

KUVEMPU UNIVERSITY

Revised syllabus for BCA Course

And

BSc Computer Science Course

W.E.F 2016-17

**DEPARTMENT OF STUDIES AND RESEARCH IN
COMPUTER SCIENCE JANNASHAYADRI CAMPUS,
SHAKARGHATTA
KARNATAKA,INDIA**


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KUVEMPU UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE
Syllabi of UG Courses in BCA and B.Sc (Computer Science)
For 2016-2017 New Batch

U. G. Board of Studies (BOS) in Computer Science

- | | | |
|----|---|-----------------|
| 01 | Dr. Narasimhamurthy V.
Associate Professor,
Govt. First Grade College,
Shimogga | Chairman |
| 02 | Dr. Prabhakar C.J
Assistant Professor,
Dept. of Computer Science,
Kuvempu University. | Member |
| 03 | Shri. Ravikumar M
Assistant Professor,
Dept. of Computer Science,
Kuvempu University. | Member |
| 04 | Dr. Suresha M
Assistant Professor,
Dept. of Computer Science,
Kuvempu University. | Member |

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**Regulations for BCA course under semester scheme
(With effect from 2016-17)**

Eligibility for Admission

1. A candidate who passed the three year Diploma in the branch of computer science, examination conducted by the board of Technical education, Government of Karnataka, shall be eligible for admission to first semester of BCA degree course.
2. A candidate who passed the two-year Pre-University examination in science/commerce of Karnataka state or any other examination considered as equivalent there to is eligible for admission to the first semester of BCA degree course.
3. If he/she is unable to pass or complete the degree within 6 years he/she should take readmission into BCA for I semester (study all the 6 semesters from first).

II) Claim of Exemption

A candidate who keeps terms for I, II and V semesters be allowed to keep terms for II, IV and VI semesters respectively, subjected to the following conditions:

1. A candidate who passes 50% of theory and practical's put together of I and II semester examinations (at the end of second semester) be allowed to keep terms for III semester.
2. A candidate who passes fully I and II semesters and 50% of theory and practical's put together of III and IV semesters examinations (at the end of IV semester) be allowed to keep terms for V semester.

BCA Regulations

For BSc course only students completing PUC or its equivalent examination with science subjects are eligible. For BCA course only students completing PUC or its equivalent examination with science subjects and PUC (Commerce) or its equivalent examination with Mathematics as one of the subjects are eligible.

R.1

a) Title of the course: Bachelor of Computer Applications (BCA)


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b) Duration of the Course: The course shall be of three years duration spread over six semesters

c) Scheme of the Study:

- i) There shall be six theory papers and one practical each carrying 100 marks (80+20) for first semester and second semester
- ii) There shall be five theory papers, two practical papers each carrying 100 marks (80+20) from third to fifth semester
- iii) The project work shall be carried out either independently or jointly (minimum 3 students and maximum 5 students in a batch)
- iv) Medium of Instruction: The medium of instruction shall be English

d) Scheme of Examination:

- i) At the end of each semester there shall be university examination of three hours duration in each of the theory paper/practical carrying 80 marks
- ii) Internal assessment (IA) carrying 20 Marks in each of the theory Paper /practical shall be based on the performance of the student in two tests of one hour duration. No minimum for passing is required in IA
- iii) At the end of the sixth semester each student shall able to submit the completed project report for the evaluation which shall be certified by internal guide and duly signed by the HOD and the principal. The project report and Viva-voce shall be evaluated by both Internal and External examiners.

R.2 Each semester shall be of 4 months duration

R.3 Attendance

Each student must have at least 75% attendance in each of the course (theory and Practical) in each semester. Shortage of attendance will be dealt with as per university rule from time to time.

R.4 Carry over system

A candidate is allowed to carry over maximum of 60% unleared (failed) papers and/Practical's of previous semester to subsequent semesters from the first to sixth semester to subsequent semester from the first to sixth semester

R.5 The maximum period for completion of the course shall be six years from the date of admission

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R. 6 Eligibility for admission:

a) Any student who has passed PUC-II in science or commerce subject secured a minimum of 35% of marks.

OR

b) Any student who has passed JOC(job Oriented Course) in Computer Technique/computer Applications/Electronics/Electrical branch with minimum of 35% of marks in aggregate in all the semesters/years.

OR

c) Any student who has passed diploma in engineering (Three years duration of course Regulated by and affiliated to AICTE) in computer science/Computer applications/Electronics/Electrical branch with minimum of 35% of marks in aggregate in all the semesters/years

OR

d) Any student who has passed Industrial training Institutes(ITI) (Regulated by and affiliated to AICTE) in Computer Science/Computer applications/Electronics/Electrical branch with minimum of 35% of marks in aggregate in all the semesters

R.7 Admission Procedure

a) Merit list shall be prepared based on marks obtained in eligible course.

b) Reservation: as per the notification/Govt.orders from the university/Govt from time to time.

R.8 Results:

a) Minimum for pass in each of theory paper/practical (computer lab)/Project report shall be 35% at the university semester examination.

b) The aggregate minimum for pass in each of the theory/Practical (computer lab)/Project work shall be 40% of marks in each course including IA/Viva-voce minimum marks is required in IA/Viva-Voce

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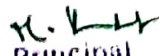
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NEW SYLLABUS FOR BCA (EFFECT FROM 2016-17)

Semester	First	Weekly hours	Internal marks	External marks	total
Paper code	Subject				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-I	4	20	80	100
BCA05	ENGLISH-I	4	20	80	100
BCA13	MATHEMATICS-I FOR COMPUTER APPLICATION	4	20	80	100
BCA14	COMPUTER FUNDAMENTALS	4	20	80	100
BCA15	C-PROGRAMMING	4	20	80	100
BCA16	DIGITAL FUNDAMENTALS	4	20	80	100
BCA17	C PROGRAMMING LAB	3	20	80	100
Total		27			700

Semester	second	Weekly hours	Internal marks	External marks	total
Paper code	Subject				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-II	4	20	80	100
BCA05	ENGLISH-II	4	20	80	100
BCA23	MATHEMATICS-II FOR COMPUTER APPLICATION	4	20	80	100
BCA24	COA	4	20	80	100
BCA25	STATISTICS AND PROBABILITY	4	20	80	100
BCA26	DATA STRUCTURE USING C	3	20	80	100
BCA27	DATA STRUCTURE LAB	3	20	80	100
Total		27			700

Semester	THIRD	Weekly hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-III	4	20	80	100
BCA05	ENGLISH-III	4	20	80	100
BCA33	OBJECT ORIENTED PROGRAMMING WITH C++	4	20	80	100
BCA34	SYSTEM SOFTWARE	4	20	80	100
BCA35	DATA BASE MANAGEMENT SYSTEM	4	20	80	100
BCA36	C++ LAB	3	20	80	100
BCA37	SQL LAB	3	20	80	100
TOTAL		26			700


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Semester	FOURTH	Weekly y hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA01/02/03/04	KAN/SANS/URDU/HINDI-IV	4	20	80	100
BCA05	ENGLISH-II	4	20	80	100
BCA43	JAVA PROGRAMMING	4	20	80	100
BCA44	COMPUTER GRAPHICS AND MULTIMEDIA	4	20	80	100
BCA45	DATAWAREHOUSING AND DATA MINIG	4	20	80	100
BCA46	JAVA LAB	3	20	80	100
BCA47	CG LAB	3	20	80	100
TOTAL		26			700

Semester	FIFTH	Weekly hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA51	ADVANCED JAVA PROGRAMMING	4	20	80	100
BCA52	DATA COMMUNICATION	4	20	80	100
BCA53	WEB TECHNOLOGY WITH PHP	4	20	80	100
BCA54	OPERATING SYSTEM	4	20	80	100
BCA55*	SOFTWARE ENGINEERING	4	20	80	100
BCA56	WEB TECHNOLOGY LAB	3	20	80	100
BCA57	ADVANCED JAVA LAB	3	20	80	100
TOTAL		26			700

Semester	SIXTH	Weekly hours	Internal marks	External marks	total
Paper code	SUBJECT				
BCA61	COMPUTER NETWORKS	4	20	80	100
BCA62	DOT NET WITH C#	4	20	80	100
BCA63	UNIX AND SHELL PROGRAMMING	4	20	80	100
BCA64	UNIX AND SHELL PROGRAMMING LAB	3	20	80	100
BCA65	PROJECT LAB	3	20	80	100
TOTAL		18			500

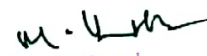
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NEW SYLLABUS FOR B.Sc. (Computer Science)

(EFFECT FROM 2016-17)

Paper code	Semester	SUBJECT	Weekly hours	Internal marks	External marks	PRACTICALS	total
BSC1	I	CF & CP	4+3	10	50	40	100
BSC2	II	DS	4+3	10	50	40	100
BSC3	III	DBMS	4+3	10	50	40	100
BSC4	IV	C++	4+3	10	50	40	100
BSC5	V	JAVA	4+3	10	50	40	100
		OS&UNIX	4+3	10	50	40	100
BSC6	VI	ADV JAVA	4+3	10	50	40	100
		SE&CN	4+3	10	50	40	100
		TOTAL					


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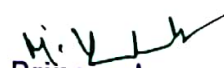
Unit-5 DETERMINANTS

08 hrs

Definition of determinant(definition and examples), determinant of matrix of order one , order two and order three(simple problems),properties of determinant(examples only, no verification),applications of determinants and matrices for solving the system of linear equations of two variables and three variables(simple problems),applications of determinant and matrices for checking the system of linear equations for consistency and inconsistency(simple problems).

Refence Books:

- 1.Text book of Mathematics – Shanthi Narayan
- 2.Text book of Mathematics – S. Lipschutz


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FIRST SEMESTER BCA

BCA-13 : MATHEMATICS –I FOR COMPUTER APPLICATIONS

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit-1 SETS, RELATIONS AND FUNCTIONS

10hrs

Definition of a set, sub-set with examples, Venn diagrams, types of sets-equal sets, null set, disjoint sets, finite set, infinite set, power set, cardinality of set. Operations on sets-union and intersection of two sets, complement of a set, difference of two sets, symmetric difference of sets. Algebraic properties of set operations, addition principle for two finite sets and for three disjoint sets. Computer representation of sets and subsets, strings and regular expressions. Definition of a relation with examples, types of relations-empty, universal, trivial, equivalence, reflexive, symmetric, transitive relation (definition and examples only, no problems). Definition of a function with examples, types of function, one-to-one (injective), Binary operation-commutative, associative, identity, invertible (definition and examples only, no problems). Functions for computer science-characteristic function, floor function, ceiling function.

Unit-2 LOGIC AND REASONING

10 hrs

Definition of proposition or statement, proposition variables, negation of statements, truth table, conjunction, disjunction, implications quantifiers- predicate, universal quantifier, universal quantification, existential quantification. Conditional statement/implication, contrapositive and converse, equivalence or biconditional, tautology, contradiction, logical equivalence, properties of proposition operation-commutative, associative, distributive, idempotent negation. Simple problems on tautology and equivalence. Rules for validating statements

Unit-3 MATHEMATICAL INDUCTION AND COUNTING

10hrs

Principle of mathematical induction, simple problems on principle of mathematical induction. Fundamental principle of counting (statement with examples only), permutations- definition and simple problems. combinations- definition and simple problems. pigeonhole principle- statement and proof, extended pigeonhole principle- statement and proof.

Unit-4 MATRICES

10 hrs

Definition of matrix and order of matrix, types of matrices-column matrix, row matrix, square matrix, diagonal matrix, scalar matrix, identity matrix, zero matrix (definition and examples only, no problems), equality of matrices (definition and examples), simple problems on equality of matrices. operations on matrices-addition, subtraction, product of two matrices, scalar multiplication of a matrix, inverse of a matrix, simple problems on these operations.

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BCA 14 COMPUTER FUNDAMENTALS

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1- Introduction to Computer Systems

10hrs

Definition of a Computer, History of Computers, Generations of Computers, Block diagram of a Computer with functional units (explanation), Parts of a computer system with peripherals (explanation of peripherals), and essential computer hardware , Information processing Cycle.

Unit 2- Input and output device

05hrs

Input devices-key board mouse, track ball, light pen, joy stick(explanation with diagram and working),output devices,monitors types of monitors printing and types of printers and working with advantages and disadvantages. Representation of data, text code-EBCDIC, ASCII, EXTENDED, ASCII, UNICODE. Memory: Tracks and sectors, cache memory Primary memory: RAM and its types,ROM and its types Secondary memory : hard disk,CD-ROM,DVD

Unit 3. Software:

08 hrs

Definition of software, types of software's application and system software with example , assembler, compiler, interpreter, linker, loader (Definitions only).Classification of languages high level and low level language(assembly and machine level) advantage and disadvantages.Operating System Basics : Definition, functions of an operating system, types of operating system, graphical user interface - basic components of GUI,MS DOS COMMANDS with syntax and example : copy,con, type,copy,rename,del,make directory,remove directory,dir and its types,copy files from one drive to other drive,tree,hiding files)

Unit 4- Problem Solving Techniques :

10 hrs

Problem Definition, Problem Analysis, Design of Problems and Design Tools. ALGORITHMS: Algorithm-definition, Characteristics, Notations, Advantages and Disadvantages. FLOWCHART: Definition, Symbols, Advantages and Disadvantages. Debugging, Testing, Documentation and Maintenance. Writing an algorithm and flowchart : Area of circle, arithmetical operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of N natural numbers, factorial of number, Fibonacci series, prime number,reverse a given number.

Unit 5- Computer Networks -basic concepts

05 hrs

Definition,uses of network,types of network,network topology,network transmission media(twisted pair,co axial,optical fiber), definitions of network terface card(NIC),Hub,Bridge,Switch,Router,Bandwidth),internet and its applications,understanding world wide web(how the web works,web browsers)

References:

1. Computer fundamentals- RAJARAMANNA
2. Computer fundamentals- P B KOTTUR


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QUESTION PAPER PATTERN

PART -I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks


There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5


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BCA 15: C Programming

Number of Teaching Hours – 48
Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Introduction

8hrs

History of c-programming, Features, basic program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

Unit 2 –Operators

10hrs

Arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversions, mathematical functions. Managing I/O operations – reading and writing a character, formatted and unformatted I/O. Review of algorithm and flow chart

Unit 3- Decision making, branching and looping

10hrs

If and if-else statement, nested if, else if ladder, switch statement, ? operator, go to statement, while, do-while and for, nested for, infinity for loop, examples, break and continue statements.

Unit 4- Arrays and Functions

10hrs

One and two dimensional arrays, array initialization. Strings - declaration and initialization of string variable, reading and writing strings, string handling functions. Functions – Need, syntax of function declaration, all types of functions, nesting of functions, categories, parameter passing mechanism, function with arrays, Recursion .

Unit 5-Structures And Pointers: Pointers- concept, pointer operator and operation

10hrs

Pointer arithmetic, dynamic memory allocation, command line arguments. Structure Definition, declaration, accessing structure members, structure with in structure, example programs, structure with array, union and difference between structure and union with example programs, typedef, enum

Reference :

1. Computer Concepts and Programming, *Padma Reddy*
2. Let us C, *Yashwanth Kanetkar*
3. Ansi C, *Balagurusamy*

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QUESTION PAPER PATTERN

PART -I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks.
Each question must contain sub-questions-(a), (b), (c) and marks of a sub- question should not be more than 05 Marks.
The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5


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BCA-16 DIGITAL FUNDAMENTALS

Number of Teaching Hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Number system and codes:

04 Hrs

Binary number system, decimal number system, octal number system, hexadecimal number system. Bases inter conversions. Representation of negative numbers 1's and 2's complements. Codes: BCD, GRAY, EXCESS-3.

Unit 2- Boolean algebra and logic systems:

10 Hrs

Laws of Boolean algebra, Boolean laws. Evaluation of Boolean expression, De Morgan's theorems and proof, simplification on Boolean expressions using Boolean laws Basic gates (AND, OR, NOT): truth table, Definition, Boolean expression and symbols, universal gates (NAND, NOR): truth table, definition, Boolean expression and symbols, design of basic gates using NAND and NOR gates. Logical gates using NAND and NOR, Design of given Boolean expression using basic gates or NAND gate or NOR gate. XOR and XNOR gate (Definition, Boolean expression and symbols, truth table).

Unit 3- Simplification of Boolean functions:

12 Hrs

SOP and POS form, min term and max term, expression of Boolean equation in Min and Max term (conversion of SOP and POS forms to standard form) **K-map method: Rules**, simplification of Boolean equation using K-map (up to 4 variables), without and with don't-care condition, Implementation using basic gates or NAND gate or NOR gate, Quine - Mc Cluskey Tabulation method, determination and selection of prime implicants.

Unit 4- Combination logic:

08Hrs

Design procedure, design of half adder and full adder, half subtractor and full subtractor. Code converters:- BCD to Excess 3 code, gray code, magnitude comparator, encoders (BCD to decimal), decoder (decimal to BCD), multiplexer(4:1 and 8:1), de-multiplexer(1:4 and 1:8).

Unit 5- Sequential logic:

14 Hrs

Introduction, Flip-flops – SR, JK, D, T, JK-MS (Detailed Study) Registers – Introduction, shift register- types and applications. Counters – synchronous and asynchronous counters (Up, down, up down and Mod counters, ring counter, Johnson counter) with timing diagram.

References:

1. Digital Logic and Computer Design- M. Morris Mano
2. Digital fundamentals – B. Basavaraj


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QUESTION PAPER PATTERN

PART- I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks There shall be 07 questions carrying equal 15 Marks.
Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5

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BCA 17 C- programming lab

PART - A

1. All roots of quadratic equation
2. First biggest and second biggest among n numbers
3. Prime numbers between M and N ($M \leq N$)
4. Fibonacci series between M and N
5. Binary to Octal conversion
6. Sorting an unsorted array
7. Deleting the repeated elements in an array

PART - B

8. Any four String handling function using switch-case
9. Addition of two matrices
10. Multiplication of two matrices
11. Comparison of $[A]$ and $[A]^T$
12. Sum of upper triangular, lower triangular and diagonal elements of a square matrix.
13. Binary and linear search in an array using function
14. Norm and trace of a matrix


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QUESTION PAPER PATTERN

PART- I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART -II 75 Marks There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5


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SECOND SEMESTER BCA

BCA 23 MATHEMATICS –II FOR COMPUTER APPLICATIONS

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Groups theory

08 hrs

Definition of group, sub group, integral powers of element of a group, order of an element, properties related to order of an element of a group, cyclic groups, properties of cyclic group, coset decomposition of a group with examples

Unit 2 - Introduction to Graph theory

10 hrs

Definition of graph, graph as models, matrices and isomorphism, graph terminologies-definitions, properties and examples, Decomposition and special graphs. Paths, cycles and trails -connection in graphs, bipartite graphs, Eulerian circuits. Vertex degree and counting-counting extremal problems and graphic sequences and bijections paths, cycles and trails-connection in graphs

Unit 3 – Directed Graphs

10 hrs

Definition of directed graph, properties and examples, vertex degrees, Eulerian digraphs, orientations and tournaments. Trees and distance-basic properties, properties of trees, distance in trees and graphs, disjoint spanning trees, spanning trees and enumeration of trees, Hamilton paths and circuits, Representation and Isomorphism, colouring graphs. Decomposition of graphs, special graphs. Optimization and trees-minimum spanning tree, shortest paths, trees in computer science.

Unit 4 – Introduction to operations research

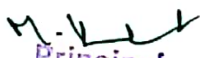
10 hrs

Nature and definition of OR, meaning, models characteristics, advantages. General methods for solving O.R..models - analytical, numeric and Monte Carlo. Advantages and scope. 10hrs

Unit 5 – Linear programming problem, transportation, assignment

10 hrs


Linear Programming Problems: Formulation (both minimization and maximization type) solution of LPP using graphical method. General LPP. Basic solutions and degenerate solutions. Standard form and canonical form. Characteristic features of LPP. Transportation problem(NWC,LC,VAM),Assignment problem, Travelling salesman Problem


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PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks
Viva – voce - 10 Marks
Record - 10 Marks

C-Program	Flowchart/Algorithm	10 Marks
	2 Program Writing	30 Marks
	Error free Compilation or Partial output	10 Marks
	Correct output with proper display	10 Marks


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BCA 24 COMPUTER ORGANISATION AND ARCHITECTURE

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Basic Structure of Computers **10hrs**

Basic operational concepts, Bus Structures, performance, Multiprocessors and Multicomputer, Historical perspective.

Unit 2- Machine instructions and programs **10 hrs**

Numbers, Arithmetic Operation and Characters, Memory Location and Addresses, Memory Operations, Instruction and Instruction Sequencing, Addressing Modes, Assembly Language, Basic Input/output Operation, Stacks and Queues, Subroutines, Additional Instructions.

Unit 3- Input/ output organization **10 hrs**

Accessing I/O Devices, Interrupts, Direct Memory Access, Buses, Interface Circuits, Standard I/O interfaces

Unit 4- The memory system **10 hrs**

Basic Concepts, Semiconductor RAM memories, Cache memories, Virtual Memories.

Unit 5- Basic processing unit **10 hrs**

Some fundamental concepts , execution of complete instruction, multiple-bus organization , introduction on hardwired control and Micro programmed control, distinguish between hardware control and micro control


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Reference Books:

1. Introduction to Graph theory by S. Lipschutz
2. Operations research by S. D. Sharma
3. Operation Research by Kalavathi.
4. Discrete Mathematical Structures by Bernard Kolman

QUESTION PAPER PATTERN

PART -I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.


PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.
The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
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- Question 6 from Unit 5
- Question 7 from Unit 5

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BCA 25 STATISTICS AND PROBABILITY

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1- Introduction to statistics

10 hrs

Definition of statistics, scope of statistics, characteristics of statistics, functions and limitations of statistics. Basic concepts(definitions only)-units/ individuals, populations/universe, sample, variable, attribute, discrete variable, continuous variable, qualitative data and quantitative data. Stages of Statistical method – collection, organisation/classification, presentation, analysis and interpretation of data (in brief). Classification of data-definition, objectives, types of classification. Definitions of frequency, class frequency, frequency distribution ,discrete frequency distribution, continuous frequency distribution, class-inclusive class and exclusive class, class limits, correction factor, open-end frequency distribution, mid-point or class mark, width/size of class number of classes, cumulative frequency, frequency density. Rules/Guidelines for classification. Tabulation-definition, objectives, types of tables-one way/simple, two way and manifold tables(dominions only).

Unit 2 -Analysis of Univariate data

10 hrs

Definitions-central tendency, average, arithmetic mean, mode, median, geometric mean and harmonic mean. Simple problems on arithmetic mean ,geometric mean and harmonic mean. Measures of Dispersion- range, range coefficient, mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient (definitions only). simple problems on mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient.

Unit 3 -Analysis of Bivariate data

10 hrs

Correlation-definition, types of correlation (i)based on number of variables-simple, multiple and partial correlation, (ii) based on direction of change –positive and negative correlation, (iii) based on change in proportion-linear and non- linear correlation(explanation in brief).Measurement of correlation-scatter diagram method to represent data(brief explanation with merits and demerits),Karl Pearson's coefficient of correlation formula and simple problems on this formula, Spearman's Rank correlation coefficient formula and simple problems on this formula.

Regression- definition, difference between correlation and regression, regression line, regression equation, properties of regression lines, uses of regression analysis. Simple problems on regression equations.

Unit 4 - Probability theory

10 hrs

Definition of probability, experiment, events, sample space. Types of events-simple, composite, equally likely, mutually exclusive, exhaustive, independent and dependent events(definition and examples).Classical definition of Probability with example, axiomatic


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References:

1. Computer organization : Carl Hamacher, Zvonko Vranesic and Safwat Zaky McGraw
2. Digital Logic and computer design : Morris Mano, M.
4. Computer Architecture and Organisation : Tanenbaum, A.S.
5. Computer Architecture and Organisation : Hayes, J.P

QUESTION PAPER PATTERN

PART- I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART- II 75 Marks


There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5


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Reference Books:

1. Statistics and probability by B.M Aggarwal
2. Statistics by Rajmohan

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.
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- Question 3 from Unit 3
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- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5


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definition of probability with example. Union and intersection of two events with example. Definition of conditional probability, statement and proof of addition theorem of probability for two non-mutually exclusive events(theorem of total probability)and problems on this theorem, statement and proof of multiplication theorem of probability for two independent events(theorem of compound probability)and problems on this theorem. Bayer's theorem(statement only).

Unit-5 Probability distributions

08 hrs

Random variable-definition, types of random variables-discrete and continuous(definitions and examples only), definition of probability distribution, definition of mathematical expectation $E(X)$ and variance $V(X)$ of random variable 'X', types of probability distributions-Bernoulli distribution, Binomial distribution, Poisson distribution and Normal distribution(simple problems on these).

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Reference Books:

1. Data structures using C and C++ - Yedidyiah et al
2. Programming in ANSI C - E. Balaguruswamy
3. Data structures and programming design using C - Robert Kruse PIII publications
4. Data structures and applications - Trembly and Sorenson
5. Systematic approach to data structure Padmareddy

QUESTION PAPER PATTERN

PART I 05 Marks


There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.
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- Question 7 from Unit 5


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BCA 26 DATA STRUCTURES USING C

Number of Teaching hours – 48

Theory Examination- 80 Max marks.
marks.

Internal Assessment- 20 Max

Unit 1-Introduction

10 hrs

Review of structures and pointers(briefly),definition of data structure, types(primitive, noprimitive-linear and non linear).Linear data structure-Stack: Definition and example, operations, representation of stack in C, evaluation of postfix expression, conversion from infix to postfix using stack table. Recursion: Recursive definition, and process, Recursion in C, writing Recursive programs
efficiency of recursion- examples

Unit 2 – Queue

10 hrs

Definition and example, operations, representation of queue in C and its types- Ordinary queue, circular queue, priority queues, double ended queue.

Unit 3- Linked list

10 hrs

Definition and example, stack and queue operations using linked list, insert and delete node in between a list, circular linked list and doubly linked list (concepts only).

Unit 4- Trees


10 hrs

Tree terminologies, Binary tree, binary tree representation, types of binary tree - linked representation, tree traversals, and binary search tree and their applications, algorithm on searching element in a binary search tree, arithmetic expression in tree representation

Unit 5- Searching and Sorting

08 hrs

Basic search technique, sequential search, and its efficiency searching ordered table- index sequential search, Binary search, interpolation search, binary tree searching, Hashing (open address and close address).Sorting: General background, quick sort, insertion sort – simple insertion, shell sort, radix sort, selection sort, binary tree sort, heap sort, merge sort.


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BCA 27 DATA STRUCTURES LAB

Part – A

1. Implementation of stack
2. Evaluation of post fix expression
3. Implementation of queue
4. Implementation of circular queue using structures
5. Shell sort

Part – B

1. Conversion of infix to postfix
2. Implementation of stack using linked list
3. Implementation of queue using linked list
4. Binary tree traversals
5. Quick sort
6. Heap sort
7. Tree sort

PRACTICAL EXAM SCHEME

Record Manual- 10 Marks

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Part –A	One Program Max marks 30	Flowchart/Algorithm	05 Marks
		Program writing	10 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Flowchart/Algorithm	10 Marks
		Program writing	10 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

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THIRD SEMESTER BCA

BCA 33 OBJECT ORIENTED PROGRAMMING WITH C++

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Introduction to C++ and OOPS

08 hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming-Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP.C++ features, Comparison with C, Structure of a C++ program, input and output statements Keywords, symbolic constants, type compatibility, declaration of variables, reference variables, operators in C++, control structures.

Unit 2 - Classes Objects and Member Functions

10 hrs

Limitations of structures in C, specifying a class, creating objects, memory allocation for objects static data members, arrays within a class, local classes. Defining member functions, call by reference, return by reference, inline functions, default arguments, making an outside function inline, nesting of member functions, private member functions, function overloading, static member functions, const member functions, pointer to members, friend and virtual functions.

Unit 3 - Constructors and Destructors

10 hrs

Introduction, constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, dynamic initialization of objects, copy constructor, dynamic constructors, constructing two dimensional arrays, const objects, destructors.

Unit 4 - Operator overloading

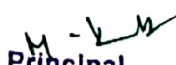
08 hrs

Introduction, definition, overloading unary operators, overloading binary operators, overloading operators using friends, string manipulations using operators, rules for operator overloading, type conversions.

Unit 5 - Inheritance and Templates

10 hrs

Inheritance definition, defining derived classes, types-single inheritance, making a private member inheritable, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes. Template definition, class templates, class templates with multiple parameters, function templates, function templates with parameters.


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Reference Books:

1. Object Oriented Programming with C++ - E Balaguruswamy
2. Object Oriented Programming in Turbo C++ - Robert Lafore
3. C++ The complete Language – Bjarne Schildt

QUESTION PAPER PATTERN

PART -I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

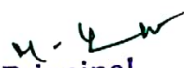
PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-
(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

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- Question 7 from Unit 5


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BCA 34 SYSTEM SOFTWARE

Number of Teaching hours – 48
Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Machine Architecture

08 hrs

Introduction, System software and machine architecture, Simplified Instructional Computers (SIC) and its architecture, Instruction Formats of IBM-360.

Unit 2 - Assembler

10 hrs

Introduction, General design procedure, design of Assembler, statement of problem, data Structure, Format of Data bases, Algorithm for pass 1 and pass 2, look for modularity. Explanation along with flowcharts for both pass 1 and pass 2 (detail flowchart). Table Processing :Searching & Sorting - Linear and binary search , comparison, examples. Interchange sort,, shell sort, bucket sort, radix exchange sort, address calculation sort,. Random entry searching

Unit 3 - Macro Language and macro processor

10 hrs

Introduction, Macro instructions, Features of macro facility-macro instruction arguments, Conditional macro Expansion, Macro calls within macro, Macro instruction defining macro implementation: statement of problem, Specification of databases and specification of database format, Algorithm and flowchart for processing macro definitions and macro expansion

Unit 4 - Loader

10 hrs

Introduction, Loader schemes-compile and go loader scheme, general loader, Absolute loader, Sub routine linkage, Relocating loader, Direct linking loader, overlays, Dynamic loading.

Unit 5 - Compiler

10 hrs

Introduction, Statement of problem, Phases of compiler, Lexical phase, syntax phase, interpretation phase optimization phase, storage assignment phase, code generation phase, Assembly phase, passes of compiler. Data Structures: statement of problem, storage classes and its use.

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References:

1. System programming – John. J. Donovan
2. System Software – Leland L. Beck, Third edition, Addison Wesley 1997
3. Systems programming and operating systems – Dhamdare

QUESTION PAPER PATTERN

PART -I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.
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Question Paper must contain:

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- Question 6 from Unit 5
- Question 7 from Unit 5


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BCA 35 DATABASE MANAGEMENT SYSTEM

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks.

Unit 1 - Introduction

10 hrs

Meaning of data and information. Meaning of persistent data, definitions for DBMS, database, database system, examples, database system applications. database management system vs. file management system, views of data, data independence, data models, database languages, database users and administrators, database system structure, application architecture, advantages of using DBMS, classification of DBMS, meaning of schema and instance.

Unit 2 - E-R Model

10 hrs

Using high-level, conceptual data models for database design, basic-concepts, constraints, keys, an example database application, E-R diagram, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality), specialization, generalization

Unit 3 - Relational Model

12 hrs

Structure of relational Databases, Relational algebra - select, project. union, set difference, rename, division operations, Modification of the database, queries using relational algebra. Extended relational algebra operations. SQL- Background, basic structure, set operation, aggregate functions, NULL values, nested sub queries, Views, complex queries, Modification of the database, joined relations, Data Definition Language, domain constraints, referential integrity in SQL. Assertions, authorization, privileges in SQL, Encryption techniques.

Unit 4 - Relational Database Design

10 hrs

Pitfalls in relational data base design, Normalization for relational databases. Normal forms based on primary keys, General definitions of first, second and third normal forms, Functional Dependency (concept and example) decomposition, Boyce-Codd Normal Form - definition and example, fourth Normal form - Multi valued Dependencies - definition and example.

Unit 5 - Storage and File Structure

06 hrs

Overview of physical storage media, RAID, Organisation of records in files, Data dictionary, Ordered indices, B+ tree, introduction to transactions.


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Reference Books:

1. Korth, Sudarshan "Database System concepts", Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri "fundamentals of database Systems"
3. Addison C.J. Date "Introduction to Database systems" Addison-wesley.
4. Bipin C Desai "Introduction to Data base system" Galgotia publications

QUESTION PAPER PATTERN

PART-I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.


PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

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- Question 7 from Unit 5


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BCA 36 C++PROGRAMMING LAB

PART A

1. Write a c++ program to find the result of a student using class concept
2. Define a class employee having data members name, basic salary, net salary with the member function getdata() , showdata(). Calculate the net salary assuming appropriate % for all allowance and deductions using class concept
3. Define a class to represent product details it includes data member pname, pcode, price, pquality include member function a) to get product detail b) to display the product details and total price using class concept
4. Write a c++ program to print Fibonacci series using constructor
5. Write a c++ program to find biggest of two numbers and three numbers using function overloading
6. write a c++ program to calculate area of triangle, rectangle and circle using function overloading
7. write a c++ program to calculate family income using friend function

PART - B

8. write a c++ program to add two complex numbers using operator overloading
9. write a c++ program to concatenate two string using operator overloading
10. write a c++ program to implement multiple inheritance by creating classes- father, mother and son
11. write a c++ program to swap two numbers using function template
12. write a c++ program to sort an array using function template
13. Write a c++ program to define a class Bank Account including the following class members.
DataMembers:, cust name, accno, balance.
Member Functions: a) getdata(custname,accno,balance).
b) display(accno).
c) deposit(acno,amt).
d) withdrow(accno,amt) updation aftern checking the balance.
e) To display name & balance of all the records
14. Write a c++ program to implement multilevel inheritance by creating classes:
College—> name_id, location,dept
Student—>name ,reg_no, course, age
DOB—>date, month, year, place


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PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record - 10 Marks

Part –A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks


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BCA 37 SQL LAB

- I. Use the default emp and dept table to write SQL statements for the following queries
 1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find the name of all managers and number of employees under them
 3. Find the details of all employees in the research department
 4. Find the minimum, maximum and average salary of each department
 5. Find department name having least number of employees
 6. Find the department name having highest annual payroll
 7. Add an employee under the manager smith
 8. Find the employees who are not getting commission

 - II. Create tables as below
Student(name string, regno string primary key, dob date, doj date ,course string foreign key)
Markscard(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)
Write SQL statements for the following queries.
 1. List the names of students studying in BCA course in the order of their joining
 2. Find the name of student who has scored highest marks in every sem of each course
 3. Count the number of students in each course
 4. Find the course having second highest number of students
 5. Find the course having least students in I semester
 6. Display the details of student 'xxx' in every semester.
 7. Find the names of al juniors of 'yyy' in course 'c1'
 8. Find all students studying with 'xxx' and elder to him (compare DOB)

 - III Dept(deptno integer pkey, dname string not null, loc string not null)
Emp(eno integer pkey, ename string, deptno fkey, design string not null, bsal number>0)
Salary(eno fkey, da, hra,gross,it,pf,net,comm)
DESIGN ARE manager,clerk,salesman
Comm=5% of basic if design=salesman otherwise null
Da=15% bsal hra = 7% of bsal gross=bsal+da+hra
It =0 if gross<15000
= 10% of gross if gross between 15000 and 30000
=20% of gross if gross between 30000 and 50000
= 30% of gross otherwise
pf= 10% of gross or 1000 whichever is less
- Write SQL statements for
1. Count the number of employees in every designation
 2. List the employees of every department in descending order of their net salary
 3. List the name and salary of highest salary payer in every department
 4. List the name of employee paying highest IT
 5. List the total IT paid by each department
 6. List the departments in every location
 7. Raise the basic salary by 10% for the managers of every department.
 8. Find the number of employees having atleast 10 years of experience in every department.

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- IV Create tables as below
 Employee(eno, ename,street,city)
 Company(cno,cname,city)
 Works(eno,cno,sal)
 Manages(mno,eno)

Write SQL statements for the following queries

1. Find the name of all employee working in the city in which they live
2. Find the company having most employee
3. Count the number of employees under each manager.
4. Find the company having second highest payroll
5. Find employee drawing more salary than his manager in every company
6. Raise the salary of every manager by 25%
7. Find name of employees who are not having managers
8. Find average, highest and lowest salary of every company

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks
 Viva – voce - 10 Marks
 Record - 10 Marks

Table Creation	2 Tables creation & data insertion from any two cycles	20 marks
SQL queries	2 SQL queries from I cycle and 6 SQL queries from any two other cycles for which tables created	40 marks
	Queries writing 3 marks (each)	
	Execution 2 marks (each)	

NOTE: Examiner has to ask 8 queries from two cycles in which students should answer minimum 3 queries in any one cycle


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FOURTH SEMESTER BCA

BCA 43 JAVA PROGRAMMING

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to Java and Java Program Structure

10 hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Introduction to packages in Java, Applets, Operators & Expressions, Data types, Constants and Variables, Type conversions, Mathematical functions; Control Statements: Decision making and Branching with while, do-while, for and labeled loops; Arrays, Vectors & Strings: Initialization, Declaration of 1D, 2D arrays, String arrays, String methods, Vectors, Wrapper classes.

Unit 2 - Overview

10 hrs

Class, Objects, Constructor, Method overloading, Static members; Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; Interface: Defining, Extending and Implementing assigning interface variables

Unit 3 -Packages and multithreading

10 hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

Unit 4 - Exceptions and Debugging


10 hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and rethrowing exceptions, creating Exception classes, multiple catch statements, finally clause, tips for using exceptions, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

Unit 5 - Applets and Graphics

08 hrs

Applets basics, applets and application, Life cycle, Life cycle of Applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon. Using control loops in applets, drawing bar charts.


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Reference Books:

1. Java, The Complete Reference – Patrick Naughton and Schildt
2. Programming in Java – Joseph L Weber
3. Java Programming – E Balaguruswamy

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 1

Question 3 from Unit 2

Question 4 from Unit 2 and 3

Question 5 from Unit 3

Question 6 from Unit 4

Question 7 from Unit 5

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BCA 44 COMPUTER GRAPHICS

Number of Teaching hours – 48
Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to Multimedia

10 hrs

Definition, CD-ROM and the multimedia highway, Uses of Multimedia, Introduction to making multimedia – The stages of Project, the hardware & software requirements to make good multimedia, Multimedia skills .Multimedia building blocks- SOUND: MIDI, Digital audio, audio file formats. Images: still images, color and file formats. ANIMATION: principles of animation, making animation. VIDEO: using video, how video works, and video standards.

Unit 2 - Introduction to Graphics applications

10 hrs

CAD , presentation graphics, computer art, entertainment, education and training, visualization, image processing. Display devices – raster scan displays – color CRT, DVST, LCD, 3D viewing devices. Raster scan systems, Random scan systems. List of I/O devices.

Unit 3 - Output primitives

10 hrs

Points and lines, line drawing algorithm, DDA algorithm, Bresenham's line algorithm, examples, parallel line algorithm, loading the frame buffer, circle generating algorithm, midpoint circle algorithm, ellipse generating algorithm. Pixel addressing and object geometry. Color and gray scale levels, color tables, character attributes.

Unit 4 - 2D Transformation

10 hrs

Basic Transformations- translation,. Scaling, rotation, matrix representation and homogeneous coordinates, composite transformations- translation, scaling, general pivot point and fixed point rotation, scaling directions, other transformations – reflection, shear, transformation between coordinates, inverse transformations.

Unit 5 - Windowing and Clipping

08 hrs

Introduction, the viewing transformation, viewing transformation implementation, clipping, the Cohen-Sutherland outcode algorithm, Liang-Barsky line clipping algorithm, the Sutherland-Hodgeman algorithm, the clipping of polygons and adding clipping to the system, text clipping, exterior clipping, curve clipping.


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Reference Books:

1. Tay Vaughan "Multimedia – making it work", TMH publication, fifth edition.
2. D Hearn & M P Baker: "Computer Graphics C version", Pearson Education
3. D Newman and Sproull: "Principles of Interactive Computer Graphics -, TMH,II edition.
4. Steven Harrington "Computer graphics: A programming Approach", TMH publication. Second edition
5. Roy plastock and Zhigang Xiang: " Computer graphics". Schaum's outline series, II edition.

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

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- Question 6 from Unit 5
- Question 7 from Unit 5


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BCA 45 Data Warehousing and Data Mining

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Data Warehousing and OLAP

10 hrs

Data Warehouse basic concepts, Data Warehouse Modeling, Data Cube and OLAP, Data warehouse Schemes.

Unit 2 - Data Mining

10 hrs

Introduction, Data Mining, Motivating Challenges, Data Mining Tasks, Technologies, Data Mining Applications, Data Preprocessing.

Unit 3 - Association Analysis

10 hrs

Frequent Item set Generation, Rule Generation, Compact Representation of Frequent Item sets

Unit 4 - Classification

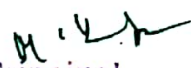
10 hrs

Basics, General approach to solve classification problem, Decision Trees, Rule Based Classifiers, Nearest Neighbor Classifiers.

Unit 5 - Methods, Improving accuracy of Classification

08 hrs

Methods, Improving accuracy of clarification methods, Evaluation criteria for classification methods, Multiclass Problem.


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Text Books:

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining, Addison- Wesley, 2005.
2. G.K.Gupta: Introduction to Data Mining with Case Studies, 3rd Edition, PHI, New Delhi, 2009

Reference Books:

1. Arun K Pujari: Data Mining Techniques University Press, 2nd Edition, 2009.
2. Jiawei Han and Micheline Kamber : Data Mining-Concepts and Techniques, II Edition, Morgan Kaufmann Publisher, 2006.
3. Alex Berson and Stephen J. Smith: Data Warehousing, Data Mining, and OLAP Computing, McGrawHill Publisher, 1997.

QUESTION PAPER PATTERN

PART -I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART -II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 1

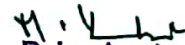
Question 3 from Unit 2

Question 4 from Unit 2 and 3

Question 5 from Unit 3

Question 6 from Unit 4

Question 7 from Unit 5


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BCA 46 JAVA PROGRAMMING LAB

PART A

1. Write a Java program to generate first n odd numbers and pick and display prime numbers among them. Read value for n as command line argument.
2. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.
3. Write a java program to find area of geometric figures (at least 3) using method overloading.
4. Write a Java program to find the circumference and area of the circle using interface.
5. Write a java program to perform matrix addition and multiplication using case statement
6. Write a java program to accept student information using array of objects and constructor initialisation.
7. Write a java program to accept student, employee information to perform relevant computation using hierarchical inheritance.

PART B

8. Write a java program to implement static and dynamic stack using interface using abstract class.
9. Write a java program to implement constructor overloading by passing different number of parameter of different types.
10. Define a package to contain the class sort to contain methods for various sorting techniques with time complexity (at least 3) Use this package to sort the list
11. Write a Java program to generate odd, even and Fibonacci numbers simultaneously using the concept of multi-threading.
12. Write a program to implement an applet by passing parameter to HTML
13. Write an applet program to display human face
14. Create an applet to display concentric n circles, input value for n.

