

Annexure No.	32 B
SCAA Dated	29.02.2008

BHARATHIAR UNIVERSITY :: COIMBATORE – 641 046
REGULATIONS FOR BACHELOR OF COMPUTER APPLICATIONS DEGREE COURSE
with Semester System
(with effect from 2007-2008)

1. Eligibility for Admission to the Course

Candidate for admission to the first year of the BACHELOR OF COMPUTER APPLICATIONS (BCA) degree course shall be required to have passed the higher secondary examination conducted by the Govt. of Tamil Nadu with any one of the following subjects: Mathematics / Computer Science / Statistics / Business mathematics or other examinations accepted as equivalent there to by the Syndicate, subject to such other conditions as may be prescribed there for.

2. Duration of the Course

The course shall extend over a period of three years comprising of six semesters with two semesters in one academic year. There shall not be less than 90 working days for each semester. Examination shall be conducted at the end of every semester for the respective subjects.

3. Course of Study

The course of study for the BCA degree course shall consist of the following

a) Part - I

Tamil or any one of the following modern/classical languages i.e. Telugu, Kannada, Malayalam, Hindi, Sanskrit, French, German, Arabic & Urdu. It shall be offered for the first two semesters with one examination at the end of each semester.

b) Part – II : English

The subject shall be offered during the first two semesters with one examination at the end of each semester. During third semester the subject communication skills will be offered as one of the core subject.

c) Foundation Course

The Foundation course shall comprise of two stages as follows:

Foundation Course A : General Awareness (I & II semesters)

Foundation Course B : Environmental Studies (III & IV semesters)

The syllabus and scheme of examination for the foundation course A, General awareness shall be apportioned as follows.

From the printed material supplied by the University - 75%

Current affairs & who is who? - 25%

The current affairs cover current developments in all aspects of general knowledge which are not covered in the printed material on this subject issued by the University.

The Foundation course B shall comprise of only one paper which shall have Environmental Studies.

d) Part – III

Group A : Core subject – As prescribed in the scheme of examination.

Examination will be conducted in the core subjects at the end of every semester

Group B: allied subjects -2 subjects-4 papers

Examination shall be conducted in the allied subjects at the end of first four semesters.

Group C: application oriented subjects: 2 subjects – 4 papers

The application –oriented subjects shall be offered during the last two semesters of study viz., V and VI semesters. Examination shall be conducted in the subjects at the end of V & VI semesters.

Group D: field work/institutional training

Every student shall be required to undergo field work/institutional training, related to the application-oriented subject for a period of not less than 2 weeks, conveniently arranged during the course of 3rd year. The principal of the college and the head of the department shall issue a certificate to the effect that the student had satisfactorily undergone the field work/institutional training for the prescribed period.

Diploma Programme:

All the UG programmes shall offer compulsory diploma subjects and it shall be offered in four papers spread over each paper at the end of III, IV, V, & VI semesters.

e) Co-Curricular activities: NSS/NCC/Physical education

Every student shall participate compulsorily for period of not less than two years (4 semesters) in any one of the above programmes.

The above activities shall be conducted outside the regular working hours of the college. The principal shall furnish a certificate regarding the student's performance in the respective field and shall grade the student in the five point scale as follows

A-Exemplary

B-very good

C-good

D-fair

E-Satisfactory

This grading shall be incorporated in the mark sheet to be issued at the end of the appropriate semester (4th or 5th or 6th semester).

(Handicapped students who are unable to participate in any of the above activities shall be required to take a test in the theoretical aspects of any one of the above 3 field and be graded and certified accordingly).

4. Requirement to appear for the examinations

- a) a candidate will be permitted to appear for the university examinations for any semester if
 - i) He/she secures not less than 75% of attendance in the number of working days during the semester.
 - ii) He/she earns a progress certificate from the head of the institution, of having satisfactory completed the course of study prescribed in the subjects as required by these regulations, and
 - iii) His/her conduct has been satisfactory.

Provided that it shall be open to the syndicate, or any authority delegated with such powers by the syndicate, to grant exemption to a candidate who has failed to earn 75% of the attendance prescribed, for valid reasons, subject to usual conditions.

- b) A candidate who has secured less than 65% but 55% and above attendance in any semester has to compensate the shortage in attendance in the subsequent semester besides, earning the required percentage of attendance in that semester and appear for both semester papers together at the end of the latter semester.
- c) A candidate who has secured less than 55% of attendance in any semester will not be permitted to appear for the regular examinations and to continue the study in the subsequent semester. He/she has to rejoin the semester in which the attendance is less than 55%
- d) A candidate who has secured less than 65% of attendance in the final semester has to compensate his/her attendance shortage in a manner as decided by the concerned head of the department after rejoining the same course.

5. Restrictions to appear for the examinations

- a) Any candidate having arrear paper(s) shall have the option to appear in any arrear paper along with the regular semester papers.
- b) “Candidates who fail in any of the papers in Part I, II & III of UG degree examinations shall complete the paper concerned within 5 years from the date of admission to the said course, and should they fail to do so, they shall take the examination in the texts/ revised syllabus prescribed for the immediate next batch of candidates. If there is no change in the texts/syllabus they shall appear for the examination in that paper with the syllabus in vogue until there is a change in the texts or syllabus. In the event of removal of that paper consequent to change of regulation and / or curriculum after 5 year period, the candidates shall have to take up an equivalent paper in the revised syllabus as suggested by the chairman and fulfill the requirements as per regulation/ curriculum for the award of the degree.

6. Medium of Instruction and examinations

The medium of instruction and examinations for the papers of Part I and II shall be the language concerned. For part III subjects other than modern languages, the medium of instruction shall be either Tamil or English and the medium of examinations is in English/Tamil irrespective of the medium of instructions. For modern languages, the medium of instruction and examination will be in the languages concerned.

7. Submission of Record Note Books for practical examinations

Candidates appearing for practical examinations should submit bonafide Record Note Books prescribed for practical examinations, otherwise the candidates will not be permitted to appear for the practical examinations. However, in genuine cases where the students, who could not submit the record note books, they may be permitted to appear for the practical examinations, provided the concerned Head of the department from the institution of the candidate certified that the candidate has performed the experiments prescribed for the course. For such candidates who do not submit Record Books, zero (0) marks will be awarded for record note books.

8. Passing Minimum

- a) A candidate who secures not less than 40% of the total marks in any subject including the Diploma and Foundation courses (theory or Practical) in the University examination shall be declared to have passed the examination in the subject (theory or Practical).
- b) A candidate who passes the examination in all the subjects of Part I, II and III (including the Diploma and Foundation courses) shall be declared to have passed, the whole examination.

9. Improvement of Marks in the subjects already passed

Candidates desirous of improving the marks awarded in a passed subject in their first attempt shall reappear once within a period of subsequent two semesters. The improved marks shall be considered for classification but not for ranking. When there is no improvement, there shall not be any change in the original marks already awarded.

10. Classification of Successful candidates

- a) A candidate who passes all the Part III examinations in the First attempt within a period of three years securing 75% and above in the aggregate of Part III marks shall be declared to have passed B.A/ B.Sc./B.Com./B.B.M. degree examination in **First Class with Distinctions**
- b) (i) A candidate who passes all the examinations in Part I or Part II or Part III or Diploma securing not less than 60 per cent of total marks for concerned part shall be declared to have passed that part in **First Class**

(ii) A candidate who passed all the examinations in Part I or Part II or Part III or Diploma securing not less than 50 per cent but below 60 per cent of total marks for concerned part shall be declared to have passed that part in **Second Class**

(iii) All other successful candidates shall be declared to have passed the Part I or Part II or Part III or Diploma examination in **Third Class**

11. Conferment of the Degree

No candidate shall be eligible for conferment of the Degree unless he / she,

- i. has undergone the prescribed course of study for a period of not less than six semesters in an institution approved by/affiliated to the University or has been exempted from in the manner prescribed and has passed the examinations as have been prescribed therefor.
- ii. Has satisfactorily participated in either NSS or NCC or Physical Education as evidenced by a certificate issued by the Principal of the institution.
- iii. Has successfully completed the prescribed Field Work/ Institutional Training as evidenced by certificate issued by the Principal of the College.

12. Ranking

A candidate who qualifies for the UG degree course passing all the examinations in the first attempt, within the minimum period prescribed for the course of study from the date of admission to the course and secures I or II class shall be eligible for ranking and such ranking will be confined to 10 % of the total number of candidates qualified in that particular branch of study, subject to a maximum of 10 ranks.

The improved marks will not be taken into consideration for ranking.

