SCHEME OF EXAMINATION 2010-2011

BCA PART- I

Subject Code	Subject Paper	Theory Marks		Internal Marks		Teaching Load per Week		
		Max.(A)	Min.(B)	Max.(C)	Min. (D)	L	T	P
BCA101	**Theoretical** foundation of Comp. Sc. **Part I** Discrete Math **Part II** Calculus & Statistical Analysis **Part III** Introductory Electronics	50 50 50	60 -	- - -	- - -	2 2 2	- - -	- - -
BCA102	Fundamentals of IT & O.S.	100	40	50	30	4	2	-
BCA103	Programming in 'C' Language	100	40	50	30	4	2	-
BCA104	Introduction to PC Software & Internet Applications	100	40	50	30	4	2	-
BCA105	A. Programming in Visual Basic B. Practical based on course 105A	50 50	20 20	- -	- -	2 -	2 -	- 2x2
BCA106	A. English Communication skills B. Foundation Course	50 50	40	- -	- -	2 2	- -	- -
BCA107	Practical Based on Course-103	100	50	-	-	-	-	3x2
BCA108	Practical Based on Course-104	100	50	-	-	-	-	1x2
	TOTAL	850	360	150	90			
GRAND TOTAL (PAPER+INTERNAL)		**(A+C) 1000**		**(B+D) 450**				

Minimum passing marks in subject BCA 101 is 40% of total marks 150 (i.e. Total of Part I + Part II + Part III marks of BCA 101)

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
BCA201	**Part I** Numerical Analysis **Part II** Differentiation & Integration **Part III** Data Structures	50 50 50	60	- - -	- - -	2 2 2	- - -	- - -
BCA202	DBMS (Oracle, SQL)	100	40	50	30	4	2	-
BCA203	Programming in C++ & Visual C++	100	40	50	30	4	2	-
BCA204	Computer Networking & Internet Technology	100	40	50	30	4	2	-
BCA205	A. Shell Programming in Linux/Unix B. Practical based on course 205A	50 50	20 20	- -	- -	2 -	2 -	- 2x2
BCA206	A. Principles of Management B. Foundation Course	50 50	40	- -	- -	2 2	- -	- -
BCA207	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 201 is 40% of total marks 150 (i.e. Total of Part I + Part II + Part III marks of BCA 201)

SCHEME OF EXAMINATION 2010-20117

BCA PART- III

Subject Code	Subject Paper	Theory Marks		Internal Marks		Teaching Load per Week		
		Max.(A)	Min.(B)	Max.(C)	Min. (D)	L	T	P
BCA301	**Part I** Calculus & Geometry **Part II** DifferentiaL Equation & Fourier Series **Part III** Computer System Architect	50 50 50	60	- - -	- - -	2 2 2	- - -	- - -
BCA302	Java	100	40	50	30	4	2	-
BCA303	Operating Systems	100	40	50	30	4	2	-
BCA304	Software Engineering	100	40	50	30	4	2	-
BCA305	A. Multimedia tools and Applications B. Practical based on course 305A	50 50	20 20	- -	- -	2 -	2 -	- 2x2
BCA306	A. Financial Accountancy B. Foundation Course	50 50	40	- -	- -	2 2	- -	- -
BCA307	Practical Based on Course-302	100	50	-	-	-	-	3x2
BCA308	Project	100	50	-	-	-	-	1x2
	TOTAL	850	360	150	90			
	GRAND TOTAL (PAPER+INTERNAL)	**(A+C) 1000**	**(B+D) 450**					

Minimum passing marks in subject BCA301 is 40% of total marks 150(i.e. Total of Part I + Part II + Part III marks of BCA301)

BCA - 101

THEORETICAL FOUNDATION OF COMPUTER SCIENCE

PAPER-I : DISCRETE MATHEMATICS

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 Recall of statements and logical connectives, tautologies and contradictions, logical equivalence, algebra of propositions quantifiers, existential quantifiers and universal quantifiers.

UNIT-II Boolean algebra and its properties, algebra of propositions as an example, De Morgan's Laws, partial order relations g.l.b., l.u.b. Algebra of electric circuits and its applications. Design of simple automatic control system.

UNIT-III Boolean functions - disjunctive and conjugative normal forms. Boolean's expansion theorem, fundamental forms. Many terminal Networks.

UNIT-IV Arbitrary Cartesian product of sets. Equivalence relations, partition of sets, injective, surjective, bijective maps, binary operations, countable, uncountable sets.

UNIT-V Basic Concept of Graph Theory, Sub graphs, Trees and their properties, Binary Trees, Spanning Trees, Directed Trees, Planar graphs, Euler Circuit, Hamiltonian Graph. Chromatic number.

BOOKS RECOMMENDED:

1. Boolean Algebra and its Application : J.E. Whitesitt
2. Concepts of Modem Mathematics : P.L. Bhatnagar
3. Discrete Mathematics : B.R.Thakur
4. Graph theory and its applications : Narsingh Dev.
5. Discrete Maths : C.L.Liu T M Hill

BCA-101

PAPER-II : CALCULUS AND STATISTICAL METHODS

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 Limits, Continuity and differentiability of function(s) of one variable, First and second kind of discontinuities.

UNIT-II Differentiation of Functions, Differentiation of functions of functions, parametric functions, product of functions, function in Product and quotient form, Logarithmic differentiation, Differentiation of Parametric functions.

UNIT-III Tangent & Normal, Subtangent, Subnormal, Monotonic Increasing and Decreasing function, Simple examples of Maxima and Minima.

Statistical Methods

UNIT-IV Probability – sample space, Types of events (mutually exclusive, equally likely event, favorable events, dependent and independent events), composition of events, additive and multiplicative law of probability, conditional probability, inverse probability, Bays Theorem.

UNIT-V Frequency distribution and measures of dispersions, Binomial, Poisson and Normal distribution. Curve fitting and Principle of least square, Correlation and Regressions lines.

BOOKS RECOMMENDED:

1. Differential Calculus : Gorakh Prasad
2. Statistics : Rey & Sharma
3. Statistics : Shukla & Sahay

BCA-101

THEORETICAL FOUNDATION OF COMPUTER SCIENCE

PAPER - III : INTRODUCTORY ELECTRONICS

Max Marks : 50

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

UNIT-I **SEMICONDUCTORS & INTEGRATED CIRCUITS-** Introduction to semiconductors & its types, Diode, PNP & NPN transistors, CE amplifier & Switching characteristics of Transistors, Logic Families, Scale of Integration, RTL, DTL, TTL, and its characteristics.

UNIT-II **INTEGRATED CIRCUIT FABRICATION-** Integrated circuits technology. Advantages and limitations of Integrated circuits, Basic monolithic integrated circuit technology.

UNIT-III **DATA REPRESENTATION-** Datatypes, number systems, fixed point representation, 1's and 2's complements, Binary fixed point representation, arithmetic operation on binary operation, overflow and underflow, codes, ASCII, EBCDIC codes, Grey codes, Excess-3, BCD codes, Error detection and correcting codes.

UNIT-IV **LOGIC GATES AND BOOLEAN ALGEBRA-** Logic gates AND, OR, NOT, gates and their truth tables, MOR, NAND and XOR gates, Boolean algebra, basic Boolean Law, demorgan's theorem, Map Simplification, Minimizing technique, K-Map, Sum of product, Product of sum.

UNIT-V **COMBINATOINAL & SEQUENTIAL LOGIC CIRCUITS –** combinational and sequential circuits, binary adder, substractor, Flip flop – RS, D, JK, and T flip flop, data & shift register, encoder, decoder, comparator, Multiplexer, Demultiplexer, RAM & ROM.

BOOKS RECOMMENDED :

1. Digital Computer Electronics - Albert P. Malvino (TMH Edition)
2. Digital Computer and LogicDesign - M Morris Mano (PHI)
3. Digital Computer Fundamentals - Thomas P. Bartee (Megraw Hill)
4. Handbook of Electronics - GuptaKumar(Pragati Prakashan Meerut)

BCA - 102

FUNDAMENTALS of IT & O.S.

Max Marks : 100 **Min. Marks : 40**

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

UNIT-I **Introduction to Computers**

Computer System Characteristics and Capabilities : Speed, Accuracy, Reliability, Memory capability, Repeatability. *Computer Hardware and Software:* Block Diagram of a Computer, Different Types of Softwares. *Data Processing:* Data, Data Processing System, Storing Data, Processing Data. *Types of Computers:* Analog, Digital, Hybrid

General and Special Purpose Computers. *Computer Generations:* Characteristics of Computer Generations Computer Systems – Micros, Minis & Main-frames. *Introduction to a PC :* The IBM Personal Computer Types of PC systems PC, XT & AT Pentium PC's Limitations of Micro Computer.