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PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record - 10 Marks

Part –A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks



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BCA 47 COMPUTER GRAPHICS PROGRAMMING LAB

PART A

1. Write a program to draw borders at the four corners of the screen.
2. Write a program to implement DDA line drawing algorithm
3. Write a program to implement Bresenham's line drawing algorithm
4. Write a program to implement Bresenham's line drawing algorithm for $|m| < 1$
5. Write a program to implement Parallel line algorithm
6. Write a program to implement Mid point circle algorithm
7. Write a program to implement Ellipse generating algorithm

PART B

8. Write a program to continuously rotate an object about origin. Small angles to be used for successive rotation.
9. Write a program that applies any specified sequence of transformations to a displayed object. The program is to be designed so that a user selects the transformation sequence and associated parameter from displayed menus, and the composite transformation is then calculated and used to transform the object. Display the original and transformed objects in different colours or different fill patterns.
10. Write a program to demonstrate clipping by defining world and viewing coordinates
11. Write a program to implement Cohen Sutherland line clipping algorithm
12. Write a program to implement Sutherland - Hodgeman polygon clipping algorithm

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record - 10 Marks

Part –A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks


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FIFTH SEMESTER BCA
BCA 51 ADVANCED PROGRAMMING IN JAVA

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Review of Java Concepts and AWT, Graphics Programming **10 hrs**

Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, drawing objects, line graphs, polygon classes, working with colors and fonts. Advanced graphics operations using Java2D. Designing simple User Interfaces (UIs) using AWT, Layout Manages.

Unit 2 - Swing, Event Handling and Event Handling: **10 hrs**

Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, Event queue. Swing: Meaning, need difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing, and handling basic events.

Unit 3 - Java Beans, Java Archives (JAR) **10 hrs**

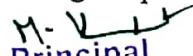
Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties. Java Archives (JARs): Meaning, need, the JAR utility, Creating JAR files.

Unit 4 - File Management and JDBC **10 hrs**

File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file. JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBC Exceptions.

Unit 5 -Fundamental concepts of Collections, Generics and Network programming **08 hrs**

Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map. Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing the container, implementing the constructors, implementing generic methods. Network programming: Meaning of Client, Server, Socket, port. Creating a client socket, creating a server socket, writing simple server and client.


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Reference books:

1. The Complete Reference – Java 2: Herbert Schildt, 5th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.

QUESTION PAPER PATTERN

PART I 05 Marks

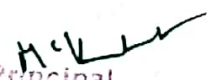
There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.
The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1
- Question 2 from Unit 2
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5


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BCA 52 Data Communication

Number of Teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to Data Communication

08 hrs

Communication model & Data Communication networking -types. Data Transmission- Transmission terminology, Analog & Digital data transmission, Transmission impairments – attenuation, delay distortion & noise.

Unit 2: Data Transmission media

10 hrs

Guided Transmission- types- Twisted pair, coaxial cable & optical fiber – physical description, application & characteristics. Unguided Transmission- wireless transmission: types- Terrestrial type, Satellite, Broadcast radio – physical description, application & characteristics.

Unit 3: Data encoding

10 hrs

Basics, types and description of different signals, Digital data & digital signals: NRZ, multilevel binary, Bi phase techniques. Digital data & Analog signals: Encoding techniques- ASK, FSK, PSK Analog data & Digital signals: PCM & delta modulation Analog data & Analog signals: Modulation- AM & FM Spread spectrum: Frequency hopping, direct sequence Asynchronous & synchronous transmission: Line configurations- full duplex & half duplex.

Unit 4 - Data link control & medium access sub

10 hrs

Flow control: Stop and wait & sliding window flow control. Error detection: Parity check, CRC Error control: Stop and wait ARQ, Go Back-N ARQ High-level data link control: basics, Characteristics, frame structure, operation Medium access sub layer- the channel allocation problem. Multiple access Protocol-ALOHA, carriers sense multiple access protocol, collision free protocol.

Unit 5 - Multiplexing and Switching

10 hrs

Frequency division multiplexing- characteristics, analog carrier systems, Time division multiplexing- characteristics, link control. Digital carrier system, ISDN user network interface. Circuit switching networks- switching concept, space division & time division switching- Pocket switching networks-principles, switching technique, and packet size. Comparison of Circuit switching & Packet switching



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Reference books:

1. Data and Computer Communications – William Stallings.
2. Computer Networks – Andrew S. Tanenbaum.
3. Data Communication – Ulysis D Black.
4. Data Communication and Networking – Behrouz A. Forouzan.
5. Internetworking with TCP/ IP – Douglas E comer, PHI

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.


PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-
(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5


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BCA 53 Web programming with J2EE Concepts and PHP

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 – Introduction

08hrs

Internet, WWW, Web Browsers and Web Servers, URLs, HTTP, Evolution of the Web, Peak into the History of the Web, Internet Applications, Important Components of the Web, Web Search Engines, Application Servers. HTML and DHTML Concepts : Programming structure, different basic tags , Images, Hyper text Links. Lists, Tables, Forms, Frames. Cascading Style Sheets: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, Background images, The and <div> tags.

Unit 2 – The JavaScript

10 hrs

Overview of JavaScript, Execution Environment, Object orientation and JavaScript, Syntactic characteristics, Primitives, operations, and expressions, Arrays, Functions, Pattern matching using regular expressions, Examples. Events and Event Handling,

Unit 3 – Client – Server Systems

10 hrs

Meaning of client and server, Client-Server architecture, benefits, concept of ports and sockets. Protocol – Meaning, definition, examples, meaning of stateless and state (state full) protocols. HTTP protocol – meaning, http protocol request and response header formats, status codes. Client-Server communication scenario.

Unit 4 – JEE Technology Concepts


10 hrs

Multi-tier architecture for application development – Meaning, need, advantages. Meaning of enterprise application and web application, various tiers in enterprise application – client tier, web tier, business tier, enterprise information system tier. Introduction to JEE concepts – Need, advantages, characteristics of JEE technology, the concepts of containers, components and services – meaning of web container, application client container, EJB container.

Unit 5 – Basics of PHP and Java Server Pages Programming Concepts

10hrs

Introduction to JSP - language structure, advantages, characteristics, comparison between Java and Java Server Pages. Various aspects of Java Server Pages programs, writing and executing JSP programs. Writing dynamic programs using JSP. Database programming through JSP. Basics of PHP : Introduction ,variables ,functions, sessions, date, mysql integrations with php, file uploading.


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Reference books:

1. The Complete Reference – J2EE – Jim Keogh
2. J2EE – Kevin Mukhar, James L. Weaver, James P Crume, Ron Phillips
3. learning php and mysql 4th Edition Robin Nixon.
4. Begining php-5 and Mysql Cristian Darie.

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

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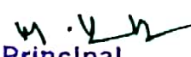
Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 5

Question 7 from Unit 5


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BCA 54 OPERATING SYSTEM

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 – Introduction

10 hrs

Definition of Operating System, need. Early systems – Simple monitors, Batch Systems. Multiprogramming, Time Sharing, Real time, Parallel and Distributed systems. Special Purpose Systems – Real Time Embedded Systems, Multimedia Systems, Handheld Systems. Computing Environments – Traditional, Client Server, Peer-to-Peer and Web based. Open Source Operating Systems.

Unit 2 – Process Management

10 hrs

Process concept – meaning of process, sequential and concurrent processes, process state, process control block, threads, Process scheduling – scheduling queues, schedulers, context switch. Operations on Processes – creation and termination. Inter process communication – Independent and co-operating processes. Communication in client-server systems – RPC and RMI. Process scheduling – Basic concepts
Processor - CPU I/O burst cycle, CPU Scheduler, Preemptive scheduling, dispatcher. Scheduling criteria, Scheduling algorithm – First-Come-First-Served (FCFS), Shortest Job First (SJF), Priority Scheduling, Round Robin. Multi-level queue scheduling (Concepts only), multi-level feedback queue scheduling (Concepts only). Multiple processor scheduling, Real time scheduling.

Unit 3 – Deadlocks

10 hrs

Definition with example, System model, Dead lock characterization – Necessary Conditions, Resource Allocation Graph, Dead lock prevention, Avoidance and detection, Recovery from dead lock.

Unit 4 – Memory Management

10 hrs

Logical and Physical address space, Swapping, Contiguous allocation, Paging, Segmentation, Virtual memory - demand paging and its performance, Page replacement algorithms, Allocation of frames, Thrashing.

Unit 5 – Disk and File Management

08 hrs

Secondary Storage Structure and Disk Management: Disk structure & scheduling methods, Disk management, disk reliability. File concepts, Access methods, Directory structure, Protection and consistency semantics, File system structure, Allocation methods, free space management.

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References:

1. Abraham Silberschatz and Peter Baer Galvin, Operating System Concepts, Fifth edition, Addison - wesley 1989.
2. Milan Milonkovic, Operating System Concepts & Design, II Edition, McGraw Hill 1992.
3. Stallings, Operating Systems, Pearson Edition.
4. Tanenbaum, Operating System Concepts, Pearson Education
5. Nutt : Operating System, 3/e Pearson Education 2004

QUESTION PAPER PATTERN

PART-I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART- II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions- (a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

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- Question 6 from Unit 5
- Question 7 from Unit 5


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BCA 55 SOFTWARE ENGINEERING

Number of teaching hours – 48

Theory Examination- 80 Max marks
marks

Internal Assessment- 20 Max

Unit 1 – Introduction

10hrs

Definition of software, software problems (industrial strength software, software is expensive, late and unreliable maintenance and rework), software engineering challengers (scale, quality and productivity, attributes), software engineering approach (phased development process, managing process, components).

Unit 2 – Software processes

10hrs

Introduction to software process (processes and process modules, component of software process), characteristics of software process (predictability, support testability and maintainability, support change, early defect removal, process improvement and feedback), software process models (waterfall, prototype, iterativ enhancement model, spiral, comparison of process models).

Unit 3 – Software Planning

10hrs

Introduction to planning, effort estimation (uncertainties, building efforts, bottom-up, COCOMO model), project scheduling and staffing (overall, detailed scheduling, team structure), risk management (concepts, assessment), project monitoring plan (measurements, project monitoring and tracking).

Unit 4 – Analysis and Design

10hrs

Software requirements (needs and requirement process), problem analysis (informal approach, data flow modeling, object oriented modeling, prototyping), requirement specification (characteristics of SRS, components of SRS, specification language, structure of requirement document), validation. Design: Function oriented design: design principles, module level concept (coupling, cohesion), structure design methodology (DFD, first level factoring).

Unit 5 -Coding and Testing

08 hrs

Coding: programming principles and guidelines (common coding errors, structured programming, information hiding, some programming practices, coding standards), refactoring (basic concepts with examples, common refactoring), verification (code inspections, static analysis, proving correctness, unit testing). Testing: testing fundamentals, black box and white box testing, comparison between black box and white box testing, testing process (levels of testing, test plan).

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Reference books:

1. An integrated approach to software engineering-Pankaj Jalote.
2. Roger Pressman, Software Engineering- A Practitioner's Approach TMH
3. Ian Sommerville, Software Engineering, Pearson Publications Ltd.

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

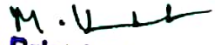
PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 2
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- Question 5 from Unit 4
- Question 6 from Unit 5
- Question 7 from Unit 5


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BCA 56 WEB PROGRAMMING LAB WITH J2EE CONCEPTS AND PHP

Part – A

1. Create a webpage using html to display college information with appropriate images and list of departments.
2. Create a webpage using html to display the below mentioned table (use appropriate colors):

Name		Place
Rama	R	Bhadravathi
Kumar	B	Shimoga
Rajesh	S	Thirthahalli
Ramakrishna	RK	Bhadravathi

3. Create a webpage with two images which alternately changes on mouse over using CSS.
4. Create a webpage to display system date in the given format: Ex: 01 January 2016
5. Create a webpage to demonstrate the use of external Cascading Style Sheets
6. Create a webpage to demonstrate the use of span and div tags in DHTML.
7. Create a webpage with two textboxes and command buttons to perform arithmetic operations and display the result in appropriate dialog boxes using JavaScript.
8. Create a webpage to convert a given text from uppercase to lowercase using JavaScript.

Part – B

9. Write a JSP application to read the details of a student and store the same on to the MS Access database.
10. Write a JSP application to evaluate the salary details of an employee and store the same in the MS Access database table.
11. Write a multilayered JSP program to evaluate the result of a student. Consider student name, register number, marks obtained in 5 subjects as input and read them by writing a proper user interface JSP. Evaluate the total marks, percentage marks and grade by writing a process JSP. While evaluating the grade verify whether the student has cleared all the papers. Display the output with proper marks list format by using <TABLE> tag.

College Name

Marks List

Name of the Student :

Register Number :

Subjects	Max. Marks	Min. Marks	Marks Obtained
1. Subject1	100	40	--
2. Subject2	100	40	--
3. Subject3	100	40	--
4. Subject4	100	40	--
5. Subject5	100	40	--
Total Marks	500	200	--
Percentage Marks:	-- %		
Grade:	----		


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12. Write a multilayered JSP application to accept and store student information. Accept student name, register number, course, combination, semester, marks obtained in five subjects as input through a proper user interface page. Design course, combination and semester as combo boxes. Store the accepted details in the MS Access table.
13. Write a multilayered JSP application to read and store employee information. Read employee name, employee identification number, Department, Designation, Basic Salary, TA, DA, HRA, PF, LIC (in percentage) as input through a proper user interface page. Also calculate TA Amount, DA Amount, HRA Amount, PF Amount, LIC Amount, Total Allowances, Total Deductions, Gross Salary and Net Salary components of the employee. Along with the employee information store the salary details in the MS Access table.
14. Write a program to connect the mysql-database and display connection status using PHP.
15. Write a program to upload and display an image using PHP.


PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record 10 Marks

Part –A	One Program Max marks 25	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 35	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks


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BCA 57 ADVANCED JAVA PROGRAMMING LAB

Part A

1. Write an Applet program to design a user interface to key-in the details of an employee.
2. Write an applet to add, remove, select an item in a list
3. Write a applet display select geometric figure from a list.
4. Write a program to implement mouse events
5. Write a program to implement keyboard events
6. Write a Java program (console) to store the typed text to a file.
7. Write a Java program to display the content of a file.
8. Write a Java program to edit the content of a file.

Part B

9. Write a Java program with JDBC to store the details of a person on to an Oracle database table.
10. Write a Java program with JDBC to access and display the details of a person stored in an Oracle database table.
11. Write a Java program with JDBC to access and delete the details of a given person stored in an Oracle database table.
12. Write a Java GUI program to accept the details of an employee and store the same on to an Oracle database table.
13. Write a Java GUI program to access and display the details of a given employee stored in Oracle database table.
14. Write a Java program to design a simple Client and Server components. Pass simple text (static) from client to the server and a receipt acknowledgement (static) back to the client.
15. Write a Java program to demonstrate the use of generics.


PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record 10 Marks

Part –A	One Program Max marks 25	Program writing	15 Marks
		Error free compilation or partial output	05 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 35	Program writing	20 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks


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SIXTH SEMESTER BCA
BCA 61 COMPUTER NETWORKS

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Basics

Uses of computer networks, network hardware- broadcast networks, point – to -point networks, network software-protocol hierarchies, design issues, interface & services, connection oriented & connection less services, service primitives

10 hrs

Unit 2: Reference models

OSI reference model- description of each layer. TCP/IP reference model, comparison of the two models, Critique of the OSI model and protocols, Critique of the TCP/IP model and protocols, Example networks-ARPANET,ATM.

10 hrs

Unit 3: The network layer

Design issues, routing algorithms- the optimality principle, shortest path routing, distance vector routing, and link state routing. Congestion control algorithms- general principle, Congestion prevention policies, traffic shaping. The network layer in the internet - the IP protocol, IP address, and subnet. Internet control protocol.

10 hrs

Unit 4: The transport layer

The transport service- services provided to the upper layer, quality service, and transport service primitives. Elements of transport protocol - addressing, establishing a connection, releasing a connection. A simple transport protocol- the example service primitives, the example transport entity. The Internet transport protocol (TCP & UDP)- the service model, the TCP segment header, the TCP connection management. UDP - header.

10 hrs

Unit 5: The Application layer

Network security - traditional cryptography, two fundamental cryptographic principles, secret key & public key algorithms. DNS - Name space, SNMP - model. Electronic mail, architecture and services, www.

08 hrs


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Reference books:

1. Data and Computer Communications – William Stallings.
2. Computer Networks – Andrew S. Tanenbaum.
3. Data Communication – Ulysis D Black.
4. Data Communication and Networking – Behrouz A. Forouzan.
5. Internetworking with TCP/ IP – Douglas E comer, PHI

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.
The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks .Each question must contain sub-questions-
(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 2
- Question 3 from Unit 2 and 3
- Question 4 from Unit 3
- Question 5 from Unit 4
- Question 6 from Unit 4
- Question 7 from Unit 5


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BCA 62 DOT NET PROGRAMMING

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction to C# & .NET platform and Building C# Applications 08hrs

Introduction to C# and .NET platform : .NET solution, Building blocks of the .NET platform(CLR, CTS, CLS), Role of .NET base class libraries, .NET Aware programming languages, role of common intermediate languages & type metadata and assembly manifests, A tour of the .NET namespaces.

Building C# Applications : Role of the command line compiler(csc.exe), Building a C# application using csc.exe, the command line debugger(cordbg.exe), using the visual studio .NET IDE & its debugging, C# "pre-processor" directives.

Unit 2 - C# language fundament mentals 10hrs

Anatomy of a basic C# class, creating objects: constructor basics, Default assignments & variables scope, variables initialization syntax, basic inputs & output with the console class, understand static methods, arrays & string manipulations, Encapsulation Services, Class Properties , Read and Write only Properties, Static Properties, Inheritance Is As keyword Usage, Controlling Base Class Creation With Base, Sealed Classes, Delegation , Polymorphism, The Virtual and Override Keywords ,Abstract Classes, Abstract Methods

Unit 3 - Exception & object life time and Interface and Collections 10hrs

Exception & object life time :The Basics of Object Life Time, The Role Of Application Roots, Understanding Object Generations, The Role Of .NET Exception Handling ,Throwing a Generic Exception ,Catching Exceptions, Properties of Exception, Multiple Exception (Concepts Only),The Finally Block

Interface & Collections : Definition, Implementing an Interface in C#, Interface members at object level, Interface as Parameters, Interface as Return Values, Arrays of Interface Types, Interface Hierarchies, Interface as polymorphic agents, Exploring the system. collections Namespaces.

Unit 4 - Introducing windows forms 10hrs

Overview of the system. windows. Forms Namespaces, An Anatomy of a Form, A Simple Form Program, Function with Control Class, The Functionality Of the Form Class, Component class, control class, Programming with windows forms controls : Working with Button types, Check Boxes, Radio Buttons, Group Boxes, List Boxes, Calender control, assigning tool tips for controls.


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Unit 5 - Data access with ADO.NET

10hrs

The Two Faces Of ADO.NET, Understanding ADO.NET Data Providers, Understanding The Connected Layer of ADO.NET, Working with Connection Object, Inserting, Updating and Deleting Records

References Book:

- 1 Pro C# with .NET 3.0 ----- Andrew Troelsen
- 2 C# Programming ----- E Balaguruswamy

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART II 75 Marks There shall be 07 questions carrying equal 15 Marks.

Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

- Question 1 from Unit 1.
- Question 2 from Unit 1
- Question 3 from Unit 2
- Question 4 from Unit 3
- Question 5 from Unit 3
- Question 6 from Unit 4
- Question 7 from Unit 5


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BCA 63 UNIX Operating System

Number of teaching hours – 48

Theory Examination- 80 Max marks.

Internal Assessment- 20 Max marks

Unit 1 - Introduction

08 hrs

The Unix operating system, , A brief Session, The Unix Architecture, Features of UNIX, POSIX and Single UNIX specification, Locating commands, Internal and External commands, Command Structure, Flexibility of command Usage, Man Browsing the Manual Pages ON-line, Understanding the man Documentation. General-Purpose Utilities: Cal command, date command, echo, printf, bc, script, passwd, who, uname.

Unit 2 - The File System

10 hrs

The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: Cat, cp, rm, mv, more, The lp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip.

Basic File Attributes: Listing file attributes, listing directory attributes, File Ownership, File Permissions, changing file permissions, Directory Permissions, Changing File Ownership.

Unit 3 - The Vi Editor

10 hrs

Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions(U and U), Repeating the last command(.), Searching for a Pattern(/ and ?), Substitution.

Unit 4 - The process

10 hrs

Process basics, process status, system process, Mechanism of process creations, Internal and external commands, process states and zombies, running jobs in background, nice, killing process with signals, job control, at and batch, cron, timing process.

Simple filters: The sample database, pr, head, tail, cut, paste, sort, uniq, tr, displaying a word-count list. Filters using regular expressions: grep, basic regular expressions, extended regular expressions.

Unit 5 - The Shell

08 hrs

The shell's Interpretive Cycle, Shell Offering, Pattern Matching, Escaping and Quoting, Redirection, /dev/null and /dev/tty, Pipes, tee, Command Substitution, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, exit and exit status of command, the logical operators && and ||- conditional execution, the if conditional, using test and to evaluate expressions, the case conditional, expr, \$0: calling a script by different names, while, for, set and shift, the here document (<<), trap, debugging shell scripts with set -x, sample validation and data entry scripts.

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References :

1. Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH

QUESTION PAPER PATTERN

PART I 05 Marks

There shall be 05 questions from all the Units and each carrying 01 Marks.

The student has to attend all the 05 questions.

PART II 75 Marks

There shall be 07 questions carrying equal 15 Marks. Each question must contain sub-questions-(a),(b),(c) and marks of a sub- question should not be more than 05 Marks.

