

Syllabus: Post Graduate Diploma in Computer Application

Name of the Course: PGDCA I (Sem.– I & II)

(Syllabus to be implemented from w.e.f. June 2020)

Punyshlok Ahilyadevi Holkar Solapur University, Solapur
PGDCA(Post Graduate Diploma in Computer Application)
STRUCTURE FOR COLLEGE & UNIVERSITY CAMPUS
Choice Based Credit System w.e.f.2020-21

Semester	Code	Title of the Paper	Semester Exam			L	T	P	Total Credits
			Theory	IA	Total				
Subject									
HCT	PGDCA1.1	Communication skill	80	20	100	4	1	0	5
HCT	PGDCA1.2	Fundamental of computer and information technology	80	20	100	4	1	0	5
HCT	PGDCA 1.3	Introduction to accounting Package and MS-office	80	20	100	4	1	0	5
	PGDCA 1.4	Software Enginnering with C Programming	80	20	100	4	1	0	5
DSE	PGDCA 1.5	Web programming with PHP	80	20	100	4	1	0	5
DSE	PGDCA 1.6	I) Lab Course based on PGDCA – 1.2,1.3,1.4		50	50	2		50	5
		II) Mini project based on 1.5		50	50	3		50	
			400	200	600				
		PGDCA Semister -II							
Subject		**Hard Core** Compulsory Papers							
HCT	PGDCA 1.7	DBMS with oracle	80	20	100	4	1	0	5
HCT	PGDCA 1.8	ASP.NET using C#	80	20	100	4	1	0	5
HCT	PGDCA 1.9	JAVA and Python Programming	80	20	100	4	1	0	5
HCT	PGDCA 2.0	Lab Course 2 Based on PGDCA 1.7,1.8,1.9	-	100	100			3	6
		Major Project		100	200			3	
			240	260	600			0	

HCT -Hard Core Theory

DSE -Discipline Specific Elective

SCT -Soft Core Theory

OET -Open Elective Theory

IA -Internal Assessment – Home Assignment'Unit Test' Seminar' PPT Presentation'' Industrial Visit/ Oral Exam' Group Discussion' Case Study' Internship' Survey/ Field Visit report.

L Lecture

T Theory

P Practical

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PGDCA – Semester I (Paper No.1.1)

Communication Skills

Max. Marks: 100
External Assessment: 80
Internal Assessment: 20

Unit No.1	**Nature of Communications**: Definition of communication, Significance of Good Communication, Objective of Communication, Communication Process, Type of Communication, Nonverbal communication aspects of body language and Principles of Communication.	16
Unit.No.2	**Communication in organization**: Nature, scope and limitations of communication, Barriers to communication, Overcoming the barriers, Downward communication, Upward Communication, Horizontal communication, Grapevine communication. Written communication: • The process of formal written communication – The 'you' attitude, classify, conciseness, preciseness, style, flow Accuracy and readability • Mechanism of writing – Abbreviations, Numerals, Capitalization, Spelling, Punctuation	14
Unit No 3	**business Correspondence**: [14] Business Correspondence in organization, Essential, The layout, Planning the letter. Letter related to –purchase, Sales, Business related inquiries, Claims and adjustment, Job application and resume	14
Unit No.4	**Foundation of Effective Writing** :(AIDS) [16] • Meeting- Kinds of meetings, the agenda, Minute of the meetings, Paper work for regular meetings • Report – Common features, Routing reports and non-routine reports, Steps in writing report • Modern Office Communication – Electronic communication, Telephone EPBAX, Teleconferencing, Answering machine, E-mail, Voicemail, Fax, Internet, Video conferencing • Notes – The General approach will be to give broad idea of business communication, Practical work will consist of Letter writing, Report writing, Arranging meetings and Seminars, Every student will have to deliver minimum two prepared speeches and one extempore speech	16

. Books Recommended:
1) Essentials of Business Communication- Rajendra Pal & L.S.
2) Business Communications- U.S.Rai& S.M. Rai.
3) Communication skill – P. C. Pardesi
4) Business Communication, AshaKaul, PHI
5) Business Communication, M. Balasubramanyam
6) Business correspondence and report writing, Sharma, K. Mohan, Tata McGraw Hill

