

**GOVT. E. RAGHAVENDRA RAO PG SCIENCE COLLEGE,
BILASPUR (C.G.)**



DEPARTMENT OF COMPUTER APPLICATION
(Post Graduate Diploma of Computer Application)

SYLLABUS
(P.G.D.C.A.)

SESSION

2023-2024

Department of Computer Application
(Diploma Course)

Part A: Introduction				
Program: Diploma Course		Class:PGDCA	Year: 2023	Session:2023-24
1	Course Code	PGDCA-1T		
2	Course Title	Computer Fundamentals and Information Technology		
3	Course Type	Core Course		
4	Pre-requisite (if any)	As per Govt. Norms		
5	Course Learning Outcomes (CLO)	- Understand the concept of input and output devices and the basic terminologies used in the computer. - Understand the Programming, flow chart symbols, complete and correct flow chart algorithms, create a program based on a flow chart. - Identify categories of programs, system software and applications. Organize and work with files and folders - Utilize the Internet Web resources and evaluate on-line e-business system. - Solve common business problems using appropriate Information Technology applications and systems.		
6	Total Marks	Max. Marks: 100		Min Passing Marks: 40
Part B: Content of the Course				
Unit	Topics (Course Contents)			
I	Introduction to Computers and information technology: Brief history of development of computer and generations of computer. Computer system characteristics, Advantages and disadvantages of a computer, Block diagram of computer, Types of computer - Analog, Hybrid, digital, Micro, Mini, Mainframe, Super computer, Personal Computer, Types of PCs desktop, Laptop, Notebook, Palmtop etc., Number systems (Binary, Octal, Decimal, Hexadecimal), Computer codes – ASCII, EBCDIC.			
II	Input devices: Keyboard, Mouse, Monitor, Trackball, Joystick, Electronic Pen, Touch Screen, Image Scanner, MICR, OCR,OMR, Bar code reader, Digitizer, Electronic Card Reader, voice Recognition, Vision Input System, Output Devices: Monitors, Printers, Plotters, Screen Image Projector, Voice response system.			
III	Main Memory (RAM, ROM, EPROM, Cache memory) Registers. Secondary storage devices (Sequential and Direct Access Devices), Magnetic tapes, Magnetic Disks, Optical Disk, CD-ROM, DVD.			
IV	Software and its types (System software, Application Software, Firmware), Computer Languages (Machine, Assembly, High level), Assemblers, Compilers, and Interpreter, Linker & Loader,Virus definition, type, effects, symptoms. Anti-virus program, virus prevention.			
V	Computer Network and Security: Data Communication, Components of Data Communication, Types of network(LAN,MAN WAN), Internetwork, Transmission mode, Protocols and Architecture, Topology, OSI reference model, TCP/IP reference model.			
Keywords:	Input & Output Devices, Memory, Software, Virus			
Part C: Learning Resource				

Text Books, Reference Books, Other Resources
Suggested Readings: <i>Text Books Recommended-</i> 1. “Computer Fundamentals”, P.K. Sinha, BPB Publication 2. “Fundamental of computer “, V. Rajaraman, PHI Publication 3. “Introduction to information technology”, V. Rajaraman, PHI ublication 4. “Information Technology today” , S. jaiswal 5. “Fundamental of IT”, Leon and Leon , Leon Tec world 6. “Introduction to Information Technology”, Aksoy and Denardis, Cengage learning <i>Online resources:</i>

PART - D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Marks Minimum Marks: 40 Marks	
Year End	Paper – Two section – A & B
Exam (SEE):	Section A: Objective and Short answer type questions – 30 Marks
	Section B: Descriptive answer type questions unit wise – 14 x 05 = 70 Marks