The student has to attend any 05 full questions

Question Paper must contain:

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 2

Question 4 from Unit 3

Question 5 from Unit 4

Question 6 from Unit 4

Question 7 from Unit 5


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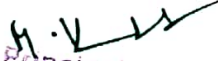
BCA 64 UNIX LAB

PART A

1. Write a shell script to count the number of characters in a given string.
2. Write a shell script program to perform all arithmetic operation on floating point
3. Write a shell script program to check whether the given no. is positive or negative.
4. Write a shell script program to find area of a square, rectangle, circle and triangle.
5. Write a shell script program to reverse a number.
6. Write a shell script program to find sum of digit of a no.
7. Write a shell script program to add, subtract, multiply the two given numbers passed as command line arguments.
8. Write a shell script program to read data from command line argument and print 1st and 2nd command line argument and print how many no. of argument user has given.

Part – B

1. Write a shell script program to read pattern and file name and search whether the given pattern is present in a file or not, with suitable validation.
2. Write a shell script program to check whether the given file is present in a directory and check what are all the permission given for the owner.
3. Write a shell script program to read filename from command line argument and check whether the file is regular file or directory or by both.
4. Write a shell script program to read 2 filename and check which 1 is newer and which 1 is older.
5. Write a shell script program to find the number of directory files and ordinary files in the current directory.
6. Write a shell script program to perform the following any 1 operation based on your own
 - a. choice.
 - b. show first 5 line data
 - c. show last 3 line data
 - d. sort the data
 - e. find out word count


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7. Write a shell script program to perform the following any 1 operation on your own choice.

- a. list the file
- b. process the user
- c. today's date
- d. user of the system
- e. exit

PRACTICAL EXAM SCHEME

Practical Proper - 60 Marks

Viva – voce - 10 Marks

Record 10 Marks

Part -A	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks
Part - B	One Program Max marks 30	Program writing	15 Marks
		Error free compilation or partial output	10 Marks
		Correct result with proper display	05 Marks

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BCA 65 PROJECT LAB

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

For the project work, the guide(internal) evaluate the work for 20 marks based on the performance of the candidates during the development of he project and the external examiner will evaluate the project work as follows:

- Project Report - 20 marks
- Project Demo -30 Marks
- Viva-Voce - 30 marks

The Project work should be either an individual one or a group of not more than five members.

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FIRST SEMESTER BSc

Computer Science -I

BCS-1 Computers Fundamentals and C Programming

Theory Examination- 50 Max marks.
Internal Assessment- 10 Max marks

Number of Teaching hours –48

Unit 1- Introduction to Computer Systems:

15hrs

Definition of a Computer, History of Computers, Generations of Computers, types of computer – based on size and working principle, Block diagram of a Computer with functional units(explanation), Parts of a computer system, Information processing Cycle. Definition of software and hardware, types of programming languages, assembler, compiler, interpreter, linker, loader (Definitions only), number system – decimal, binary, octal and hexadecimal number, interconversion of decimal to binary and vice-versa. ASCII codes. Algorithm-definition, Characteristics, notations. Flowchart-definition, Symbols used in writing the flow-chart Writing an algorithm and flow-chart of simple problems.

Unit 2- Introduction to Computer Systems:

06hrs

Introduction to C, features C , basic C program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

Unit 3- Operators and Expressions:

06hrs

C operators- arithmetic, relational, logical, bitwise, assignment, increment and decrement, conditional (?:) and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversions, mathematical functions. Definition of macro and pre-processor directives, Managing I/O operation – reading and writing a character, formatted and unformatted I/O functions.

Unit 4- Control Structures:

10hrs

conditional control statements- if, if-else, nested if, switch , go to statement, while, do-while and for statements. Unconditional control statements- break, continue and return statements (definition and explanation with syntax, flowchart and examples)

Unit 5- Arrays, Strings and Functions:

10hrs

Definitions of an array, types-one and two dimensional array, (definition, declaration, initialization with examples). *Strings* – definition, declaration and initialization of string variable, string handling functions- strcmp, strcpy, strlen, strlwr,strupr (explanation with syntax and examples) Functions – definition, need, syntax for function declaration, function prototype, category of functions, nesting of functions, function with arrays, scope of variables , parameter passing mechanism- call by value and call by reference. Recursion and Recursive function (definitions only)

Reference :

1. Fundamentals of Computers, V. Rajaraman.
2. Computer Concepts and C Programming, P.B. Kotur
3. Let us C, Yashwanth Kanetkar
4. ANSI C, Balagurusamy

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QUESTION PAPER PATTERN

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks. Each question may contain sub questions-(a) and (b), The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 & Unit 3.

Question 2 from Unit 4

Question 3 from Unit 5


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PRACTICAL: C- PROGRAMMING LAB

1. Find the biggest of three numbers.
2. Arithmetic operations using switch statement.
3. Find the Fibonacci series between M and N.
4. Prime numbers between M and N
5. Binary to Decimal conversion
6. Sorting an unsorted array
7. Searching an element in an array.
8. Addition of two matrices
9. Multiplication of two matrices
10. Norm and trace of the matrix.
11. Count the numbers of vowels in a given string.
12. Find the factorial of a number using function.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Flowchart/Algorithm 05 Marks
 - ✓ Program Writing 15 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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SECOND SEMESTER BSc

Computer Science -II

BCS-2 Data Structures using C

Number of Teaching hours - 43

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1- Introduction to Data Structures, Structure and Union

08hrs

Pointers-Definition, Declaration, Examples and usage. Static / dynamic memory allocation. Structure-Definition, declaration, accessing structure members. Union - Definition, declaration, Differences between structures and union . Definition of Data Structure and types with examples.

Unit 2- Stack

6hrs

Definition and example, operations, representation of stack in C, applications of stack, evaluation of postfix expression, conversion from infix to postfix. Recursion -Tower of Hanoi, Factorial, GCD.

Unit 3- Queues and lists

10hrs

Definition and example, operations on queue, types of queue, sequential representation, disadvantages of ordinary queue, circular queue and priority queue(concepts only).Linked list-Definitions and types of lists ,operations on SLL, stack and queue implementation using linked list, circular and doubly linked list (concepts only).

Unit 4- Trees

10hrs

Tree definition, representation, types of tree, Tree terminologies with an example, Binary tree,linked list representation of binary tree, tree traversals,binary search tree(definition only) and its applications.

Unit 5- Searching and sorting

10hrs

Searching technique- sequential, Binary search, interpolation, binary tree searching definition of Sorting definition and its types -radix sort, quick sort, shell sort,heapsort,binary tree sort.

References:

1. Systematic approach to data structure Padmareddy
2. Programming in ANSI C - E. Balagursamy
3. Datastructures and programming design using C - Robert Kruse PIII publications
4. Datastructures and applications - Trembly and Sorenson

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QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART -III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 2 & Unit 5.

Question 2 from Unit 3

Question 3 from Unit 4


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PRACTICAL DATA STRUCTURES LAB

1. Implementation of stack
2. Evaluation of postfix expression
3. Conversion of infix to postfix
4. Tower of Hanoi
5. Implementation of queue
6. Implementation of stack/queue using linked list
7. Binary tree traversals
8. Quick sort
9. Heap sort
10. Tree sort
11. Shell sort
12. Binary search

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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THIRD SEMESTER B Sc

Computer Science -III

BCS-3 Object Oriented Programming with C++

Number of teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1: Introduction to C++ and OOPS:

12hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming- Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic Binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP. C++ features, Comparison of C++ with C, Structure of a C++ program, input and output statements, Keywords, symbolic constants, type compatibility, declaration of variables, reference variables, operators in C++, control structures.

Unit 2 : Classes Objects and Member Functions:

15hrs

Limitations of structures in C, specifying a class, creating objects, memory allocation for objects, static data members, arrays within a class, local classes. Defining member functions, call by reference, return by reference, inline functions, default arguments, making an outside function inline, nesting of member functions, private member functions, function overloading, static member functions, const member functions, pointer to members, friend and virtual functions.

Unit 3 : Constructors and Destructors:

06hrs

Introduction, constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, dynamic initialization of objects, copy constructor, dynamic constructors, constructing two dimensional arrays, const objects, destructors.

Unit 4 : Operator overloading:

05hrs

Introduction, definition, overloading unary operators, overloading binary operators, overloading operators using friends, string manipulations using operators, rules for operator overloading, type conversions.

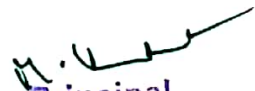
Unit 5 : Inheritance and Templates:

10hrs

Inheritance definition, defining derived classes, types-single inheritance, making a private member inheritable, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes. Template definition, class templates, class templates with multiple parameters, function templates, function templates with parameters.

Reference Books:

1. Object Oriented Programming with C++ - E balaguruswamy
2. Object Oriented Programming in Turbo C++ - Robert Lafore
3. C++ The complete Language – BjarneSchildt


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QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 & Unit 2.

Question 2 from Unit 3 & Unit 4.

Question 3 from Unit 5


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PRACTICAL: C++ LAB

1. Write a c++ program to find the result of a student using class concept
2. Define a class employee having data members name, basic salary, net salary with the member function getdata(), showdata(). Calculate the net salary assuming appropriate % for all allowance and deductions using class concept
3. Define a class to represent product details it includes data member pname, pcode, price, pquality include member function a) to get product detail b) to display the product details and total price using class concept
4. Write a c++ program to print Fibonacci series using constructor
5. Write a c++ program to find biggest of two numbers and three numbers using function overloading
6. write a c++ program to calculate area of triangle, rectangle and circle using function overloading
7. write a c++ program to calculate family income using friend function
8. write a c++ program to add two complex numbers using operator overloading
9. write a c++ program to concatenate two string using operator overloading
10. write a c++ program to implement multiple inheritance by creating classes: Father , Mother and Son
11. write a c++ program to swap two numbers using function template
12. write a c++ program to sort an array using function template

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

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FOURTH SEMESTER BSc

Computer Science -IV

BCS-4: Database Management System

Number of Teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1: Introduction to DBMS

10hrs

Meaning of data and information. Meaning of persistent data, definitions for DBMS, database, database system, examples, database system applications. database management system vs. file management system, views of data, data independence, data models, database languages, database users and administrators, database system structure, application architecture, advantages of using DBMS, classification of DBMS, meaning of schema and instance.

Unit 2: E-R Model

10hrs

Using high-level, conceptual data models for database design, basic-concepts, constraints, keys, an example database application, E-R diagram, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality), specialization, generalization.

Unit 3: Relational Model

10hrs

Structure of relational Databases, Relational algebra - select, project, union, set difference, rename, division operations, Modification of the database, queries using relational algebra. Extended relational algebra operations.

Unit 4: SQL

10hrs

Background, basic structure, set operation, aggregate functions, NULL values, nested sub queries, Views, complex queries, Modification of the database, joined relations, Data Definition Language, domain constraints, referential integrity in SQL Assertions, authorization, privileges in SQL.

Unit 5: Relational Database Design:

08hrs

Pitfalls in relational data base design, Normalization for relational databases. Normal forms based on primary keys, General definitions of first, second and third normal forms, Functional Dependency (concept and example) decomposition, Boyce-Codd Normal Form -


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definition and example, fourth Normal form - Multi valued Dependencies - definition and example.

Reference Books:

1. Korth, Sudarshan "Database System concepts", Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri "fundamentals of database Systems"-Addison Wesley-2004
3. C.J. Date "Introduction to Database systems" Addison-wesley.
4. Bipin C Desai "Introduction to Data base system" Galgotia publications


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QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART -III: 15 Marks

There shall be 05 questions each carrying 05 Marks.
Each question may contain sub-questions-(a) and (b),
The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1.

Question 2 from Unit 2 & Unit 3

Question 3 from Unit 4 &Unit 5


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PRACTICAL: SQL LAB

- I. Use the default emp and dept tables to write SQL statements for the following queries
1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find names of all employees whose name starts with 's' and having atleast 6 characters in it
 3. Find the name of all managers and number of employees under them
 4. Find the details of all employees in the research department
 5. Find the minimum, maximum and average salary of each department
 6. Find department name having least number of employees
 7. Find the department name having highest annual payroll
 8. Add an employee under the manager smith
 9. Find the employees who are not getting commission

II. Create tables as below

Student(name string, regno string primary key, dob date, doj date, course string foreign key)

Marks card(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)

Write SQL statements for the following queries.

1. List the names of students studying in BCA course in the order of their joining
2. Find the name of student who has scored highest marks in every sem of each course
3. Count the number of students in each course
4. Find the course having second highest number of students
5. Find the course having least students in I semester
6. Raise the marks of sub3 in III sem BCA students by 5% if the student has failed in that subject
7. Display the details of student 'xxx' in every semester.
8. Find the names of all juniors of 'yyy' in course 'c1'
9. Find all students studying with 'xxx' and elder to him (compare DOB)

III. Dept(deptno integer pkey, dname string not null, loc string not null)

Emp(eno integer pkey, ename string, deptno foreign key, desgn string not null, bsal number > 0)

Salary(enofkey, da, hra, gross, it, pf, net, comm)

DESIGN ARE manager, clerk, salesman

Comm=5% of basic if desgn=salesman otherwise null

Da=15% bsalhra = 7% of bsal gross=bsal+da+hra

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It =0 if gross < 15000

= 10% of gross if gross between 15000 and 30000

= 20% of gross if gross between 30000 and 50000

= 30% of gross otherwise

pf = 10% of gross or 1000 whichever is less

Write SQL statements for

1. Count the number of employees in every designation
2. List the employees of every department in descending order of their net salary
3. List the name and salary of highest salary payer in every department
4. List the name of employee paying highest IT
5. List the total IT paid by each department
6. List the departments in every location
7. Raise the basic salary by 10% for the managers of every department.
8. Find the number of employees having at least 10 years of experience in every department.
9. Count the number of employees who are not getting commission in every department

PRACTICAL EXAM SCHEME

Practical Proper - 30 Marks

Viva – voce - 05 Marks

Record - 05 Marks

Table Creation	Table creation & data insertion	10 marks
	4 SQL queries	20 marks
SQL queries	Queries writing 3 marks (each)	
	Execution 2 marks (each)	

(NOTE: Examiner has to ask 6 queries from a cycle in which student should answer 4 queries in the given cycle)

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FIFTH SEMESTER BSc

Computer Science -V

BCS-5 JAVA Programming

Number of teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

1. Introduction to Java and Java Program Structure 15hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Introduction to packages in Java, Applets, Operators & Expressions, Data types, Constants and Variables, Type conversions, Mathematical functions; Control Statements: Decision making and Branching with while, do-while, for and labeled loops; Arrays, Vectors & Strings: Initialization, Declaration of 1D, 2D arrays, String arrays, String methods, Vectors, Wrapper classes.

2. Overview 10hrs

Class, Objects, Constructor, Method overloading, Static members; Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; Interface: Defining, Extending and implementing assigning interface variables

3. Packages and multithreading 10hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

4. Exceptions and Debugging: 08hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and re-throwing exceptions, creating Exception classes, multiple catch statements, finally clause, tips for using exceptions, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

5. Applets and Graphics: 05hrs

Applets basics, applets and application, Life cycle, Life cycle of Applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon. Using control loops in applets, drawing bar charts.

Reference Books:

- | | |
|---------------------------------|--------------------------------|
| 1. Java, The Complete Reference | – Patrick Naughton and Schildt |
| 2. Programming in Java | – Joseph L. Weber |
| 3. Java Programming | – E Balagurusamy |

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QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.


The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 & Unit 2

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5


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PRACTICAL: JAVA PROGRAMMING LAB

1. Write a Java program to generate first n odd numbers and pick and display prime numbers among them. Read value for n as command line argument.
2. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.
3. Write a java program to find area of geometric figures (atleast 3) using method overloading.
4. Write a Java program to find the circumference and area of the circle using interface.
5. Write a java program to sort the alphabets in the given string.
6. Write a java program to accept student information using array of objects and constructor initialisation.
7. Write a java program to implement constructor overloading by passing different number of parameter of different types.
8. Define a package to contain the class sort to contain methods for various sorting techniques with time complexity (at least 2)Use this package to sort the list
9. Write a Java program to demonstrate multi-threading.
10. Write a program to implement an applet by passing parameter to HTML
11. Write an applet program to display human face
12. Create an applet to display concentric n circles, input value for n.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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FIFTH SEMESTER BSc

Computer Science -VI

BCS-6: Operating System and UNIX

Number of teaching hours – 48

Theory Examination- 50 Max marks.
Internal Assessment- 10 Max marks

Unit 1.Introduction to Operating systems, CPU Scheduling and Memory management **10hrs**

Introduction, types and functions of operating systems. Scheduling concepts, algorithms, performance criteria, FCFS, Shortest job first, priority scheduling, Pre-emptive algorithm – round robin. Function, single contiguous allocation, multiprogramming, partitioned allocation. Paged memory management.

Unit 2.Dead lock and File system **05hrs**

Deadlock problem, deadlock characteristics, deadlock prevention and avoidance. File concept access methods, directory structures, protection and consistency semantics

Unit 3.Introduction to UNIX, The File System **15hrs**

The Unix operating system, A brief Session, The Unix Architecture, Features of UNIX, Locating commands, Internal and External commands. General-Purpose Utilities: man, cal, date, echo, printf, bc, script, passwd, who, uname. The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: cat, cp, rm, mv, more, lp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip.

Unit 3: Basic File Attributes and Vi Editor **08hrs**

Listing file attributes, File Ownership, File Permissions, changing file permissions, Changing File Ownership Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions(U and U), Repeating the last command(.), Searching for a Pattern(/ and ?), Substitution.

Unit 5:The Shell: **10hrs**

Brief introduction, The shell's Interpretive Cycle, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, the logical operators && and ||- conditional execution, the if conditional, using test and [] to evaluate expressions, the case conditional, expr, while, for, set and shift, file test operator. Pattern matching :grep

References :

- 1.Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH
- 2.Operating systems concepts, Korth

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QUESTION PAPER PATTERN

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART- IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 & Unit 2

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5


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PRACTICAL: UNIX PROGRAMMING LAB

- 1) Write a shell script program to perform all arithmetic operation on floating point.
- 2) Write a shell script program to check whether the given number is positive or negative.
- 3) Write a shell script program to reverse a number.
- 4) Write a shell script program to find sum of digit of a number.
- 5) To Find the sum of the series (sum= $1 + \frac{1}{2} + \dots + \frac{1}{n}$)
- 6) Write a shell script to perform the following any one operation based on your own choice.
 - a. Show first 5 line data
 - b. Show last 3 line data
 - c. Sort the data
 - d. Find out word count
- 7) Add, subtract and multiply the two given number passed as command line argument.
- 8) Write a shell script to count number of characters in a given string
- 9) Write a shell script program to read pattern and file name and search whether the given pattern in a file or not.
- 10) Write a shell script to read filename from command line argument check whether the file is regular file or directory or by both.
- 11) Find the number of directory file and ordinary files in the current
- 12) To read two file names and check which one is newer and which one is older.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

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SIXTH SEMESTER BSc

Computer Science -VII

BCS-7 ADVANCED PROGRAMMING IN JAVA

Number of teaching hours – 48

Theory Examination- 50 Max marks.

Internal Assessment- 10 Max marks

Unit 1: Review of Java Concepts and AWT, Graphics Programming **10hrs**

Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, drawing objects, line graphs, polygon classes, working with colours and fonts. Advanced graphics operations using Java2D. Designing simple User Interfaces (UIs) using AWT, Layout Manages.

Unit 2: Swings and event handling **10hrs**

Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, Event queue. Swing: Meaning, need difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing, and handling basic events.

Unit 3: Java Beans, Java Archives (JAR) **08hrs**

Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties. Java Archives (JARs): Meaning, need, the JAR utility, Creating JAR files.

Unit 4: File Management and JDBC **10hrs**

File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file. JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBC Exceptions.



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Unit 5: Fundamental concepts of Collections, Generics and Network programming 10hrs

Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map. Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing the container, implementing the constructors, implementing generic methods. Network programming: Meaning of Client, Server, Socket, port. Creating a client socket, creating a server socket, writing simple server and client.

References:

1. Complete Reference – Java 2: Herbert Schildt, 5th / 7th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.


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QUESTION PAPER PATTERN

PART I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART III: 15 Marks

There shall be 05 questions each carrying 05 Marks.
Each question may contain sub-questions-(a) and (b),
The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.
The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1 and Unit 2.

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5


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PRACTICAL: ADVANCED JAVA PROGRAMMING LAB

1. Write an applet to add, remove, select an item in a list
2. Write an applet to display selected geometric figure from a list.
3. Write a program to implement mouse events
4. Write a program to implement keyboard events
5. Write a Java program (console) to store the typed text to a file.
6. Write a Java program to display the content of a file.
7. Write a Java program with JDBC to store the details of a person on to an Oracle database table.
8. Write a Java program with JDBC to access and display the details of a person stored in an Oracle database table.
9. Write a Java program with JDBC to access and delete the details of a given person stored in an Oracle database table.
10. Write a Java GUI program to accept the details of an employee and store the same on to an Oracle database table.
11. Write a Java program to design a simple Client and Server components. Pass simple text (static) from client to the server and a receipt acknowledgement (static) back to the client.
12. Write a Java program to demonstrate the use of generics.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
 - ✓ Program Writing 20 Marks
 - ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks

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SIXTH SEMESTER BSc

Computer Science -VIII BCS-8 :SOFTWARE ENGINEERING & COMPUTER NETWORKS

Number of Teaching hours – 48

Theory Examination- 50 Max marks.
Internal Assessment- 10 Max marks

Unit 1. Introduction to Software Engineering and Software process **10hrs**

Software, Software Engineering, phases in software development, role of management and Software metrics. Software process, process models- waterfall model, prototyping model, iterative enhancement model and spiral model.

Unit 2. Software design **07hrs** Design objectives, design principles, module level concepts, structured design methodology, introduction to detailed design, SRS.

