Choice Based Credit System

Maharaja Ganga Singh University

Post Graduate Diploma in Computer Applications (PGDCA)

(Semester System)

2025-26

Postgraduate Diploma Programme

(Effective from Academic Year 2025-26)

SYLLABUS
SCHEME OF EXAMINATION AND
COURSES OF STUDY

Table of Contents

S.No.	Item	Page No
1	Background	3
2	Programme Outcomes (POs)	5
3	Programme Specific Outcomes (PSOs)	7
4	Post Graduate Attributes	8
5	Structure of Masters' Courses	9
6	Learning Outcome Index	13
7	Semester-wise Courses & Credit Distribution	14
8	Course Level Learning Outcomes	14
9	Teaching-Learning Process	72
10	Assessment & Evaluation	72

Background

Considering the curricular reforms as instrumental for desired learning outcomes, all the academic departments of Maharaja Ganga Singh University Bikaner, made a rigorous attempt to revise the curriculum of postgraduate programs in alignment with National Education Policy-2020 and UGC Quality Mandate for Higher Education Institutions-2021. The process of revising the curriculum could be prompted with the adoption of the "Comprehensive Roadmap for Implementation of NEP-2020". The Roadmap identified the key features of the Policy and elucidated the Action Plan with well-defined responsibilities and an indicative timeline for major academic reforms.

The process of revamping the curriculum started with a series of webinars and discussions conducted by the University to orient the teachers about the key features of the Policy, enabling them to revise the curriculum in sync with the Policy. Proper orientation of the faculty about the vision and provisions of NEP-2020 made it easier for them to appreciate and incorporate the vital aspects of the Policy in the revised curriculum focused on creating holistic thoughtful, creative, and well-rounded individuals equipped with the key 21st-century skills 'for the development of an enlightened, socially conscious, knowledgeable, and skilled nation'.

With NEP-2020 in the background, the revised curricula articulate the spirit of the Policy by emphasising upon - an integrated approach to learning; innovative pedagogies and assessment strategies; multidisciplinary and cross-disciplinary education; creative and critical thinking; ethical and Constitutional values through value-based courses; 21st century capabilities across the range of disciplines through life skills, entrepreneurial and professional skills; community and constructive public engagement; social, moral, and environmental awareness; Organic Living and Global Citizenship Education (GCED); holistic, inquiry-based, discovery-based , discussion-based and analysis-based learning; exposure to Indian knowledge system, cultural traditions and literature through relevant courses offering "Knowledge of India, fine blend of modern pedagogies with indigenous and traditional ways of learning; flexibility in course choices, student-centric participatory learning; imaginative and flexible curricular structures to enable creative combinations of disciplines for study; offering multiple entry and exit points, alignment of Vocational courses with the International Standard Classification of Occupations maintained by the International Labor Organization; breaking the silos of disciplines; integration of extra-curricular and curricular aspects, exploring internships with local industry, businesses and artists and craft persons; closer collaboration between industry and higher education institutions for technical, vocational, and science programs, and formative assessment tools to be aligned with the learning outcomes, capabilities, and dispositions as specified for each course. The university has also developed a consensus on Blended Learning with 10% component of online teaching and 60% face-to-face classes for each program.

The revised curricula of various programs could be devised with concerted efforts of the faculty, Heads of the Departments, and the Deans of Schools of Study. The draft prepared by each department was discussed in a series of discussion sessions conducted at the Department, School, and University level. The leadership of the University has been a driving force behind the entire exercise of developing the uniform template and structure for the revised curriculum. The Vice-Chancellor of the University conducted series of meetings with Heads and Deans to deliberate upon the vital parameters of the revised curriculum to formulate a uniform template featuring Background, Programme Outcomes,

Programme Specific Outcomes, Postgraduate Attributes, Structure of Masters Course, Learning Outcome Index, Semester-wise Courses and Credit Distribution, Course-level Learning Outcomes, Teaching-Learning Process, Blended Learning, Assessment and Evaluation, Keywords, References, and Appendices. The experts of various Board of Studies and School Boards contributed to a large extent in giving the final shape to the revised curriculum of each program.

To ensure the implementation of curricular reforms envisioned in NEP-2020, the University has decided to implement various provisions in a phased manner. Therefore, the curriculum may be reviewed annually so as to gradually include all relevant provisions of NEP-2020.

Program Outcomes

On completing Post Graduate Diploma in Computer Applications, the students shall be able to realize the following outcomes:

PO	Description
PO1	Acquire knowledge with facts and figures related to various subjects in pure sciences such as Physics, Chemistry, Botany, Zoology, Mathematics, etc.
PO2	Understood the basic concepts, fundamental principles, and scientific theories related to various scientific phenomena and their relevance in day-to-day life.
PO3	Acquire the skills in handling scientific instruments, planning, and performing laboratory experiments The skills of observations and drawing logical inferences from the scientific experiments.
PO4	Analyze the given scientific data critically and systematically and the ability to draw objective conclusions.
PO5	Be able to think creatively (divergent and convergent) to propose novel ideas in explaining facts and figures or providing new solutions to problems.
PO6	Realize how developments in any science subject help develop other science subjects and vice-versa and how interdisciplinary approach helps provide better solutions and new ideas for sustainable outcomes.
PO7	Develop a scientific outlook concerning science subjects and all aspects related to life.
PO8	Realize that knowledge of subjects in other faculties such as humanities, performing arts, social sciences, etc., can have greatly and effectively influence, which inspires in evolving new scientific theories and inventions.
PO9	Imbibe ethical, moral, and social values in personal and social life, leading to a highly cultured and civilized personality.
PO10	Develope various communication skills such as reading, listening, speaking, etc., which will help express ideas and views clearly and effectively.
PO11	Realize that pursuit of knowledge is a lifelong activity and in combination with untiring efforts and positive attitude and other necessary qualities leads towards a successful life.