Part A: Introduction			
Program: Diploma Course		Class: PGDCA	Year: 2023
Session: 2023-24			
1	Course Code	PGDCA-2T	
2	Course Title	PC PACKAGES	
3	Course Type	Core Course	
4	Pre-requisite (if any)	As per Govt. Norms	
5	Course Learning Outcomes (CLO)	- Identify the parts of the Windows operating system and uses of common Windows OS elements. - Learn Modern office activities and their software requirements. - Create a new Word document and formatting a document using MS-WORD. - Create an electronic spreadsheet using MS-Excel, familiarize oneself with Excel's basic and advance features. - Learn slide show presentation concepts and explore the Microsoft Office PowerPoint environment.	
6	Total Marks	Max. Marks: 100	Min Passing Marks: 40
Part B: Content of the Course			
Unit	Topics (Course Contents)		
I	Fundamentals of DOS, Booting process, POST. Internal commands of DOS: Directory and file commands, date, time, ver, prompt, cls. External commands: x-copy, disk-copy, format, attrib, tree, move. Creating and executing batch files.		
II	Graphical User Interface, Windows as an operating system, Features of Windows, Versions of windows, Components of windows desktop, Working with desktop icons, Changing the properties of desktop, Performing file and folder operations (Creating, Renaming, Opening and viewing, copying and moving, deleting) Windows Accessories (paint, calendar, calculator, notepad, WordPad).		
III	Introduction to word processing (MS-Word) : Advantages of word processing, Main features of MS-Word, Creating, Opening and saving a word document. Applying text formatting (Changing Font and font size, Applying bold, Italic and Underline, Strikethrough, Subscript, Superscript, Changing colour text). Applying paragraph formatting (Setting Indent for paragraph, Adding a paragraph border, bullets) Printing the documents, Previewing a document, Inserting picture, Find, replace, Using mail merge, Working with tables.		
IV	Introduction to Spreadsheet (MS-Excel) : Definition and advantages of electronic worksheet, Understanding workbook and worksheets, Exploring the Ms-Excel user interface (Title Bar, Minimise/Maximize, Close buttons, Formula Bar, Worksheet, Scroll bars, Status Bar etc.), Entering data in worksheet, saving and opening a workbook, managing worksheets in workbook, renaming, deleting worksheet, Inserting and deleting rows and columns, Using Cut, Copy, Paste, Formatting Cells (font, text alignment etc.), auto calculate, auto complete, creating lists, series, fill handle, Working with charts and Functions like SUM, ROUND, AVERAGE, CONCATENATE, LEN, LOWER, UPPER, FIND, NOW, TODAY, ABS, INT, MOD, SQRT, COUNTMAX, MIN.		

V	Introduction to Power Point, Main components of powerpoint interface(Title Bar, Minimize/Maximize, Close buttons, Working Area, Scroll bars, Status Bar, slide Pane, etc.), creating presentations in different ways, Inserting new slide, Moving and deleting slides, saving presentation, Inserting image, shapes, working with animations and transition effects, adding a transition style and sound, working with tables. Introduction to MS-Access, database objects-Tables, Queries, Forms and Reports. Creating table, working with fields in a table, Inserting a new field, Entering records in a table.
Keywords:	Operating System, Input & Output Devices, Current Trends
Part C: Learning Resource	
Text Books, Reference Books, Other Resources	
Suggested Readings: Text Books Recommended- 1. Comdex Computer Course Kit (windows 7 with office 2010), Gupta Vikas. Dreamtech Publication 2. Mastering MS Office 2000, Professional Edition by Courier, BPB Publication 3. MS Office 2000 Training Guide by Maria, BPB Publications 4. MS Office complete by SYBEX. ONLINE RESOURCES: 1. https://www.ndl.gov.in/ (National Digital Library of India) 2. https://www.swayam.gov.in/ (SWAYAM PORTAL) 3. https://www.doabooks.org/ (Directory of Open Access Books) 4. https://nptel.ac.in/ National Programme on Technology Enhanced Learning (NPTEL) 5. https://epgp.inflibnet.ac.in/ E-PG Pathshala 6. http://cec.nic.in/cec/ (e-Content Courseware in UG Subjects) https://egyankosh.ac.in/ (E-Gyankosh)	