UNIT-II **Computer Organization :**

Introduction to Input Devices : Categorizing Input Hardware, Keyboard, Direct Entry–Card Readers, Scanning Devices – O.M.R., Character Readers, MICR, Smart Cards, Voice Input Devices, Pointing Devices – Mouse, Light Pen. *Storage Devices :* Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods–Sequential, Direct & Indexed Sequential, Tape Storage and Retrieval Methods Tape storage Devices, characteristics and limitations, Direct access Storage and Microcomputers - Hard Disks, Disk Cartridges, Direct Access Storage Devices for large Computer systems, Mass storage systems and Optical Disks, CD ROM. *Central Processing Unit :* The Microprocessor, control unit, A.L.U., Registers, Buses, Main Memory, Main Memory (RAM) for microcomputers, Read Only Memory(ROM). *Computer Output :* Output Fundamentals, Hardcopy Output Devices, Impact Printers, Non-Impact Printers, Plotters, Computer output Microfilm/Microfiche(COM) systems, Softcopy Output Devices, Cathode Ray Tube, Flat Screen Technologies.

UNIT-III **Computer Software:**

System Software: System software Vs. Application Softwar Types of System Software, Introduction and Types of Operating Systems progra ns, Booting Loader, Diagnostic Tests, Operating Systems Executive, BIOS, Utility Programs, File Maintenance, Language Processors, Assembler, Compiler & Interpreter. *Application Software:* Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages.

UNIT-IV **Microsoft Disk Operating System :**

Introduction, History and Versions of DOS. *Fundamentals of DOS :* Physical Structure of the Disk, Compatibility of drives, Disks & DOS versions, Preparing Disks for use, Device Names. *Getting Started with DOS :* Booting Process (DOS, Windows, Unix), System Files and Command.com, Internal DOS Commands - DIR, MD, CD, COPY, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE. Files & Directories, Elementary External DOS Commands - CHKDSK, MEM, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, HELP, TREE, SYS, LABEL, ATTRIB, Creating a Batch Files, Additional Commands - ECHO, PROMPT, EDIT, FORMAT, FDISK, BACKUP, RESTORE, MORE, SORT, APPEND. Introduction to Unix OS, Basic commands eg pwd, is, cat, pg, who, ps, mail, cal, File commands- ls, cat, tail, cp, mv, rm, file,type, chmod. Directory Commands- cd, mkdir, rmdir.

UNIT-V **Overview of GUI & Windows OS:**

Introduction to GUI and various versions of MS Windows 98, Windows XP, Windows 2000, Windows Vista, Workgroups and domains, Quick launch toolbar, Windows Flip, 3D navigation, Desktop, Internet explorer 7.0, networking features (Sharing files), managing programs and multimedia, control panel, Speech recognition and Dictation, Handling user accounts, Security and protection features, management tools (updating, diagnosing, configurations, backup and recovery, upgrading windows vista). OLE Concept, Comparative study of Linux, DOS and Windows, features of Windows Vista, reliability, migrating the data.

Books

1. Using IT : Williams T M Hill
2. IT : Curtin T M Hill
3. Fundamental of Information Technology : Chetan Shrivastava_Kalyani Publishers
4 Computer Fundamentals : P.K Sinha BPB Pubications

BCA-103

PROGRAMMING IN 'C' LANGUAGE

Max. Marks : 100 **Min. Marks : 40**

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

UNIT-I **Fundamentals of C Programming** - Overview of C : History of 'C', Structure of 'C' program. Keywords, Tokens, Data types, Constants, Literals and Variables, Operators and Expressions : Arithmetic operators, Relational operator, Logical operators, Expressions, Operator : operator precedence and associativity ,Type casting, Console I/O formatting, Unformatted I/O functions: getch(), getchar, getche(), getc(), putc(), putchar().

Control Constructs : If-else, conditional operators, switch and break, nested conditional branching statements, loops: For, do.. while, while, Nested loops, break and continue, goto and label, exit function.

UNIT-II **Arrays, Strings and Functions : Array**:-Array declaration, One and Two dimensional numeric and character arrays. Multidimensional arrays.

String:- String declaration, initialization, string manipulation with/without using library function.

Functions:-definition, function components: Function arguments, return value, function call statement, function prototype. Type of function arrangement: return and argument, no return and no argument, return and no argument, no return and argument. Scope and lifetime of variable. Call by value and call by reference. Function using arrays, function with command line argument. User defined function: maths and character functions, Recursive function.

UNIT-III **Structure, Union & Enum- Structure**: basics, declaring structure and structure variable, typedef statement, array of structure, array within structure, Nested structure; passing structure to function, function returning structure. **Union**: basics, declaring union and union variable, **Enum**: declaring enum and enum variable.

UNIT-IV **Dynamic Data Structures in 'C' - Pointers**: definition of pointers, pointer declaration, using & and * operators. Void pointer, pointer to pointer, Pointer in math expression, pointer arithmetic, pointer comparison, dynamic memory allocation functions – malloc, calloc, realloc and free, pointers vs. Arrays, Arrays of pointer, pointer to array, pointers to functions, function returning pointer, passing function as argument to function, pointer to structure, dynamic array of structure through pointer to structure.

UNIT-V **File Handling and Miscellaneous Features** - File handling: file pointer, file accessing functions,:fopen, fclose, fputc, fgetc, fprintf, fscanf, fread, fwrite,beof, fflush, rewind, fseek, ferror. File handling through command line argument. Introduction to C preprocessor #include, #define, conditional compilation directives: #if, #else, #elif, #endif, #ifndef etc.

BOOKS RECOMMENDED :

Main Reading:

1. Programming in C - Yashwant Kanetkar
2. Programming in C - Venugopal

3. The C Programming Language - Kemigham and Ritche [Prentice Hall].
4. Application Programming in C - R. Johnson-baugh & Martin Kalin Macmillan International Editions.
5. The Spirit of C - Mullish Cooper, Jaico publishing House
6. How to solve it by Computers - R.G.Dromey, Prentice Hall of India.
7. Mastering in CPP - Venugopal

Supplementary Readings:

1. The art of C Programming - Jones, Robin & Stewart, Narosa Publishing House.
2. C Problem solving and Programming - A. Kenneth, Prentice Hall International.
3. C made easy - H. Schildt, McGraw Hill Book Company

BCA-104
Introduction to PC Software & Internet Applications

Max Marks : 100 **Min. Marks : 40**

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

UNIT-I Using Office 2007 MS-Word- **Creating and editing word documents, formatting documents –aligning documents, indenting paragraphs, changing margin, formatting pages, formatting paragraph, printing labels, working with tables, formatting text in tables, inserting and deleting cells, rows and columns, use bulleted and numbering, checking spelling and grammar, finding synonyms, working with long documents, working with header and footer, adding page number and foot note, working with graphics, inserting clip art, working with pictures, Word art, creating flow chart, creating word templates, creating templates, working with mail merge, writing the form letter, merging form documents, selecting merge records, creating macros, running macro.**

UNIT-II **Working with MS-Excel** – Introducing Excel, use of excel sheet, saving, opening, and printing workbook ,Apply formats in cell & text, Divide worksheet into pages , setting page layout, adding Header & Footer. Using multiple documents, arranging windows i.e. (Cascade, Tiled ,Split), protecting your work, password protection. Working with Functions & Formulas, using absolute reference, referencing cell by name , using cell label , giving name to cell and ranges , working with formulas (mathematical & trigonometric , statistical, date time , most recently used), Working with Excel graphics, creating chart & graphs. filtering a database ,using auto filter ,criteria range, calculating total and subtotal, creating pivot table, goal seek, recording & playing macros, deleting and selecting macro location.

UNIT-III **Working with MS-PowerPoint & MS-Access - Presenting with PowerPoint** – Creating presentation, working with slides, different types of slides, setting page layout, selecting background and applying design, adding graphics to slide, adding sound and movie, working with table, creating chart and ginih, playing a slide show, slide transition, advancing slides, setting time, rehearsing timing, animating slide, animating objects, running the show from windows. **MS-Access** – Creating tables in Access, defining datatypes, creating relationships, manipulating records.

UNIT-IV **Introduction to HTML and Designing Web Page using MS-FrontPage** – Concept of website, web standards, what is HTML, HTML documents/files. HTML Editor, explanation of the structure of home page, elements in HTML document, HTML

elements, HTML tags and basic HTML tags, viewing the source of webpage. And downloading the WebPages source **Image, internal and external linking between web pages** – IMG elements. **Features of Front page 2000**, Designing web page, working with views, Hyperlinks, setting Hyperlink, using List, themes, tables, Frames, style sheet, working with forms, page Templates, frame templates, anchor, working with banners, Dynamic effect, How to publishing webpages in local area network.

