DEVI AHILYA VISHWAVIDYALAYA, INDORE

SEMESTER WISE SCHEME
OF SYLLABUS
FOR

BACHELOR
OF
COMPUTER APPLICATIONS
(B.C.A.)

2011-12 Academic Year ONWARDS

DEVI AHILYA VISHWAVIDYALAYA, INDORE(M.P.)

General rules for B.C.A. Examination

Note:

(A) These Rules will be effective under the university statues, regulations and ordinances.

(B) Admission and Examination will be governed under the ordinances no. 6, 7 and 8. A copy of these ordinances can be purchased from university.

(C) The general rules for the examination of B.C.A. and criteria for pass/fail/ promotion to next semester is as follows:

1. Examination at graduation level in Computer applications is divided in three parts; I, II & III and each part comprises of two semesters, odd and even in an academic year. The examination of all six semesters shall be conducted by the university itself.
2. An examinee failing in less than or equal to 4 papers among all the odd and even semester papers in a particular year shall be eligible to give ATKT examination. A candidate who has not been able to pass in more than 4 papers after any Semester examination will be declared fail in that full year. This can be explained as follows:

   An examinee will be in a part (year) allowed to undertake even semester examination after the odd semester examination irrespective of the examinee marks in the odd semester provided the candidate have not failed in more than four papers of the odd semester or previous semesters. An examinee will be automatically allowed to undertake next part (Year) odd semester examination only if the candidate has not failed in more than four papers in previous year odd plus even semester examinations and has ATKT maximum upto 4 papers.
3. A candidate (examinee) will be declared failed in a paper, if an examinee fails to obtain (33%) Minimum Marks. Theory and practical papers will be counted separately. An examinee has to pass separately in theory as well as practical papers, else the examinee is considered as fail in the particular theory papers or the corresponding practical paper.
4. In practical papers, an examiner will examine each examinee individually by records and viva examination on overall record and by giving 1 or 2 exercises allotted by the examiner to test the individual's ability in practical laboratory in the subject concerned. Duration of examination will be 3 hours for each theory and practical papers.
5. Each question paper of theory may contain 50 % analytical and/or numerical exercises and will have five questions each. A paper setter may however will have to give a choice within the question.(Also refer to note at the end of syllabus of each paper)

(D). **Division:**

1. Examinee is required to pass in each theory and practical examination separately.
2. University will not award any division on basis of Part -I or II (four semesters Semester 1 to 4) results.
3. On the basis of aggregate of the total marks obtained in three parts/ years of graduation examination (Six Semesters) the division will be decided as under:

1) First Division	60 % or above	On the basis of Aggregate of total marks obtained in three years.
2) Second Division	45 % or above	
3) Third Division	33 % or above	

4. In case, those students who have passed Part -I or Part -II of three year graduation examination from other university of M.P., and passed remaining examination from Devi Ahilya University, the division will be decided on the basis of aggregate of total marks obtained in three parts.
5. Those students who have passed part-I or part -II of three year graduation course from outside M.P Universities and passed remaining examination from Devi Ahilya University. In such case graduation degree will be determined on the basis of aggregate of marks obtained in this university only, In counting of marks for the degree/division the marks obtained in Non M.P universities will not be taken into account.
6. For the award of division obtained by the examinee on the basis of aggregate marks of all the three years, and for the rules not defined here, the rules for B.Sc. three year pass course degree examination at Devi Ahilya Vishwavidhalaya shall also apply for B.C.A. three year degree course.

(E). **Medium:**

Medium of examination up to graduation level will be English, but the medium of Languages examination will be particular language.

(F). **Particulars:**

1. Private Examinee will not be allowed to take those papers which are not studied in University Teaching Departments or its affiliated Colleges, even though a paper is included in Syllabus and Scheme of examination.
2. If examinee has taken such paper in which practical examination is conducted, then after completion of practical's, certificate is to be produced from the Head/ Principal of the concerned UTD/ affiliated College to University. This certificate should be produced before the date fixed and declared by the university. In absence of certificate examinee will not be eligible for appearing in examination.

BCA PART I Semester –Scheme : 2011-12 and Onwards:

Course of studies for the BCA –I Semester

BCA - I Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -101 Mathematics -I	10	40	--------	50	4+13
BCA -102 Statistics -I	10	40	--------	50	4+13
BCA -103 Physics -I	10	40	--------	50	4+13
BCA -104 Programming & Problem solving through C -I	--------	50	--------	50	17
BCA -105 PC Software		50	--------	50	17
BCA -106 English	10	40	--------	50	4+13
BCA -107 Programming & Problem solving through C –I Practical	--------	--------	25	25	9
BCA -108 PC Software Practical	--------	--------	25	25	9
Total Marks	40	260	50	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA - II Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -201 Mathematics –II	10	40	--------	50	4+13
BCA -202 Statistics -II	10	40	--------	50	4+13
BCA -203 Physics -II	10	40	--------	50	4+13
BCA -204 Programming & Problem solving through C -II	--------	50	--------	50	17
BCA -205 Introduction to Information System	--------	50	--------	50	17
BCA -206 Hindi	10	40		50	4+13
BCA -207 Practical- Programming & Problem solving through C -II	--------	--------	25	25	9
BCA -208 Internet Practical	--------	--------	25	25	9
Total Marks	40	260	50	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA PART II Semester –Scheme :2012-13 and Onwards:

Course of studies for the BCA –III Semester

BCA - III Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -301 Mathematics -III	10	40	--------	50	4+13
BCA -302 Object Oriented Programming Through C++	--------	50	--------	50	17
BCA -303 Digital Computer Electronics	--------	50	--------	50	17
BCA -304 Accounting & Financial Mgt	10	40	--------	50	4+13
BCA -305 Data Structure using C++	--------	50	--------	50	17
BCA -306 Communicational Skills	5	20	--------	25	2+07
BCA -307 Practical (Object Oriented Programming Through C++)	--------	--------	25	25	9
BCA -308 Practical (Data Structure using C++)	--------	--------	25	25	9
BCA -309 Practical (Digital Computer Electronics)	--------	--------	25	25	9
Total Marks	25	50	75	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA – IV Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -401 Coordinate Geometry of Three Dimension	10	40	--------	50	4+13
BCA -402 Database Management System	--------	50	--------	50	17
BCA -403 Data & Network Communication	10	40	--------	50	17
BCA -404 Digital Computer Organization	----------	50	--------	50	4+13
BCA -405 Unix Operating System	--------	50	--------	50	17
BCA -406 Environmental Awareness	5	20	--------	25	2+07
BCA -407 Practical (Database Management System)	--------	--------	25	25	9
BCA -408 Practical (Digital Computer Organization)	--------	--------	25	25	9
BCA -409 Practical (Unix Operating System)	--------	--------	25	25	9
Total Marks	25	250	75	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA PART III Semester –Scheme :2013-14 and Onwards:

Course of studies for the BCA –V Semester

BCA - V Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA - 501 Introduction to JAVA	----------	50	--------	50	17
BCA - 502 Computer Organization and Architecture	10	40	--------	50	4+13
BCA - 503 Software Eng.	10	40	--------	50	4+13
BCA - 504 Discrete Mathematics & Linear algebra	10	40	--------	50	4+13
BCA -505 Web Designing & web Technology	10	40	--------	50	4+13
BCA - 506 Entrepreneurship	5	20	--------	25	2+07
BCA - 507 Practical JAVA	--------	--------	25	25	9
BCA - 508 VB/ VB.NET Practical	--------	--------	50	25	17
Total Marks	45	230	75	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA – VI Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA - 601 Computer Graphics & Multimedia	----------	50	--------	50	17
BCA - 602 Computer Oriented Numerical Methods	----------	50	--------	50	17
BCA - 603 Microprocessor & assembly language Programming	----------	50	--------	50	17
BCA - 604 Principles and Practices of Management	10	40	--------	50	4+13
BCA - 605 Project	----------	----------	75	75	26
BCA - 606 Computer Graphics Practical	----------	----------	25	25	9
BCA - 607 Practical (CONM Using C)	--------	--------	25	25	9
BCA - 608 Practical (Microprocessor & assembly language Programming)	--------	--------	25	25	9
Total Marks	10	190	150	--------	----------
Grand Total	----------	---------	----------	350	---------

DEVI AHILYA VISHWAVIDYALAYA, INDORE

SEMESTER WISE SCHEME
OF SYLLABUS
FOR

BACHELOR
OF
COMPUTER APPLICATIONS
(B.C.A.)
Part - I (FIRST YEAR)
20011-12 Academic Year ONWARDS

DEVI AHILYA VISHWAVIDYALAYA, INDORE(M.P.)

BCA PART I Semester –Scheme :2011-12 and Onwards:

Course of studies for the BCA –I Semester

BCA - I Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -101 Mathematics -I	10	40	--------	50	4+13
BCA -102 Statistics -I	10	40	--------	50	4+13
BCA -103 Physics -I	10	40	--------	50	4+13
BCA -104 Programming & Problem solving through C -I	--------	50	--------	50	17
BCA -105 PC Software		50	--------	50	17
BCA -106 English	10	40	--------	50	4+13
BCA -107 Programming & Problem solving through C –I Practical	--------	--------	25	25	9
BCA -108 PC Software Practical	--------	--------	25	25	9
Total Marks	40	260	50	--------	----------
Grand Total	----------	---------	----------	350	---------

SEMESTER – 1

BCA -101 : MATHEMATICS – 1

Max. Marks : 50 **Min. Marks : 17**

OBJECTIVE : The objective of this course is to familiarize the students with Calculus.

EXAMINATION

The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT - I

Review of concepts of function of one variable: define a function. Types of function:
Limits: define working rule for finding out the limit, fundamental property of limit, problems based on limits:
Continuity : define point of discontinuity, classification of discontinuity, problems based on continuity & discontinuity
Differentiability : condition for derivability and problems.

UNIT - II

Successive differentiation, Rolles theorem, Mean value theorem, Taylor's theorem, Taylor's & Maclaurin's series, Intermediate forms.

UNIT - III

Tangents, Normals, Curvature, asymptotes, integration of hyperbolic function and reduction formula

UNIT - IV

Differentiation of vector function, gradient, directional derivatives, divergence and curl, vector function of several scalar variables and their partial derivative, level surface gradient in Cartesian and polar coordinates, divergences of vector and curl of a vector.

UNIT - V

Matrix – definition, types of matrix, special matrix elementary transformation of matrix, inverse of matrix – adjoint methods and Gaussian elimination, normal from of matrix, rank of matrix, nullity of matrix (their applications) consistency and solution of linear simultaneous equations.

TEXT BOOK

A text book of calculus by Dr. H.K.Pathak, & D.C. Agrawal 2010

REFERENCE BOOKS :

1. A text book of calculus by Dr. H.S.Sharma, Ratan Prakashan
2. Vector Calculus & Geometric by Dr. H.K.Pathak, & D.C. Agrawal
3. Discrete Mathematics by Dr. H.K.Pathak, & D.C. Agrawal – (shikha sahitya prakashan)

BCA -102 STATISTICAL METHODS – I

Max. Marks : 50 **Min. Marks : 17**

OBJECTIVE : The objective of this course is to familiarize the students with Statistics.

EXAMINATION

The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT 1

Variables & graphs : Statistics, population & sample, discrete & continuous variables, graphs, equations, inequalities, logarithms, Frequency distributions: frequency distributions, histogram, frequency polygons. Frequency curve, cumulative frequency distribution, ogives

UNIT II

Measures of central tendency : The arithmetic mean, weighted arithmetic mean geometric mean, harmonic mean, mean power of numbers, root mean square, median , mode, quartiles, deciles & percentiles.

Measures of dispersion : The range, mean deviation, semi inter quartile range for quartiles, deviation, absolute & related dispersion, coefficient of variation.

UNIT III

Monuments skewness & kurtosis : Moments of various types, relation between moments, sheppard's correction to moments, skewness & kurtosis, moment generating function.

Elementary probability theory : sample space, events, classical definition of portability, relative frequency definition theorems of total & compound portability, Independent & dependent event, mutually exclusive event, mathematical expectation.

UNIT IV

Theoretical distributions discrete & continuous probability distribution. Basic concepts & applications of degenerate, Bernoulli, Binomial, geometric negative binomial. Hyper geometric & Poisson distributions , normal distribution

Curve fitting & the method of last squares : curve fitting the method of least square, the least square lines, the least square parabola, regression.

