SCHEME OF EXAMINATION 2010-2011

BCA PART- II

Subject Code	Subject Paper	Theory Marks		Internal Marks		Teaching Load per Week		
		Max.(A)	Min.(B)	Max.(C)	Min. (D)	L	T	P
BCA	Part I Numerical Analysis	50		-	-	2	-	
	Part II Differentiation & Integration	50	60	-	-	2	-	-
	Part III Data Structures	50		-	-	2	-	-
BCA	DBMS (Oracle, SQL)	100	40	50	30	4	2	-
BCA	Programming in C++ & Visual C++	100	40	50	30	4	2	-
BCA	Computer Networking & Internet Technology	100	40	50	30	4	2	-
BCA	A. Shell Programming in Linux/Unix	50	20	-	-	2	2	-
	B. Practical based on course 205A	50	20	-	-	-	-	2x2
BCA	A. Principles of Management	50	40	-	-	2	-	-
	B. Foundation Course	50		-	-	2	-	-
BCA	Practical Based on Course-202 Mini Project (Visual Basic & Oracle/ Access	100	50	-	-	-	-	3x2
BCA208	Practical Based on Course-203							
	TOTAL	850	360	150	90			
GRAND TOTAL (PAPER+INTERNAL)		(A+C) 1000		(B+D) 450				

* Minimum passing marks in subject BCA is 40% of total marks 150 (i.e. Total of Part I + Part II + Part III marks of BCA)

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(6)

THEORETICAL FOUNDATION OF COMPUTER SCIENCE
PAPER - I : Numerical Analysis

Max Marks : 5

NOTE :- The Question Paper setter is advised to prepare unit-wise question with th
provision of internal choice. Simple / Scientific calculator is allowed.

UNIT-I SOLUTION OF POLYNOMIAL AND TRANSCENDENTAL ALGEBRIAC
EQUATIONS
Bisection method, Regula falsi method & Newton's method, Solution of Cubic
Biquadratic Equation.

UNIT-II SIMULTANEOUS EQUATIONS AND MATRIX
Gauss-Jordan method, Cholesky's method , Reduction to lower or upper Triangula
forms , Inversion of matrix , method of partitioning , Characteristics equation of matrix
Power methods , Eigen values of matrix , Transformation to diagonal forms.

UNIT-III INTERPOLATION - SINGLE VARIABLE FUNCTIONS
Newton's Interpolation formula, Newton's Forward and Backward Differenc
Interpolation Formula, Langranges'Interpolation formula, Newton's Divided Differenc
Interpolation Formula.

UNIT-IV NUMERICAL DIFFERENTIATION AND INTEGRATION
Newton - cotes integration formula, Trapezoidal Rule, Simpson's One-Third and Three

BCA, DCA & PGDCA   (28)

Eight Rule, Waddle's Rule.

UNIT-V NUMERICALS SOLUTION OF ORDINARY DIFFERENCTIAL AND INTEGRAL EQUATION

Numerical Solution of first order Ordinary Differential Equations, one step method, Euler's, Picard's and Taylor's series Methods, Picard's Methods for successive approximations, Runga-Kutta Method.

BOOKS RECOMMENDED

1. Garewal   :   Numerical methods
2. Gupta & Mallic   :   Numerical Methods
3. Hamming R.W.   :   Numerical methods for scientist & Engineers. (McGraw Hill)
4. Conle S.D.   :   Elementary numerical analysis
   Carl De Boor   (International Book Company London)
5. Jain M.K.   :   Numerical methods for Science and Engineering
   Iyengar S.R.K   calculations (John Willey & Sons)

THEORETICAL FOUNDATION OF COMPUTER SCIENCE
PAPER - II : Differentiation and Integration

Max Marks : 50

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

Differentiation

UNIT-I Successive Differentiation, Lebnitz's Theorem, Rolle's Theorem, Lagrange's and Cauchy Mean Value Theorem, Taylor's Theorem, Expansion by Taylor's and Maclaurin's series.

UNIT-II Asymptotes, Curvature, Test of Convexity and Concavity, Point of Inflaxion, Tracing of Curves in Cartesian and Polar form.

UNIT-III Partial and Directional Derivatives of functions of two and three variables, Jacobian's Theorem.

Integration

UNIT-IV Integration of functions by parts, by substitution and by partial fraction; Definite Integral and its properties.

UNIT-V Integration of functions of two and three variables, Change of order of Integration, Determination of Area and Length.

BOOKS RECOMMENDED

1. Differential Calculus   - Gorakh Prasad
2. Differentiation and Integration   - H.K. Pathak

THEORETICAL FOUNDATION OF COMPUTER SCIENCE
PAPER - III : Data Structures

Max Marks : 50

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

UNIT-I INTRODUCTION -

Introduction, Basic terminology, Elementary data organization, Data structure, Data structure operation,

UNIT-II CONCEPTS OF ARRAYS, RECORDS AND POINTERS -

Basic Terminology, Linear Array; Sorting : Bubble Sort; Searching: Liner Searc
Binary Search, Pointers : Pointer Array; Records: Record Structures.

UNIT-III LINKED LISTS, STACKS, QUEUES, RECURSION –

Link lists, Traversing a linked list, searching a linked list; Insertion into a linke
List, Deletion from a Linked List, Stacks, Array Representation of Stack; Queue

UNIT-IV TREES -

Types of Trees, Binary Trees, Representing Binary, Traversing binary tree, Searchir
and Inserting in Binary Tree, Deleting in Binary tree.