UNIT-V Animations and Graphics: **Basic Concept of 2D/3D Animation, Principle and application in Multimedia, Hardware & software resources requirement for animation, steps for creating generic animation. Learn the basic of Flash Animation;**

Creating a new movie : Get set Up, Input Text, Animate Text, drawing and painting with tools, brush,create basic shapes like Oval, Rectangle& Polystar Tools, tools working with object & filing the object, Transformation, object properties dialog box, creating layers motion tweeing, shape tweeing , mask layers, basic action scripts, importing sound through Flash.

Interface of Photoshop : The Photoshop workspace use of menus palettes and toolbox, creating new images, using selecting tools, lasso tool, Direct select Lasso, convert point tool, image adjustment through Photoshop.

Book:

1. Office 2000 made easy - Alan Neibauer, Tata McGraw Hill.
2. An Introduction to HTML - Dr.K.N. Agarwala, Dr.O.P.Vyas, P.A.Agarwala
3. FLASHMX Bible - Robert Reinhart
4. Sams Teach Yourself Macromedia Flash 8 in 24 Hours - Phillip Kerman
5. Photoshop Bible - Willey Publication
6. Ms front page 2000 complete concept and Technical Gary, B.shelly.
8. Complete Reference HTML
9. How to do everything with Macromedia - Bonnie Blake,Doug Sahlin
10. Multimedia Making it works - Tay Vaughan Tata Mcgraw Hills

BCA–105
PROGRAMMING IN VISUAL BASIC

Max Marks : 50 **Min. Marks : 20**

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

UNIT-I **Introduction to visual Basic:** Hardware requirements, features of VB, Editions of Visual Basic, and Event Driven Programming vs procedure oriented programming. Introduction to Integrated Development Enviroment. Basic concepts of Visual Basic programming: Controls, properties, methods, events, forms, projects. Creating Executable files.

Variables, constants, data types, data conversion function., scope of variables Operators **Control Structure :** Conditional / branching statements : If...else..endif, Select case Looping statements: do.. while, for.. next, for each, exiting a loop, goto statement, msgbox and input box functions.

UNIT-II **Arrays:** types of arrays, array manipulation, Working with standard controls. Working with control array, various key and mouse events, using drag and drop concepts. **Procedure and Functions:** types of function, library function, date and time function, format function, and string related function, validation function. Creating user defined

function & procedure, call by value and call by reference, concept of recursion, working with basic module, class module and form module.

UNIT-III **Working with Advanced Controls:** toolbar, status bar, tabbed dialog controls, progress bar, animation controls, dtpicker, calendar, common dialog control.
SDI & MDI Application: creating MDI application, menu editor: defining menu & popup menu, sub main, startup objects. Working with graphics control and using grphic methods.

UNIT-IV **Error Handling:** Types of errors, error trapping tools: watch window, local window, immediate window, debug menu, tracing program flow with call stack, the err object, error function, error handling routines : on error goto statements.
File Handling: type of file handling, Sequential file handling: reading, writing and appending in file, understanding user defined data type, Random access file: reading, writing and appending in file.

UNIT-V **Data Access Using the ADO Data Control:** Basic concepts of relational database, visual data manager, introduction to SQL, concept of ODBC, Overview of DAO and RDO, Using DAO and RDO to access data. ADO features, difference among ADO, DAO and RDO, accessing and manipulating database using ADO, ADO object hierarchy, concept of recordset and its type, connection object, command object.
Data Environment: accessing data using data environment, using Datagrid, Data combo, data list, MSHFlexgrid.
Report Generation: Overview of Data Report, creating Data report, adding groups, using data report functions. Introduction to Crystal Report Writer.

BOOK RECOMMENDED:

Mastering Visual Basic 6 Fundamentals - By Microsoft
Mastering in Visual Basic - Bv BPB Publications.
Introduction to VB Programming – By V. K Jain
Visual Basic 6 Programming Biack Book By Holzner Dreamtech
Peter Norton's guide to Visual Basic 6 Techmedia

BCA –106
COMMUNICATION SKILLS

Max Marks : 50

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

Objective : This course is designed to enable the students of computer education to speak and write English with a fare degree of grammatical correctness. The inputs in the course contents are related to spellings, meanings of words and the correct use of words relating to the field of computers and other areas of knowledge.

UNIT-I Vocabulary, knowledge of at least one thousand words - their spelling, meanings and usage. Phrases.

UNIT-II Structure of sentences - Simple, Complex and compound. Clauses and Subordinate clauses

UNIT-III The tenses and aspects. The modal, the gerund, the participle, the infinitive.

UNIT-IV **Transformation of sentences :-**

1. Interchange of Active and Passive Voice.
2. Interchange of Affirmative and Negative Sentences.
3. Interchange of Explanative and Assertive Sentences.

4. Interchange of interrogative and Assertive Sentences.
5. Direct and Indirect Speech.

UNIT-V Practical Application of grammar. Practice in talks, conversation and writing. Report writing. Writing of applications. Letter writings, Description of events.

Books:

1. Living English Structure - by W.S. Allen.
2. A Practical English Grammar - by Thomson and Martinet.

Testing Pattern : The question paper will clearly specify units and will have questions from unit I to IV. Unit V will include practicals.

Unit I - 10 marks
Unit II - 10 marks
Unit III - 10 marks
Unit IV - 10 marks
Unit V - Practicals - 10 marks

BCA –106
FOUNDATION COURSE : GENERAL AWARENESS

Max Marks : 50

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

1. Indian Art, meaning of art, features of indian art, elementary knowledge of paintings, music, dancing, sculpture archeology, iconography & other social arts.
2. Indian Literature, Ancient Indian Literature, Elementary knowledge of Vedic Literature, Mahabharta, Ramayan and other main granthas.
3. Indian Freedom Struggle : Freedom Struggle of 1857, National Consciousness, non-cooperation movements. Civil disobedient movement quit India movement, contribution of revolutionaries in freedom struggle.
4. Indian Constitution : Introduction, main features of constitution fundamental rights, Fundamental duties.

Text Book :

Indian Culture the book sponsored by M.P. Hindi granth Academy is the prescribed textbook for the syllabus.

Bridge course for BCA (Only For Non mathematics Students)

Max Marks : 50 **Min. Marks : 20**

Note : Fundamentals of the topics are to be dealt to enable the students to understand the topics. The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.. Only Simple calculator is allowed not scientific.

UNIT-I **Algebra**
Partial fractions, Arithmetic Progression & Geometric Progression. Determinants and matrices, Inverse matrix.

UNIT-II Permutation combination, method of induction, Binomial Theorem for positive integral index. And any index (without proof), Exponential and logarithmic series.

UNIT-III **Trigonometry**
Measurement of angles, Trigonometric ratios, simple formula, compound angles, Trigonometric ratios of multiple and sub multiple angles. Height and Distance, Inverse

Function.

UNIT-IV **Geometry**

Locus, Cartesian coordinate system, Distance formula, Section formula, Slope of a straight line various forms, Angle between two lines, pair of straight lines, parabole, ellipse and hyperbola.

UNIT-V **Statistics**

Frequency Distribution, Measures of central tendency, Mean. Median, Mode, G.M., H.M., Inter quartile range, Mean deviation, Standard deviation.

BOOKS RECOMMENDED

Mathematic (class XI and XII) - R.D.SHARMA
YOUGBODH Mathematics - (class XI and XII)

PRACTICAL WORK

BCA I

BCA-105(B) PROGRAMMING IN VISUAL BASIC

1 **Scheme of Examination:-** 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. WAP to perform arithmetic operation **using command buttons**. (**Declare variables globally**).
2. WAP to take input of principal, rate & time and calculate simple interest & compound interest.
3. Write a program to take input of x and print table of x in the following format.
   X * 1 = X
   X * 2 = 2X

   X * 10 = 10*X
4. Design an interface, which will appear like marksheet. It will take input of marks in five subjects and calculate total marks and percentage then provide grade according to following criteria. (**Using nested if**) (Use tab index property to move focus).