UNIT V

Correlation theory : Linear correlation, Measures of correlation, the least square regression lines expected & unexpected variation, coefficient of correlation, rank correlation, correlation index, multiple & partial correlation for three variables;

Theory of attributes: Consistency of data, association of attributes, coefficient of association, contingency tables.

REFERENCE BOOKS :

1. Statistics schaum's outline series, Spiegel, M.R.McGraw Hill Publishing Company.
2. Mathematical statistics Kapoor & Saxena : - S,Chand & sons.

BCA -103 : PHYSICS – I

Max. Marks : 50 **Min. Marks : 17**

OBJECTIVE : the objective of this course is to familiarize the students with basic concept of electricity.

EXAMINATION

The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT – I

Frictional electricity, charges & their conservation, Coulomb's Law, electric field & potential due to a point charge & dipole. Dielectric potential – An atomic view, dielectric polarization, Dielectric Susceptibility; Forces on the surface of a charged conductor. Energy stored in a dielectric medium. Capacity, units of capacity, Potential energy of a charged conductor, principal of condenser or capacitor.

UNIT –II

Magnetic properties of materials & Magnetic circuits : Para, Dia & Ferromagnetic substances. Magnetic circuit, Magneto motive force, Reluctance Permanence, Ohm's Law and comparison with electric circuit, Relation between M & H, Hesterisis loop, Energy loss, Determination of Susceptibility & Permeability

UNIT – III

A.C. Circuits : Definitions, Different forms of e.m.f. equations, Effective, virtual or Rms Value. Mean and Average Value of AC Quantities, Forms Factor, AC circuits Containg Resistance Capacitance, Inductance, Separately & simultaneously. Series ans parallel resonance circuit (Phasor diagram Treatment)

UNIT – IV

Ohm's Law, Factors affecting resistance, color code variable resistors, power and energy, D.C. series and parallel circuits kickoff's voltage and current law., voltage and current divider rules, Network Theorems: Maximum Power transfer theorem thevenin's theorem, Norton's theorem, Super position theorem, Millman's Theorem, Reciprocity theorem

UNIT – V

Classification of Solids: Energy bands in solids, Conductor, Semiconductor & Insulator, Chemical Bands in Germanium & Silicon, Intrinsic & Extrinsic Semiconductors, Conductivity Diode & the Transistor, Super Conductivity

TEXT BOOK

Physics Part II : Resnick & Halliday. Wiley Publication

REFERENCE BOOK :

Engineering Physics : R.K. Gaur & S.L. Gupta. Dhanpat Rai Publication

BCA-104 : PROGRAMMING & PROBLEM SOLVING THROUGH C -I

Max. Marks : 50 **Min. Marks : 17**

OBJECTIVE : The objective of this course are to make the student understand programming language, programming, concept of loops, reading a set of data stepwise refinement, function, control: structure and arrays, After Completion of this course the student is expected to analyze the real life problem and write a program in 'C' language to solve problem. The main emphasis of the course will be on problem solving aspect that is developing proper algorithms.

EXAMINATION

The external examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT –I

Algorithm for problem solving: An Introduction, Properties of an algorithm, classification, algorithm logic, flowchart.

Program design and implementation issues: programming system design technique, programming technique, basic constructs of structured programming, modular designing of programs.

Programming Environment: High level programming language, Low level programming language, Middle level programming language, assembler, compiler, interpreter.

UNIT- II

What is C : Historical development of C where C stands,

Getting Started with C : The C Character set, Types of C Constants , Types of C Variables, C keywords, identifiers literals.

C Instructions : Type Declaration Instruction, arithmetic Integer Long Short, Signed unsigned, storage classes, Integer and Float Conversions, type conversion in assignment, hierarchy of operations.

UNIT – III

Decision control structure : control instructions in C, if, if-else, use of logical operator, hierarchy of logical operators, arithmetic operators, relational operators, assignment operators, increment and decrement operators, conditional operators, bit wise operators, special operators, "&,*,.,>, "sizeof"

Loops control structure : while loop, for loop, do – while loop, odd loop, nested loop, break , continue, case control structure, go to, exit statement

UNIT –IV

Array what are arrays , array initialization, bound checking 1D array, 2D array initialization of 1D and 2D array, memory map of 1D and 2D array, Multidimensional array.

Strings: what are strings, standard library string function strlen(), strcpy(), strcat(), strcmp(), 2D array of characters

UNIT –V

Structure : Why use structure, declaration of structure, accessing structure elements, how structure elements are stored, array of structure, uses of structure

Preprocessor: features of C Preprocessor, macro expansion, micro with arguments, file inclusion, conditional, #if, #elif, miscellaneous directives, #include, #define, directives, #undef, #pragma directives.

TEXT BOOK

Y. Kanetkar, "Let us C", BPB Publications

REFERENCE BOOKS

1. Programming with problem solving thought 'C'. (ELSEVIER)(for UNIT I)
2. "Programming in C", E. Balaguruswamy Tata McGraw Hill
3. "C The Complete Reference", H. Schildt, Tata McGraw Hill
4. First course in programming with 'C', T.Jeyapoovan (VIKAS)
5. The C Programming language by Brian W. Kernighan Dennis M. Ritchie Prentice Hall
6. Practical C Programming 3rd Edition A Nutshell Handbook O'Relly.
7. Computer Programming and IT (for RTU), by Ashok N Kamthane et. al, Pearson Education, 2011

BCA – 105 PC SOFTWARE

OBJECTIVE : The objective of this course is to give knowledge about the basic of a computer and its application

EXAMINATION

The external examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

Maximum Marks: 50 **Minimum Pass Marks: 17**

UNIT I

MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows accessories.

UNIT II

Documentation Using MS-Word - Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

UNIT III

Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation.

UNIT IV

Database Management using Excel-Sorting, Filtering, Table, Validation, Goal Seek, Scenario.

UNIT V

Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

TEXT BOOK

Learn Microsoft Office – Russell A. Shultz – BPB Publication

REFERENCES BOOKS

1. Microsoft Office – Complete Reference – BPB Publication
2. Courter, G Marquis (1999). Microsoft Office 2000: Professional Edition. BPB.
3. PC Software – Shree Sai Prakashan, Meerut

BCA- 108 PRACTICALS (PC SOFTWARE)

Max. Marks :25 **Min. Marks : 09**

DOS

Practical based on DOS : introduction to PCs with related Hardware, software, DOS its variations, and Starting DOS.

DOS Commands : internal External Commands, common Commands notation, files & file command, Disk Command, Batch files introduction to batch processing, creation of batch file special batch file, autoexec.bat hard disk setup, configuring a system, creation of subdirectories, pipelines, filter and miscellaneous.

WINDOWS

1. Creating folder, cut, copy, paste, managing file and folder in windows.
2. Arrange icons, set display properties
3. Adding and removing software and hardware
4. Setting date and time, screen saver and appearance.
5. Using windows accessories.
6. Settings of all control panel items
7. Search file
8. Windows – 2000 Desktop setting – new folder, rename, recycle bin operation, briefcase, control panel utility, Display properties, screen saver, background setting.

MS-Word

1. Creating & Editing Document
2. Formatting Document
3. Use of Auto-text, Autocorrect, Spelling and Grammar Tool,
4. Page Formatting, Page Border, Background,
5. Creation of MS-Word-Mail Merge, Macros, Tables.
6. Practice of Printing, page setup etc.

MS-Powerpoint

1. Creating, Manipulating & Enhancing Slides,
2. Inserting Organizational Charts, Excel Charts
3. Using Word Art
4. Putting Animations and Sounds
5. Inserting Animated Pictures
6. Inserting Recorded Sound Effect

MS-Excel

1. Creating & Editing Worksheet, Fill Handle
2. Use Formulas and Functions
3. Preparing Charts

BCA – 106 : ENGLISH

Max. Marks : 25 **Min. Marks : 09**

OBJECTIVE : the objective of this course is to give knowledge about the basics of a English language

EXAMINATION

The internal examination will carry 20% marks i.e. 05 marks. The external examination will be of 80% marks i.e. 20 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

Scheme for Examination:

UNIT – I : Short- answer question.
UNIT – II : Reading Comprehensive and vocabulary.
UNIT – III : paragraph writing.
UNIT – IV : Letter Writing (both formal & informal)
UNIT – V : Grammar(20 Items from the prescribed text book to be asked and 15 to be attempted)

Structural Items :

1. Simple. Compound and complex sentences
2. co-ordinate clauses (with, but, or, either-or, neither-nor, otherwise or else)

i) subordinate clauses-noun, clause-as, subject object and complement : Relative clauses (restrictive and non- restrictive clauses): adverb Clauses(open and Hypothetical conditional with because, thought, here, so that, as soon as)

j) comparative clauses (as+=adjective/adverb + as-no sooner…..Than)

Tenses :

i) Simple present, progressive present perfect
ii) Simple past, progressive and past perfect
iii) Indication of futurity
The passive (Simple present and past, present and past perfect and to infinitive structure) reported speech : i) declarative sentences, ii) imperatives, iii) Interogative-wh-question. Exclamatory sentences.
iv) Modals (Will, Shall, Should, Would, Ought to, have to/ have got to, Can-could, may- might and need)
Verb structures (infinitives and gerundial), Linking Devices

NOTE : The above language items will be introduced to express the following communicative functions:

a) seeking and imparting information.
b) Expressing attitudes- intellectual and emotional.
c) Persuasion and dissuasion etc

Questions on all the units shall be asked from the prescribed text. Witch will comprise specimens of popular creative writing and the following items:

i) Indian art

Meaning of art Features of Indian art

Elementary knowledge of paintings, music, dancing, Seclpture, Archaeology, Iconography and other social arts.

ii) Indian Literature

ancient Indian Literature

Elementary Knowledge of vedic Literature, mahabharat, ramayan and other main Granthas.

iii) Indian freedom struggle.

Freedom struggle of 1857 national consciousness, non cooperation movement, Civil disobedient movement, contribution of revolutionaries in freedom struggle.

iv) Indian Constitution

Introduction main futures of Constitution, fundamental right, fundamental duties.

TEXT BOOK

English Language and Indian Culture: publication by M. P. Hindi Granth Academy

BCA – 107 Programming & Problem solving through C -I -LABORATORY

Max. Marks :25 **Min. Marks : 09**

List of practical

1. Write a C program to display "Hello Computer" on the screen.
2. Write a C program to display Your Name, Address and City in different lines.
3. Write a C program to find the area of a circle using the formula: Area = PI * r2
4. Write a C program to find the area and volume of sphere. Formulas are: Area = 4*PI*R*R Volume = 4/3*PI*R*R*R.
5. Write a C program to print the multiply value of two accepted numbers.
6. Write a C program to convert centigrade into Fahrenheit. Formula: C= (F-32)/1.8.
7. Write a C program to read in a three digit number produce following output (assuming that the input is 347)
   3 hundreds
   4 tens
   7 units
8. Write a C program to read in two integers and display one as a percentage of the other. Typically your output should look like 20 is 50.00% of 40
   assuming that the input numbers where 20 and 40. Display the percentage correct to 2 decimal places.
9. Write a C program to find out whether the character presses through the keyboard is a digit or not (using conditional operator).
10. Write a C program to swap variable values of i and j.
11. To sum n difference number using array.
12. To generates Fibonacci series.
13. Find the sum of series.
    i) 1+2+……
    ii) 2+4+……
    iii) 1+3+……
    iv) 1+2/2!+3/3!+……
    v) $1+x/1!+x^2/2!+x3/^3$!+……
    vi) $1-x/1!+x^2/2!-x3/^3$!+……
14. Find the factorial of given number using for loop
15. Find whether given year is leap or not.
16. Write a C program to find the maximum from given three nos.
17. Write a C program to find that the accepted no is Negative, Positive or Zero.
18. Write a program which reads two integer values. If the first is lesser print the message up. If the second is lesser, print the message down if they are equal, print the message equal if there is an error reading the data, print a message containing the word Error.
19. Write a C program that prints the given three integers in ascending order using if – else.
20. Given as input three integers representing a date as day, month, year, print the number day, month and year for the next day's date.
    Typical input: “28 2 1992” Typical output: “Date following 28:02:1992 is 29:02:1992”.
21. Write a C program for calculator designing using switch /case loop?
22. Write a C program to convert decimal to binary.
23. Write a C program to convert decimal to octal.
24. Write a C program to convert decimal to hexadecimal.
25. Write a C program to find the sum of first 100 natural nos.
26. Write a C program to find the sum of first 100 odd nos. and even nos.
27. Write a C program to display first 25 Fibonacci nos.
28. Write a C program to display first 100 prime nos.
29. Write a C program to find factorial of accepted nos.
30. Write a C program to find the sum of digits of accepted no.
31. Write a C program to print the accepted no and its reverse no.
32. Write a C program to print all the Factors of accepted no.
33. Write a C program to find HCF of two given numbers.