UNIT-V SORTING AND SEARCHING –

Sorting, Insertion Sort, Selection Sort, Merging, Merge.

BOOKS RECOMMENDED :

1. Data Structure — Seymour Lipschutz (Schaum's Series).
2. Data Structure & Program Design - Robert L. Kruse, 3rd Ed., Prentice Hall.

DBMS (Oracle, SQL)

Max Marks : 100   Min. Marks : 4

NOTE :- The Question Paper setter is advised to prepare unit-wise question with th
provision of internal choice. Only Simple calculator is allowed not Scientifi
calculator.

UNIT-I OVERVIEW OF DATABASE MANAGEMENT SYSTEM :

Database, Definition of DBMS, Purpose of Database System, Data abstractior
Instances and Schema, Data Independence, Data administration roles, Different kind
of DBMS users, Data Dictionary, Data base languages- DDL, DML, DCL Data Models
The Relational approach, The Network approach, The Hierarchical approach, DBMS
storage structure and access method.

UNIT-II ENTITY-RELATIONSHIP MODEL:

Entity - Relationship model as a tool for conceptual design-entities attributes and
relationships. ER diagrams; 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 relationa
Schema.

UNIT-III Structured Query Language

Relational Algebra : select, project, cross product different types of joins (inner join
outer joins, self join); set operations, Simple and complex queries using relationa
algebra. Integrity constraints: Not null, unique, check, primary key, foreign key.

UNIT-IV Relational Database Design-

Normalization concept in logical model; Pitfalls in database. design, update
anomalies: Functional dependencies, Join dependencies, Normal forms (1NF, 2NF
3NF). Boyce Godd Normal form, Decomposition, Multi-Valued Dependencies, 4NF
5NF.

UNIT-V INTRODUCTION TO ORACLE :

Introduction to Commercial database query language, SQL & its environment. SQL
as a data definition language- creating tables, altering tables, drop tables. SQL as
data manipulation language- Inserting, Deleting ,Retrieving and updating data in a
table. SQL as query language. Introduction to SQL constructs (SELECT...FROM.

WHERE... GROUP BY... HAVING... ORDERBY....), Temporary tables, Nested queries.

Suggested Books :

1. Data base system : Korth & Silberschatz.
2. Data Base Management System : Alexies & Mathews [Vikas publication
3. An Introduction to Data base System : C.J. Date
4. Data Base Management System : Raguramakrishnan.

Programming in C++ & Visual C++

Max Marks : 100   Min. Marks : 40

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

UNIT-I   **Overview of Object Oriented Concepts**
Need for Object Oriented programming; Procedural Languages; The Object Oriented approach; advantages of Object Oriented Programming; characterization of Object Oriented Languages; Objects; Classes; inheritance; reusability; New data types; Polymorphism and overloading.

UNIT-II   Object Classes and Inheritance
Object and Class, Using the class, class construct, class destructors, object as function argument, struct and classes, array as class member, operator overloading. Type of inheritance, Derive class, Base class. Access specifier: protected. Overriding, member function, String,

UNIT-III   **Object Oriented Programming**
In overview of C++ Programming; Loops and decisions; Structures and functions. Arrays and Pointers, Inheritance, Overloaded Function, Inline Function, Virtual Functions, pure virtual Functions Streams.

UNIT-IV   **Object Oriented Design & Database**
Object structure concepts; Object type; Attribute types; relationship type; Object behavioral concepts; Methodology for Object Oriented Design; Booch methodology Relational Vs Object Oriented Databases, The architecture of Object Oriented Databases.

UNIT-V   **Introduction to VC++** - C under windows, Overview of VC++, VC++ workspace & projects, creating source code file, adding C++ code to a program.
Introduction to MFC - The part of VC++ programs, the application object, the main window object, the view object, the document object, Windows event oriented programming, what is device context.

RECOMMENDED BOOKS :

1. Object Oriented Programming : McGregor & Sykes SA, 1992 Van Nostrand.
2. The C++ Programming Language : Strustrp B,Addision Wasley.
3. Object Oriented Programming in C++ : Lafore R, Galgotia Publications.
4. Introduction to Object Oriented Programming : Witt KV, Galgotia Publications.
5. Object Oriented Programming : Blaschek G, Springer Verlag
6. Object Data Management : Cattel R, Addison Wasley.
7. Modern Database Systems : Kim W, ACM Press, Addision Wesley.

VC++

1. Visual C++ in Record time : Steven Holzner
2. Visual C++ Programming : Yashwant P. Kanetkar

BCA, DCA & PGDCA   (31)

Computer Networking & Internet Technology

Max Marks : 100   Min. Marks : 40

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not Scientific calculator.

UNIT-I   **Introduction to Computer Networking-**

Data Communication, Networks - Distributed Processing, Network Criteria, Applications; Protocols and Standards, Standard Organization, Line Configuration - Point to Point, Multi Point; Topology - Mesh, Star, Tree, Bus, Ring, Hibrid; Tansmission mode, Categories of Network - LAN, MAN, WAN, Inter Networks.