If %	Then Grade
> = 90	A+
> = 75 & < 90	A
> = 60 & < 75	B
> = 45 & < 60	C
Otherwise	F

5. WAP to create a simple calculator (**Using control array**)

6. Write a program to check whether an centered no. is prime or not. (**Using for loop & Exit for**)
7. Write a program which will count all vowels, consonants, digits, special characters and blank spaces in a sentences (Using **select case**)
8. WAP to illustrate all functionalities of **listbox** and **combobox**.
9. WAP using **check boxes** for following font effects.
   Bold
   Italic
   Underline
   Increase font size
   Decrease font size
   Font color
10. WAP for temperature conversion using **option button**.
11. WAP to launch a rocket using **pictures box** and **timer control**.
12. WAP to change back color of any control (label, textbox) using **scroll box**.
13. WAP to search an element for a **one dimension static array**.
14. WAP to sort a dynamic array of
    (a) n numbers
    (b) n strings (Input array size at run time)
15. WAP to take input of two matrices and perform their addition, subtraction and multiplication using **menu editor**.
17. WAP to illustrate **call by value and call by reference** (to swap to values)
18. Write a program to calculate factorial of a number using **user defined function.**
19. Take input of a word and WAP to check whether it is a palindrome or not. (**Without using structure fun**)
20. WAP to find smallest among given three numbers using **user defined procedures**.
21. WAP to generate, print and find sum of first n elements of fibonacci series using **recursion**.
22. WAP to perform read write operations in a **sequential file**.
23. Create a **user defined data type** having fields name (as string of length 20 bytes), Rollno (as integer), class (as string of 10 bytes). WAP to create a **random access file** to store above data and perform following operations in this file.
    (a) Write new record (b) Read / display existing record (c) Delete any record
    (d) Search any record (f) List selected records (e) close the file
24. WAP to display records of a table using **DAO & bound control** code for buttons to move at first record, next record, previous record, last record in the table.
25. Create a table using **visual data manager** and write a program using **RDO & advanced bound control** to add, delete, edit & navigate records.
26. WAP to access a database using **ADO &** display a key column in the combo box or list box when an item is selected in it, its corresponding records is shown in **MSH flex grid.**
27. Using **Data Environment** create a program to display records of any table.
28. WAP to generate marksheet of students in a class through **data report**.
29. WAP to illustrate various **key board and mouse events.**
30. Using **drive, directory and file list box** (it will show only .bmp files). Let the user select the bmb files, which will appear in picture box as user click on any item in list box.
31. Using **toolbar** design an interface for string manipulation. Toolbar should have tabs to
    (a) Find length of string

(b) No of blank spaces in sting
(c) Reverse the string
Also show current date & time in **status bar.**

BCA I
BCA-107 PROGRAMMING IN 'C'

1 **Scheme of Examination:-**

Practical examination will be two programs and a project demonstration. It will be of 3 hours duration. All programme with flowchart & algorithms. The distribution of practical marks will be as follows and

Programme 1	-	20
Programme 2	-	20
Programme 3	-	20
Viva	-	25
[Practical Copy + Internal Record]	-	15
Total	-	**100**

2 Demonstration of installation of C Programming Language.

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

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

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

6 The mini-project could be on Sale or Purchases or Working of a part of a whole system such as Regulation of interview using queue, Sale of handicrafts with bargain, Sale of story books, Expenses in household purchases, Purchase of stationery in office, Phone/ Train/ Book Catalogue using binary tree, Sale of ice-cream/ snacks/ fast-food/ sweets, etc.

7 The format of project report will be as given later.

List of Practical

INPUT AND OUTPUT, FORMATTING

1. Write a program in which you declare variable of all data types supported by C language. Get input from user and print the value of each variable with alignment left, right and column width 10. For real numbers print their values with two digits right to the decimal.