13. Additional Degree

Any candidate who wishes to obtain an additional UG degree not involving any practical shall be permitted to do so and such candidate shall join a college in the III year of the course and he/she will be permitted to appear for part III alone by granting exemption from appearing Part I, Part II and common allied subjects (if any), already passed by the candidate. And a candidate desirous to obtain an additional UG degree involving practical shall be [permitted to do so and such candidate shall join a college in the II year of the course and he/she be permitted to appear for Part III alone by granting exemption from appearing for Part I, Part II and the common allied subjects. If any, already passed. Such candidates should obtain exemption from the university by paying a fee of Rs.500/-.

14. Evening College

The above regulations shall be applicable for candidates undergoing the respective courses in Evening Colleges also.

15. Syllabus

The syllabus for various subjects shall be clearly demarcated into five viable units in each paper/subject.

16. Revision of Regulations and Curriculum

The above Regulation and Scheme of Examinations will be in vogue without any change for a minimum period of three years from the date of approval of the Regulations. The University may revise /amend/ change the Regulations and Scheme of Examinations, if found necessary.

17. Transitory Provision

Candidates who have undergone the Course of Study prior to the Academic Year 2007-2008 will be permitted to take the Examinations under those Regulations for a period of four years i.e. up to and inclusive of the Examination of April 2012 thereafter they will be permitted to take the Examination only under the Regulations in force at that time.

**BACHELOR OF COMPUTER APPLICATIONS (B C A)
&
DIPLOMA in MULTIMEDIA AND ANIMATION**

SCHEME EXAMINATION FOR THE ACADEMIC YEAR 2007-2008 & Onwards

S E M E S T E R	P A P E R	SUBJECTS	Lecture Hours / Week	Duration of Exam.	Max. Marks
I	1	PART-I: LANGUAGE-I	6	3	100
	2	PART-II: ENGLISH-I	6	3	100
	3	CORE-1: COBOL PROGRAMMING	4	3	100
	4	CORE-2: DIGITAL FUNDAMENTALS AND ARCHITECTURE	4	3	100
	5	CORE LAB-1: PROGRAMMING LAB - COBOL	4	3	100
	6	ALLIED-1: COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS	4	3	100
	7	Foundation Course-A: General Awareness	2	--	--
II	1	PART-I: LANGUAGE-II	6	3	100
	2	PART-II: ENGLISH-II	6	3	100
	3	CORE-3: DATA STRUCTURES AND C PROGRAMMING	5	3	100
	4	CORE LAB-2: PROGRAMMING LAB - C	5	3	100
	5	ALLIED-2: COMPUTER-BASED OPTIMIZATION TECHNIQUES	6	3	100
	6	Foundation Course-A: General Awareness	2	3	100
III	1	CORE-4: COMMUNICATION SKILLS	4	3	100
	2	CORE-5: C++ PROGRAMMING	5	3	100
	3	CORE-6: OPERATING SYSTEMS	5	3	100
	4	CORE LAB-3: PROGRAMMING LAB - C++	5	3	100
	5	ALLIED-3: BUSINESS ACCOUNTING	6	3	100
	6	Foundation Course-B: Environment Studies	2	--	--
	7	DIPLOMA-1: MULTIMEDIA	3	3	100

BACHELOR OF COMPUTER APPLICATIONS (B C A)
&
DIPLOMA in MULTIMEDIA AND ANIMATION

SCHEME EXAMINATION FOR THE ACADEMIC YEAR 2007-2008 & onwards

S E M E S T E R	P A P E R	SUBJECTS	Lecture Hours / Week	Duration of Exam.	Max. Marks
IV	1	CORE-7: VISUAL PROGRAMMING - VISUAL BASIC	6	3	100
	2	CORE-8: RDBMS AND ORACLE	6	3	100
	3	CORE LAB-4: PROGRAMMING LAB - VISUAL BASIC & ORACLE	6	3	100
	4	ALLIED-4: MANAGEMENT INFORMATION SYSTEMS	6	3	100
	5	Foundation Course-B: Environment Studies	2	3	100
	6	DIPLOMA-2: MULTIMEDIA LAB - PHOTOSHOP	4	3	100
V	1	CORE-9: SOFTWARE ENGINEERING	5	3	100
	2	CORE-10: JAVA PROGRAMMING	6	3	100
	3	CORE-11: COMPUTER NETWORKS	5	3	100
	4	AOS-1: COMPUTER GRAPHICS	6	3	100
	5	CORE LAB-5: JAVA PROGRAMMING	5	3	100
	6	DIPLOMA-3: ANIMATION TECHNIQUES	3	3	100
VI	1	CORE-12: SOFTWARE TESTING	5	3	100
	2	CORE-13: CLIENT / SERVER COMPUTING	5	3	100
	3	CORE-14: WEB TECHNOLOGY	5	3	100
	4	AOS-2: E-COMMERCE	5	3	100
	5	CORE LAB-6: PROGRAMMING LAB - HTML	6	3	100
	6	DIPLOMA-4: ANIMATION LAB - FLASH	4	3	100
BCA Course DIPLOMA Course			3200 marks 400 marks		

B.C.A. (Regular)	SEMESTER - I	Effective from 2007-08 onwards
CORE-1	COBOL PROGRAMMING	

Subject Description: This subject deals the programming concepts using COBOL language.

Goal: To learn about COBOL programming language.

Objective: On successful completion of this subject the students should have skills for writing programs for business applications and file handling concepts.

UNIT-I: Introduction to COBOL: COBOL words - Literals - Structure of COBOL Program - COBOL Coding Sheet-IDENTIFICATION DIVISION- ENVIRONMENT DIVISION – DATA DIVISION – Editing and Non-editing Picture Clauses – Level Numbers – VALUE and FILLER Clause.

UNIT-II: PROCEDURE DIVISION – Data Movement Verb – Arithmetic Verbs : Add, Subtract, Multiply, Divide, Compute – Input/Output Statement: Accept, Display Control Verbs: GOTO – GOTO Depending on – Stop Run – CORRESPONDING Option - ROUNDED option - ON SIZE ERROR option - Simple Programs Using Above Verbs.

UNIT-III: Conditional Statements: If Statement – Nested if statement – Sign Condition – Class Condition- Condition Name – Compound Condition- PERFORM Statements, More about DATA Division: RENAMES-REDEFINES – Simple Programs Using the above Verbs.

UNIT-IV: Files in COBOL: Sequential – Relative – Indexed Sequential - Random files – File description and Record description entries - Input/Output Verbs: Open, read, write, rewrite, Close, Delete – Sort Verb – Simple Programs using above Verbs.

UNIT-V: Table Handling: Occurs Clause – Two and Multi-Dimensional Tables – Occurs. Indexed by Clause – SET Verb – START and SEARCH Verb – Random Files-Keys & Their Importance – INVALID KEY Clause – SCREEN SECTION - Simple Programs using above Verbs.

TEXT BOOK:

1. **COBOL PROGRAMMING, M.K. ROY & D.GHOSH DASTIDAR, 2nd ed, TMH.**

REFERENCE BOOKS:

1. **COBOL programming – V. Rajaraman, PHI Pub.**
2. **Introduction To Cobol Programming – Dr. R. Krishnamoorthy, JJ Publications.**
3. **Structured COBOL – Welburn, TMH, 4th Edition.**

B.C.A. (Regular)	SEMESTER - I	Effective from 2007-08 onwards
CORE-2	DIGITAL FUNDAMENTALS AND ARCHITECTURE	

Subject Description: This subject deals with fundamentals of digital computers, Microprocessors and System architecture.

Goal: To learn about Computer Fundamentals and its Architecture.

Objective: On successful completion of this subject the students should have Knowledge on digital circuits, Microprocessor architecture, and Interfacing of various components.

UNIT-I: Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half-subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

UNIT-II: Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications. Sequential circuits: Flip-Flops: RS, D, JK, T - Multiplexers – Demultiplexers – Decoder – Encoder - Counters.

UNIT-III: MICROPROCESSOR: Architecture – Bus Organization – Functional diagram and pin out diagram of 8085 - Addressing modes of 8085 – Instruction set of 8085 – I/O Schemes – Peripherals and Interfaces.

UNIT-IV: Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.

UNIT-V: Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory Page Table, Page Replacement.