34. Write a C program to find all the prime number between two given numbers.
35. Write C programs to print the terms of each of the following series:
    i. Sin(x) ii. Cos(x) iii. Log (1+x) iv. log(1-x) v. e^x vi. e^{-x}
36. Write a C program to print the sum of series.(will be given in class)
37. Display the following output on screen (assuming the value for input parameter n=5) :

a.	b.	c.	d.	e.
*	1	A	1	1
**	12	AB	23	23
***	123	ABC	345	456
****	1234	ABCD	4567	78910
*****	12345	ABCDE	56789	101112131415
f.	g.	h.	i.	j.
*****	ABCDE	*	1	1
****	ABCD	***	123	121
***	ABC	*****	12345	12321
**	AB	*******	1234567	1234321
*	A	*********	123456789	123454321
k.	l.	m.	n.	o.
*	ABCDE	1	*****	1
**	ABCD	12	0000	10
***	ABC	123	***	101
****	AB	1234	00	1010
*****	A	12345	*	10101
p.	q.	r.	s.	t.
1	1	A	ABCDEDCBA	1
01	22	AB	ABCD DCBA	121
101	333	ABC	ABC CBA	12321
0101	4444	AB	AB BA	1234321
10101	55555	A	A A	123454321

38. Write a C program to find minimum, maximum, sum and average of the given one dimensional array.
39. Write a C program to perform the basic Matrix operations addition, subtraction, multiplication, Transpose.
40. Write a program to take a sentence as input and reverse every word of the sentence.
41. Write a C Function for the following task
    a. Calculating Factorial
    b. Find value of a given Fibonacci term
    c. Swapping the values of two variable
    d. Minimum/maximum value from the given input
42. Write User Defined Function and test them in the main program for the following standard function
    a. int myatoi(Char *s)
    b. char *myitoa(int i)
    c. int mystrlen(char *s)
    d. char *mysubstr(char *s, int i, int j)
    e. char *mystrcat(char *s1,char *s2)
    f. int mystrcmp(char *s1, char *s2)
    g. int mystrchr(char *s, char c, int i)
    h. char *mystrrev(char *s)
    i. int mystrend(char *s, char *t)
    j. char *myreplace(char *s, char *old, char *new)
    k. int abs(int i)
    l. char *mytoupper(char *)
    m. char *mytolower(char*)
    n. int isupper(char *s)
    o. int islower(char *s)
    p. int mypower(int a, int b)
    q. int mymod (int a, int b)

BCA PART I Semester - Scheme :2011-12 and Onwards:

Course of studies for the BCA –II Semester

BCA - II Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -201 Mathematics –II	10	40	--------	50	4+13
BCA -202 Statistics -II	10	40	--------	50	4+13
BCA -203 Physics -II	10	40	--------	50	4+13
BCA -204 Programming & Problem solving through C -II	--------	50	--------	50	17
BCA -205 Introduction to Information System	--------	50	--------	50	17
BCA -206 Hindi	10	40		50	4+13
BCA -207 Practical- Programming & Problem solving through C -II	--------	--------	25	25	9
BCA -208 Internet Practical	--------	--------	25	25	9
Total Marks	40	260	50	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA – 201 MATHEMATICS – II

Max. Marks : 50 **Min. Marks : 17**

Objective:
The objective of this course is to help student gain knowledge about advanced Calculus.

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT – I
Curve tracing : Tracing curves with equations in Cartesian & polar forms.
Improper integrals : Convergence of improper integrals. Evaluation of convergent improper integrals.

UNIT – II
Gamma and Beta function and their properties, some important deductions (duplication formula)
Rectification L length curve, intrinsic equation.

UNIT – III
Multiple integrals : Integration of functions of two & three variables, Double & triple integrals, Dirichlet integral use double & triple integral in finding areas and volumes. Vector integration : Indefinite and definite, surface and volume integrals, Gauss and stokes theorems and some applications.

UNIT – IV
Partial differential : Function of several variables, Limits, Continuity and differentiability, Partial derivatives, Eulers Theorem, Mean Theorem & Tailors Theorem.

UNIT – V
Maxima & Minima function of two and three variables.
convergence and divergence of series : Definition and various tests.

TEXT BOOK

A text book of higher calculus for B.Sc II by Dr. H. S. Pathak& D.C. Agrawal . Shikha Sahitya Prakashan.

REFERENCE BOOK

A text book of higher calculus for B.Sc II by Dr. H. S. Sharma Ratan Prakashan.

BCA – 202 STATISTICAL METHODS – II

Max. Marks : 50 **Min. Marks : 17**

Objective:
The objective of this course is to give knowledge about advanced Statistics to the student.

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT- I
Estimation Theory : Unbiasedness, Consistency, efficiency and sufficiency of estimations, Maximum likelihood estimates and their properties (without proof), Cramer Rao Inequality and Minimum variance estimates.

UNIT- II
Testing of Hypotheses : Simple and composite hypothesis, error of kind-I and kind – II, critical region, level of significance, size and power of a test, Neymann Pearson's fundamental lemma and its application(with Proof)

UNIT – III
Test of significance: Test of simple hypothesis, Beta, gamma distributions and properties, Chi-square, T, F, Z distribution and test based on them.

UNIT – IV
Non- parametric Test : Sign test, Median test, Wilcoxon's run test, Wilcoxon's signed rank test. Contingency tables.

UNIT- V
Analysis of Variance : one –way & Two – way classification with one observation per cell, basic designs of experiments : completely randomized design, randomized block design & latin square design.

TEXT BOOK
Mathematical Statistics by J. N. Kapoor & H.C. Saxena , S. Chand & co.

REFERENCE BOOKS:
1. Fundamental of Statistics Vol. 1 M. Goon, B. Dasgupta, M.K. Gupta, The world press pvt. Ltd.

BCA – 203 PHYSICS II

Max. Marks : 50 **Min. Marks : 17**

Objective:
The objective of this course is to familiarize the student with Optics and Magnetism.

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT – I
Basic Concepts of Electromagnetic wave propagation, properties of plane wave propagation, guided and unguided media, ionospheric propagation : Critical frequency, MUF, skip distance, drik propagation.
Electromagnetic wave: Transmission line, coaxial cable, reflection coefficient, VSWR, Standing waves, impedance matching, wave guide, traveling waves and Maxwell's equations.

UNIT – II
Interference : principle of superposition, Interference of light, analytical treatment of interference, Theory of Interference fringes, Interference in thin films, wedge shaped film, Newton's rings and determination of wavelength, Michelson's interferometer and its uses.

UNIT – III
Diffraction : Two kinds of diffraction, Rectilinear Propagation of light, Zone plate, Diffraction at straight edge, Diffraction at single slit, plane diffraction grating, Resolving power of a grating, Dispersive power of a grating.

UNIT – IV
Polarization : Polarization of light waves, various types of light, double refraction, Nicol's prism, Huygen's theory of double refraction, Quarter and half wave plate, Production & analysis of different kind, Optical activity, fresnel's theory of optical rotation.

UNIT – V
Doppler effect of light & its applications.
Laser : concepts of coherence, spatial and temporal coherence, Spontaneous and stimulated emission, Population inversion, Ruby Laser, Gas Laser, Semiconductor Laser, Uses of Laser.

TEXT BOOK
Physics Part II : Resnick & Halliday.Wiley Publication.

REFERENCE BOOKS :
1. Engineering Physics : R.K. Gaur & S. L. Gupta, Dhanpat Rai Publication.

BCA -204: PROBLEM SOLVING AND PROGRAMMING THROUGH C -II

Max. Marks: 50 **Min. Marks: 17**

Objective:

The objective of this course are to make the student understand the programming language ,programming concepts of loops ,reading a set of data , stepwise refinements , Function, control structure& arrays. After completion of this course the students is expected to analyze the real life problems & write a program in 'c' language to solve problem. The main emphasis of the course will be on problem solving aspect that is, developing proper algorithms.

Examination:

The external examination will be of 50 marks. The question paper will contain question equally distributed in all units. The balance of paper will be maintained by including appropriate numerical/objective/conceptual/analytic/theoretical) combination of subsection in each question.

UNIT – I

Functions: definition, declaration, calling & use. passing values b\w function, scope rule of function.

Advanced feature of functions: Function declaration & prototypes, call by value, call by reference, back to function calls, macro verses function, Recursion, need of recursion, types of recursion.

UNIT- II

Pointer: Definition & declaration, pointer assignment, pointer & arrays, passing entire array to function, pointers & 2D array, pointers array, pointer to array, array of pointer to string, Pointer to structures, use of pointer, malloc(), calloc() library function.

Union: Union definition & declaration, accessing a union member, union of structures, initialization of union member, uses of union, use of user defined data types

UNIT-III

Types of I/O, Console I/O function, Formatted console I/O function, sprintf(), sscanf () function, unformatted consol I/O functions.

Disk I/O function: File opening modes, writing, closing files(fclose),a file copy program, using argc, argv, string I/O in files, formatted disk I/O function, text verses binary mode, record I/O in files, detecting error in reading & writing, I/O redirection in DOS.

UNIT-IV

Components of VDU: Display Adapters, Display Screens (monitor), Video Display modes, resolution

Text or Graphics: Color in text in modes, color in graphic mode, video pages, writing to VDU memory in text mode.

UNIT-V

Graphic programming: lines, stylish lines, drawing & filling images, patterns with differences, bar ()
Filling regular & nonregular shapes, of palettes &colors, outputting text, justifying text, a bit of animation, system matrics.

TEXT BOOK:

LET US 'C' by Y.Kanetkar(BPB)

REFERENCE BOOKS:

1. Programming in 'C' Balaguruswami
2. Programming& problem solving through 'C'.(Elsevier)
3. First course in Programming with 'C',T.Jeyapoovan(VIKAS)
4. The C programming Language by Brain W Kernigham and dennis M Ritchie
5. Practical C programming,3rd edition(anetshell handbook)O'Relly
6. Computer Programming and IT (for RTU) by Ashok N Kamthane et. al, Pearson Education, 2011

BCA-205 INTRODUCTION TO INFORMATION SYSTEM

Max.Marks:50 **Min.Marks:17**

Objective: The objective of this course is to provide the student with the skill they can use to be effective business reader in their organization and to provide core of IS principle with which every student should be familiar.

Examination:
The external examination will be of 50 marks. The question paper will contain question equally distributed in all units. The balance of paper will be maintained by including appropriate (numerical/objective/conceptual/analytic/theoretical) combination of subsection in each question.

UNIT-I
Information concept, system and modeling concept, meaning of information system, business information system, system development, need to learn information system, organization and information system, competitive advantage, performance based information system, careers in information system.