Unit 3. Coding and Testing

Programming practices, top down & bottom up approaches, structured programming, programming style. Testing fundamentals, brief introduction to functional testing and structural testing. Difference between black box testing and white box testing.

Unit 4 Introduction to Computer networks Network Hardware **10hrs**

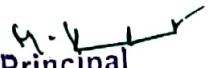
Definition and goals of computer network. Types of Networks- Broadcast, point-to-point, LAN, WAN, MAN, network topologies, wireless network example, Internet and its applications. 10 hrs

Unit 5 Network Software, Reference models and Transmission Media **13hrs**

Network Architecture, Design issues of network, connection oriented and connectionless services. OSI / ISO model, TCP / IP model, Novell network, ARPANET. Transmission Media- magnetic media, twisted pair, coaxial cable, fibre optics cable

References:

1. An integrated approach to Software Engineering : Pankaj Jalote.
2. Software Engineering a practitioners approach : Roger Pressman.
3. Computer networks : Andrew S Tanenbaum.


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QUESTION PAPER PATTERN

PART- I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART- II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions each carrying 05 Marks.

Each question may contain sub-questions-(a) and (b),

The student has to attend only 03 questions.

Question 1 from Unit 1.

Question 2 from Unit 2

Question 3 from Unit 3

Question 4 from Unit 4

Question 5 from Unit 5

PART -IV:20 Marks

There shall be 03 questions and each carrying 10 Marks.

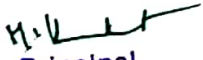
The student has to attend only 02 questions.

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Question 1 from Unit 1 and Unit 2.

Question 2 from Unit 3 & Unit 4

Question 3 from Unit 5


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PRACTICAL: PROJECT LAB

PROJECT LAB EXAM SCHEME

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The Project work should be either an individual lone or a group of not more than five members.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The examiner will evaluate the project work as follows:

- Project Report - 10 Marks
- Project Demo - 10 Marks
- Viva-Voce - 20 Marks


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KUVEMPU



UNIVERSITY

Revised syllabus


BCA, B. Sc (Computer Science) and BA (Computer Applications)

W.E.F 2019-20

**DEPARTMENT OF P.G. STUDIES AND RESEARCH IN
COMPUTER SCIENCE,**

JANNASHAYADRI , SHAKARGHATTA

SHIMOGA, KARNATAKA


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NEW SYLLABUS FOR B.A (Computer Applications)

(EFFECT FROM 2019-20)

Paper code	Semester	Subject	Weekly hours	Internal marks	External marks	Practicals	Total
BAC-1	I	Computer Fundamentals	4+3	10	50	40	100
BAC-2	II	C-programming	4+3	10	50	40	100
BAC-3	III	Introduction to Data Structure	4+3	10	50	40	100
BAC-4	IV	OOPS with C++	4+3	10	50	40	100
BAC-5.1	V	JAVA	4+3	10	50	40	100
BAC-5.2	VI	DBMS	4+3	10	50	40	100
BAC-6.1	VII	Internet Programming	4+3	10	50	40	100
BAC-6.2	VIII	SE&CN	4+3	10	50	40	100


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FIRST SEMESTER BA (Computer Applications)

Computer Applications -I

BAC-1 Computers Fundamentals

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction:

10 hrs

Definition of computer, Characteristics of computer, history of computers, generations of computer, functional units of a computer, types of computers-based on principle of working, based on size & speed, Definitions of digital computer & analog computer, Definition of super computer, example for super computer.

Unit 2- Hardware:

10 hrs

Input Device- Keyboard & mouse, OCR, OMR. Output device- monitor and brief description of CRT monitor, Printer and brief description of dot matrix printer, Projector and Headphone (Definition and Uses). Memory-Primary memory: RAM, types of RAM, ROM and its types, Difference between RAM & ROM, Secondary memory: Brief description of working of hard disk and floppy disk, Types of CD-ROM.

Unit 3-Software :

10 hrs

Definition of software, types of software's – application, system and utility software, Definitions of assembler, compiler, interpreter, linker, loader. Types of Programming Languages -assembly language and machine level language (advantage and disadvantages). Definition of operating System, functions of an operating system, types of operating system, MS DOS Commands with syntax and example (copycon, type, copy, rename, del, make directory, remove directory, dir and its types, copy files from one drive to other drive, tree, hiding files)

Unit 4-Problem solving techniques:

09 hrs

Algorithm-definition, Characteristics, Notations, Advantages and Disadvantages. Flowchart- Definition, Symbols, Advantages and Disadvantages. Writing an algorithm and flowchart: Area of circle, Arithmetical operations, simple interest and compound interest, Swapping of two numbers, largest of two numbers, factorial of a number, reverse a number, Fibonacci series.

Unit 5-Logic gates:

09 hrs

Binary number system- Conversion of decimal number into binary number and Conversion from Binary to Decimal number system. ASCII code(brief), Gates – AND, OR, NOT, NAND, NOR, XOR (Definition, Truth Table & Logic Symbol), De-Morgan's Theorem (Statement and Proof). Boolean Laws.

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References:

1. Computer fundamentals- P B KOTTUR
2. Computer fundamentals- RAJARAMANNA
3. Digital Logic and Computer Design- M. Morris Mono

QUESTION PAPER PATTERN FOR I SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks


There shall be 03 questions and each carrying 10 Marks.
The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.


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PRACTICAL :COMPUTER BASICS LAB

1.DOS COMMANDS: DATE , TIME, CLS, COPY CON, TYPE, DIR with wild cards, MD, CD, RD, COPY, XCOPY, FORMAT, DISKCOPY etc.,.

2.MS-WORD:Drafting, Entering, Working with all Menus, Using different fonts and colours the following:

1. Bio-Data
2. Application for Job
3. Joining Report
4. Creation of Marks Card

3.MS-EXCEL:Drafting, Entering, Working with all Menus, Using different fonts and colours the following:

1. Bio-data
2. Creation of marks card
3. Result calculation

4.POWERPOINT: Formatting, updating and printing of the following:

1. Text matter with different fonts
2. Preparing Charts : Pie Chart
3. Preparing Graphs: Bar Graph
4. Introducing Animation
5. Introducing Sound Effect
6. Using Hyperlinks

PRACTICAL EXAM SCHEME

- Practical Proper - 30 marks
- ✓ **DOS COMMANDS**–Any two 2X 5marks=10 m
- ✓ **marks** (writing-2 marks and execution-3marks)
- ✓ **MS-WORD/MS-EXCEL/POWERPOINT**-20marks(writing-10marks and execution-10 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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SECOND SEMESTER BA (Computer Applications)

Computer Applications -II

BAC-2 C- Programming

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1-Introduction to C:

10 hrs

History of C, features of C, basic structure of C, character set, tokens- keywords, identifiers, constants, variables, strings, definition, types, rules for naming, syntax for the declaration, symbolic constant definition.

Unit 2- Operators:

10 hrs

Increment and Decrement operators, Arithmetic, relational, logical, assignment and bitwise operators, conditional operator and special operators of C, data type conversion, precedence and associativity of operators. Mathematical functions. Formatted and unformatted Input and Output functions – gets(), puts(), getchar(), putchar(), printf() and scanf().

Unit 3-Branching Control Structures:

09 hrs

Conditional Control Structures: If Statement, if-else statement, nested if, Switch statement (Explanation with syntax, flowchart and example), goto statement (syntax and example, use).

Unit 4- Looping Control Structures:

09 hrs

while, do-while and for statements (Explanation with syntax, flowchart and example), Nested for statement. Unconditional control statements - break continue, return and exit(syntax and example).


Unit 5-Arrays and Functions:

10 hrs

Definition of array, Declaration and initialization, One and two dimensional arrays, string definition, Declaration and Initialization of String variable, String handling functions. Definition of Function, syntax for function declaration and function definition, types of functions, Recursion –definition and example.

References:

1. Computer Concepts and C Programming by P B Kottur.
2. Ansi C, by Balagurusamy E


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QUESTION PAPER PATTERN FOR II SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

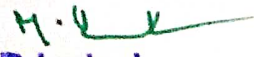
Question 3 from Unit 4 & Unit 5.

PRACTICAL : C PROGRAMMING

1. Conversion of temperature given in Degree Fahrenheit to temperature in degree Celsius using the formula $C = (F-32)/1.8$ and vice-versa.
2. Find the biggest among two numbers.
3. Find whether the entered number is odd or even.
4. Arithmetic operations using switch statement.
5. Check whether an entered number is Prime number or not.
6. Find the Fibonacci series between M and N.
7. Searching an element in an array.
8. Addition of two matrices
9. Find the factorial of a number using function.
10. Perform swapping of two numbers using functions

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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THIRD SEMESTER BA (Computer Applications)

Computer Applications -III

BAC-3 INTRODUCTION TO DATA STRUCTURES

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction :

10 hrs

Definition of Structure, syntax and example for structure declaration. Definition of union, syntax and example for union declaration, difference between structure and union. Pointers–Definition, Declaration, Examples. Dynamic memory allocation functions – syntax and examples. Definition of Data Structure and types of data structures with examples.

Unit 2- Stack and recursion:

10 hrs

Definition and example of stack (LIFO), operations of stack with algorithms, applications of stack, algorithm for the conversion of infix to postfix expression. Tower of Hanoi problem and Factorial of a number using recursion.

Unit 3- Queue :

10 hrs

Definition and example of Queue (FIFO), operations on queue, types of queue – ordinary queue and circular queue (definitions only), disadvantages of ordinary queue. Linked list–Definitions and types of lists – Single Linked List, Doubly Linked List (definitions only).

Unit 4-Tree :

09 hrs

Definition of a Tree, Definition of root, left sub tree, right sub tree, degree of node, terminal node, depth, Definition of Binary tree, types of binary trees (definition only), Algorithm for tree traversal.

Unit 5-Sorting and searching :

09 hrs

Definition of sorting, explanation of bubble sort, radix sort and merge sort with examples. Definition of searching, explanation of Binary search and Linear search with examples.

References:

1. Systematic approach to data structure –A M Padmareddy
2. Programming in ANSI C - E Balaguruswamy
3. Datastructures and applications - Trembly and Sorenson

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QUESTION PAPER PATTERN FOR III SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.


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PRACTICAL :DATA STRUCUTRES LAB USING C

1. Employee program using structure.
2. Implementation of stack
3. Recursive program to simulate Tower of Hanoi concept
4. Recursive program to find factorial of a number
5. Implementation of queue
6. Implementation of linked list
7. Binary tree traversals
8. Bubble sort
9. Binary search
10. Linear Search

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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FOURTH SEMESTER B.A (Computer Applications)

Computer Applications -IV

BAC-4 OBJECT ORIENTED PROGRAMMING WITH C++

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to OOP:

10 hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming- Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic Binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP.

Unit 2-Introduction to C++:

10 hrs

Difference between C and C++, Structure of a C++ program, input and output statements, tokens - Keywords, identifiers, constants, strings and operators, reference variables – definition and example, special operators in C++, brief introduction to control structures in C++.

Unit 3-Classes Objects and Member Functions:

10 hrs

Difference between structure and class, syntax and example for class declaration, Definition of data member and member function, Defining member function inside and outside the class, inline functions, memory allocation for objects, static data members and static member functions, function overloading, definition of friend function, syntax and example for the declaration of friend function, special characteristics of friend function.

Unit 4-Constructors, destructors and Operator overloading:

09 hrs

Definition of a constructor, types - parameterized constructor, default constructor, copy constructor, special characteristics of constructor, definition of a destructor, special characteristics of destructor, definition to Operator overloading, overloading binary operator (+) to add two complex numbers, rules for operator overloading.

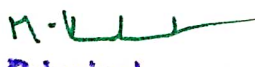
Unit 5: Inheritance and templates:

09 hrs

Inheritance definition, forms of inheritance, syntax and example for defining derived classes, visibility modes, explanation of multilevel inheritance and hybrid inheritance with examples. Definition of templates, syntax and example for class and function template.

Reference Books:

1. Object Oriented Programming with C++ - E Balaguruswamy
2. C++ - The Complete Language – BjarneSchildt
3. Object Oriented Programming in Turbo C++ - Robert Lafore


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QUESTION PAPER PATTERN FOR IV SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.


The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.


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PRACTICAL :C++ LAB

Write a C++ Program:

1. Which reads a radius of a circle and computes the area of the circle.
2. Which takes an 'n' digits integer number as input and computes the sum of the digits and prints it.
3. To check whether the number is palindrome or not.
4. To find the result of a student using class concept.
5. To Define a class employee having data members name, basic salary, net salary with the member function getdata(), showdata(). Calculate the net salary assuming appropriate % for all allowance and deductions using class concept.
6. To concatenate two strings using library functions.
7. To print Fibonacci series using constructor.
8. To find biggest of two numbers using function overloading.
9. To calculate area of triangle, rectangle and circle using function overloading.
10. To implement Multilevel inheritance by creating classes: Grand Father, Father and Son

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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FIFTH SEMESTER B.A (Computer Applications)

Computer Applications -V

BAC-5.1 DATABASE MANAGEMENT SYSTEM

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction DBMS:

10 hrs

Meaning of data and information, definitions of database, applications of database system, definition of DBMS, disadvantages of file processing system (advantages of DBMS), three levels of data abstraction, difference between schema and instance, definition of data models, types of data models (brief explanation), database languages – DDL and DML.

Unit 2- E-R model :

10 hrs

Different types of database users, functions of Database Administrator (DBA), basic-concepts - Primary keys, foreign key, super key, definition of E-R diagram, symbols used in E-R Diagram, E-R diagram for Banking enterprise, E-R diagram for Book store, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality).

Unit 3- Relational model:

10 hrs

Fundamental operations of Relational algebra - select, project, union, set difference, join, division operations (explanation with examples). Types of aggregate functions – MAX, MIN, SUM, COUNT and AVERAGE (Definition with example).

Unit 4-SQL:

09 hrs

Definition of Query, explanation of basic structure of SQL – Select, from and where clauses in SQL, data types in SQL, explanation of set operation in SQL – Union, intersection, except, NULL values.

Unit 5- Database:

09 hrs

design Pitfalls in relational database design, definition of Normalization, Various types of Normal forms (Definitions only) – First Normal form, Second Normal form, Third Normal form, Boyce-Codd Normal Form (BCNF).


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Reference Books:

1. Korth, Sudarshan "Database System concepts", Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri "fundamentals of database Systems"-Addison Wesley-2004
3. C.J. Date "Introduction to Database systems" Addison-wesley.
4. Bipin C Desai "Introduction to Data base system" Galgotia publications

QUESTION PAPER PATTERN FOR V SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.


The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.


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PRACTICAL :SQL LAB

- I. Design an ER-Diagram for representing the BANK scenario.
- II. Design an ER-Diagram for representing the College Library Scenario.
- III. Use the default EMP and DEPT tables to write SQL statements for the following queries
 1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find names of all employees whose name starts with 's'.
 3. Find names of all employees who have atleast 6 characters in their name.
 4. Find the details of all employees in the research department
 5. Find the minimum, maximum and average salary of each department
- IV. Create table with the following fields:

TEACHER (teacher-Id, Name, Subject(sub1,sub2,sub3))

Write SQL queries to perform the following:

1. List all the teachers whose teacher-Id lies between 10-20.
2. List all the teachers whose name starts with letter 'a'.
3. List all the teachers who are teaching 'sub2'.
4. List the teacher whose teacher-Id is 12 and teaching 'sub2'.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Writing ER-Diagram-10 Marks
- ✓ Table creation & data insertion -10 marks
- ✓ SQL queries- 2 X 5 marks =10 marks[Queries writing 3 marks (each) and Execution 2 marks (each)]
- Viva – voce - 05 Marks
- Record - 05 Marks

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FIFTH SEMESTER BA (Computer Applications)

Computer Applications -VI

BAC-5.2 JAVA PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction:

10 hrs

History of Java, Java features, Difference between C/C++ and Java, Java and Internet, Java and WWW, Web browsers, Java support system, Java Development Kit (JDK), Application Programming Interface(API), Java Runtime Environment (JRE).

Unit 2-Overview:

10 hrs

Structure of Java program, Java tokens, java character set, Java Statements, Implementing Java program, Java Virtual Machine, difference between Applets and applications,

Unit 3- Control Statements and operators in Java:

10 hrs

Constants, Variables and Data Types in Java, Type casting, Arithmetic operators, relational operators, logical and assignment, conditional, bitwise and special operators, Control Statements: Branching Decision making – if, if-else, nested if, else-if ladder & switch and Looping statements with while, do-while, for statements.

Unit 4- Method overloading:

09 hrs

Definition of a Class, syntax and example for the declaration and for defining the class, Objects, class members, Constructor, Method overloading, Inheritance: forms of inheritance, Method overriding, Visibility Controls.

Unit 5-Packages :

09 hrs

Array – 1D array, declaration, creation and initialization of 1D array, Strings – String methods, Vector – Vector methods, , Defining, Extending and Implementing Interfaces, Definition of a Packages, Java API Packages, Creation, accessing and usage of packages.

Reference Books:

1. Programming with Java- A primer, 4th Edition, by E balaguruswamy.
2. The Complete Reference – Patrick Naughton and Schildt
3. Programming in Java – Joseph L Weber

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QUESTION PAPER PATTERN FOR I SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.
The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.


Question 3 from Unit 4 & Unit 5.

PRACTICAL – JAVA PROGRAMMING LAB

1. Write a Java program to convert the given temperature in Fahrenheit to Celsius and display the values in tabular form.
2. Write a Java program to generate first n odd numbers.
3. Write a java program to find area of circle and rectangle using method overloading.
4. Write a Java program to find the circumference of the circle using interface.
5. Write a java program to sort the alphabets in the given string.
6. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.
7. Write a java program to accept student information using array of objects and constructor initialization.
8. Write a java program to perform matrix addition and multiplication using case statement
9. Write a java program to implement constructor overloading by passing different number of parameter of different types.
10. Write a java program to accept student information to perform relevant computation using single inheritance.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Writing 20 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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SIXTH SEMESTER BA (Computer Applications)

Computer Applications -VII

BAC-6.1 INTERNET PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction:

10 hrs

Internet basics, basic concepts, communicating on the internet, internet domain, internet server identities, establishing connectivity on internet, client IP address, Overview of TCP/IP and its services, TCP protocols – WWW,FTP, TELNET.

Unit 2-Introduction to HTML:

10hrs

Information files creation, Web server, web client/browser, HTML tags, structure of HTML program, Text formatting, Text styles, text effects.

Unit 3-Lists:

10hrs

Definition, types - Unordered and ordered list, adding graphics to HTML Documents. Tables – Definition, table tags and attributes. Definition of Link and its attributes, external and internal document references. Images as Hyperlinks.

Unit 4- Frames:

09 hrs

Definition, tags, examples. Cascading Style Sheets (CSS) and its Attributes – font, color and background, text, border, list. Span and Divtags. External Style sheets.


Unit 5: Introduction to Javascript:

09 hrs

Web pages, Forms, Form validation, Netscape and javascript, Client side javascript, Advantages of javascript, writing javascript into HTML, Basic programming Techniques - Data types and literals, Creating Variables.

References:

1. Web enabled Commercial Application Development using HTML, JAVASCRIPT, DHTML and PHP, by IVAN BAYROSS, 4th Edition, BPB Publication.


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QUESTION PAPER PATTERN FOR VI SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL – INTERNET PROGRAMMING LAB

1. Working with web browsers
2. Understanding the working of a web server
3. Home Page Design – Bio Data
4. Home Page Design – College
5. Home Page Design – With Audio Integrated
6. Home Page Design – With Video Integrated
7. Home Page Design – With Audio and Video Integrated
8. Home Page Design – With Animation

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Writing 20 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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SIXTH SEMESTER B.A (Computer Applications)

Computer Applications -VIII

BAC-6.2 SOFTWARE ENGINEERING & COMPUTER NETWORKS

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Software Engineering:

10 hrs

IEEE definition of Software and Software Engineering, Software Problems, Software engineering challenges, Software quality attributes, phases in software development (Phased Development process), Definition of Software process, Component software process, desired characteristics of software process, Software development process models- waterfall model.

Unit 2- Software design:

09 hrs

Definition of SRS, need for SRS, Characteristics of SRS, Structure of SRS, design principles, module level concepts – coupling and cohesion.

Unit 3- Coding and testing :

09 hrs

Definition of Coding, Programming principles and guidelines, definition of testing, testing fundamentals, levels of testing, Difference between black box testing and white box testing.

Unit 4-Introduction to Computer networksand Network Hardware:

10 hrs

Definition of computer network, Goals of computer network, Types of Networks based on transmission technology - Broadcast, point- to -point, Types of Networks based on size & scale - LAN, WAN, MAN, Protocol hierarchies (Network software), Network topologies – Bus, Mesh, Ring, tree and star.

Unit 5- Network Software, Reference models and Transmission Media:

10 hrs

Reference models - OSI / ISO model, TCP / IP model, Transmission Media - twisted pair, coaxial cable, fiber optics cable, Internet and its applications, Wireless media - Bluetooth, Wi-Fi.