TEXT BOOKS:

1. **DIGITAL ELECTRONICS CIRCUITS AND SYSTEMS - V.K. Puri, TMH.**
2. **COMPUTER SYSTEM ARCHITECTURE - M. Morris Mano, PHI.**

REFERENCE BOOKS:

1. **Digital principles and applications, Albert Paul Malvino, Donald P Leach, TMH, 1996.**
2. **COMPUTER ARCHITECTURE, Carter, Schaum's outline series, TMH.**

B.C.A. (Regular)	SEMESTER-III	Effective from 2007-08 onwards
CORE LAB-1	PROGRAMMING LAB - COBOL	

PRACTICAL LIST

1. Write a COBOL Program to find the sum of individual digits of a 10-digit number until a single digit is produced.
2. Write a COBOL Program to accept the inputs Student Name, Marks for 5 subjects and declare the result as PASS, if the student gets minimum of 10 marks in each subject, otherwise declare as FAIL.
3. Write a COBOL Program to accept the given date (DDMMYY) and display the result in the following specified format: 030498 as 3rd APR 1998.
4. Write a COBOL Program to display the given three digit number into words using OCCURS clause. (Example: 342 as *THREE HUNDRED AND FORTY TWO*).
5. Write a COBOL Program to create a student data file STUDENT.DAT, using the following fields: ROLL-NO, NAME, AGE, YEAR-IN-COLLEGE, SEX, MARKS for 5 subjects.
6. Write a COBOL Program to create the following two files, using the student data file STUDENT.DAT (created by Program 5):
FILE-1.DAT: List of male students who are studying third year
FILE-2.DAT: List of female students who are studying first year
(Use MOVE CORRESPONDING option).
7. Write a COBOL Program to sort the student data file STUDENT.DAT (created by Program 5) in the ascending order of the fields SEX, YEAR-IN-COLLEGE and ROLL-NO (use SORT verb) into SORT.DAT file.
8. Write a COBOL Program to create an Indexed Sequential File EMPLOYEE.DAT for the Employees of an Organization using the fields: ROLL-NO, NAME, DOB, SEX, BASIC-PAY and DESIGNATION.
9. Write a COBOL Program to update the BASIC-PAY of each employee in the employee data file EMPLOYEE.DAT (created by Program 8) by incrementing 25% of BASIC-PAY.
10. Write a COBOL Program to find the number of male employees whose BASIC-PAY > 4000 and number of female employees whose BASIC-PAY < 3000 using the employee data file EMPLOYEE.DAT (created by Program 8).
11. Write a COBOL Program to create an Inventory data file INVENT.DAT by using the following fields: ITEM-CODE, DESCRIPTION, OPEN-STOCK, PURCHASES, SALES, SAFETY-LEVEL and CLOSE-STOCK.
12. Write a COBOL Program to prepare Re-Order Level Statement by using the inventory data file INVENT.DAT (created by Program 11), if the CLOSE-STOCK is less than SAFETY-LEVEL.

B.C.A. (Regular)	SEMESTER - I	Effective from 2007-08 onwards
ALLIED-1	COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS	

Subject Description: This subject deals various numerical methods and statistical applications for computer science.

Goal: To learn about the computer based numerical and statistical methods.

Objective: On successful completion of this subject the students should have:

- Understanding various concepts of numerical analysis.
- Learning various applications statistical methods for Computer Science.

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UNIT-I: The Solution of Numerical Algebraic & Transcendental Equations – Bisection method – Newton-Raphson method - The method of false position. The Solution of Simultaneous Linear Algebraic Equation – Gauss Elimination method – Gauss Jordan Elimination method – Gauss Seidal method of iteration – Gauss – Jacobi method

UNIT-II: Numerical Differentiation – Newton’s Forward Difference formula - Newton’s backward difference formula – numerical Integration – Trapezoidal rule - Simpson’s One-third rule – Simpson’s three-eighths rule.

UNIT-III: Interpolation – Newton forward interpolation formula – Newton backward interpolation formula – LaGrange’s formula – Numerical solution of ordinary differential equations – Taylor method – Euler method – Range-Kutta method.

UNIT-IV: Measures of central tendency – Mean, Median and mode – Relation between mean, median and mode. Dispersion – Range – Mean deviation & standard deviation.

UNIT-V: Correlation – Karl Pearson’s Coefficient of Correlation – Rank correlation regression – Regression Equations- Difference between correlation & Regression

TEXT BOOKS:

1. **NUMERICAL METHODS – P. Kandasamy , K. Thilagavathi, K. Gunavathi.** S. Chand & company Ltd. New Delhi Revised Edition 2005 (UNIT I, II & III)
2. **STATISTICAL METHODS – R. S. N. Pillai, V. Bagavathi** Sultan Chand and Sons & Company Ltd. New Delhi. Reprint 2005. (UNIT IV & V)

REFERENCE BOOKS:

1. **COMPUTER ORIENTED NUMERICAL METHODS – V. Rajaraman,** PHI Pub.
2. **NUMERICAL METHODS – E. Balagurusamy** Tata McGraw Hill.
3. **FUNDAMENTAL OF MATHEMATICAL STATISTICS – S.C. Gupta, V. K. Kapoor,** S.Chand and Sons.

B.C.A. (Regular)	SEMESTER - II	Effective from 2007-08 onwards
CORE-3	DATA STRUCTURES AND C PROGRAMMING	

Subject Description:

This subject deals with the methods of data structures using C programming language.

Goal:

To learn about C programming language using data structure concepts.

Objective:

On successful completion of this subject the students should have writing programming ability on data structures dealing with Stacks, Queues, List, Searching and Sorting algorithms etc.,

UNIT-I: Programming development methodologies – Programming style – Problem solving techniques: Algorithm, Flowchart, Pseudocode - Structure of a C program – C character set – Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion. Operators and Expressions – Formatted and Unformatted I/O functions – Decision statements – Loop control statements.

UNIT-II: Arrays – String and its standard functions. Pointers – Functions – Preprocessor directives: #define, #include, #ifndef, Predefined macros.

UNIT-III: Structure and Union: Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, Bit fields, Enumerated data types, Union. Files: Streams and file types, Steps for file operation, File I/O, Structures read and write, other file functions, Command line arguments, I/O redirection.

UNIT-IV: Linear data structures: Introduction to data structures – List: Implementations, Traversal, Searching and retrieving an element, Predecessor and Successor, Insertion, Deletion, Sorting, Merging lists – Stack: Representation, Terms, Operations on stack, Implementation. Single linked list, Linked list with and without header, Insertion, Deletion, Double linked list – Queues: Various positions of queue, Representation.

UNIT-V: Searching and Sorting – Searching: Linear, Binary. Sorting – Insertion, Selection, Bubble, Quick, Tree, Heap.

TEXT BOOK:

1. **Ashok N Kamthane**, “PROGRAMMING AND DATA STRUCTURES” – Pearson Education, First Indian Print, 2004.

REFERENCE BOOKS:

1. **E Balagurusamy**, PROGRAMMING IN ANSI C, Tata McGraw-Hill, 1998.
2. **Ellis Horowitz and Sartaj Sahni**- FUNDAMENTALS OF DATA STRUCTURES, Galgotia Book Source, 1999.
3. **DATA STRUCTURES USING C** – Aaron M Tanenbaum, Yedidye langsam, Moshe J Augenstein, PHI.

B.C.A. (Regular)	SEMESTER-II	Effective from 2007-08 onwards
CORE LAB- 2	PROGRAMMING LAB - C	

PRACTICAL LIST

1. Write a C Program to create two **ARRAYS** of integers. Sort and store the elements of both in the third array.
2. Write a C Program to experiment the operation of **STACK** using array implementation.
3. Create a Menu-Driven program to implement **QUEUE** to perform the following using pointers:
 1. **Insertion**
 2. **Deletion**
 3. **Modification**
 4. **List**
4. Write a C Program to create **LINKED LIST** representation of employee records and do the following operations using pointers:
 - (1) To add a new record
 - (2) To delete an existing record
 - (3) To print the information about an employee
 - (4) To find the number of employees in the structure.
5. Write a C Program to count the total nodes of the **LINKED LIST**.
6. Write a C Program to insert an element at the end of the **LINKED LIST**.
7. Write a C Program to insert an element beginning of the **DOUBLY LINKED LIST**.
8. Write a C Program to display a **HASH TABLE**, which is to be prepared by using the Mid-Square method.
9. Write a C Program to demonstrate **BINARY SEARCH**.
10. Write a C Program to insert nodes into a Binary tree and to traverse in pre-order.
11. Write a C Program to arrange a set of numbers in ascending order using **QUICK-SORT**.
12. Write a C Program to arrange a set of numbers in descending order using **EXCHANGE-SORT**.

B.C.A. (Regular)	SEMESTER - II	Effective from 2007-08 onwards
ALLIED-2	COMPUTER BASED OPTIMIZATION TECHNIQUES	

Subject Description: This subject deals various optimization techniques for linear programming, Transportation, Assignment Problems, Game theory, PERT and CPM.

Goal: To learn about the managerial concepts like decision making, optimization, etc.

Objective: On successful completion of this subject the students should have:

- Understanding various mathematical applications in industries.
- Decision making for real time environment.

UNIT-I: Linear Programming - Mathematical Model assumption of linear Programming – Graphical method - Principles of Simplex method, Big-M Method ,Duality, Dual simplex method.

UNIT-II: Transportation and assignment problem - Integer Programming Branch and Round Techniques - Assignment and Traveling Salesman Problem.

UNIT-III: Game Theory - Concept of Pure and Mixed Strategies – Solving 2 x 2 matrix with and without saddle point - n x 2 - 2 x m games. Replacement models - Elementary replacement models - present value - rate of return - depreciation - Individual replacement – Group replacement.