Program Specific Outcomes (PSO)

On completing Masters in the Post Graduate Diploma in Computer Applications, the students shall be able to realize the following outcomes:

PSO	Description
PSO1	Communicate computer science concepts, designs, and solutions effectively and professionally
PSO2	Apply knowledge of computing to produce effective designs and solutions for specific problems
PSO3	Use software development tools, software systems, and modern computing platforms
PSO4	To have the knowledge and the ability to develop creative solutions
PSO5	To develop skills to learn new technology
PSO6	To develop critical reasoning
PSO7	To apply computer science theory and software development concepts to construct computing-based solutions
PSO8	To design and develop computer programs/computer-based systems in the area related to algorithms, networking, web design, cloud computing, Artificial Intelligence, Mobile applications
PSO9	The ability to understand, analyse and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient design of computer-based systems of varying complexity
PSO10	The ability to understand the evolutionary changes in computing, apply standard practices and strategies in software project development using open-ended programming environments to deliver a quality product for business success, real-world problems, and meet the challenges of the future
PSO11	The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, lifelong learning and a zest for higher studies and also to act as a good citizen by inculcating in them moral values & ethics

Postgraduate Attributes

- Disciplinary Knowledge
- Creative & Critical Thinking
- Reasoning and Analytical abilities
- Logic/Discrete Mathematics knowledge
- Logical Thinking
- Problem analysis and solving abilities
- Life Skills
- Moral & Ethical Values
- Research Skills

Structure of Masters' Programme

Scheme for

Post Graduate Diploma in Computer Application (Semester I)

Session 2025-26

Semester I										
Course Code	**Course Title**	**Exam Hours**	**Max. Marks**		**Total Marks**	**Min. passing Marks (%)**	**L**	**T**	**P**	**Total Credits**
			Int. Marks	**Ext. Marks**						
PGDCA6AECT101	Fundamentals of Computer Science	3				Non-CGPA S/NS*	2	0	0	2
PGDCA6DCCT102	Mathematics for Computer Science	3	20	80	100	36%	3	1	0	4
PGDCA6DCCT103	Internet Programming	3	20	80	100	36%	3	1	0	4
PGDCA6DCCT104	Computer Organization	3	20	80	100	36%	3	1	0	4
PGDCA6DCCT105	C++ Programming	3	20	80	100	36%	3	1	0	4
PGDCA6DCCP106	Combined Practical	3	40	160	200	36%	0	0	8	8
Total CREDITS Semester I						26				
Total MARKS Semester I						600				

- DCC: Discipline-centric compulsory course. AEC: Ability Enhancement course.
- S/NS*=Satisfactory or Not satisfactory.
- A candidate shall be required to obtain 36% marks to pass in theory, practical, and internals separately.
- For Internal Evaluation of 20 Marks (15 Marks theory paper + suggestive*, + 05 Marks practical paper}
- *Suggestive: Please include assignment/seminar, Logical thinking/application of knowledge, attentiveness, and skills in internal assessment).
- L=Lecture (1 credit = 1 hrs; T=Tutorial (1 credit = 1 hrs); P=Practical(1 credit = 1.5 hrs)

Scheme for

Post Graduate Diploma in Computer Application (Semester II)

Session 2025-26

Semester II										
Course Code	**Course Title**	**Exam Hours**	**Max. Marks**		**Total Marks**	**Min. passing Marks (%)**	**L**	**T**	**P**	**Credits**
			Int. Marks	**Ext. Marks**						
PGDCA6VACT201	National and Human Values	3				Non-CGPA S/NS*	2	0	0	2
PGDCA6DCCT202	Database Management System	3	20	80	100	36%	3	1	0	4
PGDCA6DCCT203	Data Communication and Networking	3	20	80	100	36%	3	1	0	4
PGDCA6DCCT204	Operating System	3	20	80	100	36%	3	1	0	4
PGDCA6DCCT205	PHP	3	20	80	100	36%	3	1	0	4
PGDCA6DCCP206	Combined Practical & Project	3	40	160	200	36%	0	0	8	8
Total CREDITS Semester II						26				
Total MARKS Semester II						600				
Total CREDITS (Semester I + Semester II)						**52**				
Total MARKS(Semester I + Semester II)						**1200**				

- DCC: Discipline-centric compulsory course. AEC: Ability Enhancement course.
- S/NS*=Satisfactory or Not satisfactory.
- A candidate shall be required to obtain 36% marks to pass in theory, practical, and internals separately.
- For Internal Evaluation of 20 Marks (15 Marks {theory paper + suggestive*}, + 05 Marks practical paper)
- *Suggestive: Please include assignment/seminar, Logical thinking/application of knowledge, attentiveness, and skills in internal assessment).
- L=Lecture (1 credit = 1 hrs; T=Tutorial (1 credit = 1 hrs); P=Practical(1 credit = 1.5 hrs)

Learning Outcome Index

Learning Outcomes are statements of knowledge, skills, and abilities a student should possess and demonstrate upon completion of learning experiences.

I. Programme Outcomes(PO) and Programme Specific Outcomes (PSO)

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10	PSO11
PO1	x	x	x	x	x	x	x	x		x	x
PO2	x		x		x	x	x	x	x	x	x
PO3	x	x	x		x	x	x	x	x	x	x
PO4	x	x	x	x	x	x		x	x	x	x
PO5	x	x	x	x	x	x	x	x	x	x	x
PO6	x	x	x	x	x	x	x			x	x
PO7				x	x		x		x	x	x
PO8		x		x		x	x	x			x
PO9	x	x		x	x		x	x			x
PO10	x	x	x		x				x		x
PO11	x	x	x		x	x	x	x	x	x	x

II. Programme Specific Outcomes (PSO) and Core Courses (CC)

	PGDCA 101	PGDCA 102	PGDCA 103	PGDCA 104	PGDCA 201	PGDCA 202	PGDCA 203	PGDCA 204
PSO1	x	x	x	x	x	x	x	x
PSO2	x	x	x	x	x	x	x	x
PSO3		x		x	x			x
PSO4	x	x	x	x	x	x	x	x
PSO5	x	x	x	x	x	x	x	x
PSO6	x		x		x	x	x	
PSO7	x	x	x	x	x	x	x	x
PSO8		x		x	x			x
PSO9		x	x	x	x			x
PSO10	x	x	x	x	x	x	x	x
PSO11	x	x	x	x	x	x	x	x

Objectives, Course-level Learning Outcomes, Contents, and Suggested Readings

Semester I

Paper Code:PGDCA6AECT101
Paper Name: Fundamentals of Computer Science
(See Scheme of Examination)

Course Objectives:

CO1. To understand the characteristics of computers
CO2. To know about the generations of computers
CO3. To have knowledge about computer languages
CO4. To understand the basics of an operating system
CO5. To be acquaint with word processor, spreadsheet, and presentation
CO6. To understand and apply the concept of algorithms and algorithm analysis
CO7. To know about some unsolved problems of computer science

Learning Outcomes:

After completion of this course, the student will be able to-
LO1. Understanding of the characteristics of computers
LO2. Know about the generations of computers
LO3. Having knowledge of computer languages
LO4. Understanding of the basics of operating system
LO5. Acquaintance with word processor, spreadsheet, and presentation
LO6. Understanding and ability to design algorithms
LO7. Know about some unsolved problems of computer science

Unit I

Basics: Block Diagram, characteristics, generations of computers, classification of computers; Binary number system, Limitations of Computers, Primary and secondary memory, Input and output devices; Computer languages: Machine language, assembly language, higher-level language, 4GL. Introduction to Compiler, Interpreter, Assembler, System Softwares, Application Softwares.Operating System: Features of Windows, Linux, Macintosh, Android. Open-source software: concept and examples.

Unit II

Word Processing software: different formats for saving a word document, creating, editing documents and related operations, formatting features and related operations, spelling and grammar checker, headers and footers, creating and managing tables; printing, macros, mail merge, equation editor.