PART - D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods:	
Maximum Marks:	100 Marks
Minimum Marks:	40 Marks
Year End	Paper – Two section – A & B
Exam (SEE):	Section A: Objective and Short answer type questions – 30 Marks
	Section B: Descriptive answer type questions unit wise – 14 x 05 = 70 Marks

Part A: Introduction			
Program: Diploma Course		Class: PGDCA	Year: 2023
		Session: 2023-24	
1	Course Code	PGDCA-3T	
2	Course Title	Operating System	
3	Course Type	Core Course	
4	Pre-requisite (if any)	As per Govt. Norms	
5	Course Learning Outcomes (CLO)	1. Describe the important computer system resources and the role of operating system in their management policies and algorithms. 2. Understand the process management policies and scheduling of processes by CPU. 3. Evaluate the requirement for process synchronization and coordination handled by operating system. 4. Describe and analyze the memory management and its allocation policies.	
	Total Marks	Max. Marks: 100	Min Passing Marks: 40
Part B: Content of the Course			
Unit	Topics (Course Contents)		
I	Introduction to Operating System What is an Operating System, Operating Systems Architecture, Function of Operating System. Booting Process, Types of Operating System: Multi-Programming, Multi-Tasking, Multi-Threading; Operating Systems Classification: Simple Batch Systems, Multi-programmed Batches systems, Time-Sharing Systems, Parallel & Distributed Operating Systems, System Calls, Android, Linux, Windows.		
II	Process Management: Process Model, Process States and Transitions, Process control block, Basic concepts of Threads, Schedulers, CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms. FCFC, Priority, MLQ, ROUND ROBIN		
III	Synchronization and Deadlock Background, The Critical- Section Problem, Mutual exclusion, Semaphore, Classical problem of synchronization, Critical region and conditional critical region. Deadlock: Deadlock characteristic, Methods of handling deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.		
IV	Memory Management Main Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation, Segmentation with Paging, Virtual Memory: Demand Paging, Page replacement.		
V	File-System Implementation A Simple File System, Logical & Physical File System, File-System Interface: Access Methods, Directory Structure, Protection, Free-Space Management, Directory Implementation.		
Keywords:	Operating System, Process, threads, Virtual memory.		
Part C: Learning Resource			
Text Books, Reference Books, Other Resources			
Suggested Readings:			
Text Books:			

1. Operating System Concepts, Silberschatz and Galvin, Pearson Education Pub.
2. Operating Systems, Madnick E., Donovan J., Tata McGraw Hill,
3. Operating Systems, A. S. Tannenbaum, PHI

Reference Books:

1. Operating Systems Internals and Design Principle, William Stallings, Prentice Hall Publishers
2. Operating Systems- AConcept-Based Approach, Dhananjay M. Dhamdhere, McGraw-Hil

PART - D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Minimum Marks: 40 Marks

Year End	Paper – Two section – A & B
Exam (SEE):	Section A: Objective and Short answer type questions – 30 Marks
	Section B: Descriptive answer type questions unit wise – 14 x 05 = 70 Marks