UNIT-IV: (*Derivations not included*) Queuing Theory - definition of waiting line model -Queue discipline - traffic intensity - poisson arrival – Birth death process - Problem from single server: finite and infinite population model – Problems from multi server: finite and infinite population model.

UNIT-V: PERT & CPM - Network representation - backward pass - Forward pass - computation - Pert Network - Probability factor – updating and Crashing.

TEXT BOOKS

1. **OPERATIONS RESEARCH** - Manmohan, P.K. Gupta, Kanthiswarup, S. CHAND & SONS - 1997.

REFERENCE BOOKS

1. **OPERATIONS RESEARCH** - Hamdy A Taha, Pearson Education, 7th edition, 2002
2. **PROBLEMS IN OPERATIONS RESEARCH** – P.K. Gupta, D.S. Hira, S. Chand Pub

B.C.A. (Regular)	SEMESTER - III	Effective from 2007-08 onwards
CORE-5	C++ PROGRAMMING	

Subject Description: This subject deals with Object-oriented programming concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.

Goal: Knowledge on Object-oriented concept and programming with C++.

Objective: To inculcate knowledge on Object-oriented programming concepts using C++.

UNIT-I: Introduction to C++: key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages – I/O in C++ - C++ Declaration. **Control Structures: Decision Making and Statements:** *if ..else, goto, break, continue, switch...case* statements. **Loops in C++:** *for, while, do -* Functions in C++ - Inline functions – Function Overloading.

UNIT-II: Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects – friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

UNIT-III: Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchical, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT-IV: Pointers: Declaration – Pointer to Class, Object – this pointer – Pointers to derived classes and Base classes. **Arrays:** Characteristics – array of classes – Memory models – new and delete operators – dynamic object – binding, Polymorphism and Virtual Functions.

UNIT-V: Files: File stream classes – file modes – Sequential read / write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling – **String:** Declaring and initializing string objects – String Attributes – Miscellaneous functions.

TEXT BOOK:

1. **OBJECT-ORIENTED PROGRAMMING WITH ANSI AND TURBOC C++ - Ashok N Kamthane,** Pearson Education publication. 2003.

REFERENCE BOOKS:

1. **OBJECT-ORIENTED PROGRAMMING WITH C++, E.Balagurusamy,** 1998, TMH.
2. **C++ PROGRAMMING Black Book, Steven Holzner,** Wiley Student edition, Wiley India.
3. **DATA STRUCTURES USING C & C++, Yedidyah Langsam, Moshe J. Augenstein & Aaron M. Tanenbaum,** 2nd edition, PHI.

B.C.A. (Regular)	SEMESTER - III	Effective from 2007-08 onwards
CORE-6	OPERATING SYSTEMS	

Subject Description: This subject deals Operating Systems concepts and Information, Process and Memory Managements. Also it deals with advanced topics like Distributed processing, Remote Procedure call and Clusters.

Goal: Knowledge on Operating system and how it controls the information and hardware.

Objective: To inculcate knowledge on OS concepts and functioning of modern OS.

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UNIT-I: Operating System Overview: Operating System Objectives and Functions – The Evolution of Operating Systems – Major Achievements – Developments Leading to Modern Operating Systems – Microsoft Windows Overview – Traditional UNIX Systems – Modern UNIX Systems – Linux 95.

UNIT-II: OS-Functions and Structure: Different Services of Operating System – Operating System Structure – Booting. **Information Management:** The File System - Device Driver.

UNIT-III: Process Management: What Is A Process? – Evolution of Multiprogramming – Context Switching – Process States – Process State Transitions – Operations on a Process.

UNIT-IV: Memory Management: Introduction – Single Contiguous Memory Management – Fixed Partition Memory Management – Variable Partitions – Non-contiguous Allocation – Paging – Segmentation – Combined Systems – Virtual Memory Management Systems.

UNIT-V: Distributed Processing, Client/Server and Clusters: Client/Server Computing – Distributed Message Passing- Remote Procedure Calls – Clusters –Windows Cluster – Sun Cluster – Beowulf And Linux Clusters.

TEXTBOOKS:

- OPERATING SYSTEMS Internals and Design Principles – William Stallings, 5th edition, PHI.**
(UNIT-I: 2.1-2.8 UNIT-V: 14.1-14.7)
- OPERATING SYSTEMS – Achyut Godbole , 2nd edition, TMH.**
(UNIT II: 3.2, 3.7, 3.9, 4.2, 4.3 UNIT-III: 5.2-5.6, 5.9 UNIT-IV: 8.1-8.9)

REFERENCE BOOKS:

- OPERATING SYSTEMS Concepts and Design – Milan Milankovic, 2nd edition, TMH.**
- MODERN OPERATING SYSTEMS – Andrew S. Tanenbaum, 2nd edition, PHI.**
- OPERATING SYSTEM PRINCIPLES – Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, 7th Edition, Wiley India.**

B.C.A. (Regular)	SEMESTER-III	Effective from 2007-08 onwards
CORE LAB-3	PROGRAMMING LAB - C++	

PRACTICAL LIST

1. Write a C++ Program to create a class to implement the Data Structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element check for overflow and underflow conditions..
2. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write a Member function ADD(), SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.
3. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.
4. Write a C++ Program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.
5. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display strings. Overload the Operator “+” to Concatenate two Strings, “==” to Compare two strings.
6. Write a C++ Program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, and Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.
7. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGLE from class Shape and Calculate Area and Perimeter of each class separately and display the result.
8. Write a C++ Program to create two classes each class consists of two private variables, a integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes as arguments and the integer and float values of both objects separately and display the result.
9. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.
10. Write a C++ Program to check whether the given string is a palindrome or not using Pointers.
11. Write a C++ Program to create a File and to display the contents of that file with line numbers.
12. Write a C++ Program to merge two files into a single file.

Annexure No.	58 A
SCAA Dated	20.02.2008

BHARATHIAR UNIVERSITY :: COIMBATORE – 641 046.

**ALLIED PAPER – BUSINESS ACCOUNTING
FOR B.Sc., Computer Science, B.Sc. Software System and BCA degree courses
(for the students admitted from the academic year 2007-2008 and onwards)**

Credit Hours: 4

Goal: To enable the students to learn principles and concepts of Accountancy.

Objective: On successful completion of this course, the student should have understood

- Concepts and conventions of Accounting.
- Basic Accounting framework

UNIT –I

Fundamentals of Book Keeping – Accounting Concepts and Conventions – Journal – Ledger – Subsidiary books – Trial balance.

UNIT – II

Final accounts of a sole trader with adjustments – Errors and rectification

UNIT – III

Bill of exchange- Accommodation bills – Average due date – Account current.

UNIT – IV

Accounting for consignments and Joint ventures

UNIT – V

Bank Reconciliation statement – Receipts and Payments and income and expenditure account and Balance sheet – Accounts of professionals.

Note : Distribution of Marks between problems and theory shall be 80% and 20%.

BOOKS FOR REFERENCE

1. N.Vinayakam, P.L.Mani, K.L.Nagarajan – *Principles of Accountancy* – S.Chand & Company Ltd.,
2. T.S.Grewal – *Introduction to Accountancy*- S.Chand & Company Ltd.,
3. R.L.Gupta, V.K.Gupta, M.C.Shukla – *Financial Accounting* – Sultanchand & sons
4. T.S.Grewal, S.C.Gupta, S.P.Jain – *Advanced Accountancy*- Sultanchand & sons
5. K.L.Narang, S.N.Maheswari - *Advanced Accountancy*-Kalyani publishers
6. S.K.Maheswari, T.S.Reddy - *Advanced Accountancy*-Vikas publishers
7. A.Murthy -*Financial Accounting* – Margham Publishers
8. P.C.Tulsian - *Advanced Accountancy* – Tata McGraw Hill Companies.
9. A.Mukherjee, M.Hanif – *Modern Accountancy. Vol.1*- Tata McGraw Hill Companies

B.C.A. (Regular)	SEMESTER-III	Effective from 2007-08 onwards
DIPLOMA-1	MULTIMEDIA	

Subject Description: This Subject deals Multimedia Applications.

Goal: To learn about Multiple media and their technologies.

Objective: To inculcate knowledge on Media, Text, Image, Audio, Video, Animation etc.

UNIT-I: Introduction: Multimedia Presentation and Production – Characteristics of Multimedia Presentation – Multiple Media- Utilities of Multi-sensory Perception – Hardware and Software Requirements. **Digital Representation:** Analog Representation – Waves – Digital Representation – Need for Digital Representation – Analog to Digital Conversion – Digital to Analog Conversion. **Text:** Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats.

UNIT-II: Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT-III: Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response - Audio Processing Software.