References:

1. An integrated approach to Software Engineering:PankajJalote.
2. Software Engineering a practitioners approach : Roger Pressman.
3. Computer Networks:5th Edition, Andrew S Tanenbau


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QUESTION PAPER PATTERN FOR VI SEMESTER B.A (Computer Applications)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: PROJECT LAB

PROJECT LAB EXAM SCHEME

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The Project work should be either an individual (one) or a group of not more than five members.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The examiner will evaluate the project work as follows:

- Project Report - 10 Marks
- Project Demo - 10 Marks
- Viva-Voce - 20 Marks


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I -SEMESTER

Excel & C Lab

PART- A

1. Write DOS commands for the following:
 - a. To create a file
 - b. To view a created file
 - c. To edit the contents of file
 - d. To rename an existing file
 - e. To delete an existing file
2. Write DOS commands for the following:
 - a. To make a directory
 - b. To rename a directory
 - c. To delete a directory
 - d. To change the directory
 - e. To display date, time and version

PART -B

Table A				
Sales Person	Gender	Number of Sales	Sales Amount	Sold Month and Year
Cara	F	10	8000	12013
Jessy	F	7	6000	12013
Lewis	M	5	4000	32013
Tommy	M	3	2000	42013
Annie	F	2	2000	12013
Jack	M	3	2000	52013
Hugo	M	1	400	52013
Jonathan	M	1	400	72013
Aaaron	M	1	400	12014
Willy	M	4	2800	82013
Patrick	M	3	900	12013
Simmons	M	5	1750	12014
Patrick	M	6	2250	82013
Taylor	M	2	800	42013
Boon	M	3	1275	42014
Walsh	M	1	450	72013
Julie	F	5	2375	22013


Use only Formula's to Derive the results

Questions	Answers
Sum of sales amount	
Average of sales amount	
Minimum Sales amount	
Maximum number of sales	
Count of Sales Person	
Count of Male Sales person	
Sum of Sales amount of Female Person	
Average of sales amount of Female Person	
Average of Sales amount made in January 2013	
Median of Total Sales amount	
First Quartile to Sales Amount	
Third Quartile to Sales Amount	

Populate the number of sales for below listed Sales Person (Use formula)

Sales Person	Number of Sales
Aaaron	
Patrick	

1. Consider the above excel sheet and derive the answers using formulae
2. Demonstration of sorting, filters and advanced filters
3. Usage of pivot table.


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PART -C

1. Program to find the biggest and the smallest among 4 numbers using nested if.
2. Program to find the roots of quadratic equation.
3. Program to check whether the given number is Armstrong number, odd or even, perfect square or cube.
4. Program to check whether nth prime is palindrome.
5. Program to find the factors of nth Fibonacci number.
6. Program to convert decimal to binary.
7. Program to generate n terms of the series 1,-2,6,-24,120.....
8. Program to find e^x using n terms of the series $1 + x + x^2/2! + x^3/3! + \dots$
9. Program to count the number of vowels, consonants and special characters in a string by reading the string character by character.
10. Generate n prime numbers and print them in the following pattern

<pre> 2 3 5 7 11 13 17 19 23 29 ... </pre>	OR	<pre> 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53..... </pre>
--	----	---

PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks
Record : 10 Marks
Viva : 10 Marks

DOS (any 5 commands) (10 marks)	Writing of DOS Commands	5 Marks
	Error free execution of DOS Commands	5 Marks
MS Excel (10 marks)	Any five functions from questions 1 2 and 3	10 marks
	Proper syntax and result (2 marks each)	
C- Program (40 marks)	Flowchart/Algorithm	5 Marks
	Program writing	20 Marks
	Correct program and Error free compilation	10 Marks
	Correct output	5 Marks


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II -SEMESTER

DATA STRUCTURES & Advanced Excel Lab

PART -A

1. All types of data validation
2. Data visualisation using charts
3. Data visualization using scatter charts, spark lines and gauge charts
4. Usage of hyper links.

PART -B

1. Program to insert an element at given position in an array.
2. Program to multiply two matrices using functions.
3. Program to swap two integers using function with call by value and call by reference mechanism.
4. Program to create a dynamic array of n elements and find their sum and print in reverse order using functions with pointers(sum(int *,int)and rev_print(int *,int))
5. Program to store information of n students (name, regno, dob, m1,m2,m3,tot, avg and result) in an array of structures and find total, average and result using function.
6. Program to find a^b using union to store the values of a, b and a^b (for both int and/or float values of a and b)

PART- C

1. Program to implement the operations of stack using array.
2. Program to implement the operations of circular queue.
3. Program to convert infix expression to prefix notation.
4. Program to evaluate postfix expression.
5. Program to implement any three recursive functions.
6. Program to implement queue using linked list.
7. Program to evaluate an expression using linked list


PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

MS Excel (10 Marks)	Any one problem from the list	10 Marks
C- Program (25 marks)	Flowchart/Algorithm	5 Marks
	Program writing	10 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks
Linear Data Structure (25 marks)	Algorithm	5 Marks
	Program writing	10 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks


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III- -SEMESTER DS Lab Using C++

PART- A

1. Consider a class student with data members name, regno, course, m1, m2, m3 and member functions getdata(), showdata(), result() to read, print and tabulate result. Write C++ program to store the details of n students and display their result in tabulated form.
2. Write a C++ program to define a class BankAccount including the following class members and store information of n customers and display their details. DataMembers:, cust name, accno, balance.
Member Functions: a) getdata(custname,accno,balance). b) display(). c).Transaction(tr_type,amt) if Tr_type='D' transaction is deposit else transaction is withdrawal. This function should update the balance according to tr_type after checking the minimum balance of Rs 1000.
3. Write C++ program to demonstrate operator overloading
4. Program to demonstrate the use of simple, parameterised and copy constructors
5. Program to demonstrate inline and friend function.
6. Program to demonstrate function overloading.
7. Program to demonstrate multiple or multilevel inheritance

PART- B

1. Program to demonstrate the operations of doubly linked list
2. Program to demonstrate tree traversal
3. Program to implement tree sort.
4. Program to implement quick sort
5. Program to implement heap sort.
6. Program to implement radix sort.
7. Program to demonstrate time and space complexity in binary and linear searching
8. Program to compare shell and insertion sort methods.


PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

C++- Program (25 marks)	Program writing	15 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks
Linear Data Structure (35 marks)	Flowchart/Algorithm	10 Marks
	Program writing	15 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks


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III-SEMESTER SQL LAB

- I. Create emp and dept tables as below and write SQL statements for the following queries
Emp(ename not null, eno primary key, doj date, dob ,mgrno self reference key, salary >0 ,
comm, deptno foreign key)
Dept(dname not null, dno primary key, location)
1. Find the employee details in ascending order of their name and descending order of their salary
 2. Find the details of all employees in the research department
 3. Find the minimum, maximum and average salary of each department
 4. Find department name having least number of employees
 5. Find the department name having highest annual payroll
 6. Add an employee under the manager smith
 7. Find the employees who are not getting commission
 8. Display the eno, name manager name and department name in the order of their department

- II. Create tables as below Student(name string, regno string primary key, dob date, doj date ,course string foreign key) Markscard(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)
Calculate total, average and result using update statement
Write SQL statements for the following queries.
1. List the names of students studying in BCA course in the order of their joining
 2. Find the name of student who has scored highest marks in every sem of each course
 3. Count the number of students in each course (consider only distinct students of the course)
 4. Find the course having second highest number of students
 5. Raise the marks of sub3 in III sem BCA students by 5% if the student has failed in that subject
 6. Display the details of student 'xxx' in every semester.

- III. Dept(deptno integer pkey, dname string not null, loc string not null)
Emp(eno integer pkey, ename string, deptno fkey, desgn string not null, bsal number>0)
Salary(eno fkey, da, hra, gross, it, pf, net, comm) DESGN ARE manager, clerk, salesman.
Comm=5% of basic if desgn=salesman otherwise null. Da=15% bsal hra = 7% of bsal
gross=bsal+da+hra.
IT =0 if gross<15000
= 10% of gross if gross between 15000 and 30000
=20% of gross if gross between 30000 and 50000
= 30% of gross otherwise
PF =10% of gross or 1000 whichever is less. Calculate salary using update statement

Write sql statements for

1. Count the number of employees in every designation
2. List the employees of every department in descending order of their net salary
3. List the name and salary of highest salary payer in every department
4. List the name of employee paying highest IT in each department
5. List the departments in every location
6. Raise the basic salary by 10% for the managers of every department.

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- IV. Create tables as below
 Employee(eno primary key, ename, street, city)
 Company(cno primary key, cname, city)
 Works(eno foreign key, cno foreign key, sal>0)
 Manages(mno foreign key from employee table, eno foreign key from employee table)

Write sql statements for the following queries

1. Find the name of all employee working in the city in which they live
2. Find the company having most employee
3. Count the number of employees under each manager.
4. Find the company having second highest payroll
5. Find employee drawing more salary than his manager in every company
6. Raise the salary of every manager by 25%
7. Find name of employees who are not having managers
8. Find average, highest and lowest salary of every company
9. Delete the employees and the information of company 'xxx'


PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

Table creation	10 Marks
Inserting proper data	08 Marks
Table updation (if necessary)	12 Marks
5 / 7 writing	15 / 21 Marks
Execution	15 / 21 Marks


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IV -SEMESTER PLSQL BASIC PROGRAMS

PART - A

1. Create a library table with attributes book id, author_name, publisher, price and edition. Write PL/SQL code block to accept the publisher name and count number of books under that publisher and display it. Also display the publisher with maximum publication.
2. Write a function to display employee name with distinct salaries
For eg
if a's salary is 100
b's salary is 200
c's salary is 100
display either (a or c) and b
3. Write a function to rank the employees based on their salary (use RANK function)
4. Write a function to validate the Employee email id.
5. Write a procedure to capture the error log in a table in case of an exception using Autonomous_transaction,
6. From employee table, store ename and salary in varrays and display the contents of the arrays in table format.
7. Write an Anonymous block which raise a user defined exception on thursday?
8. Write an anonymous block using associative array that is indexed by a string, populates it, and prints it.

PART -B

1. Write a pl/sql code block to create a table and menu driven code to add, modify and drop specified column in it.
2. Write a pl/sql code block to create a database and menu driven code to add, rename and drop specified table into it.
3. Write a PL/SQL cursor program which is used to calculate total salary from emp table without using sum() function?
4. Create a trigger to record the changes like insert, update, delete over the employee table (The changes should be recorded in new audit table Employee_au)
5. Write a function to remove the duplicates in the employee table and copy all the records into another new table.
6. Write a function using bulk collect , to process set of 100 records in one iteration
7. Write a statement trigger on emp table such that the insertion is possible only on Thursday.
8. Write a function using dynamic sql statements , where the column names and the table name should be provided as input to the function.
9. Write an anonymous block to create nested tables and compare the values in nested tables
10. Write an anonymous block using multilevel VARRAY
11. Write an anonymous block to check if a collection element exists or not ?
12. Write a function using NEXT and PRIOR to access the elements in a collection TABLE


PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

Part A (20 marks)	Program writing	10 Marks
	Error free compilation	05 Marks
	Correct output	05 Marks
Part B (40 marks)	Program writing	20 Marks
	Error free compilation	10 Marks
	Correct output	10 Marks


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IV -SEMESTER Java Lab

PART- A

1. Write a Java program to display only those multi-digit prime numbers between a given range whose digit sum is prime. Display the prime number and its digit sum side by side. Read the value for the range using `readLine()` method of `BufferedReader` class.

Sample output:

If range is; m = 20, n=50

Prime number	Sum of digits
23	5
29	11
41	5
43	7
47	11

2. Write a Java program to sort the elements of a square matrix. Read the order and elements of the matrix during execution. Before sorting the elements of the matrix, display the source matrix.

Sample output:

Input Matrix is:

```
20 2 35
4 16 7
41 3 2
```

Matrix elements after sorting:

```
2 2 3
4 7 16
20 35 41
```

3. Write a java code to create a class with data members name, category, doj, and fees and static members total_fee, categorywise_no_students, methods to Insert data using parameterized constructor, display student information along with total fees and number of students in each category.
4. Write java program to demonstrate method overloading to generate random numbers, random alphabet sequence and random strings.
5. Assume that an examination authority conducts qualifying examination for candidates twice each year. First, in the month of June, second, in the month of December. Before the exam, it opens a registration process so that candidates register themselves. After the end of the registration dates, the authority consolidates the list of candidates and generates the unique register numbers. These numbers are assigned to each candidate. The format of the register numbers is as below. Each register number should contain exactly 10 characters.

year of Registration	cycle	Serial Number
----------------------	-------	---------------

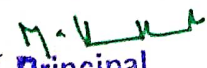
For example, if year of registration 2018, cycle 2 and there are five candidates registered then, registration numbers are: QE20182001, QE20182002, QE20182003, QE20182004, QE20182005.

The serial numbers should contain exactly 3 digits. To maintain it, prefix zeros as needed. (up to 9 serial number should be prefixed with two zeros, after 9, upto 99 it should be prefixed with single zero and after 99, no zeros). Write a Java program to generate the registration numbers as per the above requirement.

6. Write a Java program to read name, register number, date of birth, address, phone number a student. Concatenate these to frame a single content by delimiting each detail with a special symbol, pass it to a method which should separate and display the details of the student. Declare a class containing the following methods:

`void getInformation()` – to read student information. It should call `concatenate(,,,) by passing relevant information.`

`void concatenate(String name, String regNo, String dob, String address, String phoneNo)` to join the information to frame a single content. It should call


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extractInformation(...) by passing the concatenated information.
void extractInformation(String joinedInfo)
to extracted concatenated contents and to display the information.

Declare another class to contain main () method which calls *void getInformation()*.

Sample output:

Student Name: Venkata Krishna

Register Number: BC171128

Date of Birth: 10/05/1996

Address: No. 5, First Cross, Nehru Nagar, Sagar.

Phone Number: 9900990099

Concatenated content:

Venkata Krishna%BC171128%10/05/1996%No. 5, First Cross, Nehru Nagar, Sagar.%9900990099

(Application: This is the way using which collection of information is communicated between client and server in networked environment)

7. Consider class person with fields name, address and date of birth and methods read_data() and show() and another class employee inherited form person class with fields emp_id, date of join and salary and methods read() and show(). Write java program to implement the concept of single inheritance with method overriding concepts for the above classes.

PART B


1. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case and also insertion of any type of objects must be possible. Read input as strings and find the type of data and convert them into appropriate objects of appropriate classes. (Ex: 10 must be converted to object of Integer class, 2.5 into object of Float class etc.). Handle exception while converting the inputs.
2. Declare an interface containing methods *float addition(float x, float y)* and *float subtraction(float x, float y)*. Declare the classes implementing the interface to perform respective operations as listed below.

Bank - to carryout deposit and withdrawal operations. In addition to the implementation for the abstract methods, the class should contain additional methods to read and display customer information to perform the respective transaction.

EmployeeSalary - to calculate the gross and net salary. In addition to the implementation for the abstract methods, the class should contain additional methods to read and display employee information, allowance amount and deduction amount to perform the respective transaction.

Main class - which instantiates above two classes and calls respective methods.

3. Write java program to demonstrate multi level inheritance using appropriate real life example.
4. Write a java program to create a package Number which contains a class with three static methods prime, fibanocii and Armstrong that checks whether the passed value is belongs to the corresponding types.
5. Write a java program to demonstrate multithreading using runnable interface.
6. Write an applet to display the address of a person (atleast 4 lines) using parameter passing concept. Appropriate message should be displayed for wrong input.
7. Write an applet to draw a polygon based the number of sides of the polygon as input. Ex. If sides =3 it should draw a triangle, for 4 square for 8 octagon etc.
8. Write an applet to draw n squares, rectangle and circles.


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PRACTICAL EXAM SCHEME

Practical Proper: 60 Marks

Record : 10 Marks

Viva : 10 Marks

Part-A (25 marks)	Program writing	15 Marks
	Correct program and Error free compilation	5 Marks
	Correct output	5 Marks
Part-B (35 marks)	Program writing	20 Marks
	Correct program and Error free compilation	10 Marks
	Correct output	5 Marks


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QUESTION PAPER PATTERN FOR B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: PROJECT LAB

PROJECT LAB EXAM SCHEME

The objective of the project is to motivate them to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories. The project is of 3 hours/week for one (semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The Project work should be either an individual lone or a group of not more than five members.

The project proposal should include the following:

- Title
- Objectives
- Input and output
- Details of modules and process logic
- Limitations of the project
- Tools/platforms, Languages to be used
- Scope of future application

The examiner will evaluate the project work as follows:

- Project Report - 10 Marks
- Project Demo - 10 Marks
- Viva-Voce - 20 Marks

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KUVEMPU



UNIVERSITY

Revised syllabus

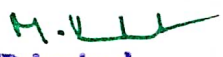
BCA, B. Sc (Computer Science) and BA (Computer Applications)

W.E.F 2019-20

**DEPARTMENT OF P.G. STUDIES AND RESEARCH IN
COMPUTER SCIENCE,**

JANNASHAYADRI , SHAKARGHATTA

SHIMOGA, KARNATAKA


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Regulations for BCA course

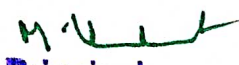
Eligibility for Admission

1. A candidate who passed the three year Diploma in the branch of computer science, examination conducted by the board of Technical education, Government of Karnataka, shall be eligible for admission to first semester of BCA degree course.
2. A candidate who passed the two-year Pre-University examination in science/commerce of Karnataka state or any other examination considered as equivalent are eligible for admission to the first semester of BCA degree course.
3. A candidate who passed the three year Diploma in the branch of computer science, examination conducted by the board of Technical education, Government of Karnataka, shall be eligible for Lateral admission to the Third semester of BCA degree course.
4. Computational Mathematics-I and II Subjects should be taught by Computer Science Faculty

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NEW SYLLABUS FOR BCA (EFFECT FROM 2019-20)

Semester	Paper	No of Hours (Theory)	No of Hours (Practical)	IA	External
I	English	4	-	20	80
	Kannada / Hindi/ Sanskrit/ Urdu	4	-	20	80
	Computational Mathematics - I	4	-	20	80
	Computer Fundamentals	4	-	20	80
	Introduction to Information Technology	4	-	20	80
	Programming Fundamentals & C-Programming	4	-	20	80
	Excel & C Lab	-	3	20	80
TOTAL				140	560
II	English	4	-	20	80
	Kannada/Hindi/ Sanskrit/ Urdu	4	-	20	80
	Computational Mathematics - 2	4	-	20	80
	C & Linear Data Structures	4	-	20	80
	Database Management System – I	4	-	20	80
	Digital Fundamentals	4	-	20	80
	DS & Advanced Excel Lab	-	3	20	80
TOTAL				20	80
III	English	4	-	20	80
	Kannada / Hindi/ Sanskrit/ Urdu	4	-	20	80
	Non Linear Data Structures using C++	4	-	20	80
	Database Management System – II	4	-	20	80
	System Software	4	-	20	80
	DS Lab Using C++	-	3	20	80
	SQL Using MYSQL	-	3	20	80
TOTAL				20	80
IV	English	4	-	20	80
	Kannada / Hindi/ Sanskrit/ Urdu	4	-	20	80
	Java	4	-	20	80
	PL/ SQL and Data Warehousing	4	-	20	80
	Software Engineering	4	-	20	80
	Java Lab	-	3	20	80
	PL/ SQL & DW Lab	-	3	20	80
TOTAL				20	80
V	Advanced programming in java	4	-	20	80
	Web Programming	4	-	20	80
	Operating System	4	-	20	80
	Data Communication	4	-	20	80
	Computer Networks	4	-	20	80
	Advanced java Lab	-	3	20	80
	Web Programming Lab	-	3	20	80
TOTAL				20	80
VI	Unix Operating System	4	-	20	80
	. Net Programming	4	-	20	80
	Elective - 1			20	80
	Digital Image Processing / Cloud Computing	4	-	20	80
	Elective – 2			20	80
	Computer Graphics/Operation Research	4	-	20	80
	Unix & Net Lab	-	3	20	80
Project Lab	-	3	20	80	
TOTAL				20	80
				120	480


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BCA - 1.3 : Computational Mathematics - 1

PART- A

Unit-1 Sets, Relations and Functions

12 hrs

Definition of a set, sub-set with examples, Venn diagrams, types of sets-equal sets, null set, disjoint sets, finite set, infinite set, power set, cardinality of set. Operations on sets-union and intersection of two sets, complement of a set, difference of two sets, symmetric difference of sets. Algebraic properties of set operations, strings and regular expressions. Definition of a relation with examples, types of relations-empty, universal, trivial, equivalence, reflexive, symmetric, transitive relation (definition and examples only, no problems). Definition of a function with examples, types of function, one-to-one (injective). Binary operation - commutative, associative, identity and invertible (definition and examples only, no problems). Functions for computer science - characteristic function, floor function and ceiling function.

Unit-2 Logic and Reasoning

12 hrs

Definition of proposition or statement, proposition variables, negation of statements, truth table, conjunction, disjunction, implications quantifiers- predicate, universal quantifier, universal quantification, existential quantification. Conditional statement/implication, contrapositive and converse, equivalence or bi conditional, tautology, contradiction, logical equivalence, properties of proposition operation-commutative, associative, distributive, idempotent negation. Simple problems on tautology and equivalence. Rules for validating statements

PART- B

Unit-3 Mathematical Induction and Counting

12 hrs


Principle of mathematical induction, simple problems on principle of mathematical induction. Fundamental principle of counting (statement with examples only), permutations-definition and simple problems. Combinations - definition and simple problems. Pigeon hole principle- statement and proof, extended pigeonhole principle- statement and proof.

Unit-4 Matrices and Determinants

12 hrs

Definition of matrix and order of matrix, types of matrices-column matrix, row matrix, square matrix, diagonal matrix, scalar matrix, identity matrix, zero matrix(definition and examples only, no problems),equality of matrices(definition and examples), simple problems on equality of matrices. Operations on matrices-addition, subtraction, product of two matrices, scalar multiplication of a matrix, inverse of a matrix, simple problems on these operations. Matrices applications in computer science.

Definition of determinant (definition and examples), determinant of matrix of order one , order two and order three(simple problems), properties of determinant(examples only, no verification),applications of determinants and matrices for solving the system of linear equations of two variables and three variables(simple problems),applications of determinant and matrices for checking the system of linear equations for consistency and inconsistency(simple problem).

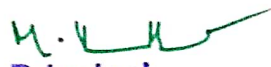

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References:

1. Text book of Mathematics – Shanthi Narayan
2. Text book of Mathematics – S. Lipschutz

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit3 and unit4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),....
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.


