ORDINANCES AND OUTLINES OF TESTS, SYLLABUS FOR THE COURSE OF POST GRADUATION DIPLOMA IN COMPUTER APPLICATION(PGDCA)

PROGRAM CODE: PGDCASSD (SEMESTER SYSTEM)

PART-I (Semester I and II)

For

SESSION 2026-27, 2027-28, 2028-29

PG DEPARTMENT OF COMPUTER SCIENCE

SHRI SANATAN DHARAM GIRLS' COLLEGE, BATHINDA

An Autonomous College

Re-Accredited with 'A' Grade by NAAC

(Under the aegis of SSD Sabha (Regd.), Since 1924 Bathinda)

POST GRADUATION DIPLOMA IN COMPUTER APPLICATION
PROGRAM CODE: PGDCASSD
PDGCA- Ist&IInd semester
SESSION 2026-27, 2027-28, 2028-29

SEMESTER-I

Code No.	Paper	Lectures per Week	Theory Marks	Internal Marks
PGDCA101T	Introduction to Information Technology and E-Commerce	5	70	30
PGDCA102T	Computer Programming Using C	5	70	30
PGDCA103T	Windows Operating System and Office Automation	5	70	30
PGDCA102P	Programming Lab-I (Based on paper PGDCA102T)	8	70	30
PGDCA103P	Programming Lab-II (Based on paper PGDCA103T)	8	70	30

SEMESTER-II

Code No.	Paper	Lectures per Week	Theory Marks	Internal Marks
PGDCA201T	Database Management System	5	70	30
PGDCA202T	Programming using Python	5	70	30
PGDCA203T	Web Technology	5	70	30
PGDCA202P	Programming Lab-III (Based on paper PGDCA202T)	8	70	30
PGDCA203P	Programming Lab-IV (Based on paper PGDCA203T)	8	70	30

CONTINUOUS ASSESSMENT (THEORY PAPERS)

1.	Two tests will be conducted during the Semester. Both the tests will be considered for assessment.	60% of the marks allotted for Continuous Assessment
2.	Assignment/Quizzes	20% of the marks allotted for Continuous Assessment
3.	Attendance	10% of the marks allotted for Continuous Assessment.
4.	Class Participation and behavior	10% of the marks allotted for Continuous Assessment.

PGDCA101T: Introduction to Information Technology and E-Commerce

Maximum Marks: 70 Maximum Times: 3 Hrs.

Minimum Pass Marks: 35% Lectures to be delivered: 45-55

Course Objective: This course is meant to prepare students for work in industry in the information processing fields as well as prepare students for business and computer-related courses. On completion of this course, the students will be able to:

- Gain knowledge of basic Information Technology concepts and applications.
- Understand computer hardware, software, networks, and internet fundamentals.
- Learn the principles and practices of e-commerce.
- Explore online business models, digital payments, and security issues.

Instructions for Paper Setter/Examiners

The question paper will consist of three sections. Section A and B will have four questions each from respective units and candidates are required to attempt two questions each from section A and B. Each question in section A and B shall carry 12 marks. Section C will consist of 11 short answer type questions covering entire syllabus. Each question in section C will carry 2 marks.

Instructions for Candidate

- Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.
- Use of non-programmable scientific calculator is allowed.

Course Content

SECTION A

Computer Fundamentals: Block structure of a computer, characteristics of computers, generations of computers, Classification of computers on the basis of capacity, purpose, and generation.

Memory types: Magnetic core, RAM, ROM, Secondary, Cache, Input and Output Units:

storage devices: floppy disk, hard disk, compact disk, tape; Printers: Impact, non-impact. Graphical I/O devices: Light pen, joystick, Mouse, Touch screen; OCR, OMR, MICR

SECTION B

Computer languages: Machine language, assembly language, high level language, Compiler, Interpreter, Assembler, System Software, Application Software.

Data Network and Communication: Network types, Transmission Modes, Network topologies,

Internet: Evolution of Internet, E-mail WWW, FTP, TELNET, IRC, Video Conferencing.

E-Commerce: The scope of E commerce, Electronic Market, Electronic Data Interchange, Internet Commerce, Benefits and limitations of E-Commerce, produce a generic framework for E-Commerce, Architectural framework of Electronic Commerce, Web based E Commerce Architecture.

Case/Class Assignments

Students will work in group of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-making in the case.