UNIT-II
H/W: components, processing and memory device, secondary storage, input and output devices
S/W: overview of s/w, system and application s/w, programming language, s/w issues and trends

UNIT-III
Data management, data modeling and database models, database management system, database application system

UNIT-IV
Overview of communication system, telecommunication, N/W and distributed processing, telecommunication and application
Use of functioning of the internet, internet services, WWW, intranets and extranets, Net issues

UNIT-V
Introduction to E-commerce, types of Ecommerce, E-commerce application, electronic payment system, technologically infra structure of E- commerce, trends to E- commerce, strategy for successive E- commerce
Computer waste and mistakes, computer crimes, privacy issue, work environment

TEXT BOOK:
Principle of Information System: Ralph stair (Thomson course technology)

BCA – 206 : HINDI LANGUAGE

fgUnh Hkk"kk

Max. Marks : 25 **Min. Marks : 09**

bdkbZ 1

d- ekud fgUnh Hkk"kk %

1- ekud fgUnh d y{k.k vkj mnkgj.k, 2- ekud fgUnh dk Lo#i, 3- ekud fgUnh d idkj

[k v'kf);k vkj mudk l'kk/ku %

1- v'kf);k d mnkgj.k, 2- v'kf);k d idkj (mPPkkj.k xr, oruh xr, ''kCn vkj vFk xr, 0;kdj.k xr)

bdkbZ 2

d fgUnh dk 'kCn HkaMkj %

1- 'kCnk d idkj, 2- 'kCnk dh jpuk, 3- u; i;kZ

[k fgUnh dh okD; jpuk

4- okD;k d idkj, 5- okD; foU;kl, 6- okD; xr lkekU; v'kf);k, 7- fojke fpUg

bdkbZ 3

i= y[ku- lkj y[ku- iYyou %

1- i=k d mnkgj.k, 2- i=k d idkj, 3- i= y[ku dh fo'kirk, (i= y[ku- lcd/ku, vr fnukd vkfn Mkyuk), 4- lkj y[ku, 5- iYyou

bdkbZ 4

Hkkjrh; lLdfr, Hkkjr n'k vkj mld fuoklh, Hkkjrh; lekt dh ljpuk, lkekftd xfr'khyrk & vn;ru, dk; vkj n'ku

bdkbZ 5

Hkkjrh; lLdfr dk fo'o ij iHkko, e/; in'k dk lkLdfrd oHko

ikB;iLrd % Hkkjrh;rk d vej Loj, idk'ku % e- i- fgUnh xFk vdkneh, HkkikyA

vuqdef.kdk

[k.M ,d % ikB; lkexh

[k.M nk % fgUnh Hkk"kk (lEi;i.k dk'ky

[k.M rhu % Hkkjrh; lLdfr

BCA -207 PRACTICAL
PROGRAMMING & PROBLEM SOLVING THROUGH C -II
MAX.MARKS:25 **MIN. MARKS: 09**

List of Practical's:

1. To find square root of nos. without using built in function
2. To find factorial of a no. using recursion
3. To reverse digit of number
4. To reverse the given string
5. To search a name in a record of student
6. To create a record having five fields
7. To exchange the value of two variable using function
8. To add two number using pointer
9. To create a file character
10. To read a file
11. To create a file of integer
12. To create file of a record
13. To copy a file
14. To merge two file
15. To find transpose of matrix
16. To find inverse of matrix
17. To convert lower case string into upper case
18. To read character from one text file convert into upper case and length into other file
19. Write a program which ask date of birth in dd/mm/yy format and spell it in word
20. To find out twins prime number
21. To enter a four digit number and print it in all combination
22. Write a mark sheet program using file
23. Write a payroll program using file
24. Partitioning of an array
25. Removal of duplicity in an array
26. Write the following recursive C Function
    a. Factorial of a given number
    b. Nth Fibonacci number
    c. Reverse of a given String
    d. Reverse of a give Number
    e. Sin(x)
27. Write a c program to create a new data type Date with the help of structure and typedef. Also write following user defined function for date manipulation.
    a. To return next Date,
    b. To return next Month,
    c. To return next Year,
    d. To add few Days in a date
    e. To add few Months in a date
    f. To add few Years in a date
    g. To return the date of the week of a given date.
    h. To return Month name from the date.
    i. To Display the Date in various format as: Date Display(Date d1, char *format)

    Here Date is the newly created data type. The format string can hold the following values: "DDMMYYYY", "MMDDYY", "MON, DD, YYYY"

Write a C program to implement myprintf and myscanf functions using Concept of variable number of arguments. (using getch, putch, gets and puts function)

28. Write a C program that creates an Employee text file? Records Are empid, empname, designation, qualification, salary, experience, Research work, address, city phone?
29. Write a C program that manipulates the above text file. The program must implements the operation to modify a record, delete a record and append new records.
30. Write C programs for the following operation to work like DOS Commands:
    a. type abc.txt
    b. copy source1.txt source2.txt
    c. copy source1.txt source2.txt source3.txt source4.txt
    d. compare source1.txt source2.txt
    e. concat source1.txt source2.txt
31. Write a C program to open two files containing integers (in sorted order) and merge their contents.
32. Write a C program to count the number of vowels, consonants, digits, spaces, other symbols, words and lines in a given text file.
33. Write C code to check if an integer is a power of 2 or not
34. Write a C program to count bits set in an integer.
35. Write a C program to set a particular bit in a given number.
36. Write a C program to reset a particular bit in a given number.
37. IF 5+3+2 = 151022 , 9+2+4 = 183652 , 8+6+3 = 482466 ,
5+4+5 = 202541 THEN; 7+2+5 = ? Develop a C program to solve this problem.

NOTE:

1. Every student will be given 6 period /week laboratory(1 period 45 minutes)
2. Every student will be work on independent computer(student: computer =1:1)

BCA-208: INTERNET PRACTICALS

MAX.MARKS:25 **MIN. MARKS: 09**

List of suggested Practical work

1. Under standing of a dial up connection through modem.
2. Configuring a computer for e-mail and using outlook express or Netscape messenger.
3. Registering an e-mail address.
4. Understanding of address book maintenance for e-mail.
5. Understanding e-mail drafting.
6. Understanding of different mail program tools.
7. Send and receive function of e-mail.
8. Using the internet for search using search engines.
9. Understanding of sites like BSNL, Rediff, Indianinfoline, Zeenext, AOL, Yahoo, Hotmail, mail city.
10. News services on Internet.
11. Downloading of tutorial from the internet from education sites.
12. Using Internet explorer.
13. Using Netscape navigator.
14. Using Netscape Communication suite.
15. Using front page or notepad etc for web design.

NOTE:

1. Every student will be given 6 periods/week laboratory (1 period = 45 minutes)
2. Every student will work on independent computer (Student: Computer=1:1)

REFERENCE BOOKS:

1. Internet Complete Reference by Sybex Pub.

DEVI AHILYA VISHWAVIDYALAYA, INDORE

SEMESTER WISE SCHEME
OF SYLLABUS
FOR

BACHELOR
OF
COMPUTER APPLICATIONS
(B.C.A.)
Part - II (SECOND YEAR)
2011-12Academic Year ONWARDS

DEVI AHILYA VISHWAVIDYALAYA, INDORE(M.P.)

BCA PART II Semester –Scheme :2012-13 and Onwards:

Course of studies for the BCA –III Semester

BCA - III Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -301 Mathematics -III	10	40	--------	50	4+13
BCA -302 Object Oriented Programming Through C++	--------	50	--------	50	17
BCA -303 Digital Computer Electronics	--------	50	--------	50	17
BCA -304 Accounting & Financial Mgt	10	40	--------	50	4+13
BCA -305 Data Structure using C++	--------	50	--------	50	17
BCA -306 Communicational Skills	5	20	--------	25	2+07
BCA -307 Practical (Object Oriented Programming Through C++)	--------	--------	25	25	9
BCA -308 Practical (Data Structure using C++)	--------	--------	25	25	9
BCA -309 Practical (Digital Computer Electronics)	--------	--------	25	25	9
Total Marks	25	50	75	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA-301: MATEMATICS III
(Differential Equations)

Max.Marks:50 **Min.Marks:17**

OBJECTIVE: To introduce the concept of mathematics.

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The internal examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical objective/ conceptual/Analytical/ Theoretical) combination of sub section in each question.

UNIT-I
Differential Equations of first order and first degree:
Homogeneous differential equation, Reducible to homogenous differential equations, Linear differential equations(Bernoulli's equation),exact Differential equation ,change of variables.
Differential equations of first order and higher degree:
Differential equations solvable for P, solvable for Y, solvable for X, Clairaut's Equation.

UNIT-II
Family of curves: Trajectories, orthogonal Trajectories, self orthogonal families, Linear differential equations of higher order with constant coefficients, differential equations reducible to linear differential equations with constant coefficients.

UNIT-III
Linear Differential, Equations of Second order, method of variable of parameters: simultaneous Differential Equations of first order.

UNIT-IV
Initial and boundary value problem, Picard's method of successive approximation, Series' solution method of ferobenius.

UNIT-V
Partial differential equations: definition and formation, partial differentials equation of first order Lagrange's method standard forms. Charpit's method, linear partial differential equation of higher order with constant coefficients.

TEXT BOOK

A text book of differential equation by H.K.PATHAK and D.C.Agrawal.(Text) shiksha sahitya prakashan .Meerut.

REFERENCE BOOKS:

1) A text book of differential equation by M.M.Kapoor Pithampur pub. Co.888, East part Road Karol bagh NewDelhi.
2) A text book of differential equation S.N..Agrawal Yougbodh prakashan,Raipur.
3) Ordinary differential equation by Gunandhar paria,Scholar pub.Indore

BCA-302: OBJECT ORIENTED PROGRAMMING THROUGH C++
Max.Marks:50 Min.Marks:17

OBJECTIVE:
To introduce the concept of object oriented programming through C++.

EXAMINATION:
The examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical objective/ conceptual/Analytical/ Theoretical) combination of sub section in each question.

UNIT I
Introduction, OOPS languages, characteristics of OOP's languages, application of OOP's, OOP's paradigm, concepts: object, class, data abstraction, data encapsulation, inheritance, and polymorphism.
Static and dynamic binding, message passing, benefits of OOP's, disadvantage of OOP's.

UNIT II
C++ programming basics, basic program structure preprocessor directive, data types, operator, manipulator, type conversions C++ stream class.
Control structure: for, do, while, do-while, if, if-else, switch.
Jump statement: break, continue, go to, exit.

UNIT III
Function and arrays. Classes and instances, defining classes in object oriented language, building and destroying instances (constructors and destructors), modifiers, friend and inline functions, string handling function.

UNIT IV
Data encapsulation, implementation of encapsulation, polymorphism, operator overloading, function overloading, virtual functions.

UNIT V
Inheritance, reusability of code through inheritance, type of inheritance, data abstraction, abstract classes, specification of code.
Templates and exception handling.

TEXT BOOK
C++, The Complete Reference, 4th Edition, Herbert Schildt, TMH.
REFERENCE BOOKS:

1. Object oriented programming with c++ by Balaguruswamy.TMH Publishing
2. C++ Primer, 3rd Edition, S.B.Lippman and J.Lajoie, Pearson Education.
3. The C++ Programming Language, 3rd Edition, B.Stroutstrup, Pearson Education.
4. OOP in C++, 3rd Edition, T.Gaddis, J.Walters and G.Muganda, Wiley DreamTech Press.
5. Object Oriented Programming in C++, 3rd Edition, R.Lafore, Galigotia Publications pvt ltd.
6. Computer Science, A Structured Programming Approach Using C++, B.A.Forouzan and R.F.Gilberg, Thomson

BCA-303: DIGITAL COMPUTER ELECTRONICS

Max.Marks:50 **Min.Marks:17**

OBJECTIVE:
To introduce the concept of digital electronics.

EXAMINATION:
The examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical objective/ conceptual/Analytical/ Theoretical) combination of sub section in each question.

UNIT I

Number system and codes. Decimal, binary, octal, hexadecimal and their inter conversion. ASCII, grey code excess-3 code, BCD numbers, binary addition, subtraction, multiplication and division (1's and 2's compliment methods)

UNIT II

Logic gates: NOT, OR, AND, NAND, NOR, XOR, XNOR gates. Boolean Algebra, De Morgan's Theorem. Application of gates, half adder and full adder.

UNIT III

Boolean functions & truth table, SOP, POS, minterms, Simplification of logical circuits using Boolean algebra and karnaugh maps.

UNIT IV

TTL, circuits, digital Ics,74 series, TTL characteristics, Totempole and open collector gates, comparison between different type of TTL, multiplexer, demultiplexer, encoder, decoder.

UNIT V

Flip- Flop, Registers and counters, RS-flip flop, level clocked D,F/P edge triggered D flip flop , edge triggered JK flip flop , racing in F/F, JK masters-slave flip flop, buffer registers, shift registers, ripple counters, synchronous counters , ring counters, Mod Counters.

TEXT BOOK
M. Morris Mano, Digital Design, 3.ed., Prentice Hall of India Pvt. Ltd.,

REFERENCE BOOKS
1. Digital Computer Electronics by Malovino and Brown McGraw Hill
2. Digital Fundamentals by Basavraj B. Vikas Publishing House (New Delhi)
3. Digital computer Fundamental by Thomas C Bartee. , 6th edition, Mc Graw Hill 1986.
4. Digital Systems- Principles and Design, Pearson Education, 2007.