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BCA 1.4 COMPUTER FUNDMENTALS

PART- A

Unit 1- Introduction to Computer Systems

12 hrs

Definition of a Computer, History of Computers, Generations of Computers, classification Of Computers, Applications of Computer, Capabilities and limitations of computer. Block diagram of a Computer with functional units (explanation), Parts of a computer system with peripherals (explanation of peripherals), and essential computer hardware , Information processing Cycle. Input and output device: Input devices-key board mouse (explanation with diagram and working), output devices, monitors types of monitors, types of printers – line and page printers, laser printer – working, advantages and disadvantages. Representation of data, text code -EBCDIC, ASCII, UNICODE.

Unit 2 Computer Organisation & Storage Device

12 hrs

Basic computer organization, bus Architecture and types .Primary Vs Secondary Storage, Primary Storage: RAM – SRAM, DRAM, SDRAM, DDR. ROM - PROM, EPROM, EEPROM, cache memory. Secondary Storage: Magnetic Tapes, Magnetic Disks. hard disks, Zip Drive, Flash Drives.

PART -B

Unit 3- MS Word and Power point

12 hrs

MS Word: Working with documents, formatting documents, Setting page style and page layout, Creating Tables, Printing documents, Mail merging.

Power point: Introduction to presentation, Creating presentation, Formatting presentation, Adding effects to presentation, Printing Handouts.

Unit 4 –MS Excel

12 hrs


Spread sheet and its applications, Data Formatting, Working with sheets, insertion and deletion of rows, columns and sheets, using formula in workbooks, creating charts, cell validation, filters.

References:

1. Computer fundamentals- V Rajaraman
2. Computer fundamentals- P B Kottur

GENERAL INSTRUCTIONS FOR PAPER SETTING

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BCA 1.5 INTRODUCTION TO INFORMATION TECHNOLOGY

PART- A

Unit 1-Software

12 hrs

Definition of software, types of software - application software, general purpose and specific purpose, scientific and business software examples. System software - operating system, assembler, compiler, interpreter, linker, loader. Classification of programming languages - machine level, assembly level, high level languages, event driven, object oriented - advantage and disadvantages examples.

Unit 2. Computer Networks

12 hrs

Definition, uses of network, applications of computer networks, types of network- point-to-point, broadcast, LAN, MAN, WAN network topology, introduction to different protocols (TCP/IP, SNMP, SMTP, FTP, HTTP, Telnet, ARP, DNS, Gopher, POP), network transmission Media (twisted pair, coaxial, optical fiber), definitions of network interface card (NIC), Hub, Bridge, Switch, Router, Bandwidth, internet and its applications, understanding world wide web - how the web works, web browsers - examples, features, Telecommunication overview, Client server.

PART- B

Unit -3 E-Commerce

12 hrs

Defining commerce , main activities of electronic commerce, benefits, goals, components, functions, process management, service management, transaction capabilities, types, scope.

Unit – 4 Introduction to clouds, big data and IOT

12 hrs


Cloud- introduction, cloud computing at a glance. Vision of cloud computing, defining a cloud, characteristics, advantages, disadvantages, examples. Big Data – meaning, 3Vs in big data, challenges. IOT- meaning, components, scope, IOT in education.

References:

1. Computer fundamentals- V Rajaraman
2. Computer fundamentals- P B Kottur
3. Mastering Cloud. Computing - RajKumarBuyya, Christian Vecchiola and ThamaraiSelvi
4. Ecommerce concepts and applications – NidhiDhavan

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
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PART -A

Unit 1-Problem Solving Techniques:

12 hrs

Problem solving techniques – problem definition, analysis, design, debugging, testing, documentation and maintenance. Design Tools - ALGORITHM: definition, characteristics, advantages and disadvantages. FLOWCHART - definition, symbols, advantages and disadvantages. Writing an algorithm and flowchart : Area of circle, arithmetical operations, simple interest and compound interest, quadratic equation, largest of three numbers, sum of N natural numbers, factorial of number, Fibonacci series, prime number, reverse a given number, evaluation of series like $\sin(x)$, $\cos(x)$, e^x , $\log(x)$ etc.

Unit 2- C Basics

12 hrs

History of c-programming, Features, basic program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

PART - B

Unit 3 - Operators

12 hrs

Arithmetic, relational, logical, assignment, increment and decrement, conditional, bitwise and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversion(implicit and explicit) and mathematical functions. Managing I/O operations – reading and writing a character, formatted and unformatted I/O.

Unit 4- Decision making, branching and looping

12 hrs

Decision making - if and if-else statement, nested if, else if ladder, switch statements, conditional operator, goto statement. Looping - while, do-while and for, nested for. break and continue statements. Programs on these concepts.

References :

1. Computer Concepts and Programming, Padma Reddy
2. Let us C , Yashwanth Kanetkar
3. Ansi C, Balagurusamy
4. Problem solving with C, M. T. Somashekara and D. S. Guru

GENERAL INSTRUCTIONS FOR PAPER SETTING

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2. There shall be 08 questions (4 questions from each part).
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5. The student has to attend at least one question from each unit.

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BCA 2.3 - Computational Mathematics -II

PART -A

Unit 1 - Graph theory

12 hrs

Definition of graph, graph as models, matrices and isomorphism, graph terminologies- definitions, properties and examples, Decomposition and special graphs. Paths, cycles and trails -connection in graphs, bipartite graphs, Eulerian circuits. Vertex, degree, bijections paths, cycles and trails-connection in graphs,

Unit 2 : Directed Graphs

12 hrs

Definition of directed graph, properties and examples, vertex degrees, Trees and distance-basic properties, properties of trees, distance in trees and graphs, disjoint spanning trees, spanning trees and enumeration of trees, Hamilton paths and circuits, Decomposition of graphs, special graphs. Optimization and trees-minimum spanning tree, shortest paths, trees in computer science.

PART- B

Unit 3 - Statistics

12 hrs

Definition, scope, characteristics, functions and limitations of statistics. Basic concepts- units/individuals, populations/universe, sample, variable, attribute, discrete variable, continuous variable, qualitative data and quantitative data. Stages of Statistical method – collection, organization presentation, analysis and interpretation of data. Classification of data - definition, objectives, types of classification, frequency, class frequency, frequency distribution ,discrete frequency distribution, continuous frequency distribution, inclusive class and exclusive class, class limits, correction factor, open-end frequency distribution, mid-point or class mark, width/size of class, number of classes, cumulative frequency, frequency density, construction of FDT for discrete and continuous data. Tabulation-definition, objectives, types of tables-one way/simple, two way and manifold tables.

Unit 4 : Central Tendency

12 hrs

Definition, average, arithmetic mean, mode, median, geometric mean and harmonic mean, advantages and limitations. Simple problems on arithmetic mean, geometric mean and harmonic mean. Measures of Dispersion - range, range coefficient, mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient (definitions only). Problems on mean deviation, mean deviation coefficient and standard deviation, standard deviation coefficient.

Reference s:

1. Introduction to Graph theory by S.Lipschutz
2. Statistics and probability by B.M Aggarwal
3. Statistics by Rajmohan

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit3 and unit4 are Part-B.
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5. The student has to attend at least one question from each unit.

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PART -A

Unit 1- Arrays and Functions

12 hrs

One and two dimensional arrays, array initialization, Strings - declaration and initialization of string variable, reading and writing strings, string handling functions. Functions – Need, syntax of function declaration, all types of functions, nesting of functions, categories, parameter passing mechanism, function with arrays.

Unit 2- Pointers & Structures

12 hrs

Pointer arithmetic, dynamic memory allocation, command line arguments. Structure-Definition, declaration, accessing structure members, structure with in structure, example programs, structure with array, union and difference between structure and union with example programs, typedef, enum

PART -B

Unit 3-Stack

12 hrs

Definition of data structure, types(primitive, non primitive-linear and nonlinear).Linear data structure- Stack: Definition and example, operations, representation of stack in C, evaluation of postfix expression, conversion from infix to postfix using stack table. Recursion: Recursive definition, and process, Recursion in C, writing Recursive programs- factorial. GCD, tower of hanoi, fibanocci, binomial coefficient, efficiency of recursion

Unit 4 –Queue and Linked List

12 hrs

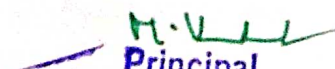
Queue – Definition, operations, representation of queue in C. Types- circular queue, double ended queue. Linked list - Definition and example, insert and delete (any where), search, count and display, . Circular linked list and doubly linked list (concepts only).

References :

1. Computer Concepts and Programming, *Padma Reddy*
2. Let us C – Yashwanth Kanetkar
3. ANSI C, -*Balagurusamy*
4. Data structures using C and C++ - Yedidyiahetal
5. Programming in ANSI C - E.Balaguruswamy
6. Data structures and programming design using C - Robert Kruse PIII publications
7. Data structures and applications - Trembly and Sorenson
8. Systematic approach to data structure – Padma Reddy

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
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5. The student has to attend at least one question from each unit.


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BCA-2.5 DATABASE MANAGEMENT SYSTEM-I

PART- A

Unit 1-Introduction

12 hrs

Definitions of Data, database, database system, DBMS, examples, database system applications. Meaning of data and information, database management system vs. file management system, views of data, data independence, data models, database languages, database users and administrators, database system structure, application architecture, advantages of using DBMS, classification of DBMS, meaning of schema and instance.

Unit 2 -E-R Model

12 hrs

Basic-concepts, Definition of Data Models, Using high-level, conceptual data models for database design, , constraints, keys, an example database application, E-R diagram, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality), Definition of Ordinality, specialization, generalization. Differences between specialization and generalization.

PART- B

Unit 3 –Relational Model

12 hrs

Structure of relational Databases, Relational algebra - select, project, union, set difference, rename, division operations, Modification of the database, queries using relational algebra. Extended relational algebra operations.

Unit 4 - SQL

12 hrs

SQL- Background, basic structure, set operation, aggregate functions, NULL values, nested sub queries, Views, complex queries, Modification of the database, joined relations, Data Definition Language, domain constraints, referential integrity in SQL. Assertions, authorization, privileges in SQL.DDL Commands.

References:

1. Korth, Sudarshan "Database System concepts", Mcgraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri "fundamentals of database Systems"
3. Addison C.J. Date "Introduction to Database systems" Addison-wesley.
4. Bipin C Desai "Introduction to Data base system" Galgotia publications

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.

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BCA-2.6 DIGITAL FUNDAMENTALS

PART- A

Unit 1- Number System and Boolean Algebra

12 hrs

Binary number system, decimal number system, octal number system, hexadecimal number system. Bases inter conversions. Representation of negative numbers - 1's and 2's complements. Codes - BCD, GRAY, EXCESS-3. Laws of Boolean algebra, Evaluation of Boolean expression, De Morgan's theorems and proof, simplification of Boolean expressions using Boolean laws, Basic gates (AND, OR, NOT): truth table, Definition, Boolean expression and symbols, universal gates (NAND, NOR) : truth table, definition, Boolean expression and symbols, SOP and POS form, min term and max term, expression of Boolean equation in Min and Max term (conversion of SOP and POS forms to standard form)

Unit 2- Logic Systems and K- Map

12 hrs

Realization basic gates using NAND and NOR gates. Realization of Boolean expression using basic gates and universal gates. XOR and XNOR gate (working, Boolean expression, symbol and truth table), **K-map method: Rules**, simplification of Boolean equation using K-map (up to 4 variables), without and with don't-care condition, Implementation using basic gates and universal gates, Quine-McCluskey Tabulation method to determine and select essential prime implicants.

PART- B

Unit 3-Combinational Logic:

12 hrs

Half adder and full adder, half subtractor and full subtractor. Code converters - BCD to Excess 3 and BCD to gray code, magnitude comparator, encoders (BCD to decimal), decoder (decimal to BCD), multiplexer(4:1 and 8:1), de-multiplexer(1:4 and 1:8).

Unit 4-Sequential Logic:

12 hrs

Introduction, Flip-flops – SR, JK, D, T, JK-MS (Detailed Study) Registers – Introduction, shift register- types and applications. Counters – synchronous and asynchronous counters (Up, down, up down and Mod counters(asynchronous only)) with timing diagram.

References:

1. Digital Logic and Computer Design- M. Morris Mano
2. Digital fundamentals – B.Basavaraj
3. Digital fundamentals – L Krishnananda

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BCA -3.3 Non Linear Data Structures using C++

PART- A

Unit 1 - Introduction to C++ and OOPS

12 hrs

Object Oriented Programming paradigm, Limitations of structures in C, Basic concepts of Object Oriented Programming- Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic binding, Message passing, Benefits of OOP, Object Oriented languages, applications of OOP.C++ features, Comparison with C, Structure of a C++ program, input and output statements Keywords, Data types, symbolic constants, type compatibility, declaration of variables, reference variables, operators in C++, control structures.

Unit 2 - Classes Objects, Member Functions And Constructors- Destructors

12 hr

Specifying a class, creating objects, memory allocation for objects, static data members, arrays within a class, local classes. Defining member functions, call by reference, return by reference, inline functions, default arguments, making an outside function inline, nesting of member functions, private member functions, function overloading, static member functions, const member functions, pointer to members, friend and virtual functions. Constructors, parameterized constructors, multiple constructors in a class, constructors with default arguments, copy constructor, dynamic constructors. Destructors.

PART- B

Unit 3— Operator overloading And Inheritance

12 hr

Overloading unary operators, overloading binary operators, overloading operators using friends, string manipulations using operators, rules for operator overloading, type conversions. Inheritance definition, defining derived classes, types-single inheritance, making a private member inheritable, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base classes.

Unit 4 – Trees And Sorting

12 hrs

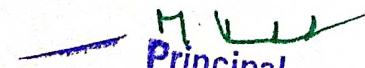
Tree terminologies, Binary tree, binary tree representation, types of binary tree - linked representation, tree traversals, and binary search tree and their applications, algorithm on searching element in a binary search tree, linear search and hashing, Quick sort, insertion sort, shell sort, radix sort, tree sort, heap sorting.

References:

1. E Balguruswamy, Data Structures using C
2. RB Patel, Expert Data Structures with C++, Khanna book publishing
3. YashwanthKanatkar, Data Structures through C

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PART -A

Unit 1- Relational Database Design

12 hrs

Review of relational algebra and relational calculus concepts, Pitfalls in relational data base design, Normalization for relational databases. Normal forms based on primary keys, General definitions of first, second and third normal forms, Functional Dependency (concept and example) decomposition, Boyce-Codd Normal Form - definition and example, fourth Normal form - Multi valued Dependencies - definition and example.

Unit 2 - Storage and File Structure

12 hrs

Overview of physical storage media, MAGNETIC AND FLASH DISKS – performance measure of a disk optimization of disk block access, RAID, improvement of reliability via redundancy, improvement of performance via parallelism RAID levels, choice of RAID level, File organization – fixed and variable length records, organization of records in files, Data dictionary, Indexing and hashing – basics , Ordered indices, , B+ index files, structure of B+ index tree.

PART- B

1.

Unit 3- Transaction management and Recovery system

12 hrs

Transaction management- Concepts, simple transaction model, storage structure, transaction atomicity and durability. Recovery system- Failure classification, storage, recovery and atomicity- log records, data modification, concurrency control and recovery, transaction commit (concepts).

Unit 4 - PL/SQL

12 hrs

Features of PL/SQL, Advantages of PL/SQL, basic syntax, data types and Subtypes. Variables -: declaration, initializing variables, variable scope, assigning SQL query results to PL/SQL variables. Constants And Literals: Declaring a Constant, The PL/SQL Literal, Operators, Precedence, Conditions: IF-THEN and it's flavours, CASE Statement, Searched CASE Statement, Basic Loop Statement, WHILE LOOP Statement, FOR LOOP Statement, Reverse FOR LOOP Statement, Nested Loops, Labeling a PL/SQL Loop, The Loop Control Statements, EXIT Statement, The EXIT WHEN Statement, CONTINUE Statement, GOTO Statement, STRINGS: Declaring String Variables, String Functions and Operators, ARRAYS: Creating a Varray Type.

References:

1. Data base system concepts - Korth , Sudarshan 6th Edition
2. Muruch's Oracle SQL and PL/SQL
3. Oracle Database 11G PL/SQL Programming

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BCA 3.5 SYSTEM SOFTWARE

PART- A

Unit 1 -Machine Architecture

12 hrs

Introduction, System software and machine architecture, Simplified Instructional Computers (SIC) and its architecture, Instruction Formats of IBM-360. Searching & Sorting - Linear and binary search, comparison, examples. Interchange sort, shell sort, bucket sort, radix exchange sort, address calculation sort, Random entry searching.

Unit 2-Assembler and Loader

12 hrs

Introduction, General design procedure, design of Assembler, statement of problem, data Structure, Format of Date bases, Algorithm for pass 1 and pass 2, look for modularity. Explanation along with flowcharts for both pass 1 and pass 2 (detailed flowchart). Introduction to loader, Loader schemes-compile and go , general loader, Absolute loader, Sub routine linkage, Relocating loader, Direct linking loader, overlays, Dynamic loading.

PART- B

Unit 3 - Macro Language and macro processor

12 hrs

Introduction, Macro instructions, Features of macro facility-macro instruction arguments, Conditional macro Expansion, Macro calls within macro, Macro instruction defining macro. Macro processor implementation: statement of problem, specification of databases and specification of database format, Algorithm and flowchart for processing macro definitions and macro expansion.

Unit 4 – Compiler

12 hrs


Introduction, Statement of problem, Phases of compiler, Detailed study of - Lexical phase, syntax phase, interpretation phase optimization phase, storage assignment phase, code generation phase, Assembly phase, passes of compiler. Data Structures: statement of problem, storage classes and its use.

References:

1. System programming – John. J. Donovan
2. System Software – Leland L. Beck, Third edition, Addison Wesley 1997
3. Systems programming and operating systems –Dhamdare

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BCA - 4.3 JAVA PROGRAMMING

PART- A

Unit 1 - Introduction to Java and Java Program Structure

14 hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Java environment- JDK, JSL. Data types, Constants and Variables, Operators & Expressions, Type conversions, Mathematical functions; Control Statements: Decision making, Branching and looping with while, do-while, for and labeled loops; Arrays- Declaration of 1D, 2D arrays, Class, Objects, Constructor, Method overloading, Static members. Strings-Introduction, classes and its methods. Vectors. Wrapper classes. Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; **Interface**: Defining, Extending and Implementing assigning interface variables

Unit 2 –Packages and multithreading

12 hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

PART -B

Unit 3- Exceptions and Debugging

12 hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and rethrowing exceptions, creating Exception classes, multiple catch statements, finally clause, tips for using exceptions, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

Unit 4 – Applets and Graphics

10 hrs

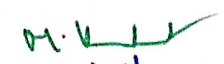
Applets basics, applet types, applets and application, Life cycle of an applet, applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon. Using control loops in applets, drawing bar charts.

References:

1. Java, The Complete Reference – Patrick Naughton and Schildt
2. Programming in Java – Joseph L Weber
3. Java Programming – E Balaguruswamy
4. Object oriented programming with Java – Mt Somashekara Ds Guru Ks Manjunath

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BCA 4.4 PL/SQL DATA WAREHOUSING

PART- A

12.

Unit 1-Procedures, Functions and Triggers

12 hrs

15.

Parts of a PL/SQL Subprogram, Creating a Procedure, Executing a Standalone Procedure, Deleting a Standalone Procedure, Parameter Modes in PL/SQL Subprograms, Methods for Passing Parameters. Functions: Creating a Function, Calling a Function, Cursors : Implicit Cursors, Explicit Cursors, Declaring the Cursor, Opening the Cursor, Fetching the cursor, Closing the, Cursor, Exceptions: Syntax for Exception Handling, Raising Exceptions, User-defined Exceptions, Pre-defined Exceptions, Triggers: Creating Triggers, Triggering a Trigger

Unit 2– Packages, Collections and Transactions

12 hrs

PL/SQL — PACKAGES: Package Specification, Package Body, Using the Package Elements, COLLECTIONS: Index-By Table, Nested Tables, Collection Methods, Collection Exceptions

TRANSACTIONS: Starting and Ending a Transaction, Committing a Transaction, Rolling Back Transactions, Automatic Transaction Control. OBJECT-ORIENTED: Instantiating an Object, Member Methods, Using Map method, Using Order method, Inheritance for PL/SQL Objects, Abstract Objects in PL/SQL

PART -B

Unit 3 - Data Warehousing and OLAP

12 hrs

Data Warehouse basic concepts: ODS, ETL functions, ODS and DW architecture, Guidelines for implementing DW, Difference between ODS and DW, OLTP and DW, OLTP and OLAP, Data Warehouse Modeling, Data warehouse Schema. OLAP: Characteristics, Multi-dimensional view and data cube, Data cube operations

Unit 4 - Data Mining

12 hrs

Introduction to Data Mining: KDD process, Architecture of Data Mining, Motivating Challenges, Data Mining Tasks, Data Mining Technologies Data Pre processing: Cleaning, integration, transformation, data reduction, data normalization. Data Mining Applications. Classification and Clusters- concepts and examples, Decision tree- concepts, algorithm, creating decision tree using information gain.

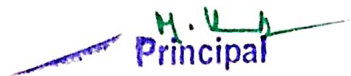
References:

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar: Introduction to Data Mining Addison- Wesley,2005.
2. G.K.Gupta : Introduction to Data Mining with Case Studies, 3rd Edition, PHI, NewDelhi,2009
3. Arun K Pujari: Data Mining Techniques University Press,2ndEdition, 2009.
4. Jiawei Han and Micheline Kamber : Data Mining-Concepts and Techniques, II Edition, Morgan KaufmannPublisher,2006.
5. Alex Berson and Stephen J. Smith: Data Warehousing, Data Mining and OLAP Computing, Mc GrawHill Publisher,1997.