Part A: Introduction				
Program: Diploma Course		Class:PGDCA	Year: 2023	Session:2023-24
1	Course Code	PGDCA-4T		
2	Course Title	PROGRAMMING IN C++		
3	Course Type	Core Course		
4	Pre-requisite (if any)	As per Govt. Norms		
5	Course Learning Outcomes (CLO)	• Learn the fundamental programming concepts and methodologies which are essential to create good C++ programs. • Practice the fundamental programming methodologies in the C++ programming language via laboratory experiences. • Code, test, and implement a well-structured, robust computer program using the C++ programming language. • Write reusable modules (collections of functions).		
6	Total Marks	Max. Marks: 100		Min Passing Marks: 40
Part B: Content of the Course				
Unit	Topics (Course Contents)			No. of Period/ Hours
I	Introduction to OOP: Basic concepts of Object Oriented Programming: Objects, Classes, Data abstraction and Encapsulation, Polymorphism, Dynamic Binding, Message Passing, Procedure Oriented vs. Object Oriented Programming. Benefits and applications of OOP.			
II	Graduating to C++: Program features and Structure of C++ program, C++ Tokens: Keywords, Identifiers, Constants, Strings, Operators, C++ data types: Basic (Built-in) data types, User defined data types, Operators and operator precedence, Control Structures (Sequence, Selection, Loop), switch case, break, continue, arrays, pointers.			
III	Functions: Function prototyping, call by reference, return by reference, Inline functions, Default arguments, function overloading, string handling functions. Operator Overloading.			
IV	Classes in C++: Structure, specifying class, creating objects, accessing class members, Defining member functions, constructors, destructors.			
V	Inheritance: Forms of Inheritance: Single inheritance, Multiple Inheritance, Hierarchical Inheritance, Multilevel Inheritance, Hybrid Inheritance, virtual base class, Polymorphism, static and dynamic binding, Virtual functions, abstract class, void pointer, friend class, friend function.			
Keywords: Class, Object, Polymorphism, Inheritance.				
Part C: Learning Resource				
Text Books, Reference Books, Other Resources				
Suggested Readings:				
Text books:				
1. C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.				
2. Object Oriented Programming in C++, 4th Edition, R.Lafore, SAMS, Pearson Education				
Reference Books:				

1. An Introduction to OOP, 3rd Edition, T. Budd, Pearson Education, 2008.
2. Programming Principles and Practice Using C++, B. Stroustrup, Addison-Wesley, Pearson Education.
3. Problem solving with C++, 6th Edition, Walter Savitch, Pearson Education, 2007.
4. The Art, Philosophy and Science of OOP with C++, R. Miller, SPD. OP in C++, 3rd Edition, T. Gaddis, J. Walters and G. Muganda, Wiley DreamTech Press.
5. An Introduction to OOP in C++ with applications in Computer Graphics, 2nd Edition, G.M. Seed, Springer. Programming with ANSI C++, B. Trivedi, Oxford Press.

ONLINE RESOURCES:

1. <https://www.ndl.gov.in/> (National Digital Library of India)
2. <https://www.swayam.gov.in/> (SWAYAM PORTAL)
3. <https://www.doabooks.org/> (Directory of Open Access Books)
4. <https://nptel.ac.in/> National Programme on Technology Enhanced Learning (NPTEL)
5. <https://epgp.inflibnet.ac.in/> E-PG Pathshala
6. <http://cec.nic.in/cec/> (e-Content Courseware in UG Subjects)
7. <https://egyankosh.ac.in/> (E-Gyankosh)

PART - D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Minimum Marks: 40 Marks

Year End	Paper – Two section – A & B
Exam (SEE):	Section A: Objective and Short answer type questions – 30 Marks
	Section B: Descriptive answer type questions unit wise – 14 x 05 = 70 Marks

Part A: Introduction				
Program: Diploma Course		Class:PGDCA	Year: 2023	Session:2023-24
1	Course Code	PGDCA-5T		
2	Course Title	INTERNET AND HTML		
3	Course Type	Core Course		
4	Pre-requisite (if any)	As per Govt. Norms		
5	Course Learning Outcomes (CLO)	- Describe the concepts of internet including browser and http protocol. - List the various HTML tags and use them to develop the user friendly web pages. - Develop the modern web pages using the html with different layouts as per need of applications.		
6	Total Marks	Max. Marks: 100		Min Passing Marks: 40
Part B: Content of the Course				
Unit	Topics (Course Contents)			
I	Introduction to Internet: History of internet, what is the internet, advantages of internet, Minimum requirements for internet, ISP, Internet protocols, Internet Tools(FTP, Gopher, E-mail, Telnet, Newsgroup, www etc.),Bridges, Hub, Routers, Repeaters and Gateways, Modem, Types of connections –Dial up, leased ISDN, Broadband,			
II	World Wide Web: About www, useful services of the www, web browsers, URL, types of web pages (Static & Dynamic), Domain name system, Search Engines, E-mail, Web Publishing, Principles of effective web page design.			
III	Introduction to HTML: Origin, evolution and importance of HTML, elements of HTML, Head, Title. Body: background, bgcolor, link, vlink, alink, bgproperties, margin. Anchor: href. Name, title. Block formatting elements: font, heading, blockquote, line break, center, marquee, list elements.			
IV	Forms in HTML: Input elements: Textbox, password box, checkbox, radio button, combo box, select elements, option element. Information type elements: code, emphasis, keyboard, strong, boldface, italics, strike and subscript.			
V	Advanced HTML: Tables: Table elements: border, cell spacing, width, height, align, bgcolor, bordercolor, TR element, TD element, TH element, Col Element. Frames: frame and frameset elements.			
Keywords:		HTML, Markup, Internet.		
Part C: Learning Resource				