UNIT-II   **The OSI Model -**

The model - Layered architecture, functions of the layers-Physical layer, Data Link layer, Network layer, Transport layer, session layer, Presentation layer, Application layer; the TCP/IP reference model, comparison of TCP/IP & OSI, Novell Netware, Arpanet, NSFNET.

UNIT-III   **Transmission of Digital Data -**

Analog and Digital, digital data transmission - parallel transmission, serial transmission, DTE-DCE interface - data terminal equipment, data circuit terminating equipment, standards, modems- Transmission rate, Modem standards.

UNIT-IV   **Introduction to Internet Technology -** Architecture of Internet, Client server model, www, The concept of web publishing, The HTML Basics Review, Tables, frames, image maps, forms & Introduction to CGI Scripting.

UNIT-V   **Scripting Language for Web Design :-** What is java , Introduction to java applet, Adding applet to web page, JavaScript ,Structure of Java Script, Basic Commands of Java Script, dynamic html.

Cascading Style Sheets & Web Server – Defining styles within HTML tags. Features of Style sheet, Web server, Publishing website, Case Studies.

Recommended Books-

1. Introduction to Data communication & Networking - Behrouz & Forouzan
2. Computer Networking - Andres & Tanenbaum
3. Web publishing - Monica D'Souza & Jude D'Souza.
4. www Designing with HTML - C Xavier

LINUX

Max Marks : 50

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculator is allowed not scientific calculator.   Min. Marks : 20

UNIT-I   **Introduction to Linux**

Introduction to Linux system, History and Emergence, Features of Linux system, Different Linux distributions, Hardware Requirements for the different versions of Linux, Architecture of the Linux, Features of the Kernel and Kernel Shell relationship.

Linux File System

Features of Linux file system, File types and permissions, Getting started, Logging in /out with the concept of home directory. File operations and links, Commonly used commands like GREP, Find, who, ls, pwd, mv, ls, cd, df, cat, head, tail, rm, sort, grip, ps, whoami, chmod, chonn,gunzip,date, bc, tar.

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UNIT-II **Text Processing**

Introduction to Text Processing, Vi editor, Vi Features, Vi Commands, Yanking, Running shell commands, from within Vi, Command macros, Set showmode, Set Auto Indent, Set number, Introduction to Exrc file.Emacs editor, Emacs feature, Emacs commands, Using cut, paste and copy in Emacs, Saving buffer in Emacs.

UNIT-III **Shell Programming**

Introduction to Shell & Shell Programming: Features of a Shell, Different types of a Shell, Why use more shell, Shell treatment to the command line, the environment, set, setenv, path, home, ifs, mail, ps1, ps2, term, log name, profile, sty, profile file, login/logout file, setting environment, simple shell programs, for... do, case, do while construct.

UNIT-IV **X-windows**

x-windows: what is X-windows, Microsoft windows verses x-windows, windows manager, FVWM and FVWM95, twn, the client server model of x-windows, starting and stopping an X-window session.

GNOME & KDE

Using the GNOME & KDE desktop environment : starting the GNOME desktop environment, the GNOME panel, using the main system menu, the Gnome file manager, getting help in GNOME, using the Gnome control. A history of KDE project, starting the KDE desktop environment, exploring the Kde desktop, KDE main system menu, using file manager window, setting wallpaper, screen savers in KDE

UNIT-V **System Administration of Linux**

Installation & system Administration of Linux: responsibilities of a system administrator, startup and shutdown process, inittub and profile file importance, security file access permission, user and group related jobs, managing disk space, managing file system, backup and restart process. PRC- installation requisite, minimum hardware requirement for Red Hat Linux, Hard Disk Partitioning, installation of Red Hat Linux Installation of Printer, Scanner and Peripheral devices in Linux.

REFERENCES:

Mastering Linux   : BPB publication
Complete Reference Linux.

B. Principles of Management   Max Marks : 50

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

UNIT-I **MANAGEMENT:**

Concept, Nature and Scope of management. The evolution of Management thought, Approaches of management, New classical school, Modern organizational Theories, Behavourial Approach and Systems Approach, Tasks of a professional Manager, Responsibilities of a Professional Manager, Management Systems and Processes, Managerial Skills.

UNIT-II **PLANNING:**

Significance, Objectives Types of Plans, Strategies & Polices, Proceedings methods & rules Project Management, Planning Evaluation, Feasibility Report, Planning Process Planning under systems approach.

UNIT-III **ORGANIZING**

Significance, objectives, Major approaches to organizational theory, Organizational

BCA, DCA & PGDCA

(33)

Structure and Design, the organizational Process, span of control or Departmentation Delegation of Authority & Inter Department Coordination, Decentralization, Determinants of effective organizing, staffing, selection, appraisal and development of Managers.

UNIT-IV   DIRECTING

Significance and issue in managing human factors. Motivation, nature and significance theories and techniques, Leadership styles and influence process, Leadership challenges.

Managerial Communication, definition & Significance, Types of communication, the process and barriers, Building effective communication system, Supervision nature and function, determination of effective supervision.

UNIT-V   CONTROLLING & DECISION MAKING

Definition and elements, Control Techniques, Coordination and determinants of an effective control system.

Organizational, Context of Decisions, Decision Making Models, Decision Making Techniques and Processes.