Unit III

Spreadsheet Software: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cell references.

Unit IV

Presentation Graphics Software: Templates, views, formatting slides, slides with graphs, animation, using special features, presenting slide shows.

Unit V

Computer Problem Solving: Algorithms, Efficiency, and analysis of algorithms Writing algorithms for simple problems like factorial computation, generation of the Fibonacci sequence, and checking for prime number; Examples of unsolved problems in Computer Science.

Recommended Readings

1. P.K Sinha, Computer Fundamentals, BPB Publications.
2. Rajaraman, Fundamentals of Computers, Fourth Edition, Prentice-Hall India Pvt. Limited.

Suggested Readings

3. Peter Norton, Introduction to Computers, 4th Edition, TMH Ltd, New Delhi.
4. R.G. Dromey, How to solve it by Computers, Pearson Publishers, New Delhi.
5. Dorothy House, Microsoft Word, Excel, and PowerPoint: Just for Beginners.

Web resources:

1. https://documentation.libreoffice.org/en/english-documentation/getting-started-guide/
2. https://www.coursera.org/learn/creative-problem-solving
3. http://web.mit.edu/rsi/www/pdfs/new-LaTeX.pdf
4. https://www.LaTeX-project.org/help/books/
5. https://support.google.com/docs/?hl=en#topic=1382883
6. https://en.wikipedia.org/wiki/List_of_unsolved_problems_in_computer_science
7. https://www.claymath.org/millennium-problems

Paper Code: PGDCA6DCCT102
Paper Name: Mathematics for Computer Science
(See Scheme of Examination)

Course Objectives:
CO1. To learn to evaluate mathematical arguments revolving around computation
CO2. To understand the basics of Combinations and Permutations
CO3. To acquire the ability to represent relations matrices and digraphs
CO4. To acquire and apply the knowledge on Graphs and Trees to real-world applications
CO5. To have the ability to Demonstrate the working of Grammars and Languages

Course Level Learning Outcomes:
After completion of this course, the student will be able to-
LO1. Comprehend and evaluate mathematical arguments revolving around computation.
LO2. Understand the basics of Combinations and Permutations.
LO3. Represent relations matrices and digraphs.
LO4. Apply the knowledge of Graphs and Trees to real-world applications.
LO5. Demonstrate the working of Grammar and Languages.

Note: Non-scientific calculators may be allowed in the end-semester examination.

Course Description

Unit – I

Sets: different types of sets, set operations; Basic Counting Principles, Pigeonhole Principle, Binomial Coefficients, Binomial Theorem, Permutations, Combinations; Matrices: addition, multiplication; Vectors: position vector, addition, subtraction and products of vectors.

Unit - II

Mathematical Induction, **Logic**: Propositions and logical operations, Conditional statements, Tautologies and Contradictions, Logical Equivalence, quantifiers, Propositional logic and Predicate logic.

Unit III

Basic computability theory: Chomsky Hierarchy, the concept of models of computation, the concept of types of languages and grammars.

Unit - IV

Relations: Representation of Relations, Properties of relations, transitive closure; Ordered Sets: poset, Properties, Hasse Diagram, Extremal elements of posets.

Unit V

Functions: Types of Functions, Asymptotic notations; Coordinate Systems: representation of points, straight lines, standard equation of circles.

Instructions for Examination (Theory)

Maximum Marks: 150 (120 External + 30 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (20 marks) shall contain 10 questions two from each Unit. Each question shall be of 2 marks. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (40 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 8 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (60 marks) shall contain 5 questions, one from each Unit. Each question shall be of 20 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal
Internal exam shall comprise Theory Exam (15 marks), Seminar Presentation (10 marks) and Class Performance (5 marks).

Recommended Readings

1. K.H. Rosen, Discrete Mathematics and its applications, seventh edition
2. Kolman, Busby and Ross, Discrete Mathematical Structures, Sixth Edition, PHI.

Suggested Readings

3. Schaum's Outline Of Theory and Problems of DiscreteMathematics, Third Edition.
4. C L Liu, Elements of Discrete Mathematics, TMH,
5. John Vince, Foundation Mathematics for Computer Science: A Visual Approach, Springer
6. George B. Thomas and Ross L. Finney, Calculus and Analytic Geometry, Addison Wesley
7. J. Ullman and J. Hopcroft, Introduction to Automata Theory, Languages, and Computation, Pearson Education
8. Daniel I.A. Cohen, Introduction to Computer Theory, 2ed, Wiley.
9. Peter Linz, An Introduction to Formal Languages and Automata, Sixth edition.

Paper Code: PGDCA6DCCT103
Paper Name: Internet Programming
(See Scheme of Examination)

Course Objectives -

CO1. To gain knowledge of how the client-server model of Internet programming works
CO2. To learn the design and development of interactive, client-side, executable web applications
CO3. To acquire the ability to demonstrate how Internet programming tasks are accomplished
CO3: To know how to build tools that assist in automating data transfer over the Internet.
CO4: To understand the advantages and disadvantages of the core Internet protocols

Course Level Learning Outcomes:

After completion of this course, the student will be able to -
LO1: Explain how the client-server model of Internet programming works
LO2: Design and develop interactive, client-side, executable web applications
LO3: Demonstrate how Internet programming tasks are accomplished
LO3: Build tools that assist in automating data transfer over the Internet
LO4: Compare the advantages and disadvantages of the core Internet protocols

Course Description

Unit I

Internet Basics: Evolution of the Internet, Basic internet terms and applications, ISP, Anatomy of an e-mail Message, basics of sending and receiving, E-mail Protocol, Mailing List- Subscribing & Unsubscribing, Introduction to World Wide Web and its work, Web Browsers, Search Engine, Downloading, HyperText Transfer Protocol (HTTP), URL, Web Servers, FTP, Web publishing- Domain Name Registration, Space on Host Server for Web Site, Maintain and Updating Website.

Unit - II

HTML: Elements of HTML & Syntax, Comments, Headings, Paragraph, Span, Pre Tags, Backgrounds, Formatting tags, Images, Hyperlinks, div tag, List Type and its Tags, Table Layout, Use of Forms in Web Pages.

Unity III

CSS**:** Introduction to Cascading Style Sheets, Types of Style Sheets (Inline, Internal and External), using Id and classes, CSS properties: Background Properties, Box Model Properties, Margin, Padding, List Properties, Border Properties, Positioning Properties.

Unit - IV

Java Script: Introduction to Client-Side Scripting, Introduction to JavaScript, Comments, Variables in JS, Data types, Operators in JS, Conditions Statements (If, If Else, Switch), JavaScript Loops (For Loop, While Loop, Do While Loop), JS Popup Boxes (Alert, Prompt, Confirm),

Unit V

JS Events, Onload, Onunload, Onsubmit, OnFocus, Onchange Event, Onblur Event, Onmouseover, Onclick, Ondbclick Events, JS Arrays, Working with Arrays, JS Objects, Window object, Document object, JS Functions, getElementById, innerHTML property, inner Text property, form validation, email validation.