Text Books, Reference Books, Other Resources
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Suggested Readings:

Text Books Recommended-

1. “Internet and Internet Engineering”, Daniel Minoli, TMH (Latest Edition)
2. “HTML The Definite Guide”, Chuckmusiano& Bill Kenndy, O Reilly (Latest Edition)
3. “Dynamic HTML”, Joseph Schmuller, BPB, 2000.

ONLINE RESOURCES:

1. <https://www.ndl.gov.in/> (National Digital Library of India)
2. <https://www.swayam.gov.in/> (SWAYAM PORTAL)
3. <https://www.doabooks.org/> (Directory of Open Access Books)
4. <https://nptel.ac.in/> National Programme on Technology Enhanced Learning (NPTEL)
5. <https://epgp.inflibnet.ac.in/> E-PG Pathshala
6. <http://cec.nic.in/cec/> (e-Content Courseware in UG Subjects)
7. <https://egyankosh.ac.in/> (E-Gyankosh)

PART - D: Assessment and Evaluation
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Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Minimum Marks: 40 Marks

Year End	Paper – Two section – A & B
Exam (SEE):	Section A: Objective and Short answer type questions – 30 Marks
	Section B: Descriptive answer type questions unit wise – 14 x 05 = 70 Marks

Part A: Introduction			
Program: Diploma Course		Class: PGDCA	Year: 2023
		Session:2023-24	
1	Course Code	PGDCA-6T	
2	Course Title	RELATIONAL DATABASE MANAGEMENT SYSTEM (ORACLE)	
3	Course Type	Core Course	
4	Pre-requisite (if any)	As per Govt. Norms	
5	Course Learning Outcomes (CLO)	- Understand Data, Database system and its architecture. - Apply ER modeling and Relational Database design using Normalization. - Apply concepts of database storage and querying. ° Understand Concurrency, Recovery and Security mechanism in DBMS. - Understand Current advances in DBMS.	
6	Total Marks	Max. Marks: 100	Min Passing Marks: 40
Part B: Content of the Course			
Unit	Topics (Course Contents)		
I	Overview of Database Management : Data and information, File System versus Database Systems, Database System Applications, Purpose of database systems, Advantages and Disadvantages of DBMS, View of data , Schemas and Instances, Data Abstraction, Data Independence, Database Architecture, Database Users and Administrators, History of Database systems.		
II	Introduction to Data Models : Relational model, E-R model as a tool for conceptual design,Attributes and relationships. Concept of keys : candidate key, primary key, alternate key, foreign key, strong and weak entities, Case studies of ER modeling , Generalization, Specialization and aggregation. Converting an ER model into relational schema. Extended ER features. Relational model: Structure of relational databases, Database schema.		
III	Relational Algebra: Selection, Projection, cross product, different types of joins (inner join, outer join, self join) Set operations, Overview of SQL Query Language, Introduction to SQL constructs (SELECT... FROM, WHERE... GROUP BY... HAVING...ORDER BY...), INSERT, DELETE, UPDATE, VIEW definition and use, Nested queries. Integrity constraints: Not null, unique, check, primary key, foreign key, references, triggers.		
IV	Normalization concept in logical models; Pitfalls in database design, update anomalies; Functional dependencies, Join dependencies, Normal forms (1NF, 2NF, 3NF and BCNF), Concept of indexes, File organization, Serial Files, Sequential files, Index-Sequential, Direct Files.		
V	ACID Properties of Transactions, Concurrency control,Introduction to Query Processing and Protecting the Database. Protecting the Database Integrity, Security and Recovery. Domain Constraints, Referential Integrity, assertion, Triggers, Security & Authorization in SQL.		
Keywords:	RDBMS, SQL, Integrity, Authorization.		
Part C: Learning Resource			
Text Books, Reference Books, Other Resources			
Suggested Readings:			
Text Books:			
1. Fundamentals of Database Systems, R Elmasri& S B. Navathe, Pearson Education.			
2. Database Systems Concepts, A Silberschatz, H F. Korth& S. Sudarshan, McGraw-Hill.			