Loops, Decisions

2. Write program to print all combination of 1 2 3.
3. 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 4 6 4 1
```

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

d)
```
1
1 2 1
1 3 3 1
```

4. Write main function using switch...case, if..else and loops which when called asks pattern type; if user enters 11 then first pattern is generated using for loop. If user enters 12 then first pattern is generated using while loop. If user enters 13 then first pattern is generated using do-while loop. If user enters 21 then a second pattern is generated using for loop and so on.
5. Write program to display number 1 to 10 in octal, decimal and hexadecimal system.
6. 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.
7. Write a program to perform following tasks using switch...case, loops, and conditional operator (as and when necessary).
   a) Find factorial of a number
   b) Print fibonacci series up to n terms and its sum.
   c) Print sin series up to n terms and its sum.
   d) Print exponential series up to n terms and its sum.
   e) Print prime numbers up n terms.
   f) Print whether a given year is leap or not.
8. Write program no. 6 but use library function to perform above tasks.

ARRAY

9. Create a single program to perform following tasks using switch, if..else, loop and single dimension character array without using library function:
   a) To reverse the string.
   b) To count the number of characters in string.
   c) To copy the one string to other string;
   d) To find whether a given string is palindrome or not.
   e) To count no. of vowels, consonants in each word of a sentence and no. of punctuation in sentence.
   f) To arrange the alphabets of a string in ascending order.
10. Create a single program to perform following tasks using switch, if..else, loop and single dimension integer array:
   a) Sort the elements.
   c) Search for presence of particular value in array element using linear search.
   d) Search for presence of particular value in array element using binary search.
11. Write a program that read the afternoon day temperature for each day of the month and then report the month average temperature as well as the days on which hottest and coolest days occurred.
12. Create a single program to perform following tasks using switch, if..else, loop and double dimension integer array of size 3x3:
   a) Addition of two matrix.
   b) Subtraction of two matrix.
   c) Multiplication of two matrix.
   d) Inverse of matrix.
   e) Transpose of matrix.
   f) Sum of diagonal elements
13. Create a single program to perform following tasks using switch, if..else, loop and double dimension character array of size 5x40:
   a) Sorting of string.
   b) Finding the largest string.
   c) Finding the smallest string.

d) Searching for presence of a string in array.

Functions

14. Write program using the function power (a, b) to calculate the value of a raised to b.
15. Write program to demonstrate difference between static and auto variable.
16. Write program to demonstrate difference between local and global variable.
17. Write a program to perform following tasks using switch...case, loops and function.
    a) Find factorial of a number
    b) Print Fibonacci series up to n terms and its sum.
    c) Print Sin series up to n terms and its sum.
    d) Print exponential series up to n terms and its sum.
18. Write a program to perform following tasks using switch...case, loops and **recursive** function.
    a) Find factorial of a number
    b) Print Fibonacci series up to n terms and its sum.
    c) Print Sin series up to n terms and its sum.
    d) Print exponential series up to n terms and its sum.
    e) Print natural series up to n terms and its sum
19. Write a function to accept 10 characters and display whether each input character is digit, uppercase letter or lower case letter.

ARRAY & FUNCTION

20. Create a single program to perform following tasks using switch, if..else, loop, function and double dimension integer array of size 3x3:
    a) Addition of two matrix.
    b) Subtraction of two matrix.
    c) Multiplication of two matrix.
    d) Inverse of matrix.
    e) Transpose of matrix.
21. Create a single program to perform following tasks using switch, if..else, loop, user defined function and single dimension character array:
    a) To reverse the string.
    b) To count the number of characters in string.
    c) To copy the one string to other string;
    d) To find whether a given string is palindrome or not.
    e) To count no. of vowels, consonant in each word of a sentence and no, of punctuations in sentence.
22. Create a single program to perform following tasks using switch, if..else, loop, function and single dimension integer array:
    a) Sort the elements.
    b) Find largest element and smallest element.
    c) Search for presence of particular value in array element using linear search.
    d) Search for presence of particular value in array element using binary search.
23. Create a single program to perform following tasks using switch, if..else, loop, function and double dimension character array of size 5x40:
    a) Sorting of string
    b) Finding the largest string, lexicographically.
    c) Finding the smallest string, lexicographically.
    c) Searching for presence of string in array.

STRUCTURE & UNION

24. Create a structure Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare a structure variable of student. Provide facilities to input data in data members and display result of student.
25. Create a structure Date with data member's dd, mm, yy (to store date). Create another structure Employee with data members to hold name of employee, employee id and date of joining (date of joining will be hold by variable of structure Date which appears as data member in Employee Structure). Store data of an employee and print the same.
26. Create a structure Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare array of structure to hold data of 3 students. Provide facilities to display result of all students. Provide facility to display result of specific student whose roll number is given.
27. Write program to create structure complex having data members to store real and imaginary part. Provide following facilities:
    a) Add two complex nos. using structure variables.
    b) Subtract two complex nos. using structure variables.
    c) Multiply two complex nos. using structure variables.
    d) Divide two complex nos. structure variables.

    Use structure as argument to function and function returning structure.

POINTER

28. Define union Emp having data members:-one integer, one float and one single dimension character array. Declare a union variable in main and test the union variable.
29. Define an enum Days_of_Week members of which will be days of week. Declare an enum variable in main and test it.
30. Write a program of swapping two numbers and demonstrates call by value and call by reference.
31. Write program to sort strings using pointer exchange.
32. Write a program in c using pointer and function to receive a string and a character as argument and return the no. of occurrences of this character in the string.
33. 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.
34. Write program to find biggest number among three numbers using pointer and function.
35. Write program to Create a structure Employee having data members to store name of employee, employee id, salary. Use Pointer to structure to store data of employee and print the stored data using pointer to structure.
36. Write program to Create a structure Employee having data members to store name of employee, employee id, salary. Use Pointer to structure to simulate dynamic array of structure store data of n employees and print the stored data of n employees using pointer to structure.
37. Write a program to sort a single dimension array of integers of n elements simulated by pointer to integer. Use function for sorting the dynamic array.
38. Write a program to sum elements of a double dimension array of integers of m rows and n columns simulated by pointer to pointer to integer. Use function for sum the elements of the dynamic array.
39. Write program to demonstrate difference between character array and pointer to character.
40. Write program to demonstrate difference between constant pointer and pointer to constant.

41. Write program to demonstrate pointer arithmetic.
42. write program to demonstrate function-returning pointer.
43. Write program using self-referential pointer to structure to create and print the linked list, data structure.

FILE STREAMS

44. Write program to copy content of one file to other file removing extra space between words name of files should come from command line arguments.
45. Write program to create a file 'data' containing a series of integers and count all even numbers present in the file 'data'.
46. Write a program to count no. of tabs, new lines, character and space of a file.,
47. Write a program to read item number, rate and quantity from an inventory file and print the followings:

1. Items having quantity > 5.
2. Total cost of inventory.

BCA I

BCA-108 INTRODUCTION TO PC SOFTWARE & INTERNET APPLICATION

1. Scheme of Examination: -

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

Programme 1 (Word)	-	13
Programme 2 (Powerpoint)	-	13
Programme 1 (Excel)	-	13
Programme 2 (HTML/ Internet Tools)	-	16
Viva	-	25
[Practical Copy + Internal Record]	-	20
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.

List of Practical

MS- WORD

File New, Open, Save, Cut, Copy, Paste, Drag Drop, Bullets and Numbering, Undo, Redo, Find, Replace, Paragraph Formatting, Character Formatting and Page Formatting.

1. Open a document. Type the following text and perform the tasks as instructed below:-

Working with Word Processor

As already mentioned, a word processor is a package that processes textual matter and creates organized and flawless documents. In addition to it a word processor not only remote all the limitations of typewriter but also offers various useful features that cannot be even dreamt of with typewriter.

Also if same textual matter is to be reproduced with minor changes, retyping the only option in typewriters.

The word processing (and word processor) originated way back in 1964 when special typewriters. Magnetic Tape Selectric typewriters (MIST) were launched by IBM (International Business Machines).

(i) Insert the following text after the first paragraph

The main components of a word processing system are listed below:

- Computer
- Printer.
- A word processing software

(ii) Save the document as Word1.doc
(iii) Move the second paragraph to the end of the document. Using darg & drop.
(iv) Move the second paragraph in the end of the document using cut, paste operations.
(v) Undo the abov.. actions.
(vi) Now use Redo actions
(vii) Go to the End of the document (in one step)
(viii) Go to the Beginning of document (in one step)
(ix) Insert page break before the third paragraph.
(x) Search the word "computer: in your document with options Match case, find whole words only.
(xi) Replace the word "typewriters" with "word processor"
(xii) Undo the above action
(xiii) Remove All page breaks from your document
(xiv) Change the magnification of your document to different percentages using zoom features.
(xv) Format the above written paragraphs and give the options as follows:
  (1) Alignment justified
  (2) Indentation: left 0.2 right:0.2
  (3) Spacing: before 6 pt. after:6 pt.
  (4) Special: first line by :0.4"
  (5) Line spacing 1.5 lines.
(xvi) Set the default tab stop to 0.3"
(xvii) Set the margins to 1.25
(xviii) Format the page using
  (1) Left margin:0.5, right margin: 0.5
  (2) Top margin:1.5, bottom margin:0.5
  (3) Gutter Margin: 1indentation: left 0.2 right:0.2
  (4) Header Margin:0.5