Instructions for Examination (Theory)

Maximum Marks: 100 (80 External + 20 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Recommended Readings

1. Thomas A. Powell, HTML: The Complete Reference, Osborne/McGraw-Hill
2. Deitel, Deitel and Nieto, Internet & WWW. How to program, 2nd Edition, Pearson Education Asia.

Suggested Readings

3. E Stephen Mack, Janan Platt, HTML 4.0, No Experience Required, 1998, BPB Publications.
4. Sybex, HTML Complete, BPB Publications.
5. V.K Jain, Internet and Web Page Designing, BPB Publications.
6. Ivan Bayross, Web Enabled Commercial Application Development Using HTML, DHTML, java script, Perl CGI, BPB publications.

Paper Code: PGDCA6DCCT104
Paper Name: Computer Organization
(See Scheme of Examination)

Course Objectives:

CO1: To understand the structure, function, and characteristics of computer systems.
CO2: To understand the design of the various functional units and components of computers.
CO3: To Identify the elements of modern instruction sets and their impact on processor design.
CO4: To acquire the ability to explain the function of each element of a memory hierarchy,
CO5: To identify and compare different methods for computer I/O

Course Level Learning Outcomes:

After completion of this course, the student will be able to-
LO1: Understand the structure, function, and characteristics of computer systems.
LO2: Understand the design of the various functional units and components of computers.
LO3: Identify the elements of modern instruction sets and their impact on processor design.
LO4: Explain the function of each element of a memory hierarchy,
LO5: Identify and compare different methods for computer I/O.

Unit I

Components of a Computer: Processor, Memory, Input-Output Unit, Difference between Organization and Architecture, Hardware-Software Interaction. **Number System:** Concept of Bit and Byte, types, and conversion.

Unit II

Complements: 1's complement, 2's complement. **Binary Arithmetic:** Addition, overflow, subtraction, multiplication (booth's algorithm), and division algorithm. **Logic gates:** Boolean Algebra, Map Simplification.

Unit III

Combinational circuits: Half Adder, Full Adder, Decoders, Multiplexers. **Sequential circuits:** Flip Flops- SR, JK, D, T Flip-Flop, Excitation Tables, State Diagram, State Table, Registers, Counters.

Unit IV

Input-Output Organization: Peripheral devices, I/O Interface, Asynchronous Data Transfer, Modes of Data Transfer, Priority Interrupt, Direct Memory Access, I/O Processor.
Memory Organization: Types and capacity of Memory, Memory Hierarchy, Associative Memory, Buffer, Cache Memory, Virtual Memory.

Unit V

Intel 8085 Microprocessor: Introduction, ALU, Timing and Control Unit, Register Set, Data and Address Bus, Addressing modes, Complete Intel 8085 Instruction set, Instruction format, Opcode and Operand, Word Size, Instruction Cycle, Pin Configuration, Intel 8085 programs.

Instructions for Examination (Theory)

Maximum Marks: 100 (80 External + 20 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Recommended Readings

1. M. Morris Mano, Computer System Architecture, Pearson, Prentice Hall.
2. J.P. Hayes, Computer Architecture & Organization, Tata McGraw Hill

Suggested Readings

3. Malvino Leach and Jerald A. Brown, Digital Computer Electronics, McGraw Hill.
4. Ramesh Gaonkar, Microprocessor Architecture, Programming, and Application With the 8085, PENRAM.
5. B.Ram, Fundamentals of Microprocessor and Microcomputers, Danpat Rai Publications.

Paper Code: PGDCA6DCCT105
Paper Name: C++ Programming
(See Scheme of Examination)

Course Objectives:

CO1. To declare, initialize and process variables, constants, and arrays
CO2. To read and print values from the keyboard
CO3. To create statements for decisions and loops
CO4. To define functions and return values
CO5. To create classes, objects, and constructors
CO6. To understand and apply OO design concepts

Course Level Learning Outcomes:

After completion of this course, the student will be able to-
LO1. Declare, initialize and process variables, constants, and arrays
LO2. Read and print values from the keyboard
LO3. Create statements for decisions and loops
LO4. Define functions and return values.
LO5. Create classes, objects, and constructors.
LO6. Understand and apply OO design concepts.

Unit I

Object-Oriented System Object-Oriented Paradigm: need, characteristics, applications. Basics of C++, branching, looping, and jump statements.

Unit II

Functions: need, types, passing arguments by value and reference, recursive function, pointers, and functions. **Arrays**: need, types, array and function, array and pointers.

Unit III

Class: Basics, static data members, Inline Function, Constructors and Destructors: need, types, usage, **Inheritance** - need, usage, types, compile-time and run-time polymorphism, overloading and overriding, virtual function, friend function, abstract class.

Unit IV

Operator overloading: need, rules, through member function and through friend function. String handling, String class, Templates, Additional Features for C++ 11, C++14 and C++17

Unit V

Searching: Linear Search, Binary Search. **Sorting:** Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Shell Sort, Merge sort, Radix Sort, Counting Sort, Bucket Sort.

Instructions for Examination (Theory)

Maximum Marks: 100 (80 External + 20 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Recommended Readings

1. E. Balagurusamy, Object-Oriented Programming With C++ , Tata Mcgraw Hill.
2. Herbert Schildt, C++ The Complete Reference, Tata Mcgraw Hill.

Suggested Readings

3. Schaum Series, Object Oriented Programming With C++, Tata Mcgraw Hill.
4. Paul J. Deitel and Harvey M. Deitel, C++11 for Programmers (Deitel Developer), Prentice Hall; 2nd edition.
5. Marc Gregoire, Nicholas A. Solter and Scott J.Kleper, Professional C++, Goodreads Publications.
6. Bjarne Stroustrup, A Tour of C++.
7. Bartłomiej Filipek, C++17 in Detail.

Semester II

Paper Code: PGDCA6VACT201
Paper Name: National and Human Values
(See Scheme of Examination)

Course Objectives:

1. To inculcate national and human values in the Students.
2. To enable the students imbibe the Indian cultural ethos.
3. To inculcate the spirit of Patriotism so that the Students develop a sense of strong bond with the nation.
4. To enable the Students grow into a citizen possessing civic sense.

Course Outcomes:

1. On the completion of the course the students shall be able to Attain the civic skills enabling him/her to become a well-behaved citizen of the country.
2. Imbibe and spread the feelings of devotion and dedication.