Text and Readings: Students should focus on material presented in lectures. The text should be used to provide further explanation and examples of concepts and techniques discussed in the course:

- P. K. Sinha and P. Sinha, "Foundation of Computers", BPB.
- D. H. Sanders, "Computers Today", McGraw Hill.
- Satish Jain,"Information Technology", BPB.
- David Cyganski, John A. Orr, Information Technology Inside and Outside" Pearson Education.
- Anshuman Sharma, “Fundamentals of Information Technology”, Lakhanpal Publishers

Scheme of Examination

- English will be the medium of instruction and examination.
- Written Examinations will be conducted at the end of each Semester as per the Academic Calendar notified in advance
- Each course will carry 100 marks of which 30 marks shall be reserved for internal assessment and the remaining 70 marks for written examination to be held at the end of each semester.
- The duration of written examination for each paper shall be three hours.
- The minimum marks for passing the examination for each semester shall be 35% in aggregate as well as a minimum of 35% marks in the semester-end examination in each paper.
- A minimum of 75% of classroom attendance is required in each subject.

PGDCA102T: Computer Programming Using C

Maximum Marks: 70 Maximum Time: 3 Hrs.
Minimum Pass Marks: 35% Lectures to be delivered: 45-55

Course Objective: This course is designed to explore computing and to show students the art of computer programming. Students will be able to learn Understand programming using C concepts for writing good programs. On completion of this course, the students will be able to

- Gain knowledge of basic programming concepts and logic building.
- Learn syntax, structure, and features of the C programming language.
- Develop skills to write, compile, and debug simple C programs.
- Understand functions, arrays, pointers, and structures in C.
- Apply problem-solving techniques using C programming.

Instructions for Paper Setter/Examiners

The question paper will consist of three sections. Section A and B will have four questions each from respective units and candidates are required to attempt two questions each from section A and B. Each question in section A and B shall carry 12 marks. Section C will consist of 11 short answer type questions covering entire syllabus. Each question in section C will carry 2 marks.

Instructions for Candidate

- Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.
- Use of non-programmable scientific calculator is allowed.

Course Content

SECTION A

Problem Solving with Computers, c character set, identifier, constants, variables, rules for defining variables, Data types, operators: arithmetic, relational, logical, comma, conditional, assignment, arithmetic expressions, input and output statements, assignment statements.

Decision statement: if, if else, nested if, switch statement, break statement, continue statement, go to statement.

Loops and control statements: While loop, for loop and do-while loop, nested loops

Arrays: one- and two-dimensional Array, multi-dimensional arrays, array initialization.

SECTION B

Pointers: Pointer data type

Functions: definition, declaration, types of functions

Structures: Using structures, arrays of structures and arrays in structures, union

Case/Class Assignments

Students will work in group of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-making in the case.

Class Participation: Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings: Students should focus on material presented in lectures. The text should be used to provide further explanation and examples of concepts and techniques discussed in the course:

- E. Balagurusamy, "Programming in C", Tata McGraw Hill.
- Kamthane, "Programming with ANSI and Turbo C", Pearson Education
- Rajaraman, V, "Fundamentals of Computers", PHI
- Kanetkar, "Let Us C", BPB Publications.
- Anshuman Sharma, Kamaljeet Kaur, “Learn Programming in C”, Lakhanpal Publishers

Scheme of Examination

- English will be the medium of instruction and examination.
- Written Examinations will be conducted at the end of each Semester as per the Academic Calendar notified in advance
- Each course will carry 100 marks of which 30 marks shall be reserved for internal assessment and the remaining 70 marks for written examination to be held at the end of each semester.
- The duration of written examination for each paper shall be three hours.
- The minimum marks for passing the examination for each semester shall be 35% in aggregate as well as a minimum of 35% marks in the semester-end examination in each paper.
- A minimum of 75% of classroom attendance is required in each subject.

PGDCA103T:Windows Operating System and Office Automation

Maximum Marks: 70 Maximum Time: 3 Hrs.
Minimum Pass Marks: 35% Lectures to be delivered: 45-55

Course Objective: This course is designed to explore basics of Windows operating system and its installation process. Students will be able to learn the concepts of MS Office and its utilities. On completion of this course, the students will be able to

- Gain knowledge of Windows operating system basics and features.
- Learn file, folder, and system management skills.
- Understand and use MS Office tools (Word, Excel, PowerPoint).
- Apply office automation techniques to improve productivity.

Instructions for Paper Setter/Examiners

The question paper will consist of three sections. Section A and B will have four questions each from respective units and candidates are required to attempt two questions each from section A and B. Each question in section A and B shall carry 12 marks. Section C will consist of 11 short answer type questions covering entire syllabus. Each question in section C will carry 2 marks.

Instructions for Candidate

- Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.
- Use of non-programmable scientific calculator is allowed.

Course Content

SECTION A

Windows Operating System: Introduction and features, icons and bars. Features and accessories of the Windows program. Objects and their properties.