(xix) Format the each occurrence of group of words 'Word Processor' as bold, italic, under line and small caps using find and replace with formatting options.
(xx) Align the heading to Center and make it bold, underlined and italicized.

File New, Open, Save, Find, Replace, Paragraph Formatting, Character Formatting and Page Formatting.

2. Type the text as show below and perform the tasks as directed:

Computers

COMPUTER is an electronic device that processes data and gives meaningful information.

Computers are being used in almost all the fields today

EXPERT SYSTEMS

HUMAN THINKING AND ARTIFICAL INTELLIGENCE

Can computer think?

AI at work Today: Natural Language programs and Expert Systems.

THE IMPACT OF COMPUTERS ON PEOPLE

The Positive Impact

The Potential Dangers
THE IMPACT OF COMPUTERS ON ORGANIZATIONS
The information Processing Industry
The Positive impact on Using Organizations
The Potential Dangers for Using Organizations

(i) Search for the word 'Computer' in the entire document. All the occurrences of the given word are to be searched irrespective of the case.
(ii) In the above question note that word also searches 'computerization and 'computerisations'. Now make sure that this time Word searches only for the word 'computer' in the entire document.
(iii) Change the entire uppercase letter to lowercase.
(iv) Give a heading to the above written text 'COMPUTERS IN TODAY'S WORLD'
(v) Centre aligns the Heading text Computer that appears in first line.
(vi) Apply outside border to entire document.
(vii) Apply outside border to the just heading text.
(viii) Change page setup according to the following specifications
Top margin: 1.5", bottom margin: 1.5"
Gutter: 1", left margin: 1.5"
Right margin: 1"
Page width: 7.5", page height: 6.5 "
Orientation: portrait
(ix) Give a header 'Creations' and footer 'The school of computing'. The footer should also consist of page no's.
(x) Give appropriate commands for giving different header and footers for first page and odd & even pages.
(xi) Save and close the document.

Character Formatting, Paragraph Formatting.

3. Type and format the text as shown below it any spelling or grammar mistake occurs correct it using spelling and grammar facility.

DELHI

New Delhi, the capital and the third largest city of India is a fusion of the ancient and the modern. The remains of the *Muslim* dynasties with its architectural delights, give the majestic ambience of the bygone era.

On the other side *New Delhi*, The imperial city built by *British*, reflects the fast paced present .The most fascinating of all is the character of *Delhi* which varies from the 13th century mausoleum of the Lodi kings to ultra modern glass skyscrapers

Character Formatting

4. Type text and Format the text as shown below : $C_2H_5OH + PCI = C_2H_5CI + POCI_3 + HCI$

$4H_3PO_3 = 3H_3PO_4 + PH3$

$PCI_3 + CI_2 = PCI_5$

Bullets and Numbering

5. Write text and format as shown below

1. Own house
   - 2400 square feet living area
   - Separate bungalow
   - Car shed available
2. Car
   - Maruti Omni Van
   - Registration number TN 728195
   - 1994 model

Table

6. Create the following table.

Admission 2005-06

Course	OC	BC	MBC	SC/ST	Total
Computer Science	9	18	5	5	37
Commerce	14	25	6	5	50
Grand Total					87

Table

7. Create Table as shown

Car		Price
Maruti	Omni Van	200000
	Maruti 800	242000
Tata	Sumo	390000
	Sierra	447000

Mail Merge, Mailing Labels

8. Write a letter to send invitation to your friend inviting on your birthday.

9. Create labels for your friends' address.

Formatting and Frames

10. Prepare a letter as shown below.

To,

The Principal,
ABC College, ABC Nagar,
Raipur (C.G.)

Sub:- Leave.

Respected Sir,

This is to bring to your kind notice, that due to reasons mentioned below, I am unable to attend the college / I could not attend the college.

_____

_____

As such, I request you to kindly grant me leave for _____.

Thanking you.

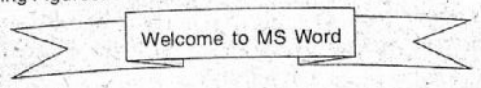
Your Faithfully

Raipur;
Dated :

Signature ----------
Name ----------
Designation ----------

Shapes

11. Create Following Figures.



Insert Picture and Caption

12. Type the text as shown below and insert picture any picture you have and place caption. As already mentioned, a word processor is a package that processes textual matter and creates organized and flawless documents.

Figure 1

In addition to it a word processor not only remote all the limitations of typewriter but also offers various useful features that cannot be even dreamt of with typewriter.

13. Create Columnar Text as shown below

New Delhi, the capital and the third largest city of India is a fusion of the ancient and the modern.

he remains of the *Muslim* dynasties with its architectural delights, give the majestic ambience of the bygone era. On the other side *New Delhi*, The imperial city built by *British*, reflects the fast paced present .

The most fascinating of all is the character of *Delhi*, which varies from the 13th century mausoleum of the Lodi kings to ultra modern glass skyscrapers

1. Create the following worksheet and save the worksheet as wages.xls

PACE COMPUTERS (ATC CEDT), Govt. of India

Payroll for Employee (Temporary)

Today's date	3 - Jul -08
Pay Rate	95

Worker's Name	Hired On	days Worked
Gross Wages		
Kushagra	3-Mar-07	
Pradeep	4-Mar-07	
Puneet	5-Mar-07	
Rajeev	6-Mar-07	

(I) Calculate days work and gross wages

2. Create the following worksheet and save the worksheet as wages.xls

Name	Basic (monthly) (Rs.)	HRA (% of basic)	DA (Rs.)	Total Salary (1997)	Bonus (Rs.)	Total Salary (1998)	% (Increase)
Shirome	5000	10	450		1200		
Somya	9000	15	800		200		
Tanya	7000	12	900		1800		

(I) Calculate the total salary as sum of Basic salary, HRA ,DA, for each employee for 1997

(II) Calculate total salary for year 1998 as sum of salary of 1997 and bonus

(III) Calculate % increase in salary from 1997 to 1998

3. Create a worksheet as follows

Pace computer (ATC CEDT) Govt. Of India

Payroll for employee (Permanent)

empcode	name	doj	salary	bonus	net salary
E001	Meenu	3-Mar-95	5000		
E002	Manoj	4-Mar-06	4000		
E003	Preeti	3-Mar-95	4800		
E004	Sumita	6-Mar-07	7500		

(I) allow bonus 8000 to employee having service >2 year other vise allow bonus 3000

(II) find net salary as sum of bonus and salary

4. create the worksheet as follows

Roll No	Name	English	Maths	Total	Average	Division
101	Kushagra	95	99			
102	Ajay	92	95			
103	Vijay	70	69			
			Class Average			

(I) find Total of two subject for each student

(II) find average of two subject for each student

(III) find class as average of average column

(IV) find division of student as first, second, third, assume percentage of division of your own and maximum marks in each student as 100

(V) Apply conditional formatting for division column, first division should be in bold, second division should be in italic and third division should be underline

5. Create macro in excel to make selected cell, bold, italic outside bordered and center across select

6. create bar chart with given data

	2001	2002	2003
Tea	19	23	25
Coffee	22	24	22
Sugar	45	40	45

(II) Provide heading production detail
(III) Provide z axis title; lacks metric tone
(III) Provide x axis title year

7. Create a table with column heading as shown below and using form perform data entry of records.

Zone	Department	Employee	Salary
West	Marketing	Mukesh	10500
East	Sales	Rahul	20000
South	Marketing	Suresh	5500
North	Marketing	Anju	25000
South	Sales	Neeraj	8000
North	Sales	Ajay	8000
South	Marketing	Mahesh	7500
West	Sales	Rajesh	4500

(I) Sort the data according to Zone then by Department
(II) Use group and outline feature to show & hide details

8. Create a table with column heading as shown below and using form perform data entry of records.

Zone	Department	Employee	Salary
West	Marketing	Mukesh	10500
East	Sales	Rahul	20000
South	Marketing	Suresh	5500
North	Marketing	Anju	25000
South	Sales	Neeraj	8000
North	Sales	Ajay	8000
South	Marketing	Mahesh	7500
West	Sales	Rajesh	4500

(I) Use filter command to show records having zone: West
(II) Use filter command to show records having zone: West and salary less than 5000
(III) Use filter command to show records having salary greater than 10000

9. Create pivot table using Data of exercise 8
10. Suppose a database exists in ms-access you are required to import the data. How will you ?
11. CCreate a able using feature

Principle	1500
Rate	4%
Time	5

300	3	4	5
1%	45	60	75
2%	90	120	150
3%	135	180	225

12. Using goal seek feature find out the interest rate it must be to earn interest 500

Principle	1500
Rate	4%
Time	5
Interest	300

MS-POWER POINT

1. Write an animated Presentation about any three courses available in a collage
2. Write an animated Presentation about communication of a bad news

BCA - 201
THEORETICAL FOUNDATION OF COMPUTER SCIENCE
PAPER - I : Numerical Analysis

Max Marks : 50

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the 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 Triangular 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 Difference Interpolation Formula, Langranges Interpolation formula, Newton's Divided Difference Interpolation Formula.

UNIT-IV NUMERICAL DIFFERENTIATION AND INTEGRATION

Newton - cotes integration formula, Trapezoidal Rule, Simpson's One-Third and Three-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)

BCA - 201
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

BCA - 201
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 Search, 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 linked List, Deletion from a Linked List, Stacks, Array Representation of Stack; Queues.

UNIT-IV TREES -
Types of Trees, Binary Trees, Representing Binary, Traversing binary tree, Searching 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.**

BCA - 202
DBMS (Oracle, SQL)

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 DATABASE MANAGEMENT SYSTEM :
Database, Definition of DBMS, Purpose of Database System, Data abstraction, Instances and Schema, Data Independence, Data administration roles, Different kinds 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 relational 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 relational 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 Codd 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.

BCA - 203
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 - 204
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

BCA - 205
LINUX

Max Marks : 50 **Min. Marks : 20**

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 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.

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.

BCA - 206

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 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

BCA - 206

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

PRACTICAL WORK

BCA II

BCA-205 (B) 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 contents 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 & Wednesday, 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 have at least 9 characters.

PRACTICAL WORK

BCA II

BCA-207 DBMS (Oracle, SQL)

1. **Scheme of Examination:-**
   Practical examination will be of 3 hours duration. The distribution of practical marks will 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.
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)
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 name 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

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 characters 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 salary of 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 of all colleges.
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.
List the students in the session who are not in the colleges in the same city as they 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, and working with project option must be given to students.**