Unit-I

1. NCC – Introduction, Aims, NCC Flag, NCC Song, NCC Administration, Raising of NCC in Schools/Colleges, NCC: Rank, Honours and Awards, NCC Training, NCC Camps, NCC Examinations, Incentive and Scholarship for Cadets.
2. Importance of Discipline in life, Aims and Merits of Discipline, Problems related to Indiscipline and Solutions.
3. Drill – Definition, Principles of Drill, Bad habits in drill, Words of Command, Drill Movements, Arms Drill, Squad Drill, Guard of Honour, Ceremonial Drill, Guard Mounting.
4. Contribution of NCC in Nation Building.

Unit-II

1. Armed Forces – Control Command, Organization of Armed Forces, Weapons of Army, Navy and Air Force, Training institutes, Honours and Awards, Recipients of Param Veer Chakra, Badges of Ranks.
2. Commission in Armed Forces – Recruitment in Armed Forces, Commission in Technical, Non-Technical and Territorial Forces.
3. Weapon Training – 0.22 Rifle, 7.62 Rifle, 7.62 SLR (Self Loading Rifle), 5.56 MM I.N.S.A.S. Rifle, L.M.G. (Light Machine Gun), Stan Machine Carbine, 2” Mortar, Grenade, Pistol, Various types of Firing, Range Procedure and Range Drill.
4. Military History and Geography, Field Craft, Field Engineering, Battle Craft.

Unit III

1. Obstacle Training. Adventure Training, Self Defence, Physical Posture Training.
2. Social Service, Disaster Management, Health and Hygiene, First Aid.
3. Leadership, Personality Development, Decision Making, Motivation, Duty and Discipline, Morale.

Unit IV

1. Value system – The role of culture and civilization-Holistic living

2. Balancing the outer and inner – Body, Mind and Intellectual level- Duties and responsibilities
3. Salient values for life- Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity, and inclusiveness
4. Self-esteem and self confidence
5. punctuality – Time, task and resource management, Team work
6. Positive and creative thinking.

Unit V

1. Universal Declaration of Human Rights
2. Human Rights violations
3. National Integration – Peace and non-violence (in context of Gandhi, Vivekanad)
4. Social Values and Welfare of the citizen
5. The role of media in value building
6. Fundamental Duties
7. Environment and Ecological balance – interdependence of all beings – living and non-living.

Assessment and Evaluation:

The Students shall be assessed and evaluated as per the schedule given below –
1. Project Report / Case Study (in 5000-7000 words) – 75%
2. Viva-voce - 25%

The topics for the Project Report / Case Study shall be allotted by the Nodal Department (decided jointly with NSS wing under the supervision or IQAC) in consultation with the Department concerned. The Candidate shall submit the Report by the date fixed for the said purpose. It shall then be followed by a Viva-voce Examination. The whole evaluation shall be done by the Departmental Internal Faculty in consultation with the Nodal Department. It is a non-creditable Paper. The Student will have to score simply a qualifying score/grade as specified in the CBCS rules.

The candidate will have to qualify the paper by the time He / She qualifies for the Programme. He/She can avail maximum 3 chances along with the Semester Examinations.

Books Recommended:

1. Hand Book of NCC : Major R C Mishra & Sanjay Kumar Mishra
2. National Security: K. Subramanyam
3. ASEAN Security: Air Comdr. Jasjit Singh
4. Indian Political System, Dr . Pukhraj Jain & Dr. Kuldeep Fadiya
5. NCERT, Education in Values, New Delhi, 1992.
6. M.G.Chitakra: Education and Human Values, A.P.H. Publishing Corporation, New Delhi,2003.
7. Chakravarthy, S.K.: Values and ethics for Organizations: Theory and Practice, Oxford University Press, New Delhi, 1999.
8. Satchidananda, M.K.: Ethics, Education, Indian Unity and Culture, Ajantha Publications,Delhi, 1991.
9. Das, M.S. & Gupta, V.K.: Social Values among Young adults: A changing Scenario, M.D.Publications, New Delhi, 1995.

10. Bandiste, D.D.: Humanist Values: A Source Book, B.R. Publishing Corporation, Delhi,1999.
11. Ruhela, S.P. : Human Values and education, Sterling Publications, New Delhi, 1986.
12. Kaul, G.N.: Values and Education in Independent Indian, Associated Publishers, Mumbai,1975.
13. Swami Budhananda (1983) How to Build Character A Primer : Ramakrishna Mission, NewDelhi.
14. A Cultural Heritage of India (4 Vols.), Bharatiya Vidya Bhavan, Bombay. (SelectedChapters only) For Life, For the future : Reserves and Remains – UNESCO Publication.
15. Values, A Vedanta Kesari Presentation, Sri Ramakrishna Math, Chennai, 1996.
16. Swami Vivekananda, Youth and Modern India, Ramakrishna Mission, Chennai.
17. Swami Vivekananda, Call to the Youth for Nation Building, Advaita Ashrama, Calcutta.
18. Awakening Indians to India, Chinmayananda Mission, 2003.

Paper Code: PGDCA6DCCT202
Paper Name: Database Management System
(See Scheme of Examination)

Course Objectives:

CO1: To understand the need for a DB approach and understand the components and roles of DBMS
CO2: To know how to write SQL queries for the given problem statement
CO3: To apply DB system development life cycle to business problems
CO4. To develop ER diagram for representing the conceptual data model
CO5: To convert ER diagram into a set of relations representing the logical data model
CO6: To implement a collection of ties in the chosen DBMS product, such as ORACLE
CO7: To have a broad understanding of database concepts and database management system software
CO8: To have a high-level experience of major DBMS components and their function
CO9: To model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
CO10: To write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
CO11: To understand detailed architecture, define objects, load data, query data, and performance-tune SQL databases.
CO12: To be able to handle large volumes of structured, semi-structured, and unstructured data using database technologies.

Course Level Learning Outcomes:

After completion of this course, the student will be able to-

LO1: Appreciate the need for a DB approach and understand the components and roles of DBMS
LO2: Write SQL queries for the given problem statement
LO3: Apply DB system development life cycle to business problems
LO4. Develop ER diagram for representing the conceptual data model
LO5: Convert ER diagram into a set of relations representing the logical data model
LO6: Implement a collection of ties in the chosen DBMS product, such as ORACLE
LO7: Have a broad understanding of database concepts and database management system software
LO8: have a high-level experience of major DBMS components and their function
LO9: be able to model an application's data requirements using conceptual modeling tools like ER diagrams and design database schemas based on the conceptual model.
LO10: be able to write SQL commands to create tables and indexes, insert/update/delete data, and query data in a relational DBMS.
LO11: To understand detailed architecture, define objects, load data, query data, and performance tune SQL databases.
LO12: Able to handle large volumes of structured, semi-structured, and unstructured data using database technologies.

Unit I

Introduction: Characteristics of database approach, Advantages, Database system architecture, Overview of different types of Data Models and data independence, Schemas and instances, Database languages and interfaces; **E-R Model**: Entities, Attributes, keys, Relationships, Roles, Dependencies, E-R Diagram.