Folder and file management: Create, copying, moving, Deleting, viewing file and folder, Backing up and restoring files. Components of Windows: format of a window, moving windows, resizing windows, minimizing and maximizing windows.

Control panel: Customizing screens, Screen colors, Patterns, Spacing icons, selecting time/date, setting the Sound, Concept of menu Using Help, Creating Short cuts, Basics of Window Setup, Notepad, Window Accessories, System restore. Customizing printing, changing the print queue, configuring the printer, Adding printers. Working with fonts: changing, removing, adding, customizing mouse and keyboard use.

SECTION B

Introduction to MS Word, MS Word Documents: Creating a File, Saving and File Formats, File views. Font/Character Formatting: Styles and Character/Font Formatting, Character Formatting. Paragraph Formatting: Styles and Paragraph Formatting, Structural Formatting, Paragraph Decoration. Styles: Styles Group, Styles Task Pane. Page Setup and Sections: Page Borders, Header and Footer Layer, Header and Footer Navigation and Design, Adding Header and Footer Material. Tables and picture insertion.

Introduction to MS Excel, Creating and Editing Worksheets and Workbooks, Exploring the types of Data, Date and Time, Modifying Cell Contents, Applying Number Formatting, Cell Range Operations, Controlling the Worksheet View, Copying and Moving Ranges, Using Names to Work with Ranges, Adding Comments to Cells. Formula and Functions, sorting and filtering data, graphs and charts

Introduction to MS PowerPoint, creating and editing slides, Inserting Content from External Sources, Using Content Placeholders, Creating Text Boxes Manually, Working with Text Boxes, Understanding layouts and Themes, Applying a Theme, Working with Preset Placeholders, Customizing and Creating Layouts, Managing Slide Masters, Managing Themes, Printing Slides. Building Animation Effects, Transitions, and Support Materials: Understanding Animation and Transitions, Assigning Transitions to Slides, Using an Animation Preset.

Case/Class Assignments

Students will work in group of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-making in the case.

Class Participation: Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings: Students should focus on material presented in lectures. The text should be used to provide further explanation and examples of concepts and techniques discussed in the course:

- Office 2007 Bible- John Walkenbach, Herb Tyson, Faithe Wempen, Cary N. Prague, Michael R. Groh, Peter G. Aitken, Michael R. Irwin, Gavin Powell and LisaA.Buci.
- Working With MS-Office 2000, Tata McGraw-Hill Publishing, Content Development Group.Chennai

Scheme of Examination

- English will be the medium of instruction and examination.
- Written Examinations will be conducted at the end of each Semester as per the Academic Calendar notified in advance
- Each course will carry 100 marks of which 30 marks shall be reserved for internal assessment and the remaining 70 marks for written examination to be held at the end of each semester.
- The duration of written examination for each paper shall be three hours.
- The minimum marks for passing the examination for each semester shall be 35% in aggregate as well as a minimum of 35% marks in the semester-end examination in each paper.
- A minimum of 75% of classroom attendance is required in each subject.

PDCA102P: Programming Lab-I

Maximum Marks: 100*	Max. Time: 3 Hrs.
Minimum Pass Marks:35%	Practical sessions to be conducted: 60-70

This laboratory course will mainly comprise of exercise based on subject PGDCA102T

*Maximum Marks for Continuous Assessment: 30
Maximum Marks for Practical Examination: 70

PGDCA103P: Programming Lab-II

Maximum Marks: 100*
Minimum Pass Marks:35%

Max. Time: 3 Hrs.
Practical sessions to be conducted: 60-70

This laboratory course will mainly comprise of exercise based on subject PGDCA103T

*Maximum Marks for Continuous Assessment: 30
Maximum Marks for Practical Examination: 70

PGDCA201T: DATABASE MANAGEMENT SYSTEM

Maximum Marks: 70 | Maximum Time: 3 Hrs.
Minimum Pass Marks: 35% | Lectures to be delivered: 45-55

Course Objective: This course is designed to explore computing and to show students the art of design and creation of relational databases. On completion of this course, the students will be able to

- Gain knowledge of database concepts and relational models.
- Learn how to analyze user needs and design databases.
- Understand functional dependencies for accurate database design.
- Understand normalization techniques to reduce redundancy and improve efficiency.

Instructions for Paper Setter/Examiners

The question paper will consist of three sections. Section A and B will have four questions each from respective units and candidates are required to attempt two questions each from section A and B. Each question in section A and B shall carry 12 marks. Section C will consist of 11 short answer type questions covering entire syllabus. Each question in section C will carry 2 marks.

Instructions for Candidate

- Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.