BCA-304: ACCOUNTING AND FINANCIAL MANAGEMENT

Max.Marks:50 **Min.Marks:17**

OBJECTIVE:

To introduce the concept of Accounting and financial management..

EXAMINATION:

The internal examination will carry 20%marks i.e.10 marks. The external examination will be of 80% marks i.e. 40 marks .The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical objective/ conceptual/Analytical/ Theoretical) combination of sub section in each question.

UNIT I

Basic accounting concepts. Accounting structure: Process of accounting, journal, ledger and trial balance based on double entry book keeping.

UNIT II

Practical system of accounting: Cash book, sales and purchase goods, bills of exchange, book reconciliation statement

UNIT III

Preparation of financial statement: income statement (Profit and loss account), Statement of financial position (Balance sheet)and adjustment, valuation of assets and depreciation method.

UNIT IV

Cash and fund flow statement. Analysis of financial statement-financial ratio.

UNIT V

Introduction to cost accounting: Element of cost , cost determinations, Direct and indirect cost, cost centers and cost units, The behavior of cost .

TEXT BOOK

Introduction to accountancy by T.S Grewal. S.Chand Books

REFERENCE BOOKS:

1. Reddy TS and Han Prasad Reddy - Financial and Management Accounting
2 .Financial Management - Prasanna Chandra
3. Myddelton - The essence of Financial Management - Prentice-Hall Of India
4. Vanhorne - Fundamentals of Financial Management - Prentice-Hall Of India
5. Accounting principles by Robert Anthony.
6. Advance accountancy by R.I Gupta
7. An introduction to accounting by Maheshwary S.N.

BCA-305: DATA STRUCTURE USING C++

Max.Marks:50 **Min.Marks:17**

OBJECTIVE:
To introduce the concept of Data structure.

EXAMINATION:
The examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical objective/ conceptual/Analytical/ Theoretical) combination of sub section in each question.

UNIT I
Definition of data structure , types ,static variable dynamic variable ,representation and address calculation of single and multidimensional array in memory, pointers , sparse matrix representation, time and space complexity of algorithm.

UNIT II
Stacks: Representation of stacks, operation on stacks, infix and post fix notations, multiple stacks, exchanging the value of two stacks, recursion techniques, expression evaluation, and application of stacks.

UNIT III
Queues: Representation of queues, operation on queues, multiple queues, circular queues, D queues, Application of queues.

UNIT IV
Link list: Singly Link list, doubly link list, circular link list, generalized lists, Problem solving with dynamic storage management, list traversal, insertions and deletion algorithms

UNIT V
Trees: Basic concept and definitions, basic operation on binary trees, tree search and insertion, tree deletion, balanced tree, balanced tree insertion and deletion B-tree , hash table, hash techniques. Graphs: definition, representation, traversal and applications.

TEXT BOOK
Data structure using C and C ++ Langsam,Augenstein, Tenenbaum PHI publishers

REFERENCE BOOKS

1. Algorithm + data structure = Program by Niklaus Wirth Prentice Hall Publishers
2. Data structure using C Robert Kruse
3. Data structure with C++ by Drozdek
4. Data Structures-Lipschutz, Schaum's Outline Series

BCA -306 : COMMUNICATION SKILLS

Max. Marks :25 **Min. Marks : 09**

OBJECTIVE:

To introduce the concept of communication skills

EXAMINATION:

The internal examination will carry 20%marks i.e.05 marks. The external examination will be of 80% marks i.e. 20 marks .The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical objective/ conceptual/Analytical/ Theoretical) combination of sub section in each question.

UNIT I

Fundamentals of Communication (OHP & PPP): Definitions, importance, forms of communication, process of communication, channels, barriers and strategies to overcome barriers of communication.

Listening (PPP): Def, Importance, Benefits, barriers, approaches, be a better listener, exercises and cases.

UNIT II

Advance Communication: Why communication? Art of communication, V3 communication, Key elements of IP communication, Quizzes, exercises and cases / incidents for practice.

UNIT III

Group Discussions:(PPP) Definitions, importance, process, points to be borne in mind while participating, Dos and Don'ts. Practice- if time permits or to be covered in PDP.

Interview (PPP) Types of Interviews, Points to be borne in mind as an interviewer or an Interviewee, commonly asked questions, Dos and Don'ts. Practice- if time permits or to be covered in PDP.

UNIT IV

Transactional Analysis: (PPP) Transactional analysis, Johari Window, FIRO-B (PPP)

Written Communication: Cover letter, Report writing, documentation, business correspondence, preparation of manuals and project reports, Drafting emails.

UNIT V

Negotiation Skill: Basic principles, Building understanding, process of negotiation, essentials of negotiations. Contemporary Communication Styles, technology enabled communication

NOTE: Class Assignments: Making Resumes. Writing formal letters, Memos, drafting emails, notices, Create a questionnaire, and meet new people they never met and know about them.

TEXT BOOK :

Chturvedi, P.D. and Chaturvedi Mukesh (2004), "Business Communication" Pearson Education, Singapore Pvt. Ltd.

REFERENCE BOOKS :

1. Business Communication by ICMR, Feb 2001.
2. Toropov Brandon (2000), "Last Minute Interview Tips", Jaico Publishing House, Mumbai.
3. Heller Robert (1998), "Essential DK Managers: Communication Clearly", Dorling Kindersley, London.

BCA-307: PRACTICAL (OBJECT ORIENTED PROGRAMMING THROUGH C++)

Max. Marks :25 **Min. Marks : 09**

1. Write a program to illustrate the use of various stream classes of c++.
2. Write a program to find the maximum of three using conditional operator.
3. Write a program to find the largest, second largest and third largest in a given array.
4. Write a program to generate Armstrong series.
5. Write a program to find the factorial of a given number.
6. Write a program to generate the Fibonacci series.
7. Write a program to check whether the given number is palindrome or not.
8. Write a program to find the GCD and LCM of two no's.
9. Write a program to read a n x m matrix and find
    a. The average of each row.
    b. The average of each column.
    c. The average of mn matrix.
10. Write a program to print the boundary element of matrix.
11. Write a program to print the diagonal elements of matrix.
12. Write a program to illustrate the use of structure and union.
13. Write a function which accept object as a parameter and returns object.
14. Write a program to overload ++ operator to increment age of person by one month.
15. Write a program to overload ++ operator to concatenate two string.
16. Write a program to illustrate the use of scope resolution operator.
17. Write a program to find the square root using inline function.
18. Write a program to illustrate the use of friend function.
19. If a class D is derived from two base classes B1 and B2, then write these classes each containing zero argument constructors. Ensure while building an object of type D firstly the constructor of B2 should get called followed by that of B1.Also provide destructor in each.
20. Write a program to overload two operator >and –as follow.

Let t1, t2 and t3 be three object of time class.
If (t1>t2)
t3=t1-t2;
Else
t3=t2-t1;

21.Create a class called Employee that includes three pieces of information as instance variables – a first name (type String), a last name (type String) and a monthly salary (double)
22.Create a constructor in above class to initialize the three instance variables. Provide a get method for each instance variable..
23.Create two employee objects and display each object's yearly salary.
24.Give each employee a 10% raise and display each Employee's yearly salary again..
25.Write C++ program to create five object of book, get information of book using getdata() function including name, price, publication and author.

26. Write search() function to search a specified book, if book is search return the complete information of book and print the information of book using putdata() function.

27.Write an application to create a super class Employee with information first name & last name and methods getFirstName(), getLastName() derive the sub-classes ContractEmployee and RegularEmployee with the information about department, designation & method displayFullName() , getDepartment, getDesig() to print the salary and to set department name & designation of the corresponding sub-class objects respectively.

28.Create an abstract class Shape which calculate the area and volume of 2-d and 3-d shapes with methods getArea and getVolume. Reuse this class to calculate the area and volume of square ,circle ,cube and sphere.

29.Write a C++ program in which you are overloading all arithmetic operators.

30.Write a program that accepts two values either integer or double. Design functions that understand the input, add them and provide the correct output.

31.Create a base class called shape. Use this class to store two double type values that could be used to compute the area of figures. Derive two specific classes called triangle and rectangle from the base shape. Add to base class, a member function get_data() to initialize base class data members and another member functions display_area() to compute and display the area of figures. Mark the display_area() as avirtual function and redefine this function in the derived class to suit their requirments.(Use pure virtual function)

32.Create a base class that contains a function display(), displaying “I am in base” . Function with same name display() is in derived class ,displaying “I am in derive”.

33.Write a C program that manipulates the above text file. The program must implements the operation to modify a record, delete a record and append new records.

34.Write a C program to open two files containing integers (in sorted order) and merge their contents.

35. Write a function template for finding the minimum value contained in an array..

BCA-308: PRACTICAL EXERCISE (DATA STRUCTURE USING C++)

Max. Marks :25 **Min. Marks : 09**

1. Store records of 100 students using array.
2. Representation of upper triangular and lower triangular sparse matrix in linear array.
3. Push and pop operation on stack using array.
4. Insertion and deletion operation on queue using array.
5. Insertion and deletion operation on circular queue using array.
6. Program for Bubble sort.
7. Program for Quick sort
8. Program for selection sort.
9. Program for Linear search.
10. Program for Binary search.
11. Program for exchanging the value of variables using pointers.
12. Linked List creation, insertion and deletion.
13. Count no. of elements in linked list.
14. Sort a Linked List.
15. Doubly Linked List creation, insertion and deletion.
16. Creation of Binary search tree.
17. Insertion and deletion of Binary search tree.
18. Traversal of Binary search tree(inorder,preorder,postorder)
19. Complete program for Binary search tree.
20. Representation of polynomial in Linked List.

BCA-309: PRACTICAL EXERCISE-
(DIGITAL COMPUTER ELECTRONICS)

Max. Marks :25 **Min. Marks : 09**

1. Practical of Logic gates (AND, OR, NOR, XOR, NAND)
2. Practical of Flip-Flop (JK, D,T etc.)
3. Practical of Counter & Shift Register.
4. Practical of Timer IC555.
5. Practical of Multiplexer & Demultiplexer
6. Practical of Encoder & Decoder.
7. Practical of Analog to Digital Converter.
8. Practical of Digital to Analog Converter.
9. Practical of Soitt trigger.
10. Practical of Half & Full Adder.

BCA PART II Semester –Scheme :2012-13 and Onwards:

Course of studies for the BCA –IV Semester

BCA – IV Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA -401 Coordinate Geometry of Three Dimension	10	40	--------	50	4+13
BCA -402 Database Management System	--------	50	--------	50	17
BCA -403 Data & Network Communication	10	40	--------	50	17
BCA -404 Digital Computer Organization	----------	50	--------	50	4+13
BCA -405 Unix Operating System	--------	50	--------	50	17
BCA -406 Environmental Awareness	5	20	--------	25	2+07
BCA -407 Practical (Database Management System)	--------	--------	25	25	9
BCA -408 Practical (Digital Computer Organization)	--------	--------	25	25	9
BCA -409 Practical (Unix Operating System)	--------	--------	25	25	9
Total Marks	25	250	75	--------	----------
Grand Total	----------	---------	----------	350	---------

SEMESTER IV
BCA-401: COORDINATE GEOMETRY OF THREE DIMENSIONS

Max.Marks:50 **Min.Marks:17**

OBJECTIVE: To Introduce the concept of coordinate geometry of three dimensions.

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (Numerical objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT I
Rectangular Cartesian of a point in space. Distance between two points. Cylindrical coordinates, Spherical Coordinates, direction cosines, point of division, orthogonal projections, angle between straight. Examples and exercise. Shortest distance between the straight line, line of greatest slope, Conditions for line intersection. Orthogonal projection of a plane area. Area of triangle in space, volume of triangle in space. Examples and Exercise.

UNIT II
Sphere circle and related topics, Tangent lines and tangent planes to a sphere, radial plane, radial line, coaxial spheres, limiting points. Examples and exercises. Surface and conicoid: transformation of axes, Invariant and decrementing Cube, centre, tangent planes, normal lines, principle directions, Diametrical and principle planes. Examples and exercises.

UNIT III
Conicoid polar planes, Locus of chords, Pole with respect to conicoid. Examples and Exercises. Parabolic, definition and description, Elliptical and Hyperbolic parabolic, Parabolic of revolution, Tangent planes and normal to a parabolic, Diametrical and Conjugate planes, Examples and exercises.