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PGDCA – Semester I (Paper No.1.2)

Fundamental of Computer and Information Technology

Max. Marks: 100

External Assessment: 80

Internal Assessment: 20

Unit No.1	Introduction to Computer Characteristic of computer, Concept of Hardware and Software, Evaluation of computer and generation ,Classification and types of computer, Block Diagram of computer system ,Motherboard ,Number system-Binary ,Decimal, Octal and Hexadecimal	12
Unit No.2	Input and Output devices:- Input Devices- Keyboard, Mouse, Lightpen Joystick, Scanner, MICR,OMR, Bar Code reader Output Devices:- Monitor-LCD,LED, Projector, Printer-CD,DVD Computer Memory Memory concept, Semiconductor -RAM, ROM, Secondary Storage Devices-Magnetic Tape ,Hard disk, Pen Drive, Optical Memory-CD,DVD	12
Unit No. 3	Introduction to Operating System Operating System:- Concept, Types, Function, Introduction to Windows, Linux, Computer Language Computer Network and Security of Data Concept of network, Network topology. LAN,MAN,WAN, Introduction to internet, E-Mail, Computer virus ,Antivirus Software	12
Unit No.4	Data Science Defination, Working benefits and uses of Data science, The data science process, Role of Data scientists	12
Unit no.5	BIGDATA AND HADOOP 1. Introduction to Big Data Topics:- What is Big Data and where it is producted? Rise of Big Data. Compare Hadoop vs traditional systems, Limitations and solutions of existing Data Analytics, Attribute of Big data, Types of data ,Other techonolgy and Bigdata	12

Reference Book:-

1) Computer Fundamental - P.K. Sinha
2) Computer Today - Basundara
3) Computer Fundamental - V. Rajaraman
4) Computer Today - Donald N. Sanders.
2) Data science and big data analytis,Emc
3) Introduction to Data science

PGDCA – Semester I (Paper No.1.3)

Introduction to Accounting Package & MS-Office

Max. Marks: 100

External Assessment: 80

Internal Assessment: 20

Unit No. 1	Accounting Concepts :Concepts of Accounting, Manual Vs Computerized Accounting, Golden Rule, Accounting Equation etc Financial Accounting: Definition of Book Keeping and Accountancy, Need for accounting, Internal and External uses of Accounting, Accounting Concepts and conventions Double Entry System of Accounting: [10] Journal Entries and Posting to ledger, Subsidiary Books. Bank Reconciliation Statement. Introduction to Tally :Introduction, Creation of Company, Introduction to Gateway of Tally, Menu, Company Info menu ,Group and Ledger	16
Unit No.1	**Windows:** Desktop icons and their functions: My computer, My documents, Network neighborhood, Recycle Bin, Quick launch tool bar, System tray, Start menu, Task bar, Dialog Boxes: List Box, Spin Control Box, Slide, Drop-down list, Radio button, Check box, Text box, Task Bar - System Tray - Quick launch tool bar - Start button - Parts of Windows -Title bar-Menu bar - Scroll barStatus bar, Maximize, Minimize, close and Resize & Moving a Window, Keyboard Accelerators: Key board short keys or hotkeys.	12
Unit No.2	**MS Word 2013 Basics:** Introduction to MS Office; Introduction to MSWord; Features & area of use. Working with MS Word.; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document; Different Page Views and layouts; Applying various Text Enhancements; Working with –Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features ; Bullets, Numbering, Auto formatting, Printing & various print options	12
Unit No. 3	**MS Excel 2013:** Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.	10
Unit No.4	**MS PowerPoint 2013:** Introduction & area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts, Columns &Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options.	10

Reference Books:

1. Windows XP Complete Reference. BPB Publications
2. MS Office XP complete BPB publication6
3. Elements of double entry book keeping – Batliboi
 4. Advanced Accounts – M.C.Shukla, T.S.Grewal and S.C.Gupta
5. Implementing Tally 6.3 by A.K.Nadhani, K.K. Nadhani, BPB Pub.
6. Computerised Financial accounting using tally- Rajan Chougule.