Course Content

SECTION A

Introduction: Database Approach, Characteristics of a Database Approach, Database System Environment.

Roles in Database Environment: Database Administrators, Database Designers, End Users, Application Developers.

Database Management Systems: Definition, Characteristics, Advantages of Using DBMS Approach, Classification of DBMSs.

Architecture: Data Models, Database Schema and Instance, Three Schema Architecture, Data Independence - Physical and Logical data Independence.

Database Conceptual Modelling by E-R model: Concepts, Entities and Entity Sets, Attributes, Mapping Constraints, E-R Diagram, Weak Entity Sets, Strong Entity Sets.

SECTION B

Relational Data Model: Concepts and Terminology.

Constraints: Integrity Constraints, Entity and Referential Integrity constraints.

Keys: Super Keys, Candidate Keys, Primary Keys, Secondary Keys and Foreign Keys. Relational Algebra: Basic Operations, Additional Operations, Example Queries.

Relational Calculus: Tuple and Domain Relational Calculus, Example Queries.

Normalization: Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependency, Normal Forms- 1NF, 2NF, 3NF, BCNF, Multi-valued Dependency, Join Dependency and Higher Normal Forms- 4NF, 5NF.

Case/Class Assignments

Students will work in group of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-making in the case.

Class Participation: Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings : Students should focus on material presented in lectures. The text should be used to provide further explanation and examples of concepts and techniques discussed in the course:

- Elmasry Navathe, "Fundamentals of Database System", Pearson Education.
- T. Connolly, C Begg, "Database Systems", Pearson Education.
- ਡਾਟਾਬੇਸ ਮੈਨੇਜਮੈਂਟ ਸਿਸਟਮ, Madaan Publishing House, Patiala
- Jeffrey D. Ullman, "Principles of Database Systems", Galgotia Publications.
- Naveen Parkash, "Introduction to Database Management", Tata McGraw Hill.
- Anushuman Sharma “Fundaments of DBMS”, Lakhanpal Publishers

Scheme of Examination

- English will be the medium of instruction and examination.
- Written Examinations will be conducted at the end of each Semester as per the Academic Calendar notified in advance
- Each course will carry 100 marks of which 30 marks shall be reserved for internal assessment and the remaining 70 marks for written examination to be held at the end of each semester.
- The duration of written examination for each paper shall be three hours.
- The minimum marks for passing the examination for each semester shall be 35% in aggregate as well as a minimum of 35% marks in the semester-end examination in each paper.
- A minimum of 75% of classroom attendance is required in each subject.

PGDCA202T: Programming with Python

Maximum Marks: 70 Maximum Time: 3 Hrs.

Minimum Pass Marks: 35% Lectures to be delivered: 45-55

Course Objective: This course is designed to explore computing and to show students the art of design and creation of relational databases. On completion of this course, the students will be able to

- Gain knowledge of Python basics, syntax, and programming concepts.
- Learn to use Python data types, operators, and control structures.
- Understand functions, modules, and file handling in Python.
- Develop skills to solve problem using python programming

Instructions for Paper Setter/Examiners

The question paper will consist of three sections. Section A and B will have four questions each from respective units and candidates are required to attempt two questions each from section A and B. Each question in section A and B shall carry 12 marks. Section C will consist of 11 short answer type questions covering entire syllabus. Each question in section C will carry 2 marks.

Instructions for Candidate

- Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.

Course Content

SECTION A

Introduction to Python: History of Python, Strength and Weakness, Different Versions, Installing Python, Setting up in local environment, IDLE, Executing from file, command line from interactive mode, Python Identifiers and reserved key words.

Python syntax: Variables and Variables type, Data types, Data Types Conversion, Operators (Arithmetic, Comparison, Assignment, Bitwise, Logical, Membership, Identity), Operators Precedence, Python Decision making (if, el if, else, nested if), Python loops (while, for, nested loops), Break and continue statements.

Python Collections or Sequence: Sequence introduction, Number operations, String Operations, List, Tuple, Dictionary, Set.

SECTION B

Python Functions: Function introduction, User defined functions, Functions with parameters, Keywords and optional parameters, Scope of variables (Global and Local), Anonymous function - Lambda, In-build function, List comprehension.

Python Modules: Modules, Standard Modules (Sys, Math, Time), Import Statement, from statement, Dir() functions.

Case/Class Assignments

Students will work in group of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-making in the case.