UNIT IV
The Ellipsoid, normal plane to it, director sphere of an ellipsoid, normal line to ellipsoid, diametrical plane to ellipsoid, conjugate diameters and diametrical planes to ellipsoid, locus of chords, polar planes. Examples and Exercises.

UNIT V
The definition and description, finding equation of cone, standard equation, condition of general Quadratic equation representing cone, Angle between two generators, enveloping cone of coincoids, right circular cone. Examples and exercises. The Cylinder definition, equation, right circular cylinder, enveloping cylinder to a coincoid. Examples and exercises.

TEXT BOOK

Coordinate Geometry of three Dimensions by G. Paria, Scholar Publishing House, Indore

REFERENCE BOOKS

1. Differential Equations, Fourier Series and Analytical Solid Geometry : P.R. Vittal (Margham Publishers)
2. Engineering Mathematics Volume 3: M. K. Venkataraman (National Publishing Co.)
3. Engineering Mathematics Volume 3: R Kandasamy and others (S. Chand and Co.)
4. Advanced Engineering Mathematics : Stanley Grossman and William R. Devit (Harper and Row publisher)
5. Fundamentals of mathematical statistics: S. C. Gupta and V. K. Kapoor (Sultan Chand and sons)

BCA-402-DATABASE MANAGEMENT SYSTEM

Max.Marks:50 **Min.Marks:17**

OBJECTIVE: To introduce the concept of database management system

EXAMINATION
The examination will be of 50 marks. The question will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objectives/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT-I
Introduction: purpose of DBMS, view of data, data models: physical model, logical model, conceptual model, hierarchical model, network model. Object oriented model. database language, Database administrator, database user, overall system structure.

UNIT-II
Entity relationship model: basic concepts, mapping constraints, keys, E-R diagram, weak, entity features, design of an E-R database schema, reduction of E-R schema to table.

UNIT-III
Structured Query Language(SQL):basic structure, set operations, aggregate functions, null values, nested sub queries, data definition language(DDL), data manipulation language(DML), data control language(DCL), transaction control language(TCL),QBE,QUEL.

UNIT-IV
Relational database design: pitfalls in relational database design, decomposition, normalization using functional dependencies, normalization using multivalue dependencies, normalization using joined dependencies.
Integrity constraints: domain constraints, entity integrity constraints, referential integrity constraints, assertion, triggers, functions, procedures, cursors.

UNIT-V
Concept of RDBMS, characteristics of RDBMS, Codd's 12 rules, introduction to oracle tools, security.

TEXT BOOK
Database system concepts by A.silberschatz, H.F.Korth, and S.Sudershan 5th Edition McGraw Hill

REFERENCE BOOKS
1. An introduction to database management system by Vipin Desai
2. Modern database system by Mcfadden

BCA-403-DATA AND NETWORK COMMUNICATION

Max.Marks:50 **Min.Marks:17**

OBJECTIVE: To introduce the concept of data and network communication

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objectives/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT-I
Data communication system, data communication links, character codes, digital data rates, serial data formats, encoded data formats, telephones systems, error detection & correction.

UNIT-II
Model, data topologies, data switching, type of networks, networking medium twisted pairs, coaxial cable, optical fibers, system network architecture, SNA operating system. Introduction to OSI & TCP/IP.

UNIT-III
Limits of communication, RS449 interface standards, RS422 & RS423, F5K & V0 modems, multiplexing methods, sampling theorem and quantization, delta modulation, digital T carrier, CODEC.

UNIT-IV
Data link protocol, character oriented protocol & bit oriented protocol, network architecture protocols, Ethernet & token ring

UNIT-V
Integrated services & routing protocols, B-ISDN, DSL& ATM, and Internet

TEXT BOOK:

Computer Network by Andrew S. Tannenbaum PHI, Fourth Edition

REFERENCE BOOKS:

1. Data & Network Communication by Michael A. Miller
2. Understanding of Data Communication & Networks by William A. Shay

BCA-404-DIGITAL COMPUTER ORGANIZATION

Max.Marks:50 **Min.Marks:17**
50

OBJECTIVE: To introduce the concept of digital Computer Organization.

EXAMINATION
The examination will be of 50 marks. The question will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objectives/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT I

Block diagram of Computer, Stored program Concept, Word length and processing speed of the Computer, User interface, Hardware/Software Concepts, Microprocessor and Single chip microprocessor concepts.

UNIT II

Input and Output Units, Floppy disk, hard disk, keyboard, mouse, joystick, scanner, serial printer, letter quality printers, plotters, laser printers, and graphics display devices.

UNIT III

Computer Memory: memory cell, memory organization, Read Only Memory, Random Access Memory, PROM,EPROM,EEPROM, serial access memory, magnetic hard disk and floppy disk driver, magnetic tape drive, Cash memory, memory controller, optical disk, program and data memory, memory management and problem is chapter 6 of reference.

UNIT IV

Distributed processing or multi processing, batch processing , multi programming and multi user system, dumb and smart terminals computer network, Local Area network, Parallel processing, Central processing Unit

UNIT V

Memory Management, U-Bits for virtual addressing scheme, I/O architecture: properties of simple I/O and their controllers. Transfer of information between I/O devices, CPU and Memory, Program control and Interrupted control information transfer, I/O processor, Interrupt controllers, H/W and S/W interrupts, Traps and exceptions, DMA transfer, DMA Controller, Cycle stealing, Block transfer and worst mode of data transfer.

TEXT BOOK

Digital Computer Organisation – Morris Mano – Pearson

REFERENCE BOOKS:

1. Computer fundamental architecture and Organization by B. Ram
2. Computer Architecture and Organisation, Nicholas carter, Scaum Series TMH Adaptation, 2nd Ed. 2010
3. Computer organization by Hayes.
4. Alex Leon & Mathews Leon, "Fundamentals of Information Technology", Leon Techworld, 1999.
5. Vikas Gupta, "Comdex Computer Kit", Wiley Dreamtech, Delhi, 2004
6. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 1992.
7. V. Raja Raman, "Introduction to Computers", PHI, 1998.
8. Alex Leon & Mathews Leon, "Introduction to Computers", Vikas Publishing House, 1999.
9. Norton Peter, "Introduction to computers", 4th Ed., TMH, 2001.

BCA-405-UNIX OPERATING SYSTEM

OBJECTIVE: To introduce the concept of Unix Operating System.

EXAMINATION
The examination will be of 50 marks. The question will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objectives/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT I

Unix operating system, background, philosophy, help facility, The file system, structure of file system, pwd, cd, ls, mkdir, chmode, cp, mv, rm commands.

UNIT II

Utilities: more, file, wc, cmp, comm, diff, lp, banner, cal, date, who, tty, stty commands. The Bourne shell: sh preceding a command by its own combining commands, pattern matching, echo, pipes, tees, shell variables and shell scripts.

UNIT III

Simple filters: pr, head, tell, cut, paste, sort, uniq, nl commands. Advanced filters: grep, egrep, fgrep, sed, tr, join, awk, filtering. The process: shell process, parent and children process status, system processes, multiple jobs and background, wait commands, pre mature termination of process, job execution with low priority, multiple jobs in foreground, shell layers, timing processes.

UNIT IV

Communication and scheduling: bulletin board, message of day, two way communication, insulation from the other users, address all users, delay, execute at later running jobs, periodically.
Programming with shell: system variable, profile, conditional execution, script termination, if, case, while, until, for, set and shift statement.

UNIT V

System Administration: super user, security, user services, floppy disk, management operation, files system, administration backups.

TEXT BOOK
Sumitabha Das, "Unix : Concepts and Applications", Third Edition, 2006,Tata McGrawHill

REFERENCE BOOK:

1. Maurice J. Bach, "Design of the Unix Operating System", Third Edition,2000,PHI.
2. ISRD Group, Basics of OS, UNIX and SHELL Programming" TMH (2006)
3. A User guide to unix system",Thomas Rebecca yate,Second Edition,2002,.Tata McGraw Hill.
4. Stephen Prata "Advanced Unix -A programmer's Guide".

BCA-406: ENVIRONMENT AWARENESS.

Max. Marks :25 **Min. Marks : 09**

OBJECTIVE: To introduce the concept of environment awareness

EXAMINATION

The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objectives/conceptual/analytical/theoretical) combination of subsection in each question

Unit-I

Environment meaning, structure & type of environment, components of environment and society environment and resources. Man environment relationship, approach to study, man interaction with environment (historical to present day).

Unit-II

Environment Degradation: Meaning pf degradation, types of degradation, process of degradation, cause of degradation, religious & philosophical factors of deforestation agricultural development & degradation population growth & degradation, urbanization & degradation, modern technology & degradation.

Unit-III

Ecology: Definition of ecology & ecosystem. Types of ecosystem, components of ecosystem, functions of ecosystem, productivity & stability of ecosystems

Environmental disasters: meaning & concepts, types of hazard & disaster, man induced & natural hazards, global warming, ozone depletion, green house effect & other major environmental problem, biodiversity.

Unit-IV

Environmental Pollution: Air, water, solid, noise pollution Meaning, definition, source, types, adverse effects & methods of control

Unit-V

Environmental Planning & Management: Concepts, aspects and Approaches, resources management, ecological Mgt. Biosphere Reserves, Management of wild life. Environmental Regulation and Rules: Vision of environment by Govt. of India, Environmental Policy, waste disposal rules and laws and legislation enacted by Parliament for environmental protection.

TEXT BOOK

"Environmental Awareness" Dhananjay Verma, Madhya Pradesh Hindi Granth ACADEMY

REFERENCE BOOKS:

1: Environmental Geography by Savinder Singh.
2: Environmental Concept/Issue by Rupa And Co.
3: Environment Rules and Regulation.
4: Environment Mgt. Vikas Publication by G.N. Pandey.

BCA-407: PRACTICAL EXERCISE
(Database Management System)

Max. Marks :25 **Min. Marks : 09**

1. E-R diagram based on queries.
2. Structured Query Language(SQL):DDL, DML, DCL and TCL commands,
3. Queries based on SQL including set operations & aggregate functions.
4. Queries based on SQL including other operators like in operators, between operators, like operators, check operators.
5. Retrieve data from the table using SQL statement.
6. Queries based on Quel & QBE(Query by example)

BCA-408: PRACTICAL EXERCISE
(Digital Computer Organization)

Max. Marks :25 **Min. Marks : 09**

1. Conversion from decimal to binary.
2. Conversion from decimal to octal.
3. Conversion from decimal to hexadecimal.
4. Convert encoder to decoder.
5. Convert decoder to encoder.
6. Addition of two 8 bit numbers.
7. Subtraction of two 8 bit numbers.
8. Multiplication of two 8 bit numbers.
9. Division of two 8 bit numbers.
10. Exchange of two 8 bit numbers.

BCA-409: PRACTICAL EXERCISE
(Unix Operating System)

Max. Marks :25 **Min. Marks : 09**

1:- Demonstrate the following commands:

i) ls
ii) cat
iii) mkdir
iv) cp
v) pwd
vi) chmod with its options, cal,date,who,tty, lp,stty.

2:- Basic Operations

i. Connecting to the system
ii. Disconnecting from the system
iii. Text and graphic mode
iv. Changing your password
v. Navigating through the file system
vi. Determining file type
vii. Looking at text files
viii. Finding help
ix. List the different types of file comparisons command.

3:- Demonstrate the all types of disk related commands.

4:- Demonstrate following commands:-

i) md
ii) rm
iii) file
iv) less

5:- Demonstrate the following commands

i) head
ii) tail
iii) wc
iv) paste
v) sort

6:- Demonstrate the following commands

i) unique
ii) grep
iii) fgrep
iv) tee

7:-.List the different types of Mathematical command in UNIX.

8:- Demonstrate the mail command with an example.

9:- Write the program to compare the two strings.

10:- Write the program to move one file to another file.

11:- Write the program to print the following diagram:-

i)
```
1
2 3
4 5 6
7 8 9 10
```

ii)
```
* * * *
* * *
* *
*
```

12.Shell programming of bourne shell.

13.Shell programming of bourne shell including if, for, while, case and shift statement.

14. Shell programming of C shell.

DEVI AHILYA VISHWAVIDYALAYA, INDORE

SEMESTER WISE SCHEME
OF SYLLABUS
FOR

BACHELOR
OF
COMPUTER APPLICATIONS
(B.C.A.)
Part - III (THIRD YEAR)
2011-12Academic Year ONWARDS

DEVI AHILYA VISHWAVIDYALAYA, INDORE(M.P.)