UNIT-IV: Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – Digital Video – Digital Video Standards - PC Video – Video Recording Formats and Systems - Video File Formats and CODECs – Video Editing – Video Editing Software.

UNIT-V: Animation: Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. **Compression:** MPEG-1 Audio – MPEG-1 Video - MPEG-2Audio – MPEG-2 Video.

TEXTBOOKS:

1. **PRINCIPLES OF MULTIMEDIA** – **Ranjan Parekh**, 2007, TMH.

(UNIT I: 1.1-1.6, 2.1-2.7, 4.1-4.7 UNIT-II: 5.1-5.16 UNIT-III: 7.1-7.4, 7.8-7.14, 7.18-7.20, 7.22, 7.24, 7.26-28 UNIT-IV: 8.1-8.12 UNIT-V: 9.5-9.10, 9.13, 9.15, 10.10-10.13)

REFERENCE BOOKS:

1. **MULTIMEDIA: Making it Work** – **Tay Vaughan**, 7th edition, TMH.

2. **Comdex MULTIMEDIA AND WEB DESIGN** – **Vikas Gupta**, DreamTech press.2007.

B.C.A. (Regular)	SEMESTER-IV	Effective from 2007-08 onwards
CORE-7	VISUAL PROGRAMMING - VISUAL BASIC	

Subject Description: This subject deals Visual Basic Programming concepts.

Goal: Knowledge on Visual Programming and how to develop a Project using Visual Basic.

Objective: To inculcate knowledge on Programming and Project Development using Visual Basic.

UNIT-I: Introducing Visual Basic: What is VB? – Event and Event Procedures – Object-related concepts – VB program Development Process – Required Computer Skills – Logical Program Organization -VB Program Components – VB environment – Opening, Saving, Running a VB Project – Getting Help – Sample VB project. **Visual Basic Fundamentals:** Numeric, String constants – Variables – Data Types and Declarations – Operators and Expressions – Hierarchy of Operations – Inserting Parentheses – Special Rules concerning Numeric Expressions – String Expressions - Assigning Values to Variables – Displaying out – Library Functions - Program Comments. **Branching and Looping:** Relational operators and Logical Expressions – Branching with If-Then, If-Then-Else blocks – Selection Select Case – Looping with For-Next, Do-Loop, While-Wend – Stop statement.

UNIT-II: Visual Basic control Fundamentals: Control tools – Control tool Categories – Working with Controls – Naming Forms and Controls – Assigning Property values to Forms and Controls – Executing commands – Displaying Output – Entering Input Data – Selecting Multiple Features, Exclusive Alternatives, Form from a List - Assigning Properties collectively – Generating Error Messages – Creating timed Events – Scroll Bars.

UNIT-III: Menus and Dialog Boxes: Building Drop-Down Menus – Accessing Menu from Keyboard – Menu Enhancements – Submenus – Pop-Up Menus – Dialog Boxes – more about MsgBox Function – The Input Box function. **Executing and Debugging a New Project:** Syntax errors – Logical errors – Setting Breakpoints – Defining Watch Values – Stepping Through a Program – User-induced Errors – Error-handlers – Generating a Stand alone Executable Program.

UNIT-IV: Procedures: Modules and Procedures – Sub Procedures – Event Procedures – Function Procedures – Scope – Optional Arguments. **Arrays:** Characteristics – Declarations – Processing – Passing Arrays to Procedures – Dynamic Arrays – Array-related Functions – Control Arrays – Looping with for Each-Next.

UNIT-V: Data Files: Characteristics – Accessing and Saving a File in VB: The Common Dialog Control – Processing a Data file – Sequential Data Files – Random-Access Data files – Binary files.

TEXTBOOK:

1. **VISUAL BASIC – Byron S. Gottfried**, Schaum's Outline series, TMH.

(UNIT-I: Chapters 1, 2 & 3

UNIT II: Chapter 4

UNIT-III: Chapter 5 & 6

UNIT-IV: Chapters 7 & 8

UNIT V: Chapter 9)

REFERENCE BOOK:

1. **The Complete reference VISUAL BASIC – Noel Jerke**, TMH.

B.C.A. (Regular)	SEMESTER-IV	Effective from 2007-08 onwards
CORE-8	RDBMS AND ORACLE	

Subject Description: This subject deals with RDBMS concepts using Oracle SQL and PL/SQL.

Goal: Knowledge on RDBMS-Oracle Programming techniques.

Objective: To inculcate knowledge on RDBMS concepts and Programming with Oracle.

UNIT-I: Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. **Database Design: Data Modeling and Normalization:** Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams - Denormalization – Another Example of Normalization.

UNIT-II: Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - iSQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT-III: Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. **Functions and Grouping:** Built-in functions – Grouping Data. **Multiple Tables: Joins and Set operations:** Join – Set operations.

UNIT-IV: PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. **Control Structures and Embedded SQL:** Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. **PL/SQL Cursors and Exceptions:** Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.

UNIT-V: PL/SQL Composite Data Types: Records – Tables – Varrays. **Named Blocks:** Procedures – Functions – Packages – Triggers – Data Dictionary Views.

TEXTBOOKS:

- 1. DATABASE SYSTEMS USING ORACLE – Nilesh Shah, 2nd edition, PHI.**
(UNIT-I: Chapters 1 & 2 UNIT-II: Chapters 3 & 4 UNIT III: Chapters 5 & 6
UNIT-IV: Chapters 10 & 11 UNIT-V: Chapters 12, 13 & 14)

REFERENCE BOOKS:

- 1. DATABASE MANAGEMNET SYSTEMS – Arun Majumdar, Pritimoy Bhattacharya, TMH.**
- 2. DATABASE MANAGEMETN SYSTEMS – Gerald V. Post, 3rd edition, TMH.**

B.C.A. (Regular)	SEMESTER-IV	Effective from 2007-08 onwards
CORE LAB- 4	PROGRAMMING LAB - VISUAL BASIC & ORACLE	

PRACTICAL LIST

VISUAL BASIC

1. Write a simple VB program to accept a number as input and convert them into
 - a. Binary
 - b. Octal
 - c. Hexa-decimal
2. Write a simple VB program to add the items to list box with user input and move the selected item to combo box one by one.
3. Write a simple VB program to develop a calculator with basic operation.
4. Design an form using common dialog control to display the font, save and open dialog box without using the action control property.
5. Write a simple program to prepare a Questionnaire.
6. Write a VB Program to develop a menu driven program
Add a MDI window in the form and arrange them in the cascading/horizontal style using menus (Create a menu to add form, arrange) (Menu Item 1).
Also change the form color using the menu in another menu item (Menu Item 2).

ORACLE

Data Definition Basics

7. Create the following table (*PK - Primary Key, FK – Foreign Key*) **cat_head, route_head, place_head, route_detail, ticket_detail, ticket_head** with the mapping given below:

cat_head	route_head
(<i>cat_code PK</i>)	(<i>cat_code FK</i>)
route_head	route_detail
(<i>route_id PK</i>)	(<i>route_id FK</i>)
ticket_head	ticket_detail
(<i>tick_no PK</i>)	(<i>tick_no FK</i>)
place_head	route_detail
(<i>place_id PK</i>)	(<i>place_id FK</i>)

 - (i) Alter the table ticket_header to add a check constraint on ticket_no to accept values between 1 and 500
 - (ii) Alter table route_header to add a column with data type as long.

Data Manipulation Basics

8. (a) Insert values to above tables
(b) Display only those routes that originate in madras and terminate at cochin
(c) Display only distinct category code from the table route_header in descending manner.
(d) Update the table route_header to set the distance between madras and coimbatore as 500

Queries

9. A. Select rows from ticket_details such that ticket number greater than any ticket_number in Ticket_header.

B. Select rows from route_header such that the route_id are greater than all route_id in route_detail

Where place id is "100".

C. Create view tick from ticket_header with Ticket_no, Origin, Destination, route_id

Report

10. Generate a report from the table ticket_detail for the particular ticket_no

PL/SQL

11.

- a. Write a PL/SQL block to update the bus_station to be "ERODE" where place_id is '01' or '05' [place_header]
- b. Write a PL/SQL block to satisfy the following condition by accepting the route_id as user input. If the distance is less than 500 than update the fare to be 200
- c. Write a Database trigger before insert for each row on the table route_detail not allowing transaction on Saturday / Sunday
- d. Write a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table route_details

PROJECT

12. Develop a Simple Project for Student Database Management System using VB as front end and ORACLE as back end.

REFERENCE BOOKS:

1. **VISUAL BASIC** – Byron S.Gottfried, Schaum's Outline Series, 2002, TMH.
2. **DATABASE SYSTEMS USING ORACLE** – Nilesh Shah, 2nd edition, PHI.

B.C.A. (Regular)	SEMESTER-IV	Effective from 2007-08 onwards
ALLIED-4	MANAGEMENT INFORMATION SYSTEMS	

Subject Description: This subject deals with various management approaches of Information Systems.