Unit II

Normalization: Definition, Functional dependencies and inference rules, 1NF, 2NF, 3NF, and BCNF. **Introduction to Relational model**, Constraints: Domain, Key, Entity integrity, Referential integrity; Keys: Primary, Super, Candidate, Foreign; **Relational algebra**: select, project, union, intersection, minus, cross product, different types of join, division operations; aggregate functions and grouping**.**

Unit III

SQL: Data Types, statements: select, insert, update, delete, create, alter, drop; views, SQL algebraic operations, nested queries; Stored procedures: Advantages, Variables, creating and calling procedures, if and case statements, loops, Cursors, Functions, Triggers.

Unit IV

Transactions processing: Definition, desirable properties of transactions, serial and non-serial schedules, the concept of serializability, conflict-serializable schedules.

Unit V

Concurrency Control: Two-phase locking techniques, dealing with Deadlock and starvation, deadlock prevention protocols, basic timestamp ordering algorithm; Overview of database recovery techniques; the concept of data warehousing.

Instructions for Examination (Theory)

Maximum Marks: 100 (80 External + 20 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Recommended Readings

1. Ramez A. Elmasri, Shamkant Navathe, Fundamentals of Database Systems, 5th Ed, Pearson Publications.
2.Korth, Silberschatz, Sudarshan, Database System Concepts, Mcgraw Hill.

Suggested Readings

3. Bipin C. Desai, An Introduction to Database Systems, Galgotia Publication.
4. Ivan Bayross, SQL, PL/SQL Programming, BPB publications.
5. Ivan Bayross, Commercial Application Development Using Oracle Developer 2000, BPB publications.

Web Resources

1. http://www.mysqltutorial.org/mysql-stored-procedure-tutorial.aspx

Paper Code: PGDCA6DCCT203
Paper Name: Data Communication and Networking
(See Scheme of Examination)

Course Objectives:

After completion of this course the student will be able to-

CO1. To gain the ability to create a new protocol and test its efficiency
CO2. To design a new network architecture using protocols and interfaces
CO3. To create a hybrid topology using the existing topologies, and check inefficiency
CO4. To apply different encoding and decoding mechanisms involved in various types of transmission media and measure the transmission impairments
CO5. To design a model internet with various categories of networks and test the transmission rate
CO6. To understand the basics of data communication, networking, the internet, and their importance
CO7. To analyze the services and features of various protocol layers in data networks
CO8. To differentiate wired and wireless computer networks
CO9. To analyze TCP/IP and their protocols
CO10. To recognize the different internet devices and their functions
CO11. To identify the primary security threats of a network

Course Level Learning Outcomes:

After completion of this course the student will be able to-

LO1. Create a new protocol and test its efficiency.
LO2. Design a new network architecture using protocols and interfaces.
LO3. Create a hybrid topology using the existing topologies, and check inefficiency.
LO4. Apply different encoding and decoding mechanisms involved in various types of transmission media and measure the transmission impairments.
LO5. Design a model internet with various categories of networks and test the transmission rate.
LO6. Understand the basics of data communication, networking, the internet, and their importance.
LO7. Analyze the services and features of various protocol layers in data networks.
LO8. Differentiate wired and wireless computer networks.
LO9. Analyze TCP/IP and their protocols.
LO10. Recognize the different internet devices and their functions.
LO11. Identify the primary security threats of a network.

Unit - I

Data Communication and Networking- Overview, Network Types, LAN Technologies, Topologies, Models- OSI Model, TCP/IP Stack, Security.
Physical Layer- Introduction, Impairments, Performance, Digital Transmission, modes.

Unit II

Digital to digital, analog to digital, Analog Transmission, digital to analog, analog to analog, Transmission media, Wireless Transmission, Multiplexing, FDM, TDM, CDM, WDM. Switching techniques- Circuit Switching, Packet switching, Datagram, Virtual circuit, and Permanent Virtual Circuit, Connectionless and connection-oriented communication, Message switching,

Unit - III

Data Link Layer- Introduction, Error Detection, and Correction. Data Link Control- Line Discipline- Enq/Ack, Poll/Select, Flow Control- Stop And Wait, Sliding Window. Error Control- ARQ, Stop and Wait ARQ, Sliding Window ARQ.

Unit IV

Network Layer- Introduction, Network Addressing, Routing, Internetworking, Tunneling, Packet Fragmentation, Network Layer Protocols, ARP, ICMP, IPv4, IPv6.
Transport Layer- Introduction, Function, End to end communication, Transmission Control Protocol, User Datagram Protocol.
Application Layer- Introduction, Client-Server Model, Application Protocols, Network Services.

Unit - V

Cyber Security- definition, cybercrime and information security, cybercriminals, classification of cybercrime. Cyber offenses- categories of cybercrime.
Tools and methods used in cybercrime- phishing, types of phishing, types, and techniques of ID theft, password cracking, keyloggers and spyware, backdoors, steganography, DoS, SQL Injection.
Cybercrime on mobile and wireless devices- attacks on wireless networks, Authentication security service, attacks on mobile phones. Cyber Law, Digital Signatures, Anti-Cybercrime Strategies, Cyberterrorism, Indian ITA 2000.

Instructions for Examination (Theory)

Maximum Marks: 100 (80 External + 20 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Recommended Readings

1. Nina Godbole & Sunit Belapur, Cyber Security.
2. Forozan, Data Communication and Networking, Tata McGraw Hill.

Suggested Readings

3. Dr. Madhulika Jain, Satish Jain, Data Communication And Computer Networks, BPB publications.
4. William Stallings, Data and Computer Communications, Pearson Education.
5. A. S. Tanenbaum, Computer Networks, Fourth Edition, Pearson Education.

Paper Code: PGDCA6DCCT204
Paper Name: Operating System
(See Scheme of Examination)

Course Objectives:

CO1. To be able to design and understand the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory, and Paging systems.

CO2. To be able to evaluate, and compare OS components through instrumentation for performance analysis.

CO3. To analyze the various device and resource management techniques for time-sharing and distributed systems

CO4. To develop and analyze simple concurrent programs using transactional memory and message passing, and understand the trade-offs and implementation decisions

Course Level Learning Outcome:

After completion of this course, the student will be able to-

LO1. Allocate Main Memory based on various memory management techniques

LO2. Compare Memory allocation using Best fit, Worst fit, and first hold policies

LO3. Apply page replacement policies for dynamic memory management

LO4. Schedule CPU time using scheduling algorithm for processors

LO5. Compare various device scheduling algorithms. serve

Unit I

Introduction to Operating System, layered Structure, Functions, Types; Process: Concept, Process States, PCB; Threads, System calls; Process Scheduling: types of schedulers, context switch, CPU Scheduling, Preemptive Scheduling, Scheduling Criteria- CPU Utilization, Throughput, Turnaround Time, Waiting Time, Response Time.