Recommended Books:

1. Principles of Management by Terry Franklin
2. Essentials of Management by Koontz H. O Donnell ;Tata McGraw Hill, New Delhi
3. Management by Stoner J.A.F ; prentice Hall, New Delhi

B. Foundation Course: As prescribed by University for B.Sc. Courses

PRACTICAL WORK
BCA II
Shell Programming in Linux/Unix

Scheme of Examination:-

1. Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows

Programme 1	-	10
Programme 2	-	10
Viva	-	15
[Practical Copy + Internal Record]	-	15
Total	-	**50**

2. In every program there should be comment for each coded line or block of code
3. Practical file should contain printed programs with name of author, date, path of program unit no. and printed output.
4. All the following programs or a similar type of programs should be prepared

List of Practical

1. Change your shell environment – path, home, ifs, mail, ps1, ps2, term, logname
    i)   at commandline
    ii)   at shell level
    iii) at login level
2. Change the wallpaper, screensaver in GNOME, KDE

3. Install Linux with following specifications – usename, password, partitions for various directories such as /etc, /home, etc

4. Add a user and password, change the password

5. Add & remove a group

6. Create partitions on your disk.

7. Install and configure (i) printer (ii) scanner

Using vi editor do the following exercises

1. In a file
   i) replace the words 'has' with 'has not '.
   ii) Locate n^{th} character
   iii) Sort lines 21 to 40

2. In a file copy/cut and paste following text-
   i) At i^{th} line, n lines to j^{th} line .
   ii) Yank a few words
   iii) Cut and paste n words to i^{th} position in l^{th} line

3. Open two files 'txtfile' and 'newfile' and copy/cut 5 lines from txtfile and paste them in newfile using vi editor.

4. Open 'txtfile' and copy/cut following and paste to the 'newfile'
   i) i^{th} to the last line in it

5. Create macro
   i) to paste your name at any position in the file.
   ii) to map the 1st function key to search for "loop" and copy into the buffer 'a' all text following it up to but not including the string "end".
   iii) to remove all leading spaces in a file
   iv) to save and quit vi editor in input mode

Write commands
   i) List all files that match a class.
   ii) List all files that do not match a class.
   iii) Change the file permissions
   iv) Configure or set characteristics of your terminal. Describe any 3.
   v) Display the lines in a file that contain a particular word.
   vi) Append the contents of two files in a file JABC.
   vii) Count the number of files in a directory.

Write shell programs
   i) Display all the users currently logged in detail with column headers.
   ii) List all files in current directory and save the list in a file ABC. Also save the contents of the files in ABC and display the contents in ABC in sorted order.
   iii) Sort the contents of a file ABC and save it in OABC.
   iv) Display all the users currently logged in detail with column headers.
   v) To save current date & time, number of files & directories in the current directory and contents of all the files to a single file NFL.
   vi) To input a number and test whether it is +ve, -ve or zero.
   vii) To test whether a filename is a regular file or a directory or of other type.
   viii) To list only the directories in current path.
   ix) To print the greatest of three numbers.
   x) To print 12 terms of fibonacci series.
   xi) To display all users currently logged in & also check a particular user every 30 seconds until he logs in.

xii) To save current date & time, number of files in the current directory and conten̄ of all the files matching a pattern to a single file NPFL.

xiii) To display particular messages depending on the weekday.

xiv) To display common messages for following group of days-Monday & Wednesda̤ Tuesday & Thursday and Friday & Saturday and other day.

xv) To display whether today is exam of BCA-II.

xvi) To wish 'Good Morning' & 'Good Evening'.

xvii) To accept a string from the terminal and echo a suitable message if it doesn't hav̄ at least 9 characters.

PRACTICAL WORK
BCA II
DBMS (Oracle, SQL)

1. **Scheme of Examination:-**

   Practical examination will be of 3 hours duration. The distribution of practical marks w̄ be as follows

Programme 1	-	10
Programme 2	-	10
Viva (C + proj)	-	25
[Practical Copy + Practical Sessional]	-	15
Project Completeness	-	15
Project Report	-	15
Project Presentation	-	10
Total	-	**100**

2. In every program there should be comment for each coded line or block of code

3. practical files should contain printed programs with name of author, date, path of program. unit no. and printed output.

4. All the following programs or a similar type of programs should be prepared

List of Practical

Using the following database,

   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   StaffJoins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

Write SQL statements for the following –

   a. Create the above tables with the given specifications and constraints.
   b. Insert about 10 rows as are appropriate to solve the following queries.
   c. List the names of the teachers teaching computer subjects.
   d. List the names and cities of all staff working in your college.
   e. List the names and cities of all staff working in your college who earn more than 15,000
   f. Find the staffs whose names start with 'M' or 'R' and ends with 'A' and/or 7 characters long.

BCA, DCA & PGDCA

(36)

g. Find the staffs whose date of joining is 2005.
h. Modify the database so that staff N1 now works in C2 College.
i. List the names of subjects, which T1 teaches in this session or all sessions.
j. Find the classes that T1 do not teach at present session.
   a. Find the colleges who have most number of staffs.
   b. Find the staffs that earn a higher salary who earn greater than average salary of their college.
   c. Find the colleges whose average salary is more than average salary of C2
   d. Find the college that has the smallest payroll.
   e. Find the colleges where the total salary is greater than the average salary of all colleges.
   f. List maximum, average, minimum salary of each college
      a. List the names of the teachers, departments teaching in more than one department.
      b. Acquire details of staffs by name in a college or each college.
      c. Find the names of staff that earn more than each staff of C2 College.
      d. Give all principals a 10% rise in salary unless their salary becomes greater than 20,000 in such case give 5% rise.
      e. Find all staff that do not work in same cities as the colleges they work.
      f. List names of employees in ascending order according to salary who are working in your college or all colleges.
         a. Create a view having fields sname, cname, dept, DOJ, and post
         b. Create a view consisting of cname, average salary and total salary of all staff in that college.
         c. Select the colleges having highest and lowest average salary using above views.
         d. List the staff names of a department using above views.

Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)
FeeStructure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)
a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. Get full detail of all students who took admission this year class wise
d. Get detail of students who took admission in Bhilai colleges.
e. Calculate the total amount of fees collected in this session
   i) By your college ii) by each college iii) by all colleges
   a. List the students who have not payed full fee
      i) in your college ii) in all colleges
   b. List the number of admissions in your class in every year.
   c. List the students in the session who are not in the colleges in the same city as they live in.
   d. List the students in colleges in your city and also live in your city.

Subjects (paperid, subject, paper, papername)
Test (paperid, date, time, max, min)
Score (rollno, paperid, marks, attendence)

BCA, DCA & PGDCA

(37)

Students (admno, rollno, class, yearsem)
a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. List the students who were present in a paper of a subject.
d. List all roll numbers who have passed in first division.
e. List all students in BCA-II who have scored higher than average
i) in your college ii) in every college
f. List the highest score, average and minimum score in BCA-II
i) in your college ii) in every college

1. Using the following database
Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
StaffJoins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)
Write SQL statements for the following –
a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. List the names of the teachers teaching computer subjects.
d. List the names and cities of all staff working in your college.
e. List the names and cities of all staff working in your college who earn more
15,000

2. Using the following database
Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
StaffJoins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)
a. Find the staffs whose names start with 'M' or 'R' and ends with 'A' and/or 7 charac
long.
b. Find the staffs whose date of joining is 2005.
c. Modify the database so that staff N1 now works in C2 college.
d. List the names of subjects which T1 teaches in this session or all sessions

3. Using the following database
Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
StaffJoins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)
Find the classes that T1 do not teach at present session.
1. Find the college who have most number of staffs.
2. Find the staffs who earn a higher salary who earn greater than average sala
their college.
3. Find the colleges whose average salary is more than average salary of C2
4. Find the college that has the smallest payroll.
5. Find the colleges where the total salary is greater than the average salary o
colleges.

BCA, DCA & PGDCA

6. List maximum, average, minimum salary of each college

4. Using the following database
   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   StaffJoins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)
   Find the classes that T1 do not teach at present session.
   3. List the names of the teachers, departments teaching in more than one departments.
   4. Acquire details of staffs by name in a college or each college.
   5. Find the names of staff who earn more than each staff of C2 college.
   6. Give all principals a 10% rise in salary unless their salary becomes greater than 20,000 in such case give 5% rise.
   7. Find all staff who donot work in same cities as the colleges they work.
   8. List names of employees in ascending order according to salary who are working in your college or all colleges.

5. Using the following database
   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   StaffJoins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)
   Find the classes that T1 do not teach at present session.
   e. Create a view having fields sname, cname, dept, DOJ, and post
   f. Create a view consisting of cname, average salary and total salary of all staff in that college.
   g. Select the colleges having highest and lowest average salary using above views.
   h. List the staff names of a department using above views.

6. Enrollment (enrollno, name, gender, DOB, address, phone)
   Admission (admno, enrollno, course, yearsem, date, cname)
   Colleges (cname, city, address, phone, afdate)
   FeeStructure (course, yearsem, fee)
   Payment (billno, admno, amount, pdate, purpose)
   1. Create the above tables with the given specifications and constraints.
   2. Insert about 10 rows as are appropriate to solve the following queries.
   3. Get full detail of all students who took admission this year classwise
   4. Get detail of students who took admission in Bhilai colleges.
   5. Calculate the total amount of fees collected in this session
   i) by your college ii) by each college iii) by all colleges

7. Enrollment (enrollno, name, gender, DOB, address, phone)
   Admission (admno, enrollno, course, yearsem, date, cname)
   Colleges (cname, city, address, phone, afdate)
   FeeStructure (course, yearsem, fee)
   Payment (billno, admno, amount, pdate, purpose)
   List the students who have not payed full fee
   i) in your college ii) in all colleges
   List the number of admissions in your class in every year.

BCA, DCA & PGDCA   (39)

List the students in the session who are not in the colleges in the same city as live in.

List the students in colleges in your city and also live in your city.

8. Subjects (paperid, subject, paper, papername)
   Test (paperid, date, time, max, min)
   Score (rollno, paperid, marks, attendence)
   Students (admno, rollno, class, yearsem)

   (5) Create the above tables with the given specifications and constraints.
   (6) Insert about 10 rows as are appropriate to solve the following queries.
   (7) List the students who were present in a paper of a subject.
   (8) List all roll numbers who have passed in first division.
   (9) List all students in MCA-II who have scored higher than average
       i) in your college   ii) in every college
   (10) List the highest score, average and minimum score in MCA-II
       i) in your college   ii) in every college

- **Note:-Demonstration of Compiler IDE features like debugging, compiling, working with project option must be given to students.**

The Project should be done by individual student. Format of the student project re on completion of the project.