BCA PART III Semester –Scheme :2013-14 and Onwards:

Course of studies for the BCA –V Semester

BCA - V Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA - 501 Introduction to JAVA	----------	50	--------	50	17
BCA - 502 Computer Organization and Architecture	10	40	--------	50	4+13
BCA - 503 Software Eng.	10	40	--------	50	4+13
BCA - 504 Discrete Mathematics & Linear algebra	10	40	--------	50	4+13
BCA -505 Web Designing & web Technology	10	40	--------	50	4+13
BCA - 506 Entrepreneurship	5	20	--------	25	2+07
BCA - 507 Practical JAVA	--------	--------	25	25	9
BCA - 508 VB/ VB.NET Practical	--------	--------	50	25	17
Total Marks	45	230	75	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA – 501 INTRODUCTION TO JAVA

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : Introduce to basics of JAVA

EXAMINATION
The internal examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance of will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT I
Primitive data types – integer, Short, Long, byte, float, double, Unicode, Character set, Boolean, their ranges, defaults initial values, wrapping of integer arithmetic, casting comments, identifiers and reserved words, local variables, operators and operator precedence, examples and exercises.

UNIT II
Statements simple and compound, Uses of control do, for, while, switch, break, case continue, label, class type data : String, Arrays, example and exercises.

UNIT III
Definitions and naming conventions for the members of the JAVA classes, instance fields and methods, Initialization by constructor, Initialization by Default constructor, Multiple Definition of constructors, creation of objects, access methods. examples and exercises.

UNIT IV
Inheritance, Super class, Sub class, Method overloading, interface, thread, Multithreading example, synchronized, Exception (try-catch-final blocks examples.) examples and exercises.

UNIT V
Java Virtual machine concept, Java Platform overview, programming Examples to clarify use of object, threads, exceptions and packages for I/O, file and string handling. examples and exercises.

TEXT BOOK
1. Complete Reference (Java 2) – Herbert Schildt - Tata McGraw Hill

REFERENCE BOOKS :

1. Joseph O'Neil, Teach yourself java, Tata McGraw Hill, New Dehli, 2001.
2. Programming with java E. Balagurusamy Tata McGraw Hill, New Dehli, 2nd edition 2002.
3. Java script : Don Gosselin, Thomson Learning (vikas Publication)
4. Java in a nut shell – Flanagan – Orielly Publication

BCA -502 COMPUTER ORGANIZATION & ARCHITECTURE

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : To familiarize with the concepts of computer architecture and organization

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT I
Introduction to organization and architecture, structure and function. A brief history of Computers. Their designing for performance, Pentium and power evolution, computer components, computer function, interconnection structure, bus interconnection, PCI , Future bus,

UNIT II
Computer Memory System, Semiconductor main memory, cache memory, advance DRAM organization, Magnetic Disk, RAID Optical memory, Magnetic tap.

UNIT III
Machine Instruction Characteristics, Types of Operand, Type of Operations, Assembly Language, Addressing, Instruction formats.
CPU Structure & function : Process Organization, register organization, The Instruction Cycle, Instruction Pipelining, The Pentium Processor, The Power PC Processor

UNIT IV
Micro Operations, control of the CPU, Hardwired implementation, Basic Concepts of Micro programmed control, microinstruction sequencing, and microinstruction execution, applications of micro programming

UNIT V
External Devices, I/O modules, Programmed I/O Interrupt-Driven I/O, Direct Memory Access, I/O Channels and processors, External Interface, The MESI Protocol vector computation, parallel processor.

TEXT BOOK

Computer Organization and Architecture by William Stallings, Fifth Edition 1999 PHI (Text)

REFERENCE BOOK :

1. Computer Architecture and Organisation, Nicholas carter, Scaum Series TMH Adaptation, 2nd Ed. 2010
2. Computer Organization and Architecture by Hayes (Tata Mcgraw Hill)

BCA – 503 SOFTWARE ENGINEERING

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : Introduce with the concept of software engineering and system analysis

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT – I
General business environment, Business system concept, system analysis, system development life cycle.

UNIT – II
Project selection: Source of project request, managing project review & selection, preliminary investigation, system requirement specification & analysis: fact finding technique, Feasibility study, Cost & Benefit analysis

UNIT – III
Structured system analysis, Tools of Structured analysis, Software Design Fundamental, Data Flow Diagram, Object Oriented Design & Data Oriented design method.

UNIT – IV
Software Quality Assurance, Software testing techniques, software testing fundamentals, White Box Testing (Basis path Testing, Control Structured testing), Black Box Testing, Software Testing Strategies : A Strategic approach to software testing, Strategic issue unit testing, integration testing, Validation testing, System Testing, The art of Debugging.

UNIT – V
System Implementation & software Maintenance, Hardware & Software Selection.

TEXT BOOK

System Analysis & design by Elias M. Awad, Galgotia Pub.

REFERENCE BOOKS :

1. Software Engineering by Roger S. Pressman, Mc- Graw Hill.
2. An Integrated Approach to software engineering pankaj Jalote, Nakoda Publication House

BCA – 504 DISCRETE MATHEMATICS & LINEAR ALGEBRA

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : Introduce Concepts of discrete mathematics and algebra.

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT –I
ALGEBRA OF LOGIC:
Recall of Statements & Logical Connectives, Tautologies & Contradictions, Tautologies & Contradictions, Logical Equivalence, Algebra of Propositions, Quantifiers, Universal & Existential Quantifiers.
BOOLEAN ALGEBRA :
Boolean Algebra and its Properties, Algebra of Propositions, De- Morgan's Laws, Algebra of Electric Circuits & Its Application, Design of Simple Automatic Control System.

UNIT – II
BOOLEAN FUNCTION OF FUNDAMENTAL FORMS :
Boolean Function – Disjunction and Conjunction Normal Forms, Bools Expansion Theorem Fundamental Forms, Many Terminal Networks, Trees and Binominal Networks.

UNIT – III
BASIC CONCEPTS :
SETS : Union, Intersection, Difference, Complement, De- Morgan's Laws & Cartesian Product.
MAPPINGS : Types of mappings, Identify & Inverse mapping, Product of Mappings
GROUPS : Definition, Order of an Element,
SUBGROUP: Definition Necessary and sufficient condition.
COSET DECOMPOSITION : Right & Left Cosets, Lagrange's Theorem
DEFINITIONS AND BASICS OF : Normal subgroup, Quotient Group, Homomorphism & Isomorphism of groups, Kernel of Homomorphism, Ring and Field.

UNIT – IV
VECTOR SPACES: Vector Space, Subspace and Quotient Spaces, Linearly Dependent and Independent Vector.
LINEAR MAPS : Definition & Properties, Homomorphism & Isomorphism of Vector Spaces, Kernel of A linear Map.

UNIT –V
Matrix Representation of a Linear Map, rank and Nullity of Linear Map. Fundamental Theorem of Vector Space Homomorphism.
Eigen values and Eigen Vector of Matrix, Cayley Hamilton Theorem : Proof & Applications.

TEXT BOOK:

1. A text book of Discrete Mathematics by H. K. Pathak and D.C.Agrawal, Shiksha Sahitya Prakashan, Meerut. (Text)
2. A text book of Linear Algebra by H. K. Pathak and D.C.Agrawal, Shiksha Sahitya Prakashan, Meerut

REFERENCE BOOKS:

1. A text book of Algebra by H. K. Pathak and D.C.Agrawal, Shiksha Sahitya Prakashan, Meerut.(TEXT)
2. Linear Algebra by S.N.Goel, Kedarnath Ramnath Publication, Meerut.
3. Linear Algebra by Kenneth Hoffman and Ray Kunze, Prentice Hall of India Pvt. Ltd. New Dehli.

BCA – 505: WEB DESIGNING AND WEB TECHNOLOGY

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : To familiarize with web designing and web technology.

EXAMINATION

The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT – I

Client sever Computing Concepts, Distributed computing on the Internet, Introduction to Web Pages, HTML, HTML Elements and pages, Formatting text & pages, including picture in a page, creating tables and lists, splitting pages into frames. HTML 5.

UNIT – II

Site Design and Navigation : The home page Navigational tools. Formatting the body section using block level, using text level.Using font style, using phrase elements.

UNIT – III

Multimedia with Web : Creating files, streaming audio, streaming animations, java Script and Browser, Java Script and sever, Embedding Java Script & HTML, Java Script fundamentals Variables, Value Store house, statements, loops, condition and functions, objects properties and methods. Event handlers and non script tag.

UNIT IV

Comparison of HTML, DHTML and XML web casting, Domain name selection , web sever selection, Web hosting, uploading and downloading of web, incremental uploading of data, introduction to SQL Sever, Introduction to user management in SQL – Server.

UNIT – V

Introduction to ASP, database handling with ASP, Connection object, record set object, request object, response object, cookies, creating tables and insert query through connection .

TEXT BOOK

HTML, Java Script, DHTML, PERL, CGI – Ivan Bayross - BPB

REFERENCE BOOKS:

1. HTML Black Book – Steven Holzner – Dreamtech Press
2. Mastering ASP Programming – BPB Publication
3. Java Script, Don Gosselin, Thomson Learning (Vikas Publication)
4. Principles of web Design Jeol Sklar, Thomson Learning (Vikas Publication)
5. Internet and Web technologies, TMH, 2002

BCA – 506 : ENTREPRENEURSHIP

Max. Marks :25 **Min. Marks : 09**

OBJECTIVE : To aware with the business entrepreneurship.

EXAMINATION
The internal examination will carry 20% marks i.e. 5 marks. The external examination will be of 80% marks i.e. 20 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT –I
Economic Development and Entrepreneurship : Concept, social context, psychological factors in Entrepreneurship. Characteristics qualities and pre requisites of Entrepreneurship, Environment factor affecting Entrepreneurship.

UNIT – II
Institutional Finance and Entrepreneurship: Mobility of Entrepreneurship, Different aspects of Entrepreneurship Organization and Performance of Entrepreneurship skills, Effectiveness of Entrepreneurship; new Entrepreneurship; economic and sociological view – points.

UNT – III
Self- employment : Need and Mode ; methods and procedures to start and expand one's own business : relation between large and small Enterprises developing ancillary for quality production and cost – effectiveness

UNIT – IV
Preparation of a new project demand, Analysis and market potential, Capital Saving and project costing, working capital requirement ; calculation of break – even point Profit making in perspective.

UNIT – V
Main coverage of project Proposal –Technical, commercial and economic, Financial and Managerial Feasibility Proforma on cost of production and profitability, Entrepreneurship before independence and Entrepreneurship growth after independence under planning system. Role of Marwari community in industrial Entrepreneurship.

REFERENCE BOOKS :

1. Project Planning and Entrepreneurship – T R Banga
2. Entrepreneurship development – Jose Paul

BCA – 507 : PRACTICAL (JAVA)

Max. Marks :25 **Min. Marks : 09**

1. Exercises related to use of Primitive data types _ Integer, short, long, byte, float, double, Unicode character set, Boolean, their ranges, defaults initial values wrapping of integer arithmetic casting.
2. Exercises related to use of comments, Identifiers and reserved words, local variables operators and operator precedence
3. Exercises related to use of statement simple and compound, Use of control do, for, while, switch, break, case of continue, label.
4. Exercises related to use of exercises related to use class type data : String, Arrays, Object Arrays, Examples of use of class type data
5. Exercises related to use of instance fields and methods, static Fields and methods, exercises related to use of Initialization by Constructor, Initialization bay default constructor.
6. Exercises related to use of Creation of object, access method.
7. Exercises related to use of Inheritance, super class, subclass, Method Overloading.
8. Exercises related to use of interface
9. Exercises related to use of thread, multithreading examples, synchronized.
10. Exercises related to use of Exception (try-catch-final blocks examples.)

CS-508 Practical on VB & VB.Net

Max. Marks :25 **Min. Marks : 09**

1. Visual Basic Practical's:
   1. Create a window application for simple Calculator.
   2. Create a window application to compare b/w two no, compare b/w 3 no.
   3. Create a program with a textbox and one button control to check whether a number is
      Prime or Not.
   4. Create a program with a textbox and one button control to check no is even or odd.
   5. Create a program with a textbox and one button control check the year is leap year or
      Not.
   6. Create a windows application to calculate simple interest.
   7. Create a windows application to calculate factorial of a number.
   8. Create a windows application to calculate for storing and displaying 10 numbers in an
      Array.
   9. Create a windows application to calculate for sorting 10 numbers stored in an array.
   10. Create a windows application to calculate to generate Fibonacci series.
   11. Create a windows application to calculate for swapping two numbers.
   12. Create a windows application to calculate Sum and Average of 10 numbers stored in a array.