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PGDCA – Semester I (Paper No.1.4)

Software Engineering With C-Programming

Max. Marks: 100

External Assessment: 80

Internal Assessment: 20

Unit No.1	**System concepts** Definition of System,Elements of System,System concepts ,Types of System Role of system Analyst **Software Engineeing :**Definition of SE, Characteristics of Software Qualities of Software **System development life Cycle :**What is SDLC,SDLC Models,Classical model Sprial Model,Waterfall Model,Prototyping Model,RAD Model	12
Unit No.2	**Requirement Analysis :-**Requirement Investigation,Feasibility Study **Fact Finding Technique,**Need of fact finding Techniques,Interview,Questionnaire Record reviews'Observation,Study of Physical System **Introduction to Software Testing:-** What is Software Testing,Use or need of software Testing,Software Development Life Cycle(SDLC), **White Box Testing** Introduction to WBT,Advantage and Disadvantage of WBT Loop Testing, Path Testing, Condition Testing, Memory Testing, Performing Testing Types of Testing WBT ,BBT adv and disadv	12
Unit No. 3	Introduction to 'C': • History or evolution of 'C' language Features or characteristics of 'C' language. • Structure of 'C' program. • Compilation & execution of program. 'C' Fundamentals: • 'C' tokens- Keywords Identifier Special symbols ('C' character sets) Variables Constants, Data types- Primitive, Derived, User defined Operators- Arithmetic, logical, assignment, relational, bitwise, conditional, increment, decrement, sizeof, comma operator etc .• Use of 'typedef' and 'enum' • Precedence and associatively of operator. • Header files and its use. 12 Data input and output operations: • Introduction to input and output operations • Introduction to stdio.h header file. • stdio.h header file functions- printf( ), scanf( ), getchar( ), putchar( ) • Different format codes or format specifier with their use • Different back slash (escape sequence) character constants with their use	12
Unit No.4	Control Statements: • Introduction to control stateme • Types of control statements1) Selective or Decision making if statement switch statement Conditional (ternary) operator 2) Iterative or looping statement While loop do-while loop for loop 3) Unconditional branching (jump) Statement break statement continue statement goto statement	12
Unit no.5	Arrays: • Introduction & definition of array • Types of array 1) One dimensional array 2) Two dimensional array 3) Multi- dimensional array • Declaration & initialization of array • Memory allocation view for all types of array. • Character array (string) Declaration, operation on string and inbuilt String function Pointer and file handling Introduction to Pointer Pass by reference,Pointer to pointer,File handling-file types,File Opening Modes	12

Recommended: 1) Programming in ANSII-C – E. Balgurusamy
          2) The C programming Language - Ritchie and Kernighan.
          3) Let Us C - Y.C. Kanetkar.
          4) A structure Programming Approach using 'C'- Behrouz A. Forouzan, RichardF. Gilberg
        5) Basic system analysis and design:- alan denial & don yeats
        6) Software Engineer - alan denial

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PGDCA – Semester I (Paper No.1.5)

Web Programming With PHP

Max. Marks: 100

External Assessment: 80

Internal Assessment: 20

Unit No.1	Overview of HTML and HTML 5 Introduction to Web Technology Introduction to Internet Requirement of Internet History of Web Technology Introduction to HTML Structure of HTML Creating and Opening HTML file Singular and paired tags, Text formlist, Image, Image Map ,Table, Frameform, get and post method, Input tags	12
Unit No.2	CSS & JavaScript Introduction to CSS Use of CSS Types of CSS, Selector, Properties, Values CSS Properties-Background, Text, Fonts, Link, List,Table ,Box Model ,Border ,Margin, paddding ,Display, Positing, Floating, Opacity, Media type, Backgrouds and Borders Imagas, Value and Replace Content, Text Effects,2D/3D Transformation, Animations ,Multiple Column layout User Interface CSS interact with JavaScript	14
Unit No. 3	Language Basics Lexical Structure-Data Type-Variable-Expression and Operator Constants-Flow Control Statement-Embedded PHP in Web Pages Functions Calling a function-Defining a Function- Variable Scope- Function parameters - Return Value- Variable Function-Anonymous function	12
Unit No.4	Web Server Apache Web Server- Working with Web Server Database Using PHP to Access a Database-Relational Database and SQL	10
Unit No. 5	MySQL:- Introduction What is My sql,Data type My SQL - QUERY ,MY SQL Database PHP My sql create database,table command in SQL,Databae ODBC	10

Reference Books:-

1, My Sql Bible stevee Suchring John Wiley son 2002
2. Programming PHP Rasmus lerdorf and levin tatroe O Reilly Publication 2002
3. PHP The Complete Reference by Steven Holzener to Professional by W. Jason gilmore

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Lab Course-1 (Max Mark 50) Based on 1.2,1.3,1.4

1) How to start computer?