3. Fundamentals of Database Management Systems, Mark L. Gillenson, Wiley India Pvt.
4. Introduction To Database Systems, C.J.Date, Longman, Pearson Education

Reference Books:

1. Database Systems: A Complete Book, Molina, Ullman, J. Widom, Pearson Education.
2. Database Systems: Design, Implementation, and Management, Peter Rob & Carlos Coronel, CENGAGE Learning India Pvt. Ltd., New Delhi.
3. Database Systems Using Oracle, Nilesh Shah, PHI Learning Pvt. Ltd., New Delhi.
4. Database Management Systems, R Ramakrishnan, J Gehrke, McGraw-Hill Education
5. Database Development and Management, Lee Chao, Auerbach Publications.

PART - D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Minimum Marks: 40 Marks

Year End	Paper – Two section – A & B
Exam (SEE):	Section A: Objective and Short answer type questions – 30 Marks
	Section B: Descriptive answer type questions unit wise – 14 x 05 = 70 Marks

Part A: Introduction				
Program: Diploma Course		Class:PGDCA	Year: 2023	Session:2023-24
1	Course Code	PGDCA-1P		
2	Course Title	Windows &PC Package Lab		
3	Course Type	Laboratory Course		
4	Pre-requisite(if any)	As per Govt. Norms		
5	Course Learning Outcomes (CLO)	• Learn Modern office activities and their software requirements • Create a new Word document and formatting a document using MS-WORD. • Create an electronic spreadsheet using MS-Excel, familiarize oneself with Excel’s basic and advance features. • Create slide show presentation and explore the Microsoft Office PowerPoint environment.		
6	Total Marks	Max. Marks:50	Min Passing Marks: 17	
Part B: Content of the Course				
Section	Topics (Course Contents)			
B	MS WORD: Basic formatting, Paragraph formatting, Page formatting. Home, Insert, Draw, Design, Layout, Mailing tab. Print Options. MS POWER POINT: Creating Presentations, Addition and formatting slides. Effects and Animation. Slide Show, Recording MS EXCEL: Operators in MS EXCEL, basic operations on cell, Using functions, Graph and Charts. Windows: Desktop, Screen Saver, Windows Accessories, System Tools, Control Panel.			
Keywords:	DOS, MS-WORD, MS-EXCEL, MS-POWER POINT			
Part C: Learning Resource				
Text Books, Reference Books, Other Resources				
Text Books Recommended- 1. Comdex Computer Course Kit (windows 7 with office 2010), Gupta Vikas. Dreamtech Publication 2. Mastering MS Office 2000, Professional Edition by Courier, BPB Publication 3. MS Office 2000 Training Guide by Maria, BPB Publications				
Part D: Assessment & Evaluation				
• Examination of Lab course shall be conducted at the end of Session. • Exam pattern shall be followed to computer laboratory norms and questions will be determined by the department /teacher concerned. • Marks distribution in each course shall be determined by the department / course tutor following the guidelines.				