Unit II

Scheduling Algorithms- FCFS, SJF, Priority Scheduling, Round Robin Scheduling, MLQ Scheduling.Synchronization: Critical Section Problem, Requirements for a solution to the critical section problem; Semaphores, simple solution to Readers-Writers Problem.

Unit III

Deadlock: Characterization, Prevention, Avoidance, Banker's Algorithm, Recovery from Deadlock. Memory Management: Physical and virtual address space, Paging, Overview of Segmentation; Virtual Memory Management: Concept, Page Replacement techniques- FIFO, LRU, Optimal.

Unit IV

Linux: features of Linux, steps of Installation, Shell and kernel, Directory structure, Users and groups, file permissions, commands- ls, cat, cd, pwd, chmod, mkdir, rm, rmdir, mv, cp, man, apt, cal, uname, history etc.; Installing packages.

Unit V

Shell scripts: writing and executing a shell script, shell variables, read and expr, decision making (if-else, case), for and while loops.

Instructions for Examination (Theory)

Maximum Marks: 100 (80 External + 20 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Recommended Readings

1. Abraham Silberschatz, Peter Baer Galvin, Operating System Principles, John Wiley And Sons Inc.
2. Milan Milen Kovic, Operating System Concepts And Design, Tata Mcgraw Hill.

Suggested Readings

3. Andrew S. Tanenbaum, Herbert Bos, Modern Operating System.
4. Mike McGrath, Linux in easy steps.
5. Sumitabha Das, Unix concepts and applications, TMH.

Paper Code: PGDCA6DCCT205
Paper Name: PHP
(See Scheme of Examination)

Course Objectives:

CO1. To introduce the importance of PHP in web page design.
CO2. To understand the features like functions, forms in PHP.
CO3. To understand Files, OOPs concepts , Cookies, Sessions and Data base
CO4. Explain the difference between a programming language and a scripting language
CO5. Create an error-free simple PHP program
CO6. Fundamental concepts of PHP scripting language
CO7. The basic structure of a web application
CO8. Basics of MySQL database
CO9. The relationship between the client-side and server-side scripts

Learning Outcome:

After completion of this course, the student will be able to-

LO1. Understand the basic structure of a web application
LO2. Understand the use of PHP with HTML
LO3. Develop and deploy enterprise web applications
LO4. Develop database connectivity using MySQL
LO5. Demonstrate how to debug PHP scripts
LO6. Creating functional websites and web apps in PHP

Unit – I

PHP: Installation of PHP. Building Blocks of PHP: Variables, data types, Operators & Expressions, Constants, Switching, Flow, Loops. Functions: Meaning, Calling, Defining a function. Return value from user defined function.

Unit - II

Arrays: Creating arrays, Array related functions. Working with String, Date & Time: Formatting String with PHP, Using Date and time Functions with PHP. Working with file and Directories.

Unit III

OOPs in PHP. Forms: Creating simple input Form. Accessing Form input with user defined arrays-GET/POST, HTML and PHP Code on a single page. Working with File Upload. Uploading & Downloading.

Unit IV

State management: Using query string(URL rewriting), Using Hidden field, Using cookies, Using session. Exception Handling: Understanding Exception and error, Try, catch, throw

Unit - V

Connecting to the MYSQL: Selecting a database, Adding data to a table, Displaying returned data on Web pages, Inserting data, Deleting data, Entering and updating data, Executing multiple queries, executing stored procedures.

Instructions for Examination (Theory)

Maximum Marks: 100 (80 External + 20 Internal)
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Suggested Readings:

6. Teach Yourself PHP, MYSQL &Apache ByMeloni, Pearson Education.
7. Open Source Development with LAMP: Using Linux, Apache, MySQL, Perl & PHP By James Lee, Pearson Education.
8. PHP: A Beginner's Guide ByVaswani, Vikram Tata Mc-Graw Hill.

Paper Code: PGDCA6DCCP206
Paper Name: Combined Practical & Project
(See Scheme of Examination)
Course Objectives:

CO1. Identify and define the problem statement
CO2. Define and justify the scope of the proposed problem
CO3. Gather and analyze system requirements
CO4. Propose an optimized solution among the existing solutions
CO5. Practice software analysis and design techniques
CO6. Develop technical report writing and oral presentation skills
CO7. Develop a functional application based on the software design
CO8. Apply to code, debugging, and testing tools to enhance the quality of the software
CO9. Prepare the proper documentation of software projects following the standard guidelines
CO10. Become a master in specialized technology
CO11. Become updated with all the latest changes in the technological world.
CO12. Ability to communicate eficiently.
CO13. Ability to be a multi-skilled engineer with sound technical knowledge, management, leadership, and entrepreneurship skills.
CO14. Capability and enthusiasm for self-improvement through continuous professional development and life-long learning
CO15. Awareness of the social, cultural, global, and environmental responsibility of an engineer.

Course Level Learning Outcomes

After completing this course, students will be able to:
LO1. Identify and define the problem statement
LO2. Define and justify the scope of the proposed problem
LO3. Gather and analyze system requirements
LO4. Propose an optimized solution among the existing solutions
LO5. Practice software analysis and design techniques
LO6. Develop technical report writing and oral presentation skills
LO7. Develop a functional application based on the software design
LO8. Apply to code, debugging, and testing tools to enhance the quality of the software
LO9. Prepare the proper documentation of software projects following the standard guidelines
L10. Become a master in specialized technology
LO11. Become updated with all the latest changes in the technological world.
LO12. Ability to communicate efficiently.
LO13. Ability to be a multi-skilled engineer with sound technical knowledge, management, leadership, and entrepreneurship skills.
LO14. Capability and enthusiasm for self-improvement through continuous professional development and life-long learning
LO15. Awareness of the social, cultural, global, and environmental responsibility of an engineer.

Practical Training and Project Work:

1. Project Work may be done individually or in groups in case of bigger projects. However, if the project is done in groups, each student must be given responsibility for a distinct module and care should be taken to monitor the individual student.
2. Project Work can be carried out in the college or outside with prior permission of the college.
3. The Student must submit a synopsis of the project report to the college for approval. The Project Guide can accept the project or suggest modification for resubmission. Only on acceptance of the draft project report, the student should make the final copies.

Submission Copy:

The Student should submit a spiral-bound copy of the project report.