Class Participation: Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings: Students should focus on material presented in lectures. The text should be used to providefurther explanation and examples of concepts and techniques discussed in the course:

- Paul Gries, Jennifer Campbell, Jason Montojo, Practical Programming- An Introduction to Computer Science Using Python 3.6, Shroff Publications and Distributors
- Anshuman Sharama, "Learn Programming in Python", Lakhanpal Publishers

Scheme of Examination

- English will be the medium of instruction and examination.
- Written Examinations will be conducted at the end of each Semester as per the Academic Calendar notified in advance
- Each course will carry 100 marks of which 30 marks shall be reserved for internal assessment and the remaining 70 marks for written examination to be held at the end of each semester.
- The duration of written examination for each paper shall be three hours.
- The minimum marks for passing the examination for each semester shall be 35% in aggregate as well as a minimum of 35% marks in the semester-end examination in each paper.
- A minimum of 75% of classroom attendance is required in each subject.

PGDCA203T: Web Technology

Maximum Marks: 70 Maximum Time: 3 Hrs.

Minimum Pass Marks: 35% Lectures to be delivered: 45-55

Course Objective: This course is designed to explore computing and to show students the art of design and creation of relational databases. On completion of this course, the students will be able to

- Gain knowledge of internet basics, protocols, and web architecture.
- Learn technologies for web design.
- Understand server-side technologies for dynamic web development.
- Explore web services, databases, and security concepts in web applications.

Instructions for Paper Setter/Examiners

The question paper will consist of three sections. Section A and B will have four questions each from respective units and candidates are required to attempt two questions each from section A and B. Each question in section A and B shall carry 12 marks. Section C will consist of 11 short answer type questions covering entire syllabus. Each question in section C will carry 2 marks.

Instructions for Candidate

- Candidates are required to attempt five questions in all, selecting two questions each from section A and B and compulsory question of section C.
- Use of non-programmable scientific calculator is allowed.

Course Content

SECTION A

Internet Basics: Networks, Protocols, TCP/IP, Internet Addresses, Ports, Sockets, Name Resolution, Firewalls, Protocol Tunneling, Proxy Servers, Internet Standards, governing the web HTTP, MIME, Inside URLS, Web applications, Overview of clients/servers web communication, comparison of web servers, Common Gateway Interface CGI.

Web Page Designing: Introduction to markup languages; HTML: list, table, images, frames, forms, pages style sheets CSS.

SECTION B

Client-Side Scripting:Java script: Introduction, documents, forms, statements, functions, objects; Event and event handling; Browsers and the DOM.

Server-Side Programming: PHP: Introduction, requirements, PHP syntax, data type, variables, strings, operators, if-else, control structure, switch, array, function, form, sending email, file upload, session/state management, error and exception, PHP Database for dynamic Web pages.

Case/Class Assignments

Students will work in group of up to four to prepare a brief write-up due before the start of each class covering the case study or class material to be discussed in the next session. Questions may include a quantitative analysis of the problem facing the decision-making in the case.

Class Participation: Attendance will be taken at each class. Class participation is scored for each student for each class

Text and Readings: Students should focus on material presented in lectures. The text should be used to providefurther explanation and examples of concepts and techniques discussed in the course:

- Ramesh Bangia, "Internet and Web Design", New Age International
- Bhave, "Programming with Java", Pearson Education
- Ullman, "PHP for the Web: Visual QuickStart Guide", Pearson Education
- Deitel, "Java for programmers", Pearson Education
- Dustin R. Callaway, "Inside Servlets" Pearson Education.
- Anshuman Sharama, “Fundamentals of Internet Application”, Lakhanpal Publishers

Scheme of Examination

- English will be the medium of instruction and examination.
- Written Examinations will be conducted at the end of each Semester as per the Academic Calendar notified in advance
- Each course will carry 100 marks of which 30 marks shall be reserved for internal assessment and the remaining 70 marks for written examination to be held at the end of each semester.
- The duration of written examination for each paper shall be three hours.
- The minimum marks for passing the examination for each semester shall be 35% in aggregate as well as a minimum of 35% marks in the semester-end examination in each paper.
- A minimum of 75% of classroom attendance is required in each subject.

PGDCA202P: Programming Lab-III

Maximum Marks: 100*
Minimum Pass Marks:35%

Max. Time: 3 Hrs.
Practical sessions to be conducted: 60-70

This laboratory course will mainly comprise of exercise based on subject PGDCA202T

*Maximum Marks for Continuous Assessment: 30
Maximum Marks for Practical Examination: 70

PGDCA203P: Programming Lab-IV

Maximum Marks: 100*
Minimum Pass Marks:35%
Max. Time: 3 Hrs.
Practical sessions to be conducted: 60-70

This laboratory course will mainly comprise of exercise based on subject PGDCA203T

*Maximum Marks for Continuous Assessment: 30
Maximum Marks for Practical Examination: 70