The Project should be done by individual student. Format of the student project report 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 for guidance and assistance of the thesis/report adviser and other members of the faculty. Courtesy demands that he/she also recognize specific contributions by other persons or institutions such as libraries and research foundations. Acknowledgements should be 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.

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
(Guide Name)

Submitted by:
(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)

1. 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)

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 " _____ " is 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 work 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**

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 out by me.

I further declare that the work reported in this project has not been submitted and 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

BCA-208 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

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:
   a) Constructor to get number in array elements. b) Sort the elements. c) Find largest 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 to integer as data member to implement double dimension dynamic array and provide following 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 imaginary 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 functions for taking input in data members and member function for displaying value of data members. Class Polar contains declaration of friend function add which accepts two objects of class Polar and returns object of class Polar after addition. Test the class using main function and objects of class Polar.
14. Write program to create class distance having data members feet and inch (A single object will store distance in form such as 5 feet 3 inch). It contains member functions for taking input in data members and member function for displaying value of data members. Class Distance contains declaration of friend function add which accepts two objects of class Distance and returns object of class Distance after addition. Class Distance contains declaration of another friend function Subtract that accepts two objects of class Distance and returns object of class Distance after subtraction. Test the class using main function and objects of class Distance.
15. Write a program to create class Mother having data member to store salary of Mother, create another class Father having data member to store salary of Father. Write a friend function, which accepts objects of class Mother, and Father and prints Sum of Salary of Mother and Father objects.

Friend Class

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

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.

Visual C++

45. Write program for obtaining fibonacci series in workspace environment
46. Write program for multiple inheritance in VC++ inheritance using book example having

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.

BCA - 301
CALCULUS & GEOMETRY

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.

CALCULUS

UNIT-I The Reimann Integral, Existence of the Riemann Integral, Properties of Reimann Integrals, Fundamental Theorem of Integral Calculus.

UNIT-II Maxima and minima of functions of two and three variables. Langrange's method of undetermined multipliers.

UNIT-III Improper integrals, Meaning of integrals of type $\int_a^\infty f(x)\,dx$, $\int_a^b f(x)\,dx$ where f(x) is not defined at a and/or b. Tests of convergence for improper integrals.

GEOMETRY

UNIT-IV Equation to cone with given base, Generators of Cone, condition for three mutually perpendicular generators, Right Circular Cone, Equation of a cylinder.

UNIT-V Polar Coordinates, Polar equation to straight line, Circle. Polar equation of a Conic.

REFERENCE:

1. Calculus of two and more variables: G.S. Pandey & V.P. Saxena (Wiley Eastern)
2. Higher calculus : P.L.Sharma
3. Vector Calculus & Geometry : B.R.Thakur.

BCA - 301
DIFFERENTIAL EQUATIONS & FOURIER SERIES

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 Concept of Differential equation. Recall of first order and first degree differential equations. Equation of first order but of higher degree. Homogeneous and exact differential equations.

UNIT-II Geometric representation, Family of curves and orthogonal trajectories. Linear differential equation with constant coefficients. Operational rules of D. Homogeneous linear equations.

UNIT-III Partial differential equations of first order, Standard forms, Linear partial differential equations of higher order with constant coefficients.

UNIT-IV Periodic Function, Fourier Sine and Cosine Series, Even and Odd Functions, Full Range and Half Range Fourier Series

UNIT-V Convergence of Fourier Series, Gibbs Phenomenon, Operations on Fourier Series, Applications of Fourier Series to Differential Equation

REFERENCE:

1. Introductory course in differential equations : D. A. Murray
2. Differential equations(Awkl Sameekaran) : B.P. Parashar & L.P. Rajpal
3. Differential equations and Fourier Series : H.K.Pathak

BCA - 301
Computer System Architecture

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 Data Representation – Data Types, Number System, Fixed Point Representation – 1's, 2's complements, Binary Fixed point representation, Arithmetic operation on Binary operation, Overflow & Underflow, Codes, ASCII, EBCDIC codes, Grey codes, Excess-3, BCD codes, Error detection & correcting codes.

UNIT-II Digital Logic Circuits – Logic Gates AND, OR, NOT, Gates & their truth tables, NOR, NAND & XOR Gates, Boolean algebra, Basic Boolean Law, Doorman's theorem, Map Simplification, Minimizing technique, K Map, Sum of product, Product of sums, Combinational & sequential Circuits Half adder & Full adder, Full Subtractor, Flip Flop – RS, D, JK & T Flip Flop, Shift register, RAM & ROM.

UNIT-III CPU organization, ALU & Control circuit, Idea about arithmetic circuits, Program control, Instruction sequencing, Introduction to Microprocessor, Microprocessor architecture, System buses, Registers, Program counter,, Block diagram of a Macro computer system, Microprocessor control signals, Interfacing Devices ,Introduction to Motherboard ,SMPS

UNIT-IV Input output organization, I/O Interface, Properties of simple I/O devices and their Controller, Isolated versus Memory mapped I/O, Modes of Data transfer, Synchronous & Asynchronous Data Transfer, Handshaking, Asynchronous serial transfer, I/O processor

UNIT-V Auxiliary memory - Magnetic drum, Disk & Tape, Semi conductor memories, Memory Hierarchy, Associative memory, Virtual memory, address space & memory space, Address mapping, Page table, Page replacement, cache memory, Hit ratio, Mapping Techniques, Writing into cache.

REFERENCE:

1. Computer System architecture - M. Moris Mano

BCA - 302
Programming In JAVA

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 :**
Genesis of java, importance to the Internet, overview of features.
OOP :
OOP features, data types, control structures, arrays, methods and classes, nested & inner classes, string and String Buffer class, Wrapper Class, vectors,

UNIT-II **Inheritance :**
Basics type,, method Override, using abstract and final classes, using super.
Packages and Interfaces :
Defined CLASSPATH, importing packages, implementing interface.

UNIT-III **Exception Handling :**
Fundamental: exception types, using try and catch, throwing exceptions, defined exceptions.
Multithreaded Programming :
Java spread model, creating threads, and thread priorities, synchronization. Suspending resuming and stopping threads.

UNIT-IV **Input/Output:**
Basic Streams, Byte and Character Stream, predefined streams, reading and writing from console and files. Using standard Java Packages (lang,util,io)
Networking : Nasecs. TCP/IP client & server sockets, URL connection.
JDBC: Setting the JDBC connectivity with backend database.

UNIT-V **Applets :**
Fundamentals, life cycle, overriding update, HTML APPLET tag, passing parameters. Developing single applets.
Introduction to AWT :
Window fundamentals, creating windowed, programs waking with graphics, using AWT controls, menus. Delegation event model, handling mouse and keyboard events.

BOOKS RECOMMENDED:

1. java complete reference - by Patrick naughten & Mesut Scpddt. [TMH]
2. Java Primer - by E.Balaguruswami
3. Java Programming - Khalid Mughal

BCA - 303
COMPUTER OPERATING SYSTEMS

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**
What is operating system, basic concept, terminology, batch processing, spooling, multiprogramming, time sharing, real time systems, protection, multiprocessor system, operating system as resource manager, process view point, memory management, process management, device management and information management, other views of operating system, historical, functional job control language and supervisor service control.

UNIT-II **Processor Management (CPU Scheduling)**
Reviewing of multiprogramming concept, scheduling concept, basic concept, CPU I/O burst cycle process state, PCB (Programme Control Block) scheduling queries, schedulars, scheduling algorithms - performance criteria, first-come - first served shortest job - first priority, preemptive algorithm, round robin, multilevel queues and multilevel feedback queues, algorithm evolution, multiprocessor scheduling , separate system, coordinated job scheduling, master / slave scheduling.

UNIT-III **Memory Management**

Preliminaries of memory management, memory handling in M/C, relocation, swapping and swap time calculation, multiple partitions, partitioned allocation MFT, fragmentation, MVT, compaction, paging, job scheduling implementation of page tables, shared page, virtual memory-overlays, concepts of virtual memory demand page, memory management and performance, page replacement and page replacement algorithms. Allocation algorithms. Storage hierarchy disk and drum scheduling - physical characteristics fcfs scheduling SCAN, short of seek time first disk scheduling algorithms sector queuing.

UNIT-IV **Information Management (File System)**

File concept, file type, typed based system, disk based system, general model of file system, file directory maintenance, symbolic file system, basic file system, physical file system, file support device directory, access methods free space management contiguous, linked allocation and indexed allocation performances.

UNIT-V **Dead Locks**

The Dead Lock problem - Dead Lock definition, Dead Lock detection, detection algorithm usage, Dead Lock characterization, resource allocation graph, Dead Lock prevention, mutual exclusion, hold and wait, no preemption and circular wait, dead lock avoidance-bankers algorithm. Recovery from Dead Lock process termination, resource preemption, combined approach to Dead Lock handling.

BOOKS RECOMMENDED :

1. Principles of Operating System - Peterson.
2. Operating System - Mandinick & Donovan.

BCA (Third Year) : BCA - 304

Software Engineering

Max marks-100 **Min marks – 40**

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

UNIT-I **Introduction to Software Engineering**

e. Definition
f. Need and Software problem
g. Software Crises
h. Software Engineering Problem
   1. Fundamental Problem
   2. Important Quality of Software Product
i. Software Engineering Approach
   1. Phase Development Process
   2. Life Cycle of Software
j. Principles Of Software Engineering
k. Software Development Process Model
   1. Waterfall model
   2. Spiral Model
   3. Prototype Model
   4. Iterative Model

UNIT-II **Project Management**

a. The Phase Management Process

b. Software Metrics
   1. Size Oriented Metrics
   2. Function Oriented Metrics

UNIT-III **Software Requirement and Specification**