2) How to shut down computer?

3) Linking of various peripherals.

4) Operation of all keys as key Board.

5) Mouse operation.

6) VDU - Various adjustment.

7) Printer and various options and its operations.

8) Searching of virus and removing of virus. Practicals Based on

Paper No. PGDCA 1.2,1.3

Windows7 :- Starting Windows-Browsing Start Menu,
 Manipulating Windows - Moving, Resizing, Closing, Windows, Minimizing and Maximizing Windows, Working With Multiple Windows Using Windows Application: Using Word- Pad to create a document, entering text and saving the work. Using my computer - Changing the icon arrangement, To view the floppy disk. To manage files, selecting one or more files, copying a file, delete a file, Drag and drop to move a file.
2. File Management using Windows Explorer :- To Copy, move and delete files, using copy and paste, using drag and drop, creating a folder. Creating a file to a folder, copying and moving the files between drives, renaming files and folders, find Program- To search by file name, by date, by type, by specific text.
3. Control Panel: - Changing date and time, changing display, choosing a background, placing folder on desktop. Adding shortcuts to folder and creating shortcut.
 4. Computer Application Through Accounting Package Tally: - Creation of firm/company, group, ledger accounts, Feeding of accounting dataReceipt, Payment, Purchase, Sale, Contra, Journal, Credit Note, Debit Note.
 5. Inventory Information: - Groups, items, Valuation
6. Reports and Final Accounts Generations -Display and print.
 7. Students should use MS-word package for Letters and Reports.
8. Students should acquire the basics of MS-Excel, i.e. functions, formulae, charts etc.
 9. Student has to present one seminar with the help of transparencies. Student should use MS - Power-Point package for presentation.

Practicals Based on pgdca 1.4
1. The distance between two cities (10 Km.) is input through the keyboard. Write a program to convert and print this distance in meters, feet, inches and centimeters.
2. Write a program to convert the temperature in centigrade degree to Fahrenheit degrees.
3. Check given number is even or odd.
4. Write program to check give number is prime or not.
 5. Write program to display fibnicce series.
6. Write a function to input 5 digit integer and calculate sum of digits.
 7. Write recursive function to find factorial of given number.
8. Write program to check given string is palindrome or not.
9. Write program to do matrix manipulations.
10. Write program to accept students information through arry of structure and calculate average marks, also decide grade and display it.
 11. Write program to generate paysheet using employees information through array of structures.
 12. Write a program to do string manipulation, write separate functions for each operation.
13. Write program to find number of vowels in given string.
14. Write program to find number of words in given text file.
15. Write program to display marksheet of students using data from stud.dat file (the structure of information of students is Roll No., Name, Marks1, Marks2, Marks3, Marks4, Marks5).
PAPER NO Pgdca 1.5

1. Design different web pages using HTML & HTML5

1. Write a simple PHP page that will display some information onto web page.

 2. Write a PHP program to find given number is Armstrong or not

3. Write a PHP program to find largest among 3 Numbers

4. Write a PHP program to check whether the given number is prime or not

 5. Write a PHP program to create an array and try with all array functions. 6. Create a registration form which contains fields name, Roll No, Gender and a submit button A mini project based on the HTML/PHP Language.