- Cover page as per format
- Certificate of Approval
- Certificate of project guide/Center Manager
- Certificate of the company/Organization
- Certificate of Evaluation
- Declaration / Self Certificate
- Acknowledgement

   In the "Acknowledgement" page, the writer recognizes his /her indebtedness guidance and assistance of the thesis/report adviser and other members of the fac Courtesy demands that he/she also recognize specific contributions by other pers or institutions such as libraries and research foundations. Acknowledgements shoul expressed simply, tastefully, and tactfully.

- Main Report
  - ✓ Contents
  - ✓ Objectives & Scope of the project
  - ✓ Definition of problem
  - ✓ System Analysis
  - ✓ Details of Hardware and Software used
  - ✓ System Design
         Database design
         Decision tree/decision table
         Data flow diagram
         E-R Diagram
         Procedural design – Algorithms
         User interface design
  - ✓ Reports Generated
  - ✓ Conclusion
  - ✓ Bibliography
  - ✓ Soft copy of the project on CD/Floppy.

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(4

Formats of various certificates and formatting styles are as:
1. Project report Cover Format:

A
Project Report
On
Title of the Project Report
(Times New Roman. Italic, Font Size=24)
Submitted in partial fulfillment of the requirements for the award of degree
Bachelor of Computer Application
From
Pt.Ravishankar Shukla University Raipur (C.G.)
(Bookman Old Style, 16 Point, Center)
Year : xxxx

Logo of college

Guide   Submitted by:
(Guide Name)   (Student's Name)
                                                        Roll No:

Submitted to
(College Name)
Pt.Ravishankar Shukla University Raipur (C.G.)

2. **Certificate of Approval by Head of the Department/ Principal in letter head**

CERTIFICATE OF APPROVAL

This is to certify that the Project work entitled " _____ "
is carried out by Mr/Ms/Mrs _____ , a student of BCA – III year at (**College Name**) is hereby approved as a credible work in the discipline of Computer Science & Information Technology for the award of degree of **Bachelor of Computer Application** during the year _____ from **Pt. Ravishankar Shukla University, Raipur (CG)**.

(**Head/ Principal Name**)

3. **Certificate from the Guide in letter head**

CERTIFICATE

This is to certify that the Project work entitled " _____ "
Submitted to the (**College Name**) by Mr/Ms/Mrs _____ Roll
No _____ , in partial fulfillment for the requirements relating to nature and standard of the award of **Bachelor of Computer Application** degree by , **Pt. Ravishankar Shukla University, Raipur (CG)** for the academic year 20____ - 20____ .

This project work has been carried out under my guidance.

(**Guide Name**)

BCA, DCA & PGDCA   (41)

2. Certificate of the Company or Organisation from where the Project is done from the ~~Project~~ Manager or Project guide.
3. Certificate of evaluation in the department letter head

CERTIFICATE OF EVALUATION

This is to certify that the Project work entitled "_____
carried out by Mr/Ms/Mrs _____ , a student of BCA – III year at (College Name), after proper evaluation and examination, is hereby approved as a credible in the discipline of Computer Science & Information Technology and is done in a satisfactory manner for its acceptance as a requisite for the award of degree of **Bachelor of Computer Application** during the year _____ from **Pt. Ravishankar Shukla University, Raipur** (CG).

Internal Examiner   External Examiner
iner

4. Declaration of Student / Self Certificate

DECLARATION

This to certify that the project report entitled "_____
which is submitted by me in the partial fulfillment for the award of the degree of Bachelor of Computer Application, (College Name), comprises the original work carried by me.

I further declare that the work reported in this project has not been submitted will not be submitted, either in part or in full for the award of any other degree or diploma in this Institute or any other Institute or University.

Place :
Date :   (Name)
                                                                                                         (Roll No)

PRACTICAL WORK   BCA II
Programming in C++ & Visual C++
1. Scheme of Examination:-
Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows

Programme 1	- 20
Programme 2	- 20
Visual C++	- 10
Viva	- 25
[Practical Copy + Internal Record]	- 25
Total	- **100**

2. In every program there should be comment for each coded line or block of code
3. Practical file should contain printed programs with name of author, date, path of program unit no. and printed output.
4. All the following programs or a similar type of programs should be prepared

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List of Practical

Loops, Decisions, Nested Method, Member Function Defined Outside Class Body:

1. Write program to generate following pattern

   a)
   ```
   A B C D E F G
   A B C   E F G
   A B       F G
   A           G
   ```

   b)
   ```
   1
   1 2
   1 2 3
   1 2 3 4
   ```

   c)
   ```
        *
      *   *
    *   *   *
   ```

   d)
   ```
        1
      1 2 1
    1 3   3 1
   1 4 6 4 1
   ```

2. Write member functions which when called asks pattern type; if user enters 11 then a member function is called which generates first pattern using for loop. If user enters 12 then a member function is called which generates first pattern using while loop. If user enters 13 then a member function is called which generates first pattern using do-while loop. If user enters 21 then a member function is called which generates second pattern using for loop and so on.

3. Write program to display number 1 to 10 in octal, decimal and hexa-decimal system.

4. Write program to display number from one number system to another number system. The program must ask for the number system in which you will input integer value then the program must ask the number system in which you will want, output of the input number after that you have to input the number in specified number system and program will give the output according to number system for output you mentioned earlier.