a. Introduction and Need of SRS
b. Structured Analysis
   1. Data Flow Diagram
   2. Cont xt Diagram
   3. Data Dictionary

UNIT-IV **Software Design & Coding**

f. Principle of Software Design
   1. Partitioning
   2. Abstraction
   3. Top Down and Bottom up Strategies
g. Concept of Module
   1. Coupling
   2. Cohesion
h. Structured Chart
i. Coding –
   a. Rules of Good programming Style
   b. Code Verification

UNIT-V **Software Testing and Maintenance**

a. Definition
b. Testing Fundamentals
   Error, Fault, Failure
c. Test Oracles
d. Types of Testing
   1. Black Box Testing
   2. White Box Testing
e. Level of testing- Unit, Integration, System, Acceptance
f. Introduction of Maintenance

Books

1. Software Engineering by Roger Pressmen

BCA - 305

MULTIMEDIA TOOLS AND APPLICATIONS

Max marks-50 **Min marks – 20**

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 **Multimedia:** Needs and areas of use, Development platforms for multimedia – DOS, Windows, Linux. Identifying Multimedia elements – Text, Images, Sound, Animation and Video, Making simple multimedia with PowerPoint.

Text – Concepts of plain & formatted text, RTF & HTML texts, using common text preparation tools, Conversion to and from of various text formats, using standard software, Object Linking and Embedding concept, Basics of font design, overview of some fonts editing and designing tools, Understanding & using various text effects.

Images – importance of graphics in multimedia, Vector and Raster graphics, image capturing methods – scanner, digital camera etc. various attributes of Images – size, color, depth etc, Various Image file format – BMP, DIB, EPS, CIF, PEX, PIC, JPG, TGA, PNG and TIF format – their features and limitations, graphic file formats conversions, processing images with common software tools such as Photoshop, Paint Shop pro, Corel draw etc..

UNIT-II **Sound:** Sound and it Attributes, Mono V/s Stereo sound, Sound channels, Sound and its effect in multimedia, Analog V/s Digital sound, Basics of digital sounds-Sampling, Frequency, Sound Depth, Channels, Sound on PC, Sound standards on PC, Capturing and Editing sound on PC, Overview and using some sound recording; editing software. Overview of various sound file formats on PC – WAV, MP3, MP4, Ogg Vorbose etc.

Animation: Basics of animation, Principle and use of animation in multimedia, Effect of resolutions, pixel depth, Images size on quality and storage. Overview of 2-D and 3-D animation techniques and software- animation pro, 3D studio & Paint Shop pro animator.

Animation on the Web – features and limitations, creating simple animations for the Web using GIF Animator and Flash.

UNIT-III **Video:** Basics of Video – Analog and Digital Video, How to use video on PC. Introduction to graphics accelerator cards, DirectX Introduction to AV/DV and IEEE1394 cards , Digitization of analog video to digital video, Interlacing and non-interlacing, Brief note on various video standards – NTSC, PAL, SECAM, HDTV. Introduction to video capturing Media & instrument – Videodisk, DVCAM, Camcorder, Introduction to digital video compression techniques and various file formats – AVI, MPEG, MOVE Real Video.

Brief Introduction to video editing and movie making tools – Quick time, video for windows & Adobe premier.

UNIT-IV **Authoring tools for CD Based Multimedia:** Type of multimedia authoring tools, key factors of selecting CD based multimedia authoring tools, Planning and distribution of a multimedia project. Multimedia development team & skills requirement, Stages in designing & producing multimedia products for CD, Testing of product, distribution of multimedia product, various formats of CD's and DVD's.

UNIT-V Multimedia on the Web: Bandwidth relationship, broadband technologies, Text in the web – Dynamic and embedded font technology, Audio on the Web – Real Audio and MP3/MP4, Audio support in HTML, Graphics – HTML safe color palate, Interlaced V/s Non interlaced model, Graphics support in HTML, Image Map, Video on the Web – Streaming video, Real Video, MPEG and SMIL, Virtual Reality on the Web.

TEXT AND REFERENCE BOOKS :

1. ***Multimedia: Making It Work*** *(4th Edition) – by Tay Vaughan, Tata Mcgraw Hills.*
2. ***Multimedia In Action*** *– James E Shuman – Vikas Publishing House.*
3. ***Multimedi Basics*** *– Volume – 1 Technology, Andreas Holzinger, Firewall Media(Laxmi Publications Pvt. Ltd) New Delhi.*

BCA - 306(A)
FINANCIAL MANAGEMENT & ACCOUNTANCY

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.

1. Financial Accounting :
   Meaning and Nature, Accounting Principles underlying the preparation of financial statements.
2. Preparation of Financial Statements :
   A Synoptic view-Profit and Loss account, Balance Sheet
3. Financial statemen. nalysis
   Ratio analysis (Liquidity, Solvency, Profitability, Efficiency), Statement of Changes in financial position-working capital basis.
4. Conceptual Framework of Cost Accounting
   Meaning nature and need of cost accounting, Elements of cost, Preparation of cost – sheet, Cost concept –Fixed and variable costs, sunk costs, Out of pocket costs, Relevant and irrelevant costs, Opportunity and imputed costs.
5. Cost – volume Profit (CVP) relationship
   Break-even analysis; (single and multiple products), Determination of sales volume to attain desired profits, Cash break-even point. Graphic presentation of CVP relationship. Assumptions and limitation of break-even analysis
6. Budgeting :
   Definition and objective. Preparation of various types of budgets including cash budget. Fixed and flexible budgets.
7. Cost Accumulation System
   Job and Process (simple treatment)
8. Variable and absorption costing systems
   Comparison for income determination (simple treatment), Variable costing as a tool of decision-making

BCA - 306 (B)
Foundation Course

Max marks : 50

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

UNIT-I Essay type answer in about 200 words. Four essay. Type question to be asked and two to be attempted.

UNIT-II Writing skills for composition- Essay writing.

UNIT-III Precis Writing

UNIT-IV Roading Comprehension of an unseen passage : 10 Marks

UNIT-V Vocabulary based on text : 5 Marks
Grammar- Advanced Exercises.

Note:- Questions on unit I and IV (b) Shall be asked from the prescribed text. Which will comprise popular creative writing and the following items.
Minimum needs- Housing and Transport. Geo -economic profile of women and Empowerment, Management of change . Ouality of life, war and human survival, the question of human social value survival , the question of human Social value, new Economic Philosophy. Recent Liberalisation methods, Demoratic decoralisation(With reference to 73,74 constitutional Amendment)
The text book shall be sponsored by the M.P. Higher Education Department and published the M.P. Hindi Granth Academy.

PRACTICAL WORK

BCA III

BCA-305(B) MULTIMEDIA TOOLS AND APPLICATIONS

1 **Scheme of Examination:-**

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

Note : At least 15 practical exercises (Decided by the concerned subject teacher of the study institute) which cover the entire syllabus.

PRACTICAL WORK

BCA III

BCA-307 JAVA

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
Programme 3	-	20
Viva	-	25
[Practical Copy + Internal Record]	-	15
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

List of Practical

1. WAP that implements the Concept of Encapsulation.
2. WAP to demonstrate concept of Polymorphism (Overloading and Overriden)
3. WAP the use boolean data type and print the Prime number Series up to 50.
4. WAP for matrix multiplication using input/output Stream.
5. WAP to add the elements of Vector as arguments of main method(Run time) and rearrange them , and copy it into an Array.
6. WAP to check that the given String is palindrome or not.
7. WAP to arrange the String in alphabetical order.
8. WAP for StringBuffer class which perform the all methods of that class.
9. WAP to calculate Simple Interest using the Wrapper Class.
10. WAP to calculate Area of various geometrical figures using the abstract class.
11. WAP where Single class implements more than one interfaces and with help of interface

reference variable user call the methods.

12. WAP that use the multiple catch statements within the try-catch mechanism.
13. WAP where user will create a self-Exception using the "throw" keyword.
14. WAP for multithread using the isAlive(), join() and synchronized() methods of Thread class.
15. WAP to create a package using command and one package will import another package.
16. WAP for AWT to create Menu and Popup Menu for Frame.
17. WAP for Applet that handle the KeyBoard Events.
18. WAP, which support the TCP/IP protocol, where client gives the message and server will be, receive the message.
19. WAP to illustrate the use of all methods of URL class.
20. WAP for JDBC to insert the values into the existing table by using prepared Statement.
21. WAP for JDBC to display the records from the existing table.
22. WAP to demonstrate the Border Layout using applet.
23. WAP for Applet who generate the MouseMotionListener Event.
24. WAP for display the checkboxes, Labels and TextFields on an AWT.
25. WAP to calculate the Area of various geometrical figures using the abstract class.
26. WAP for creating a file and to store data into that file.(Using the FileWriterIOStream)
27. WAP to display your file in DOS console use the Input/Output Stream.
28. WAP to create an Applet using the HTML file, where Parameter Pass for font Size and Font type and Applet message will change to corresponding parameters.

PRACTICAL WORK

BCA III

BCA-308 Project

1. **Scheme of Examination:- The Project should be done by individual student.**

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

Software Demonstration	-	40
Project Report (Hard Copy + Soft Copy)	-	20
Project Demonstration/Presentation	-	20
Project Viva	-	20
Total	-	**100**

2. **Format of the student project report 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 for guidance and assistance of the thesis/report adviser and other members of the faculty. Courtesy demands that he/she also recognize specific contributions by other persons or institutions such as libraries and research foundations. Acknowledgements should be expressed simply, tastefully, and tactfully.

- Synopsis of the project
- Main Report

- ✓ Objectives & Scope of the project
- ✓ Theoretical Background of Project
- ✓ Definition of problem
- ✓ System Analysis & Design
- ✓ System Planning (PERT Chart)
- ✓ Methodology adopted, system Implementation & Detail of Hardware & Software used
- ✓ System maintenance & Evaluation
- ✓ Cost and benefit Analysis
- ✓ Detailed Life Cycle of the project
  - o ERD,DFD
  - o Input and Output Screen Design
  - o Process involved
  - o Methodology used for testing
  - o Test Report, Printout of the code sheet
- ✓ User/Operational Manual- including security aspects, access rights, back up, Controls etc.
- ✓ Conclusion
- ✓ References
- ✓ Soft copy of the project on CD

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
(Guide Name)

Submitted by:
(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 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 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)

4. Certificate of the Company or Organisation from where the Project is done from the Project Manager or Project guide.
5. Certificate of evaluation in the department letter head

CERTIFICATE OF EVALUATION

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)**, after proper evaluation and examination, is hereby approved as a credible work 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**

6. 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 out by me.

I further declare that the work reported in this project has not been submitted and 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)