6) Check Number is Perfect or not

(ii) Mini Project   (Max. Marks 50)   PGDCA 1.5

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PGDCA – Semester II (Paper No.1.5)

DBMS with Oracle

Max. Marks: 100

External Assessment: 80

Internal Assessment: 20

Unit No.1	Unit- 1 Introduction to database system: Definition, Limitations of traditional file system.¬ Advantages of DBMS¬ Components of DBMS¬ Database Architecture¬ Database Users¬ Schemas and instances¬ Database languages (DDL,DML, DCL)	12
Unit No.2	Unit- 2 Conceptual Design Overview of DB design¬ E-R model: E-R Diagram, entities, attributes and its types,¬ Relationship and relationship sets, Cardinality, Degree, Generalization, Specialization, Aggregation Relational Model: Relation, Domain, Tuples, Degree,¬ cardinality Relational database design: Key and types of keys, relational¬ integrity rules, Codd's rules. Concepts of a table, a row, a relation, a tuple and a key in a¬ relational database	12
Unit No. 3	Introduction to transaction¬ Properties (ACID) of transaction¬ Transaction states¬ Problems of concurrency control.¬ Concurrency Control: Introduction to concurrency.¬	12
Unit No.4	Unit- 4 SQL Introduction¬ DDL commands (create, drop, alter) with examples¬ DML Commands (insert, Update, Delete) with example¬ DCL : Grant and Revoke¬ 15 Syllabus & Structure of BCA- II (Under Science) To be effective From June-2017 Page - 11 Constraints and its types¬ Data Retrieval Mechanism¬ Functions in SQL¬ Operators and clause¬ View¬ Index¬ Sub-query and Nested Sub-queries¬ SQL mechanisms for joining relations (inner joins, outer¬ joins and its types	12
Unit No.5	Unit- 5 PL/SQL using Oracle: Comparison between SQL and PL/SQL, Features of PL/SQL,¬ Structure of PL/SQL Data types in PL/SQL¬ Control statements : If-else construct, Loop statement for¬ loop, while loop Procedure¬ & function : Definition of procedure & functions, IN, OUT AND INOUT Parameters, Cursor : Definition of cursor, Types of cursor-implicit,¬ Explicit, Open, Fetch, Cursor Attributes, Close cursor, Parameterized cursor. Trigger and its types¬ Package in PL/SQL¬ Exception Handling in PL/SQL¬	12

Books Recommended:

1) Database System Concepts by KorthSilberschetz

2) Fundamentals of Database Systems by Elmsari, Navathe

3) SQL, PL/SQL The programming language of Oracle by Ivan Bayross

4) An Introduction to Database Systems by Bipin Desai

5) Database Management systems (DBMS) by Rajiv Chopra.

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PGDCA – Semester II (Paper No.1.5)

ASP.NET using C#

Max. Marks: 100

External Assessment: 80

Internal Assessment: 20

Unit No.1	Introduction to ASP.NET:- What asp.net,its use, Common Language Runtime,Installation ASP.NET, Namespaces,.NET framework class, Web	12
Unit No.2	Introduction to C# C# language elements, Variable & Data type Boxing and Unboxing ,Operator, Working with Arrays and Strings , Pass by value and by reference Looping,Function	12
Unit No.3	Object Oriented concepts,Classes and Objects Constructor and Destructor ,Working with "static" member Inheritance & Polymorphim-type of Inheritance, constructor in inheritance Operator and method of overloading and overriding,static and binding	12
Unit No.4	Web Form and controls:- Web Control class,creating web form,handling image,server control events,Using data control	12
Unit No. 5	Master Pages:- Simple master,Nested Master page,Introduction to css, State management ASP.NET Session State ADO.NET connection,command Object,Data Readers ,Data Sets and Data Adapter	12

Ref Book:-

1 Mastering ASP.NET- BPB Publication

2. ASP.NET complete reference- Tata Mcgraw Hill

3. ASP.NET Programming- Murach

4. "Programming C#" Jesse Liberty,O'Reilly Press

  5. "Professional C#'- Robinson etal,wrox Press,2002

  6. "The Complete Reference:- C#- Herbert Schildt,Tata McGraw Hill

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PGDCA – Semester I (Paper No.1.5)