Array

5. Write a program using function to add, subtract and multiply two matrices of order 3x3. You have to create one function for addition, which accepts three array arguments. First two array arguments are matrices to add and third matrix is destination where the resultant of addition of first two matrixes is stored. In similar way create functions for matrix subtraction and multiplication.

6. Create a single program to perform following tasks without using library functions:
   a) To reverse the string accepted as argument.
   b) To count the number of characters in string passed as argument in form of character array.
   c) To copy the one string to other string; passed as arguments in form of source character array and destination character array without using library function.
   d) To count no. of vowels, consonants in each word of a sentence passed as argument in form of character array.

Class, Object, Array of object, Object Using Array

7. Create a class Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare an object of class student. Provide facilities to input data in data members and display result of student.

8. Create a class Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare array of object to hold data of 3 students. Provide facilities to display result of all students. Provide also facility to display result of specific student whose roll number is given.

9. Create a class Sarray having an array of integers having 5 elements as data member provide following facilities:

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(43)

a) Constructor to get number in array elements. b) Sort the elements. c) Find the element

b) Search for presence of particular value in array element.

Static member function

10. Create a class Simple with static member functions for following tasks:
    a) To find factorial by recursive member function
    b) To check whether a no. is prime or not.
    c) To generate Fibonacci series up to requested terms.

Object as argument to function, function returning object

11. Write program-using class having class name Darray Darray has pointer to pointer integer as data member to implement double dimension dynamic array and provide follow facilities:
    a) Constructor to input values in array elements.
    b) Input member function to get input in array element
    c) Output member function to print element value
    d) Add member function to perform matrix addition using objects.
    e) Subtract member function to perform matrix subtraction using objects.
    f) Multiply member function to perform matrix multiplication using objects

12. Write program to create class complex having data members to store real and imagin part. Provide following facilities:
    a) Add two complex no. using objects.
    b) Subtract two complexes no. using objects.
    c) Multiply two complexes no. using objects.
    d) Divide two complex no. using objects.

Friend Function

13. Create class Polar having data members radius and angle. It contains member functic for taking input in data members and member function for displaying value of data membe Class Polar contains declaration of friend function add which accepts two objects of cla Polar and returns object of class Polar after addition. Test the class using main functi and objects of class Polar.

14. Write program to create class distance having data members feet and inch (A single obje will store distance in form such as 5 feet 3 inch). It contains member functions for taki input in data members and member function for displaying value of data members. Cla Distance contains declaration of friend function add which accepts two objects of cla Distance and returns object of class Distance after addition. Class Distance contai declaration of another friend function Subtract that accepts two objects of class Distanc and returns object of class Distance after subtraction. Test the class using main functio and objects of class Distance.

15. Write a program to create class Mother having data member to store salary of Mothe create another class Father having data member to store salary of Father. Write a frien function, which accepts objects of class Mother, and Father and prints Sum of Salar of Mother and Father objects.

Friend Class

16. Write a program to create class Mother having data member to store salary of Mothe create another class Father having data member to store salary of Father. Declare clas Father to be friend class of Mother. Write a member function in Father, which accep object of class Mother and prints Sum of Salary of Mother and Father Objects. Crea

member function in each class to get input in data member and to display the value of data member.

Static Data Member

17. Create a class Counter having a static data member, which keeps track of no. of objects created of type Counter. One static member function must be created to increase value of static data member as the object is created. One static member function must be created to decrease value of static data member as the object is destroyed. One static member function must be created to display the current value of static data member. Use main function to test the class Counter.

STRUCTURE AND CLASS

18. Define structure student. Structure student has data members for storing name, rollno, name of three subjects and marks. Write member function to store and print data.

COPY CONSTRUCTOR, CONSTRUCTOR OVERLOADING, THIS POINTER, CONSTRUCTOR WITH DEFAULT ARGUMENT.

19. Write program to create a class Polar which has data member radius and angle, define overloaded constructor to initialize object and copy constructor to initialize one object by another existing object keep name of parameter of parameterized constructor same as data members. Test function of the program in main function.

20. Write program to create a class Polar which has data member radius and angle, use constructor with default arguments to avoid constructor overloading and copy constructor to initialize one object by another existing object keep name of parameter of parameterized constructor same as data members. Test functioning of the program in main function

FUNCTION OVERLOAD, REFERENCE VARIABLE, PARAMETER PASSING BY ADDRESS, STATIC FUNCTION

21. Write a class having name Calculate that uses static overloaded function to calculate area of circle, area of rectangle and area of triangle.

22. Write a class ArraySort that uses static overloaded function to sort an array of floats, an array of integers.

23. Write a program using class, which uses static overloaded function to swap two integers, two floats methods use reference variable.

24. Write a program using class, which uses static overloaded function to swap two integers; two floats methods use parameter passing by address.