Goal: Knowledge on how to manage Information like an experienced manager.

Objective: To inculcate knowledge on managing different information systems.

UNIT-I: Introduction to MIS: MIS concept – Definition – Role of MIS – Impact of MIS – MIS and the User – Management as a Control system – MIS: a support to Management - Management Effectiveness and MIS – Organization as a system – MIS: organization effectiveness. **E-business enterprise:** Introduction – Organization of Business in an E-enterprise – E-business – E-commerce – E-communication – E-collaboration.

UNIT-II: Strategic Management of Business: The concept of corporate planning – Essentiality of Strategic Planning – Development of Business Strategies – Types of Strategies – Short-range Planning – Tools of Planning – Strategic Analysis of Business. **Information Security Challenges in E-Business:** Introduction – Security Threats and Vulnerability – Controlling Security Threat and Vulnerability – Management Security Threats and Vulnerability – Disaster Management – MIS and Security Challenges.

UNIT-III: Decision Making: Decision-making concepts – Decision-making process – Decision Analysis by Analytical Modeling – Behavioural Concepts in Decision-making – Organizational Decision-making – MIS and Decision-making. **Information and Knowledge:** Information Concepts – Information: a quality product – Classification of Information – Methods of data and Information Collection – Value of Information – General Model of a Human as an Information Processor.

UNIT-IV: Applications in Manufacturing Sector: Personnel, Financial, Production, Raw Material and Marketing Managements. **Applications in Service Sector:** Service management System – MIS Application in Service Industry – MIS: Service Industry.

UNIT-V: Enterprise Management Systems: Enterprise Management Systems – ERP system – ERP Model and Modules – Benefits of ERP – ERP Product Evaluation – ERP Implementation. Technology of Information Systems: Introduction – Data Processing – Transaction Processing – Application Processing – Information System processing.

TEXTBOOKS:

1. **MANAGEMENT INFORMATION SYSTEMS Text and Cases** – Waman S Jawadekar, 3rd ed, PHI. (UNIT-I: 1.1-1.10, 2.1-2.6 UNIT-II: 3.1-3.7,4.1-4.6 UNIT III: 6.1-6.6,7.7-7.6 UNIT-IV: 12.2-12.6,13.6-13.8 UNIT-V: 15.1-15.6,16.1-16.6)

REFERENCE BOOKS:

1. **MANAGEMENT INFORMATION SYSTEMS managing the Digital Firm** – Kenneth C. Laudon & Jane P. Laudon, 9th edition, PHI.
2. **MANAGEMENT INFORMATION SYSTEMS for the Information Age** – Haag, Cummings, McCubrey, 4th edition, TMH.
3. **MANAGEMENT INFORMATION SYSTEMS a Concise Study** – S.A. Kelkar, 2005, PHI.

B.C.A. (Regular)	SEMESTER-IV	Effective from 2007-08 onwards
DIPLOMA-2	MULTIMEDIA LAB - PHOTOSHOP	

PRACRICAL LIST

1. Create Sun Flower using Photoshop.
2. Create Water Drops using Photoshop.
3. Animate Plane Flying the Clouds using Photoshop.
4. Create Plastic Surgery for Nose using Photoshop.
5. Create Mouse using Photoshop.
6. Create See thru text using Photoshop.
7. Create Military Clothe using Photoshop.
8. Create Stone Texture using Photoshop.
9. Create Rollover Buttons using Photoshop.
10. Create Realistic Stone Structure using Photoshop.
11. Create Web Page using Photoshop.
12. Convert Black and White to Color Photo using Photoshop.

REFERENCE BOOKS:

1. **PHOTOSHOP CS2 BIBLE** – Deke McClelland & Laurie Ulrich Fuller, Wiley India.
2. **Comdex MULTIMEDIA AND WEB DESIGN** – Vikas Gupta, DreamTech press, 2007.

B.C.A. (Regular)	SEMESTER-V	Effective from 2007-08 onwards
CORE-9	SOFTWARE ENGINEERING	

Subject Description: This subject deals with Software Engineering concepts like Analysis, Design, Implementation, Testing and Maintenance.

Goal: Knowledge on how to do a software project with in-depth analysis.

Objective: To inculcate knowledge on Software engineering concepts in turn gives a roadmap to design a new software project.

UNIT-I: Introduction to Software Engineering: Definitions – Size Factors – Quality and Productivity Factors. **Planning a Software Project:** Planning the Development Process – Planning an Organizational Structure.

UNIT-II: Software Cost Estimation: Software cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Estimation Costs.

UNIT-III: Software Requirements Definition: The Software Requirements specification – Formal Specification Techniques. **Software Design:** Fundamental Design Concepts – Modules and Modularization Criteria.

UNIT-IV: Design Notations – Design Techniques. **Implementation Issues:** Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation Guidelines.

UNIT-V: Verification and Validation Techniques: Quality Assurance – Walkthroughs and Inspections – Unit Testing and Debugging – System Testing. **Software Maintenance:** Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Configuration Management.

TEXTBOOK:

1. **SOFTWARE ENGINEERING CONCEPTS** – Richard Fairley, 1997, TMH.

(UNIT-I: 1.1-1.3, 2.3-2.4 UNIT-II: 3.1-3.4 UNIT III: 4.1-4.2, 5.1-5.2

UNIT-IV: 5.3-5.4, 6.1-6.4 UNIT-V: 8.1-8.2, 8.5-8.6, 9.1-9.3)

REFERENCE BOOKS:

1. **SOFTWARE ENGINEERING FOR INTERNET APPLICATIONS** – Eve Anderson, Philip Greenspun, Andrew Grumet, 2006, PHI.

2. **SOFTWARE ENGINEERING PROJECT MANAGEMENT** – 2nd Edition, Wiley India.

3. **SOFTWARE QUALITY ENGINEERING** – Jeff Tian, Student edition, 2006, Wiley India.

B.C.A. (Regular)	SEMESTER-V	Effective from 2007-08 onwards
CORE-10	JAVA PROGRAMMING	

Subject Description: This subject deals with Java Programming concepts.

Goal: Enable to create wide range of Applications and Applets using Java.

Objective: To inculcate knowledge on Java Programming concepts.

UNIT-I: Fundamentals of Object-Oriented Programming: Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. **Java Evolution:** History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.

UNIT-II: Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: *if, if ..else, nested if, switch, ?:* operator - Decision Making and Looping: *while, do, for* – Jumps in Loops - Labeled Loops – Classes, Objects and Methods.

UNIT-III: Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together – Multithreaded Programming.

UNIT-IV: Managing Errors and Exceptions – Applet Programming – Graphics Programming.

UNIT-V: Managing Input/Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.

TEXTBOOK:

1. **PROGRAMMING WITH JAVA – A PRIMER - E. Balagurusamy**, 3rd Edition, TMH.

REFERENCE BOOKS:

1. **THE COMPLETE REFERENCE JAVA 2 - Patrick Naughton & Hebert Schildt**, 3rd ed, TMH
2. **PROGRAMMING WITH JAVA – John R. Hubbard**, 2nd Edition, TMH.
3. **JAVA and Object-Oriented Programming Paradigm – Debasish Jana**, 2005, PHI.

B.C.A. (Regular)	SEMESTER-V	Effective from 2007-08 onwards
CORE-11	COMPUTER NETWORKS	

Subject Description: This subject deals different Network concepts like Layers, Wireless Concepts, Transmission and Security.

Goal: Knowledge on Computer Networks and technologies like broadband and Bluetooth.

Objective: To inculcate knowledge on Networking concepts and technologies like wireless, broadband and Bluetooth.

UNIT-I: Network Hardware: LAN – WAN – MAN – Wireless – Home Networks. **Network Software:** Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. **Reference Models:** OSI Reference Model – TCP/IP reference Model – Comparison of OSI and TCP/IP -Critique of OSI and protocols – Critique of the TCP/IP Reference model.

UNIT-II: PHYSICAL LAYER - Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. **Wireless Transmission:** Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. **Communication Satellites:** Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.

UNIT-III: DATA-LINK LAYER: Error Detection and correction – Elementary Data-link Protocols – Sliding Window Protocols. **MEDIUM-ACCESS CONTROL SUB LAYER:** Multiple Access Protocols – Ethernet – Wireless LANs - Broadband Wireless – Bluetooth.

UNIT-IV: NETWORK LAYER: Routing algorithms – Congestion Control Algorithms. **TRANSPORT LAYER:** Elements of Transport Protocols – Internet Transport Protocols: TCP.

UNIT-V: APPLICATION LAYER: DNS – E-mail. **NETWORK SECURITY:** Cryptography – Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures.