JAVA and Python programming

Max. Marks: 100

External Assessment: 80

Internal Assessment: 20

Unit o.1	1. Java Fundamentals Features of Java , OOPs concepts , Java virtual machine ,Reflection byte codes ,Byte code interpretation ,Data types, variable, arrays, expressions, operators, and control structures ,Objects and classes	12
Unit o.2	2. Java Classes Abstract classes ,Static classes ,Inner classes ,Packages ,Wrapper classes Interfaces ,This ,Super ,Access control 3. Exception handling Exception as objects ,Exception hierarchy ,Try catch finally ,Throw, throws	12
Unit No. 3	4. IO package Input streams ,Output streams ,Object serialization ,Deserialization, Sample programs on IO files Filter and pipe streams	12
Unit No.4	**Introduction to Python programing** Features/Characteristic of Python,Basic Syntax ,writing and exciting simple program ,Basic Data types, Declaring Variable,Performing assignment, arithmetic operator,Simple Input-output, Precedence of operator,Type of Conversion, Conditional Statement, String, collection list and Tuples Declaring strings, Introduction and Manipulating Collection list Introduction and manipulating Tuples	12
Unit No 5	**Dictionaries,Funcions and Modules** Concept of dictionary, Technique to create, update and delete dictionary item **Function:** Defining a function, calling a function, advantage of function, types of function Function parameters ,Formal parameters, Actual parameter ,anonymous function Goble and local variable Data base connectivity JDBC	12

References Books:-

  1. Programming with Java A Primer, E. Balaguruswamy Tata McGraw Hill Companies
  2. Java Programming John P. Flynt Thomson 2nd
  3. Java Programming Language Ken Arnold Pearson
  4. Core Java, Dietel and Dietel
  5. Java - Balaguruswamy
  6. introduction to Computer Science using Python:- Chares Dierbach
 7. Beginning Python: Using Python 2.6. and Python 3- James Payne

 8. Practical programming: an Introduction to Computer Sccience using Python-3

  Paul Gries,Jennifeer Campbell, Jason Montojo

 9. MySQL for Python : Database Access Made Easy- A. Lukaszewski

Lab Course-2 (Max Mark 50) Based on 1.7,1.8,1.9
Course Code:- PGDCA Semester II   PAPER NO - PGDCA (1.7,1.8,,1.9)
Lab Course - 2   **Max. Marks: 100:**

1. SQL;-create table .Insert rows
2. Create Table, Insert rows and update.
3. Alter existing table structure (ALTER-ADD, MODIFY, DELETE).
4. Simple queries based on single table to view rows.
5. Simple queries based on multi table.
6. Complex queries based on single and multi table.
7. Practical by making use of IF..ELSE. 8. Practical by making use of FOR-LOOP.
9. Practical by using WHILE-LOOP.
10. Practical by making use of PL / SQL Block.
11. Practical by using cursors.
12. Practical by making use of - (% type, & row type)
13. Practical by making use to triggers.
Python:- 1) Installing python and setting up python environment
2) Write a program in python that uses simple statements like printing thenames, numbers, mathematical calculations, etc.
3) Write a program in python that uses conditional constructs like if, if-else, nested if
4) Write a program in python that uses loops
5) Write a program in pythonto manipulate on string like string copy, string concatenation, string comparison, string length, string reverse etc.
6) Write Programs in python which are related to Lists and Tuples
7) Write Programs in python which are related to dictionaries
8) Write Programs in python which are related to functions & modules
9) Write Programs in python to read & write file.
10)Write a python program to demonstrate exception handling
11)Write a python program to demonstrate the use of regular expressions
12)Write a python program to draw different shapes
13)Write a python program to show different GUI controls and their processing
14)Write a python program to show database connectivity
Paper No. 8
1. Write a program using different control structures like While , For etc.
2 Create a Web site of Your college using ASP.Net and C#
3 Create a Master Pages
4. Create a Master Page with CSS to manage application state.
5.Program to manage session state
6. Create a program for Database Conectivity
Paper No. 9 JAVA PROGRAMMING LAB 1.
Programs using constructor and destructor
2. Creation of classes and use of different types of functions
3. Count the number of objects created for a class using static member function
4. Write programs on interfaces
5. Write programs on packages
6. Write programs using function overloading
7. Programs using inheritance
8. Programs using IO streams
9. Programs using files
10. Write a program using exception handling mechanism
11. Programs using AWT
12. Programs on swing
13. Programs using JDBC

Major Project : Paper No. PGDCA - 2.0 Maximum Marks : 100
A Major Project based on the   Java , (ASP.NET using C # ,MY SQI),Language,python