STRING, POINTER, AND OPERATOR OVERLOADING

25. Create class String having pointer to character as data member and provide following Facilities:
    a) Constructor for initialization and memory allocation.
    b) Destructor for memory release.
    c) Overloaded operators + to add two string object.
    d) Overloaded operator = to assign one string object to other string object.
    e) Overloaded operator = = to compare whether the two string objects are equal or not.
    f) Overloaded operator < to compare whether first-string object is less than second-string object.
    g) Overloaded operator > to compare whether first-string object is greater than second-string object or not.
    h) Overloaded operator <= to compare whether first string object is less than or equal to second string object or not

i) Overloaded operator >= to compare whether first string object is greater than or equal to second string object.

j) Overloaded operator != to compare whether first string object is not equal to second string object or not.

k) Overloaded insertion and extraction operators for input in data member and display out put of data members.

26. Create a class Matrix having data member double dimension array of floats of size 3x3. Provide following facilities:
   a) Overloaded extraction operator for data input.
   b) Overloaded insertion operator for data output.
   c) Overloaded operator + for adding two matrix using objects.
   d) Overloaded operator – for subtracting two using matrix objects.
   e) Overloaded operator * for multiplying two using matrix objects.

OPERATOR OVERLOADING WITH FRIEND FUNCTION

27. Create a class Polar having radius and angle as data members. Provide following facilities:
   a) Overloaded insertion and extraction operators for data input and display.
   b) Overloaded constructor for initialization of data members.
   c) Overloaded operator + to add two polar co-ordinates using objects of class Polar.

28. Create class DegreeCelsius having a single data member to hold value of temperature in degree Celsius. Provide following facilities:
   a) Overloaded operator ++ which will increase value of data member by 1 (consider postfix and prefix operator overloading).
   b) Overloaded operator — which will decrease value of data member by 1 (consider postfix and prefix operator overloading).
   c) Overloaded insertion and extraction operators for input in data member and display value of data member.

OPERATOR OVERLOADING AND DATA TYPE CONVERSION

29. Create a class Polar that contains data member radius and angle. Create another class Cartesian in the same program and provide following facilities:
   a) It should be possible to assign object of polar class to object of Cartesian class.
   b) It should be possible to assign object of Cartesian class to object of polar class.

30. Create a class Fahrenheit that contains a data member to hold temperature in Fahrenheit. Create another class Celsius that contains a data member to hold temperature in Degree Celsius; in the same program and provide following facilities:
   a) It should be possible to assign object of Fahrenheit class to object of Celsius class.
   b) It should be possible to assign object of Celsius class to object of Fahrenheit class.
   c) It should be possible to compare objects of class Fahrenheit and Celsius to find out which object contains higher temperature.

VOID POINTER, POINTER AND POINTER TO OBJECT

31. Create a program having pointer to void to store address of integer variable then print value of integer variable using pointer to void. Perform the same operation for float variable.

32. Write program to find biggest number among three numbers using pointer and function.

33. Write swapping program to demonstrate call by value, call by address and call by reference in a single program.

34. Write program to Create a class Employee having data members to store name of employee, employee id, salary. Provide member function for data input, output. Use Pointer to object to simulate array of object to store information of 3 employees and test the program in function main.

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(46)

INLINE FUNCTION.

35. Write a program using inline function to calculate area of circle.
36. Write a program using inline function to find minimum of two functions. The inline function should take two arguments and should return the minimum value.

FUNCTION TEMPLATE

36. Write a program using function template to sort an array of floats, an array of integers.
37. Write a program using function template to swap two integers, two floats methods use reference variable.

TEMPLATE CLASS

37. Write a program using class template to simulate stacks of integer and stacks of float.
38. Write a program using class template to simulate linked-list of integer and linked list of floats.

INHERITANCE

39. Create a class account that stores customer name, account number and type of account. From this derive the classes cur_acct and sav_acct to make them more specific to their requirements. Include necessary member functions in order to achieve the following tasks:
    a) Accept deposit from customer.
    b) Display the balance
    c) Computer and deposit interest.
    d) Permit withdrawal and update the balance.
    e) Check for the minimum balance, impose penalty, necessary and update the balance.
40. Create a class circle with data member radius; provide member function to calculate area. Derive a class sphere from class circle; provide member function to calculate volume. Derive class cylinder from class sphere with additional data member for height and member function to calculate volume.
41. Consider an example of declaring the examination result. Design three classes:- student, exam and result. The student class has data members such as that representing roll number, name of student. Create the class exam, which contains data members representing name of subject, minimum marks, maximum marks, obtained marks for three subjects. Derive class result from both student and exam classes. Test the result class in main function.

VIRTUAL AND PURE VIRTUAL FUNCTION

42. Create a base class shape having two data members with two-member function getdata (pure virtual function) and printarea (not pure virtual function). Derive classes triangle and rectangle from class shape and redefine member function printarea in both classes triangle and rectangle and test the functioning of classes using pointer to base class objects and normal objects.

FILE STREAMS

43. Write program to copy content of one file to other file removing extra space between words name of file should come from command line arguments.
44. Write program-using class and object i/o to store data about Books (Book Id, Book Title, Author, Price, Edition). Provide following facilities:
    a) Addition of books.
    b) Searching for availability of books if provided author.
    c) Deletion of book information.
    d) Updating on Title, Author, Price, Edition.

(47)

Visual C++

45. Write program for obtaining fibonacci series in workspace environment
46. Write program for multiple inheritance in VC++ inheritance using book example h different class book, Journals, Magazines, Newspaper.
47. Implement virtual function in VC++ inheritance.
48. Implement friend function in VC++
49. Write a simple program for event handling in VC++ environment.
50. Write a program in VC++ using MFC.