BREAK OF MARKS FOR PRACTICAL

S.NO.	Argument	Max. Marks	Minimum Marks
1	Lab Record	10	
2	Viva-Voce	20	
3	Program development and Execution	20	
	Total Marks	50	17

Part A: Introduction			
Program: Diploma Course		Class:PGDCA	Year: 2022
		Session:2022-23	
1	Course Code	PGDCA-2P	
2	Course Title	Programming Lab in C++ and Oracle.	
3	Course Type	Laboratory Course	
4	Pre-requisite(if any)	As per Govt. Norms	
5	Course Learning Outcomes (CLO)	• Learn the fundamental programming concepts and methodologies which are essential to create goodC++ programs. • Practice the fundamental programming methodologies in theC++ programming language via laboratory experiences. • Code, test, and implement a well-structured, robust computer program using theC++ programming language. • Write reusable modules (collections of functions).	
6	Total Marks	Max. Marks:50	Min Passing Marks: 17
Part B: Content of the Course			
Section	Topics (Course Contents)		
A	1) Write a C++ program to find the sum of individual digits of a positive integer. 2) Write a C++ program to generate the first n terms of the sequence. 3) Write a C++ Program to Explain concept of CLASS & OBJECT. 4) Write a C++ program to explain function overloading. 5) Write a C++ program to overload + operator. 6) Write a C++ program to explain constructor,parameterizedConstructor, CopyConstructor. 7) Write a C++ program to explain Destructor. 8) Write a C++ program to explain Inheritance. 9) Write a C++ program to implement polymorphism.		
B	Oracle: CREAT, ALTER, TRUNCATE, INSERT, UPDATE, DELETE, SELECT, DROP,GROUP BY, WHERE BY, WILD CARD CHARACTERS.		
Keywords:	Constructor, destructor, inline, pointers, sql		
Part C: Learning Resource			
Text Books, Reference Books, Other Resources			
1. An Introduction to OOP, 3rd Edition, T. Budd, Pearson Education,2008. 2. Programming Principles and Practice Using C++, B.Stroutstrup, Addison- Wesley, Pearson Education. 3. Problem solving with C++, 6th Edition, Walter Savitch, Pearson Education,2007.			
Part D: Assessment & Evaluation			
• Examination of Lab course shall be conducted at the end of Session. • Exam pattern shall be followed to computer laboratory norms and questions will be determined by the department /teacher concerned. • Marks distribution in each course shall be determined by the department / course tutor following the guidelines.			

BREAK OF MARKS FOR PRACTICAL

S.NO.	Argument	Max. Marks	Minimum Marks
1	Lab Record	10	
2	Viva-Voce	20	
3	Program development and Execution	20	
	Total Marks	50	17

Part A: Introduction				
Program: Diploma Course		Class:PGDCA	Year: 2023	Session:2023-24
1	Course Code	PGDCA-3P		
2	Course Title	Project		
3	Course Type	Laboratory Course		
4	Pre-requisite(if any)	As per Govt. Norms		
5	Course Learning Outcomes (CLO)	• Learn the basics of software development. • Understanding the challenges involved in Software development. • Learn testing, coding, designing, implementation of software.		
6	Total Marks	Max. Marks:100	Min Passing Marks: 40	
Part B: Content of the Course				
Section		Topics (Course Contents)		
Note		• It is compulsory, that students would have group of maximum of two students and project should be done under Government sectors/ Public Sector/ Pvt. Limited S/W Company/ Software Technology park of India/ ISO 9001 certified company etc. • The students should not make any project under local or private institutions. • The students should make project themselves and project will not be copy of other project.		
Steps		• Getting customer's requirements • Designs, database and business logics. • Developing software application project. • Testing and implementing the project. • Troubleshooting the project application after implementation		
Part D: Assessment & Evaluation				
• Examination of Lab course shall be conducted at the end of Session. • Exam pattern shall be followed to computer laboratory norms and questions will be determined by the department /teacher concerned. • Marks distribution in each course shall be determined by the department / course tutor following the guidelines.				

BREAK OF MARKS FOR PROJECT

S.NO.	Argument	Max. Marks	Minimum Marks
1	Project Report	25	
2	Viva-Voce/ Presentation	25	
3	Project Execution	50	
	Total	100	40