2. VB.NET Practical's:

1. Create a program to determine whether a given angle forms a valid triangle.
2. Create a program which allow user to select gender using checkbox control.
3. Create a program to change the case of text box according to selected radio button.
4. Create a program to determine input number is prime or not.
5. Create a windows application that contains a list box and a button. The click event of
   the button inserts odd nos between 1 to 100 in the listbox.
6. Create a program with a textbox and two button control to set the buttons to open a file
   and to save a file.
7. Create a windows application that contains text boxes and a button. The click event of the button displays the percentage of student on the basis of marks entered in the text boxes.

BCA PART III Semester –Scheme :2013-14 and Onwards:

Course of studies for the BCA –VI Semester

BCA – VI Sem Course

Course	Theory Max. Marks		Practical Max Marks	Max. Marks	Min Marks
	Internal	External			
BCA - 601 Computer Graphics & Multimedia	----------	50	--------	50	17
BCA - 602 Computer Oriented Numerical Methods	----------	50	--------	50	17
BCA - 603 Microprocessor & assembly language Programming	----------	50	--------	50	17
BCA - 604 Principles and Practices of Management	10	40	--------	50	4+13
BCA - 605 Project	----------	----------	75	75	26
BCA - 606 Computer Graphics Practical	----------	----------	25	25	9
BCA - 607 Practical (CONM Using C)	--------	--------	25	25	9
BCA - 608 Practical (Microprocessor & assembly language Programming)	--------	--------	25	25	9
Total Marks	10	190	150	--------	----------
Grand Total	----------	---------	----------	350	---------

BCA – 601 : COMPUTER GRAPHICS & MULTIMEDIA

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : To Introduce the concept of Computer Graphics & Multimedia.

EXAMINATION
The internal examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance of will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question

UNIT – I
Pixel, frame, buffer, application of computer graphics, Raster Graphics fundamentals. Display Devices- Random Scan, Raster Scan Monitors, Color CRT Monitor, DUST and Plasma Panel.

UNIT – II
Graphics Primitives : Algorithms for line Generation, circle generation, polygon generation and polygon filling algorithm, Anti aliasing
2D Transformation : Translation, Scaling, Rotation, Reflection, homogeneous Co-ordinates.

UNIT – III
3-D Transformation : Translation, Scaling, Rotation, windowing & clipping-windows, view port, line clipping, polygon clipping, windows & view port transformation.
Display file, Segment table, Segment creation, deletion, rename,

UNIT – IV
Multimedia :
Text – Font, Faces, animating Text, Hyper Text.
Sound : MIDI, Digital audio basics, auto file formats, audio editing, MCI-multimedia control interface.
Image - Bitmap, Vector drawing, color palate, concept of 3D Modeling, Image file formats (BMP,JPG)
Animation : principle of animation, cell animation, kinematics, morphing.

UNIT – V
Video – Broadcast video standards (NTSC, PAL), Integrating computer and television, video capture board, video, colour, shooting and editing video, recording formats 9S-VHS) video hardware resolution, video compression (JPEG, MPEG)
Hard copy devices: Printers & plotters, Input devices : mouse, Trackball, Light pen, Scanner, Digital Camera.

TEXT BOOK:
Computer Graphics : Donald Hearn and M. Pauline Baker, Prentice Hall India

REFERENCE BOOKS :
1. Multimedia Making it Works, 3rd Edition, Tay Vatighan, Tata Mc-Graw-Hill New Dehli.

BCA – 602 COMPUTER ORIENTED NUMERICAL METHODS
(USING "C" LANGUAGE)

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : To Introduce the concept of computer oriented numerical methods.

EXAMINATION
The internal examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance of will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question

UNIT –I
NUMERICAL COMPUTATIONS :
Computer Arithmetic : Floating Point Number Operations, Normalization and their consequences.
Iterative Methods : Bisection Methods, False Position Methods, Newton Raphson Method, Secant Method, Graffes Root Squaring Method, Convergence of Solution

UNIT –II
Simultaneous Liner Equation : Solution of Simultaneous Liner Equation – Gauss Elimination Method, Gauss – Seidal Method, Gauss – Jordan Elimination Method, Triangularization Method & Pivoting Condensation, III Conditioned Equation & Refinement of solution
Curve Fitting : Curve Fitting Method, Least Curve Fitting, Non Linear Curve Fitting.

UNIT-III
Difference Operators And Interpolation : - Definition Of Forward, Backward, Shifting, Divided, Difference Central and Averaging Operators and their Relationships. Newton's Forward Interpolation Formula, Newton's backward Interpolation Formula Newton's divided Interpolation Formula. Lagrange's Interpolation Formula.

UNIT – IV
Numerical Differentiation : Numerical Differentiation using Newton's Forward Interpolation Formula, Newton's Backward Interpolation Formula Newton's divided Interpolation Formula.
Numerical Integration : General Quadrature Formula, Newton- Cote's Formula, Trapezoidal Rule, Simpson's one Third Rule, Simpson's Three Eight Rule.

UNIT – V
Numerical Solutions of Ordinary Differential Equations : Euler's Method , Euler's Modifies Method. Tailor's Series Method, Picard's Method, Runga Kutta Second Order and Fourth order Method.

TEXT BOOK:
V. Rajaraman, Computer Oriented Numerical Methods, Prentice Hall, India.

REFERENCE BOOKS:
1. S. S. Sastry, Introductory Methods of Numerical Analysis.

M. K. Jain, S.R.K. Iyengar & R. K. Jain, Numerical Methods for Scientific and Engineering Computation.
2. H. C. Saxena, Finite Differences and Numerical Analysis.
3. Modes A., Numerical Analysis for Computer Science.
4. Numerical Analysis by gupta and malik . (TEXT)
5. Numerical Analysis by Shastri
6. Computer based Numerical Algorithm by Krishnamurthy.

BCA – 603: MICROPROCESSOR & ASSEMBLY LANGUAGE PROGRAMMING

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : To aware with the microprocessor & introduce the concept of Assembly language Programming.

EXAMINATION
The internal examination will be of 50 marks. The question paper will contain questions equally distributed in all units. The balance of will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question

UNIT- I
Microprocessor Architecture: Architecture & Programming of 8085, Organization of CPU, Various Addressing modes.

UNIT – II
Programming: Assembly Language Programming, Instruction and data flow, Instruction set of 8085.

UNIT -III
Interfacing memory and I/O devices: Memory interfacing, various Schemes, Address space partitioning, interfacing Technique with various I/O Devices, latches and Tristate Buffer.

UNIT – IV
Interfacing Devices & Peripheral Subsystems: Programmable Peripheral 8155 & 8255, their features, programming and applications, keyboard controller 8279.

UNIT – V
APPLICATION: Microcontrollers. Architecture of 8051 micro-controller, Comparison of microprocessor of different series

TEXT BOOK:

Microprocessor Architecture Programming and Application with 8085, Willey Eastern Limited By R.S Gaonkar

REFERENCE BOOKS :

1. Microprocessor Family 8086/8088: Liu & Gibson
2. Introduction to microprocessor Software , Hardware & Programming , PHI. By L. A. Laventhal.

BCA – 604 PRINCIPLES AND PRACTICES OF MANAGEMENT

Max.Marks:50 **Min.Marks:17**

OBJECTIVE : To aware with the Principles & Practices of Management

EXAMINATION
The internal examination will carry 20% marks i.e. 10 marks. The external examination will be of 80% marks i.e. 40 marks. The question paper will contain questions equally distributed in all units. The balance of the paper will be maintained by including appropriate (numerical/objective/conceptual/analytical/theoretical) combination of subsection in each question.

UNIT – I
The Nature of Management : Definition and role of management , Functions of Manager, Scientific Management, Human Relations school of Management, Contingency Theory of Management.

UNIT –II
Planning : Nature and Purpose of Planning, Components of Planning, objective of Business Management by Objectives, Forecasting, Decision Making, Policy Formulation and Strategies.

UNIT –III
Organizing : Nature of Purpose of Organizing, Departmentation, Span of management, Delegation of Authority, Line and Staff Relationships.

UNIT –IV
Directing Process: Principles of Direction, Problems in Human Relation, Strategies for Establishing Healthy Human Relations.

UNIT – V
Control : Meaning and Process of Control, Control Techniques.

TEXT BOOK:

Principles of Management : Haroid Koontz, O'Donnel and Heinz Welhrich New York: McGraw Hill Book Co

REFERENCE BOOKS:

1. Stoner, Freeman and Gilbert Jr., "Management", PHI, 6th Ed.
2. Organization and Management Concepts : R.D. Agarwal, New Dehli, Tata McGraw Hill. 1995
3. Robbins and Coulter, "Management", PHI, 8th Ed.
4. Robbins S. P. and Decenzo David, "A. - Fundamentals of Management: Essential Concepts and Applications", Pearson Education, 5th Ed.
5. Hillier Frederick S. and Hillier Mark S. - Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets, Tata Mc Graw Hill, 2nd Ed., 2008.

BCA – 605 PRACTICALS ON VISUAL BASIC (PROJECT)

Max. Marks :25 **Min. Marks : 09**

1. Write a Program which asks Login, Password from user three times. If the password is right it wishes the user else it gives proper message to the user.
2. Write a program which has three text boxes. And four buttons. Buttons are like
   i) Add
   ii) Subtract
   iii) Multiply
   iv) Divide

   User will enter two no. in first and second text box and there result will be displayed in third text box.

3. Program which take 10 records from the user. There are two buttons on the form. Display, Modify, on clicking the button display information about the requested record. On clicking modify information of particular student should be changed.
4. Create a menu

   Color Font Case
   Red Bold Lower
   Green Italic Upper
   Blue Bold and Italic
   Font Name

   Form has one Textbox on Clicking any option properties of textbox Should Change Accordingly.
5. Take two LISTBOX. First list box has 10 elements.
   There are three buttons.
   i) >
   ii) >>
   iii) Remove

   On Clicking first button selected item from first list box should be inserted into second one. If second button is clicked then all item of first should be inserted into second one (no duplicate element in second list box).on clicking third button selected element from the second list box should be deleted.

BCA – 606 PRACTICALS (GRAPHICS & MULTIMEDIA)

Max. Marks :25 **Min. Marks : 09**

1. Write program for DDA line Method.
2. Write program for Brasnham's line drawing Algorithm.
3. Write program for Brasnham's Circle drawing Algorithm.
4. Write program for Circle Drawing Using Midpoint Subdivision Method.
5. Write program for Drawing a polygon.
6. Write program for Scan – Filling a Polygon.
7. Write program for Sutherland hodgman Polygon Clipping.
8. Write program for composite transformation.
9. Write program to write your name in hindi using any character generation method.
10. Write program for cohen- Sutherland line clipping method and clip a line using this.

BCA – 607 PRACTICALS (CONM USING C)

Max. Marks :25 **Min. Marks : 09**

Problems/ Programs related to iterative method

- Zeros of a single transcendental equation.
- Zeros of polynomials using bisection.
- False Position.
- Convergence of solution.

Problems/ Programs related to

- Simultaneous liner equation using Gauss Elimination Method.
- Solution of Simultaneous liner equation – Gauss Elimination Method.
- Solution related to pivoting.
- III Conditioned equations and refinement of solution.
- Gauss –Seidal iterative method

Problems/ Programs related to

- Numerical differentiation and integration.
- Solution of Differential equations ; Runge- Kutta method

Problems/ Programs related to

- Interpolation and Approximation : Polynomial interpolation.
- Newton
- Lagrange.
- Approximation of function by Taylor series.

BCA 608 PRACTICALS
(MICROPROCESSOR & ASSEMBLY LANGUAGE PROGARAMMING)

Max. Marks :25 **Min. Marks : 09**

1. Design of two pass or one assembler for a hypothetical assembly language.
2. Design of microprocessor.
3. 10-15 assembly Language Programming Problems decided by the teacher to be done by the student
4. Interfacing of peripherals kits like 8255, 8251, 8253, and etc. with microprocessor 8085A Kit.