Format of the Project:

1. **Paper:**
   The Report shall be typed on White Paper of A4 size.
2. **Final Submission:**
   The Report to be submitted must be original.
3. **Typing:**
   Font:- Times New Roman
   Heading:- 16 pt., Bold
   Subheading:- 14 pt, Bold
   Content:- 12 pt.
   Line Spacing:- 1.5 lines.
   Typing Side :-One Side
   Font Color:- Black.
4. **Margins:**
   The typing must be done in the following margin:
   Left : 0.75”
   Right: 0.75”
   Top: 1”
   Bottom: 1”
   Left Gutter: 0.5”
5. **Binding:**
   The report shall be Spiral Bound.
6. **Title Cover:**
   The Title cover should contain the following details:
   Top: Project Title in block capitals of 16pt.
   Centre: Name of project developer’s and Guide name.
   Bottom: Name of the university, Year of submission all in block capitals of 14pt letters on separate lines with proper spacing and centering.
7. **Blank sheets:**
   At the beginning and end of the report, two white blank papers should be provided, one for the Purpose of Binding and other to be left blank.
8. **Content:**
   I). Acknowledgment
   II). Institute/College/Organization certificate where the project is being developed.
   III). Table of contents
   IV). A brief overview of the project

V). Profiles of problems assigned
VI). Study of Existing System
VII). System Requirement
VIII). Project plan
- Team Structure
- Development Schedule
- Programming language and Development Tools

IX). Requirement Specification
X). Design
- Detailed DFD and Structure Diagram
- Data structure, Database and File Specification

XI). Project Legacy

- Current Status of project
- Remaining Areas of concern
- Technical and Managerial Lessons Learnt
- Future Recommendations

- Nomenclature and Abbreviations.
- Bibliography
- Source Code

Teaching-Learning Process

The teaching learning process may include the following-

- Lectures
- Discussions
- Simulations
- Virtual Labs
- Role Playing
- Participative Learning
- Interactive Sessions
- Seminars
- Research-based Learning/ Dissertation/ Case Study/ Project Work

The Blended Learning mode of teaching and learning is preferable in which offline (face-to-face) and online learning both are used to provide learners the opportunity to enjoy both of the worlds. Teachers can share instructions, lecture notes, and assignments online. On the other hand, students can share information/work/assignments with teachers and other students directly in a collaborative setting. This may have a more enriched learning experience, and collaboration between students can be improved upon if group activities rely on information gathered from online resources or lessons. Students who complete online coursework followed by interactive, face-to-face class activities have richer educational experiences.

Assessment and Evaluation

- A comprehensive and continuous evaluation by mid-semester examinations at regular intervals to find out each course level learning outcome
- Formative assessment on the basis of activities of a learner throughout the program instead of one assessment. for this provision of internal exams, student seminars, and assignments is included
- Open book exam is suggested for internal/ mid-term exams to better facilitate the understanding of the knowledge required
- Group examinations are recommended on problem-solving exercises and in major projects to enhance the teamwork capabilities of the learner
- Collaborative/Individual assignments are useful to enhance the capability of learners to gain domain-specific knowledge
- Student Seminars and Quizzes are recommended for the continuous learning and evaluation process

ELIGIBILITY FOR ADMISSION

Graduates of any statutory university shall be eligible for admission to the PGDCA Course. (Eligibility Marks/ Relaxation as per Government/University Rules)

PASS CRITERIA

For passing in the examination, a candidate is required to obtain at least a Satisfactory Grade in each paper (Internal + External) and also acquire a Satisfactory Grade in theory and practical separately (in each semester examination).

INSTRUCTIONS FOR PRACTICAL EXAMINATION

Marks Distribution for Practical Exam -

Each practical exam is to be conducted by two examiners one External and one Internal. The external examiner should be a senior lecturer from the jurisdiction of other universities. Credit Weightage distribution for external practical of 2 credits (40 marks) is as under

a) Practical Examination exercise of 3 questions 1 credits (20 marks)
b) Viva-Voce 0.5 credit (10 marks)
c) Laboratory Exercise File 0.5 credit (10 marks)

Marks distribution for External Project report of 12 Credits (240 marks) is as under

External Evaluation-

Research Project/ Case Study 6 credits (120 marks)
Presentation 3 credits (60 marks)
External Viva Voce 3 credits (60 marks)

Internal Evaluation- Project Report + Presentation (40 marks + 20 marks)

INSTRUCTIONS FOR STUDENTS

The student has to complete two months of career-oriented summer training from any firm/organization. If the student does not get a chance to go for training, he/she can choose a research topic and can complete the dissertation under the supervision of any of the faculty in his college.

The student who has to opt for training has to provide a signed certificate from the firm/ organization authority stating that the student has spent two months as a trainee in his organization/firm. The student who has opted for a dissertation has to submit his/her dissertation report with a certificate from his supervisor.

In both cases, the student has to present his work in front of all the faculty members and fellow students at the starting of the next session.

In terms of credits, every one-hour session of L amounts to 1 credit per semester and a minimum of two-hour sessions of T or P amounts to 1 credit per semester.

*** An Academic/ Industrial Tour shall be organized by the college/department in every session. A Tour Report shall be prepared and submitted by the students after a study tour to industries/academic institutions of repute.**

SCHEME OF EXAMINATION(Theory)

Maximum Marks: 100 (80 External + 20 Internal),
Duration: 3 Hrs
Minimum Passing Marks: 36%

External

(INSTRUCTIONS FOR PAPER SETTER)

A course will contain 5 units. The question paper shall contain three sections. Section A (10 marks) shall contain 10 questions two from each Unit. Each question shall be of 1 mark. All the questions are compulsory. Section A will be prepared such that questions i through v are multiple-choice questions, while questions vi through x will be fill-in-the-blank questions. Section B (25 marks) shall contain 5 questions (two from each unit with internal choice). Each question shall be of 5 marks. The candidate is required to answer all 5 questions. The answers should not exceed 150 words. Section C (45 marks) shall contain 5 questions, one from each Unit. Each question shall be of 15 marks. The candidate is

required to answer any three questions by selecting these three questions from different units. The answers should not exceed 400 words.

Internal

Internal exam shall comprise Theory Exam (10 marks), Seminar Presentation (6 marks) and Class Performance (4 marks).

Model Paper for 80 marks Theory Paper

Post Graduation Diploma in Computer Applications

Semester I

Duration: 3 Hours **Maximum Marks: 80**

PGDCA6DCCT101- Computer Fundamentals

Section – A

1. (a) …..…… MCQ from unit 1 ……. [1 x 10 =10]

(b) ……MCQ from unit 2 ……..

(c) ……MCQ from unit 3 ……..

(d) ……MCQ from unit 4……...

(e) ……MCQ from unit 5……...

(f) ……Fill in the Blanks from unit 1……...

(g) ……Fill in the Blanks from unit 2……..

(h) ……Fill in the Blanks from unit 3……..

(i) ……Fill in the Blanks from unit 4 ……...

(j) ……Fill in the Blanks from unit 5……...

Section - B

2. ……from unit 1…… [5 x 5=25]

or

3……from unit 1……..

4. ……from unit 2……

or

5……from unit 2……

6……from unit 3……

or

7……from unit 3……

8……from unit 4……

or

9……from unit 4……...

10……from unit 5…….

or

11……from unit 5…….

Part - C

[15 x 3=45]

12. ……from unit 1…….

13. ……from unit 2…….

14……from unit 3……...

15. ……..from unit 4……..

16. ……..from unit 5……..