TEXTBOOKS:

1. **COMPUTER NETWORKS** – Andrew S. Tanenbaum, 4th edition, PHI.
(UNIT-I:1.2-1.4 UNIT-II:2.2-2.4 UNIT-III:4.2-4.6 UNIT-IV:5.2,5.3,6.2,6.5 UNIT-V:7.1,7.2,8.1-8.4)

REFERENCE BOOKS:

1. **DATA COMMUNICATION AND NETWORKS** – Achyut Godbole, 2007, TMH.
2. **COMPUTER NETWORKS Protocols, Standards, and Interfaces** – Uyles Black, 2nd ed, PHI.

B.C.A. (Regular)	SEMESTER-V	Effective from 2007-08 onwards
AOS-1	COMPUTER GRAPHICS	

Subject Description: This subject deals with Graphics Concepts and methodologies.

Goal: Mathematical Knowledge on Graphics and Technical background.

Objective: To inculcate knowledge on Graphics with various concepts.

UNIT-I: Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. **Attributes of Output Primitives:** Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.

UNIT-II: 2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations – Point, Line, Polygon, Curve, Text and Exterior clippings.

UNIT-III: 3D Concepts: 3D Display Methods – 3D Graphics Packages. **3D Object Representations:** Polygon Surfaces – Curved lines and Surfaces – Quadric Surfaces – Super quadrics – Blobby Objects – Spline representations. **3D Geometric Modeling and Transformations:** Translation – Rotation – Scaling – Other Transformations – Composite Transformations – 3D Transformation functions..

UNIT-IV: Visible-Surface Detection Methods: Classification of Visible-Surface algorithms – Back-Face Detection – Depth-Buffer Method – A-Buffer method- Scan-Line Method – Depth-Sorting Method – BSP-Tree Method – Area-Subdivision Method – Octree Methods – Ray-casting Methods – Curved surfaces – Wire frame Methods – Visibility-Detection functions.

UNIT-V: Illumination Models: Properties of Light – Standard Primaries ad the Chromaticity Diagram – Intuitive color Concepts – RGB Color Model – YIQ Color Model – CMY Color Model – HSV Color Model – Conversion between HSV and RGB models – Color selection ad Applications.

TEXTBOOKS:

- COMPUTER GRAPHICS – Donald Hearn, M. Pauline Baker, 2nd edition, PHI.**
(UNIT-I: 3.1-3.6, 4.1-4.5 & UNIT-II: 5.1-5.4, 6.1-6.11 UNIT-III: 9.1-9.2, 10.1-10.6, 11.1-11.6
UNIT-IV: 13.1-13.13 UNIT-V: 14.1-14.5, 15.1-15.10)

REFERENCE BOOKS:

- PRINCIPLES OF INTERACTIVE OMPUTER GRAPHICS – Willium M. Newman & Robert F. Sproull, 2007, TMH.**

B.C.A. (Regular)	SEMESTER-V	Effective from 2007-08 onwards
CORE LAB- 5	JAVA PROGRAMMING	

PRACTICAL LIST

1. Write a Java Applications to extract a portion of a character string and print the extracted string.
2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.
3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.
4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.
5. Write a Java Program to draw several shapes in the created windows.
6. Write a Java Program to create a frame with four text fields as name, street, city and pin code with suitable tables. Also add a button called “my details”, When the button is clicked its corresponding values are to be appeared in the text fields.
7. Write a Java Program to demonstrate the Multiple Selection List-box.
8. Write a Java Program to create a frame with three text fields for name, age and qualification and a text field for multiple lines for address.
9. Write a Java Program to create Menu Bars and pull down menus.
10. Write a Java Program to create frames which respond to the mouse clicks. For each events with mouse such as mouse up, mouse down, etc., the corresponding message to be displayed.
11. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.
12. Write a Java Program which open an existing file and append text to that file.

REFERENCE BOOKS:

1. **JAVA 6 PROGRAMMING BLACK BOOK, 2007 edition, dreamtech press.**
2. **PROGRAMMING IN JAVA 5.0 – James P Cohoon & Jack Davidson, TMH.**

B.C.A. (Regular)	SEMESTER-V	Effective from 2007-08 onwards
DIPLOMA-3	ANIMATION TECHNIQUES	

Subject Description: This Subject deals with the Animation Techniques.

Goal: To learn about Animation.

Objective: On Successful Completion of this subject the students should have:

- 2D & 3D Animation, Script Animation, Motion Caption, Audio & Video Format etc.

UNIT-I: What is mean by Animation – Why we need Animation – Types of Animation 2D & 3D – Theory of 2D Animation – Theory of 3D Animation – Difference between Graphics & Animation – Application of 2D & 3D Animation – History of Animation – Software's.

UNIT-II: Traditional 2D Animation Concept – Types of 2D Animation – Techniques of 2D Animation – Color – Text – Formation – Size – Script Animation – Time Line Effects – Application of 2D Animation – Characterization 2D – Principle of 2D Animation – Concept Development.

UNIT-III: 3D Animation & its Concepts – Types of 3D Animation – Cycle & Non-Cycle Animation – Theory of Character 3D Animation – 3D Transition Animation – Skeleton & Kinetic 3D Animation – Texturing & Lighting of 3D Animation – 3D Camera Tracking – Applications & Software of 3D Animation.

UNIT-IV: Motion Caption – Formats – Methods – Usages – Motion Capture Software – Merge with Software – Expression – Formats – Methods – Usages – Expression Capture Softwares – Script Animation Usage – Different Language of Script Animation Among the Software.

UNIT-V: Concept Development – Scripting – Story Developing – Output Formats – Audio Formats & Video Formats – Colors – Color Cycle – Color Formats – 3D Production Budgets – 3D Animated Movies – Fields in 3D Animation.

TEXT BOOK:

1. MAYA 6.0 BIBLE - Joestadaro, Donkim.
2. 3DS MAX BIBLE - Kelly Ldot, Murtock.

REFERENCE BOOK:

1. MAYA 8.0 THE COMPLETE REFERENCE - Tom Meade, Shinsaku Arima, TMH.

ADDITIONAL REFERENCE BOOKS

1. Animation Writing and Development, Jean Ann Wright, Focal Press Visual Effects and Animation Series.
2. Animators Guide to 2D Computer Animation, Avgeranis George
3. Digital Animation Bible – AVGERAKIF, Tata McGraw Hill.
4. Maya – 8 : The Complete Reference, MEADE, Tata McGraw Hill.

5.

B.C.A. (Regular)	SEMESTER-VI	Effective from 2007-08 onwards
CORE-12	SOFTWARE TESTING	

Subject Description: This subject deals software testing concepts like unit-wise testing, integration testing and acceptance testing.

Goal: Knowledge on software testing and how to test the software at various levels.

Objective: To inculcate knowledge on Software testing concepts.

UNIT-I: Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. **White-Box Testing:** Static Testing – Structural Testing – Challenges in White-Box Testing.

UNIT-II: Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - **Integration Testing:** Integration Testing as Type of Testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash.

UNIT-III: System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT-IV: Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. **Regression Testing:** What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT-V: Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. **Test Metrics and Measurements:** Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.

TEXTBOOKS:

1. **SOFTWARE TESTING Principles and Practices – Srinivasan Desikan & Gopalswamy**

Ramesh, 2006, Pearson Education.

(UNIT-I: 2.1-2.5, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6.1-6.7

(UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.6, 17.4-17.7)

REFERENCE BOOKS:

1. **EFFECTIVE METHODS OF SOFTWARE TESTING–William E.Perry**, 3rd ed, Wiley India.

2. **SOFTWARE TESTING – Renu Rajani, Pradeep Oak**, 2007, TMH.

B.C.A. (Regular)	SEMESTER-VI	Effective from 2007-08 onwards
CORE-13	CLIENT/SERVER COMPUTING	

Subject Description: This subject deals with concepts of Client / Server computing. Also it deals with various components of Client / Server Applications.

Goal: Knowledge on Client / Server Concepts and various components of client / server Applications.

Objective: To inculcate knowledge on Client / Server concepts.

UNIT-I: Client/Server Computing – Advantages of Client / Server Computing – Technology Revolution – Connectivity – Ways to improve Performance – How to reduce network Traffic.

UNIT-II: Components of Client/Server Applications – The Client: Role of a Client – Client Services – Request for Service. **Components of Client/Server Applications – The Server:** The Role of a Server – Server Functionality in Detail – The Network Operating System – What are the Available Platforms – The Server Operating system.

UNIT-III: Components of Client/Server Applications – Connectivity: Open System Interconnect – Communications Interface Technology – Interprocess communication – WAN Technologies.

UNIT-IV: Components of Client/Server Applications–Software: Factors Driving demand for application software development – Rising Technology Staff costs – Need to improve Technology – Need for Common Interface across Platforms – Client/Server System Development Methodology. **Components of Client/Server Applications–Hardware:** Hardware/Network Acquisition – PC-Level Processing Units – Machintosh, notebooks, Pen – UNIX Workstation – x-terminals – Disk, Tape, Optical Disks, NIC and UPS.

UNIT-V: Components of Client/Server applications–Service and Support: System Administration. **The Future of Client/Server Computing:** Enabling Technologies – Transformational Systems.

TEXTBOOKS:

1. **CLIENT/SERVER COMPUTING – Patrick Smith, Steve Guenferich** , 2nd edition, PHI.
(Chapters 1-8 & 10)

B.C.A. (Regular)	SEMESTER-VI	Effective from 2007-08 onwards
CORE-14	WEB TECHNOLOGY	

Subject Description: This subject deals TCP/IP, FTP, WWW and Web technologies like ASP, JVM, DCOM, XML and WAP.

Goal: Knowledge on various Web technologies.

Objective: To inculcate knowledge web technological concepts and functioning internet.

UNIT-I: TCP/IP: TCP/IP Basics – Why IP address – Logical Address - TCP/IP Example- The concept of IP address – Basics of TCP – Features of TCP – Relationship between TCP and IP – Ports and Sockets – Active Open and Passive Open - TCP Connections – What makes TCP reliable? – TCP Packet format - Persistent TCP connections – UDP – Differences between TCP and UDP.

UNIT-II: DNS – E-mail – FTP – TFTP – History of WWW – Basics of WWW and Browsing - Local information on the internet – HTML – Web Browser Architecture – Web Pages and Multimedia – Remote Login (TELNET).

UNIT-III: Introduction to Web Technology: Web pages – Tiers – Concept of a Tier – Comparison of Microsoft and Java Technologies – Web Pages – Static Web Pages – Plug-ins – Frames – Forms. **Dynamic Web Pages:** Need – Magic of Dynamic Web Pages – Overview of Dynamic Web Page Technologies – Overview of DHTML – Common Gateway Interface – ASP – ASP Technology – ASP Example – Modern Trends in ASP – Java and JVM – Java Servlets – Java Server Pages.

UNIT-IV: Active Web Pages: Active Web Pages in better solution – Java Applets – Why are Active Web Pages Powerful? – Lifecycle of Java Applets – ActiveX Controls – Java Beans. **Middleware and Component-Based E-Commerce Architectures:** CORBA – Java Remote Method Invocation – DCOM. **EDI:** Overview – Origins of EDI – Understanding of EDI – Data Exchange Standards – EDI Architecture – Significance of EDI – Financial EDI – EDI and internet.

UNIT-V: XML: SGML – Basics of XML – XML Parsers – Need for a standard. **WAP:** Limitations of Mobile devices – Emergence of WAP – WAP Architecture – WAP Stack – Concerns about WAP and its future – Alternatives to WAP.

TEXTBOOKS:

1. **WEB TECHNOLOGIES TCP/IP to Internet Applications Architectures** – Achyut S Godbole & Atul Kahate, 2007 ,TMH.

(UNIT-I: 3.1-3.5,4.1-4.12 UNIT-II: 5.1-5.4,6.1-6.7 UNIT III:8.1-8.1,9.1-9.13

UNIT IV: 10.1-10.7,15.1-15.3,16.1-16.8 UNIT-V: 17.1-17.4,18.1-18.6)

REFERENCE BOOKS:

1. **INTERNET AND WEB TECHNOLOGIES** – Rajkamal, TMH.

2. **WEB APPLICATIONS Concepts and Real world Design** – Craig D. Knuckles, David S.Yuen.

B.C.A. (Regular)	SEMESTER-VI	Effective from 2007-08 onwards
AOS-2	E-COMMERCE	

Subject Description: This subject deals with E-commerce concepts like E-Commerce, M-Commerce, E-Security and E-payment.

Goal: Knowledge on E-commerce and Real World and Cyberspace problem awareness.

Objective: To inculcate knowledge on E-Commerce concepts in the present IT world.

UNIT-I: What is e-commerce? – E-Commerce is not E-Business – the drivers – Myths You should know – Advantages and Issues in E-Commerce – Benefits and Limitations of the Internet – Role of E-Strategy – Integrating E-commerce – E-Commerce Business Models – Management Implications.

UNIT-II: Mobile-Commerce-The Business of Time: What is M-Commerce? – Why wireless? – How wireless Technology is employed? – Wireless LAN – Wireless application Protocol -Implications for Management.

UNIT-III: Business-to-Business E-Commerce: What is B2B E-Commerce? – Supply chain Management and B2B – B2B Models – B2B Tools-EDI.

UNIT-IV: E-Security: Security in Cyberspace – Designing for Security – How much risk you afford? – The VIRUS – Security Protection and Recovery – Role of Biometrics - How to secure your system? – Security and Terrorism.

UNIT-V: Getting the money: Real World Cash – Electronic Money – Requirements for Internet-Based Payments – How would you like to pay? – B2B and E-Payment – M-Commerce and M-Payment – General Guide to E-Payment.

TEXTBOOK:

1. **ELECTRONIC COMMERCE from Vision to Fulfillment** – Elias M. Awad, 3rd edition, PHI.
(Chapters: 1, 6, 11, 13 &15)

REFERENCE BOOKS:

1. **E-COMMERCE Strategy, Technologies and Applications** – David Whiteley, 2001, TMH.
2. **INTRODUCTION TO E-COMMERCE** – Jeffrey F. Rayport, Bernard J. Jaworski, TMH.

B.C.A. (Regular)	SEMESTER-VI	Effective from 2007-08 onwards
CORE LAB-6	PROGRAMMING LAB - HTML	

PRACTICAL LIST

1. Develop a HTML document which displays you name as **<h1>** heading and displays any four of your friends. Each of your friend's names must appear as hot text. When you click your friend's name, it must open another HTML document, which tells about your friend.
2. Write names of several countries in a paragraph and store it as an HTML document, *world.html*. Each country name must be a hot text. When you click India (for example), it must open *india.html* and it should provide a brief introduction about India.
3. Design a HTML document describing you. Assign a suitable background design and background color and a text color.
4. Develop a HTML document to print the following:

Who can use the solar heaters?
Anybody with a regular hot water demand.

 - ***In houses for domestic purposes (cooking, bathing and washing).***
 - ***For engineering / chemical industries, dairies and textile/leather process plants, to –preheat boiler feed water.***
 - ***For hostels, hospitals, guest houses and industrial canteens.***
 - ***For food-processing plants and for process applications.***
5. Write a HTML document to print the following:

The family has the following facilities:

 1. ***Own House***
 - ***Living area 2400 square feet***
 - ***Separate bungalow***
 - ***Car shed***
 2. ***Car***
 - ***Maruti Esteem***
 - ***Registration Number TN 38 A 9650***
 - ***1996 Model***
 3. ***Farm***
 - ***35 acres Coconut Groves***
 - ***10 acres Mango Groves***
6. Write a HTML document to print your class Time Table.
7. Develop a Complete Web Page using Frames and Framesets which gives the Information about a Hospital using HTML.

8. Write a HTML document to print your Bio-Data in the following format:

NAME			
Religion			
Community			
Address	<i>Street</i>		
	<i>Town</i>		
	<i>District</i>		
	<i>State</i>		
	<i>PIN Code</i>		
Phone	<i>Office</i>		
	<i>Residence</i>		
	<i>Mobile</i>		
Educational Qualification			
<i>Degree</i>	<i>University/Institute</i>	<i>Month& year</i>	<i>Grade / Mark</i>

9. Develop complete set of web pages to describe you skills in various areas using HTML.
10. Develop a web site to publish your family and the details of each member using HTML.
11. Develop a HTML document to display a Registration Form for an inter-collegiate function.
12. Develop a HTML document to design Alumni Registration form of your college.

REFERENCE BOOK:

1. **World Wide Web Design with HTML – C. Xavier, 2007, TMH.**

B.C.A. (Regular)	SEMESTER-VI	Effective from 2007-08 onwards
DIPLOMA-4	ANIMATION LAB - FLASH	

PRACTICAL LIST

1. Create Shapes and Drawings in Flash.
2. Change a Shape to Another Shape. (Shape Animation)
3. Create a Man to walk with the help of Key Frame Animation.
4. Draw a Bird with Flash tools and make it fly with key Frame Animation.
5. Change the Colors of an object with the help of Animation.
6. Animate a Ball with the help of Guide line Animation.(Path Animation)
7. Create a Shining Stores with the help of Movie Clip.
8. Create Buttons & Link with other Frames.
9. Create an Album with the help of Buttons.
10. Create a 3D Rotation of a Box with the Help of Shape Animation.
11. Create Morphing between two images in Flash.
12. Create a Simple game with the help of Action Script.

REFERENCE BOOKS:

1. **Flash 8 in Simple Steps – Shalini Guptha & Adity Gupta**, 2007, dreamtech.
2. **Flash 8 – Ethan Waterall & Norbert Herber**, dreamtech.