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BCA -4.5 SOFTWARE ENGINEERING

PART- A

Unit 1–Introduction

10 hrs

Definition of software, software problems (industrial strength software, software is expensive, late and unreliable maintenance and rework), software engineering challengers (scale, quality and productivity, attributes), software engineering approach (phased development process, managing process, components).

Unit 2 –Software processes and Software Planning

14 hrs.

Introduction to software process (processes and process modules, component of software process), characteristics of software process(predictability, support, testability and maintainability, support change, early defect removal, process improvement and feedback), and software process models (waterfall, prototype, iterative enhancement model, spiral) comparison of processmodels. Introduction to planning, effort estimation (uncertainties, building efforts, bottom-up, COCOMO model), project scheduling and staffing (overall, detailed scheduling, team structure), risk management (concepts, assessment), project monitoring plan (measurements, project monitoring and tracking).

PART- B

Unit 3 – Analysis and Design

12 hrs

Software requirements (needs and requirement process), problem analysis (informal approach, data flow modeling, object oriented modeling, prototyping), requirement specification (characteristics of SRS, components of SRS, specification language, structure of requirement document), validation. Design: Function oriented design: design principles, module level concept (coupling, cohesion), structure design methodology (DFD, first level factoring).

Unit 4 –Coding and Testing

12 hrs

Coding: programming principles and guidelines (common coding errors, structured programming, information hiding, some programming practices, coding standards), refactoring (basic concepts with examples, common refactoring), verification (code inspections, static analysis, proving correctness, unit testing). Testing: testing fundamentals, black box and white box testing, comparison between black box and white box testing, regression testing, testing process- levels of testing, test plan.


References:

1. An integrated approach to software engineering-Pankaj Jalote.
2. Roger Pressman, Software Engineering- A Practitioner's Approach TMH
3. Ian Sommerville, Software Engineering, Pearson Publications Ltd.


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BCA - 5.1 ADVANCED PROGRAMMING IN JAVA

PART- A

Unit 1 - AWT, Advanced Graphics Programming 12 hrs
Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, working with colors and fonts. Advanced graphics operations using Java2D. Designing simple User Interfaces (UIs) using AWT (Label, Text Field, Choice, List, Checkbox, Checkbox Group, Scrollbar, Button, Text Area, Panel), Layout Manager.

Unit 2 –Event Handling and Swings: 12 hrs
Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, anonymous inner class, Event queue. Swing: Meaning, need difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing (JLabel, JText Field, JComboBox, JList, JCheckbox, JScrollbar, JButton, JRadioButton, JScroll Pane, J Panel, J Tabel, J Tree, JFrame) and handling basic events.

PART- B

Unit 3 - File Management and JDBC 12 hrs
File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file. JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBCExceptions.

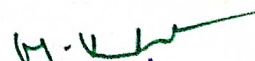
Unit 4 -Fundamental concepts of Collections, Generics and Java Beans 12 hrs
Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map . Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing container, implementing constructors, implementing generic methods. Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties. Java Archives (JARs): Meaning, need, the JAR utility, Creating JARfiles.

References:

1. The Complete Reference – Java 2: Herbert Schildt, 5th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.

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PART -A

Unit 1–Introduction

12 hrs

Internet, WWW, Web Browsers and Web Servers, URLs, HTTP, Evolution of the Web, Peak into the History of the Web, Internet Applications, Important Components of the Web, Web Search Engines, Application Servers. HTML and DHTML Concepts : Programming structure, different basic tags , Images, Hyper text Links. Lists, Tables, Forms, Frames. Cascading Style Sheets: Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, Background images, The and <div> tags.

Unit 2 –The JavaScript

12 hrs

Overview of JavaScript, Execution Environment, Object orientation and JavaScript, Syntactic characteristics, Primitives, operations, and expressions, Arrays, Functions, Pattern matching using regular expressions, Examples. Events and Event Handling, Meaning of client and server, Client-Server architecture, benefits, concept of ports and sockets. Protocol – Meaning, definition, examples, meaning of stateless and state (state full) protocols. HTTP protocol – meaning, http protocol request and response header formats, status codes. Client-Server communication scenario.

PART -B

Unit 3 – JEE Technology Concepts

12 hrs

Multi-tier architecture for application development – Meaning, need, advantages. Meaning of enterprise application and web application, various tiers in enterprise application – client tier, web tier, business tier, enterprise information system tier. Introduction to JEE concepts – Need, advantages, characteristics of JEE technology, the concepts of containers, components and services – meaning of web container, application client container, EJB container.

Unit 4 – Basics of PHP and Java Server Pages Programming Concepts

12 hrs


Introduction to JSP - language structure, advantages, characteristics, comparison between Java and Java Server Pages. Various aspects of Java Server Pages programs, writing and executing JSP programs. Writing dynamic programs using JSP. Database programming through JSP. Basics of PHP : Introduction , variables , functions, sessions, date, my sql integrations with php, file uploading.

References:

1. The Complete Reference – J2EE – Jim Keogh
2. J2EE – Kevin Mukhar, James L. Weaver, James P Crume, RonPhillips
3. learningphp and mysql4thEdition Robin Nixon.
4. Begining php-5 and Mysql Cristian Darie.

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BCA 5.3 OPERATING SYSTEM

PART- A

Unit 1–Introduction

12 hrs

Definition of Operating System, need. Early systems – Batch Systems, Multiprogramming, Time Sharing, Parallel and Distributed systems. Special Purpose Systems – Real Time, Embedded Systems, Multimedia Systems, Handheld Systems. Computing Environments – Traditional, Client Server, Peer-to-Peer and Web based. Open Source Operating Systems.

Unit 2 –Process Management

14 hrs

Process concept – meaning of process, sequential and concurrent processes, process state, process control block, threads, Process scheduling – scheduling queues, schedulers, context switch. Operations on Processes – creation and termination. Inter process communication – Independent and co-operating processes. Communication in client-server systems – RPC and RMI. Process scheduling – Basic concepts Processor - CPU I/O burst cycle, CPU Scheduler, Preemptive scheduling, dispatcher. Scheduling criteria, Scheduling algorithm – First-Come-First-Served (FCFS), Shortest Job First (SJF), Priority Scheduling, Round Robin. Multi-level queue scheduling (Concepts only), multi-level feedback queue scheduling (Concepts only). Multiple processor scheduling, real time scheduling.

PART -B

Unit 3–Deadlocks

08 hrs

Definition with example, System model, Dead lock characterization – Necessary Conditions, Resource Allocation Graph, Dead lock prevention, Avoidance and detection, Recovery from deadlock.

Unit 4 –Memory Management, Disk and File Management

14 hrs


Logical and Physical address space, Swapping, Contiguous allocation, Paging, Segmentation, Virtual memory - demand paging and its performance, Page replacement algorithms, Allocation of frames, Thrashing. Secondary Storage Structure and Disk Management: Disk structure & scheduling methods, Disk management, disk reliability. File concepts, Access methods, Directory structure, Protection and consistency semantics, File system structure, Allocation methods, free space management.

References:

1. Abraham Silberschatz and Peter Baer Galvin, Operating System Concepts, Fifth edition, Addison - wesley 1989.
2. Milan Milonkovic, Operating System Concepts & Design, II Edition, McGRaw Hill 1992.
3. Stallings, Operating Systems, Pearson Edition.
4. Tanenbaum, Operating System Concepts, Pearson Education
5. Nutt : Operating System, 3/e Pearson Education 2004

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BCA5.4 DATACOMMUNICATION

PART- A

Unit 1 - Introduction to Data Communication

14 hrs

Communication model & Data Communication networking –types. Data Transmission- Transmission terminology, Analog & Digital data transmission, Transmission impairments – attenuation, delay distortion & noise. Guided Transmission- types- Twisted pair, coaxial cable & optical fiber – physical description, application & characteristics. Unguided Transmission- wireless transmission: types- Terrestrial type, Satellite, Broadcast radio – physical description, application & characteristics.

Unit 2-Dataencoding

10 hrs

Basics, types and description of different signals, Digital data & digital signals: NRZ, multilevel binary, Bi phase techniques. Digital data & Analog signals: Encoding techniques- ASK, FSK, PSK Analog data & Digital signals: PCM & delta modulation Analog data & Analog signals: Modulation- AM & FM Spread spectrum: Frequency hopping, direct sequence Asynchronous & synchronous transmission: Line configurations- full duplex & half duplex.

PART- B

Unit 3- Data link control & medium access sub

12 hrs

Flow control: Stop and wait & sliding window flow control. Error detection: Parity check, CRC Error control: Stop and wait ARQ, Go Back-N ARQ High-level data link control: basics, Characteristics, frame structure, operation Medium access sub layer- the channel allocation problem. Multiple access Protocol- ALOHA, carriers sense multiple access protocol, collision free protocol.

Unit 4- Multiplexing and Switching

12 hrs

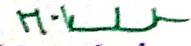
Frequency division multiplexing- characteristics, analog carrier systems, Time division multiplexing- characteristics, link control. Digital carrier system, ISDN user network interface. Circuit switching networks- switching concept, space division & time division switching- Pocket switching networks-principles, switching technique, and packet size. Comparison of Circuit switching & Pocket switching

References:

2. Data and Computer Communications – William Stallings.
3. Computer Networks – Andrew S.Tanen baum.
4. Data Communication – Ulysis D Black.
5. Data Communication and Networking – Behrouz A. Forouzan.
6. Internetworking with TCP/ IP – Douglas E comer, PHI

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BCA 5.5 COMPUTER NETWORKS

PART -A

Unit 1-Basics

14 hrs

Uses of computer networks, network hardware- broadcast networks, point – to -point networks, network software-protocol hierarchies, design issues, interface & services, connection oriented & connection less services, service primitives, OSI reference model- description of each layer. TCP/IP reference model, comparison of the two models, Critique of the OSI model and protocols, Critique of the TCP/IP model and protocols, Example networks-ARPANET,ATM.

Unit 2- The Network layer

12 hrs

Design issues, routing algorithms- the optimality principle, shortest path routing, distance vector routing, and link state routing. Congestion control algorithms- general principle, Congestion prevention policies, traffic shaping. The network layer in the internet - the IP protocol, IP address, and subnet. Internet control protocol.

PART -B

Unit 3- The Transport layer

12hrs

The transport service- services provided to the upper layer, quality service, and transport service primitives. Elements of transport protocol - addressing, establishing a connection, releasing a connection. A simple transport protocol- the example service primitives, the example transport entity. The Internet transport protocol (TCP & UDP)- the service model, the TCP segment header, the TCP connection management. UDP - header.

Unit 4- The Application layer

10hrs

Network security - traditional cryptography, two fundamental cryptographic principles, secret key & public key algorithms.DNS - Name space, SNMP - model.Electronic mail, architecture and services, www.

References:

1. Data and Computer Communications – William Stallings.
2. Computer Networks – Andrew S.Tanenbaum.
3. Data Communication – Ulysis DBlack.
4. Data Communication and Networking – Behrouz A.Forouzan.
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BCA - 6.1 UNIX OPERATING SYSTEM

PART- A

Unit 1-Introduction

12 hrs

The Unix operating system, A brief Session, The Unix Architecture, Features of UNIX, POSIX and Single UNIX specification, Locating commands, Internal and External commands, Command Structure, Flexibility of command Usage, Man Browsing the Manual Pages ON-line, Understanding the man Documentation. General-Purpose Utilities: Cal command, date command, echo, printf, bc, script, passed, who, uname.

Unit 2 – The File System

10 hrs

The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: Cat, cp, rm, mv, more, The lp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip. Basic File Attributes: Listing file attributes, listing directory attributes, File Ownership, File Permissions, changing file permissions, Directory Permissions, Changing File Ownership.

PART- B

Unit 3 – The Vi Editor

14 hrs

Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions (U and U), Repeating the last command (.), Searching for a Pattern (/ and ?), Substitution. Process basics, process status, system process, Mechanism of process creations, Internal and external commands, process states and zombies, running jobs in background, nice, killing process with signals, job control, at and batch, cron, timing process. Simple Filters: The sample database, pr, head, tail, cut, paste, sort, uniq, tr, displaying a word- count list. Filters using regular expressions: grep, basic regular expressions, extended regular expressions.

Unit 4 –The Shell

12 hrs


The shell's Interpretive Cycle, Shell Offering, Pattern Matching, Escaping and Quoting, Redirection, /dev/null and /dev/tty, Pipes, tee, Command Substitution, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, exit and exit status of command, the logical operators && and ||- conditional execution, the if conditional, using test and to evaluate expressions, the case conditional, expr, \$0: calling a script by different names, while, for, set and shift, the here document (<<), trap, debugging shell scripts with set -x, sample validation and data entry scripts.

References :

1. Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.
2. There shall be 08 questions (4 questions from each part).
3. Each question must contain sub-questions-(a),(b),...
4. The student has to attend any 05 full questions (16*5).
5. The student has to attend at least one question from each unit.


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BCA - 6.2 .NET PROGRAMMING

PART -A

Unit 1 - Introduction to C# & .NET platform and Building C# Applications 10 hrs

Introduction to C# and .NET platform : .NET solution, Building blocks of the .NET platform(CLR, CTS, CLS), Role of .NET base class libraries, .NET Aware programming languages, role of common intermediate languages & type metadata and assembly manifests, A tour of the .NET namespaces. Building C# Applications : Role of the command line compiler(csc.exe), Building a C# application using csc.exe, the command line debugger(cordbg.exe), using the visual studio.NET IDE & its debugging, C# pre-processor directives.

Unit 2 - C# language fundamentals 14 hrs

Anatomy of a basic C# class, creating objects: constructor basics, Default assignments & variables scope, variables initialization syntax, basic inputs & output with the console class, understand static methods, arrays & string manipulations, Encapsulation Services, Class Properties , Read and Write only Properties, Static Properties, Inheritance Is As keyword Usage, Controlling Base Class Creation With Base, Sealed Classes, Delegation , Polymorphism, The Virtual and Override Keywords ,Abstract Classes, Abstract Methods

PART- B

Unit 3 - Exception & object life time and Interface and Collections 12 hrs

Exception & object life time :The Basics of Object Life Time, The Role Of Application Roots, Understanding Object Generations, The Role Of .NET Exception Handling, Throwing a Generic Exception ,Catching Exceptions, Properties of Exception, Multiple Exception (Concepts Only),The Finally Block. Interface & Collections : Definition, Implementing an Interface in C#, Interface members at object level, Interface as Parameters, Interface as Return Values, Arrays of Interface Types, Interface Hierarchies, Interface as polymorphic agents, Exploring the system. Collections Namespaces.

Unit 4 – Introducing windows forms 12 hrs

Overview of the system. windows. Forms Namespaces, An Anatomy of a Form, A Simple Form Program, Function with Control Class, The Functionality Of the Form Class, Component class, control class, Programming with windows forms controls : Working with Button types, Check Boxes, Radio Buttons, Group Boxes, List Boxes, Calender control, assigning tool tips for controls. The Two Faces Of ADO. NET, Understanding ADO.NET Data Providers, Understanding The Connected Layer of ADO.NET, Working with Connection Object, Inserting, Updating and Deleting Records

References:

- 1 Pro C# with .NET 3.0 Andrew Troelsen
- 2 2 C# Programming E Balaguruswamy

GENERAL INSTRUCTIONS FOR PAPER SETTING

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BCA - 6.3.1 ELECTIVE-I DIGITAL IMAGE PROCESSING

PART- A

Unit 1- Digital Image

12 hrs

Introduction: Motivation and Perspective, Scenes and Images, Application: Components of Image Processing System. Visual Preliminaries: Brightness Adaptation and Contrast- Acuity and Contour, Texture and Pattern Discrimination, Shape Detection and Recognition- Perception of Color. Image Formation: Geometric Model, Basic Transformations, Perspective Projection, Camera Calibration- Photometric Model. Digitization: Sampling, Quantization, Visual Detail in the Digital Image, Digital Image, Elements of Digital Geometry.

UNIT-2: Image Processing

12 hrs

Image Enhancement: Contrast Intensification, Smoothing, Image Averaging, Mean Filter, Ordered Statistic Filter, Edge Preserving Smoothing Low Pass Filtering. Image Sharpening, High, Pass Filtering, Homomorphic Filtering. Restoration: Minimum Mean, Square Error Restoration, Least Square Error Restoration, Constrained, Least Square Error Restoration, Restoration by Singular Value Decomposition- Restoration by Maximum A Posterior Estimation, Restoration by Homomorphic Filtering.

PART- B

UNIT-3 :Image Compression

12 hrs

Error Criterion: Lossy Compression methods, loss -less compression, Huffman coding, Run length coding- Block coding, Quad Tree coding- contour coding. Registration: Geometric Transformation, Plane to Plane Transformation, Mapping Problem in Discrete Domain -Stereo Imaging Algorithms.

Multi-Valued Image Processing: Processing of color Images, Processing of Satellite Image, and Medical Image Processing. Segmentation: Region Extraction-Pixel based Approach, Feature Thresholding, Optimum Threshold, Threshold Selection Methods, Multi-level Thresholding, Local Thresholding, Region based Approach.

UNIT-4: Image Analysis and Feature Extraction

12 hrs

Edge and Line Detection: Edge Detection, Derivation operators, Pattern Filling Approach, Morphologic Edge Detection, Edge Linking and Edge Following, Edge elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection. Representation: Topological Attributes, Geometrical Attributes, Some other Properties, Description, - Boundary based Description-Region based Description-Relationship. Recognition: Deterministic Methods, Clustering, Statistical Classification, Fuzzy Mathematical Recognition, Syntactic Recognition, Grammar, Recognition Strategy, Tree search, Graph Matching.

References:

- 1) B. Chand and D. Dutta Majumder, Digital Image Processing and analysis, PHI(2001)
- 2) Milan Sonka, "Image Processing Analysis and Machine Vision", PWS Pub. 2nd Ed.
- 3) Adrian Low, Computer vision and Image Processing, McGraw Hill (1991)
- 4) Kenneth R. Castle man, Digital Image Processing, PHI

GENERAL INSTRUCTIONS FOR PAPER SETTING

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BCA - 6.3.2 ELECTIVE-I CLOUD COMPUTING

PART- A

Unit1 - Cloud Computing Basics **12 hrs**

Cloud Computing Overview- Applications – Intranets and the cloud – Why Cloud Computing Matters – Benefits – Limitations – Companies in the Cloud Today – Cloud Services.

Unit 2 - Cloud Computing Technology **12 hrs**

Hardware and Infrastructure – Clients – Security- Network – Services – Accessing the Cloud - platforms – Web Applications – Web APIs –Web Browsers –Cloud Storage – Overview – Cloud Storage Providers –Standards –Application – Client – Infrastructure – Service.

PART -B

Unit 3 - Cloud Computing At Work **12 hrs**

Software as a service – Overview – Driving Forces – Company offerings – Industries– Software plus Services – Overview - Mobile Device Integration –Providers – Microsoft Online.

Unit 4 - Developing Applications **12 hrs**


Google – Microsoft – Intuit Quick Base – Cast Iron Cloud – Bungee Connect - Local clouds and Thin Clients – Virtualization – Server Solutions – Thin Clients. Cloud Services for Individuals – Cloud services aimed at the mid-market –Enterprise-Class Cloud Offerings – Migration.

References:

1. Velte T. Antony, Velte J. Toby. andElsen Peter Robert (2010), “Cloud Computing: A Practical Approach”, Tata McGraw- Hill
2. Miller Michael (2008), “Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online”, Que Publishing.
3. Beard Haley (2008), “Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs”, EmereoPvt. Limited.

GENERAL INSTRUCTIONS FOR PAPER SETTING

1. In each paper unit-1 and unit-2 are Part-A and unit3 and unit4 are Part-B.
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BCA- 6.4.1 ELECTIVE-II COMPUTERGRAPHICS

PART -A

Unit 1 - Introduction to Multimedia

12 hrs

Definition, CD-ROM and the multimedia highway, Uses of Multimedia, Introduction to making multimedia – The stages of Project, the hardware & software requirements to make good multimedia, Multimedia skills .Multimedia building blocks- SOUND: MIDI, Digital audio, audio file formats. Images: still images, color and file formats. ANIMATION: principles of animation, making animation. VIDEO: using video, how video works, and video standards.

Unit 2 - Introduction to Graphics applications

12 hrs

CAD , presentation graphics, computer art, entertainment, education and training, visualization, image processing. Display devices – raster scan displays – color CRT, DVST, LCD, 3D viewing devices. Raster scan systems, Random scan systems.

PART-B

Unit 3 -Output primitives

12 hrs

Points and lines, line drawing algorithm, DDA algorithm, Bresenham's line algorithm, examples, parallel line algorithm, loading the frame buffer, circle generating algorithm, midpoint circle algorithm, and ellipse generating algorithm. Pixel addressing and object geometry. Color and gray scale levels, color tables, character attributes. Basic Transformations- translation, scaling, rotation, matrix representation and homogeneous coordinates, composite transformations, general pivot point and fixed point rotation, scaling directions, other transformations – reflection, shear, transformation between coordinates, inverse transformations.

Unit 4- Windowing and Clipping

12 hrs

Introduction, the viewing transformation, viewing transformation implementation, clipping, Cohen-Sutherland outcode algorithm, Liang-Barsky line clipping algorithm, Sutherland- Hodgeman polygon algorithm and adding clipping to the system, text clipping, exterior clipping, curve clipping.


References:

1. Tay Vaughan "Multimedia – making it work", TMH publication, fifth edition.
2. D Hearn & M P Baker: "Computer Graphics C version", Pearson Education
3. D Newman and Sproull: "Principles of Interactive Computer Graphics -", TMH, II edition.
4. Steven Harrington "Computer graphics: A programming Approach", TMH publication. Second edition
5. Roy plastock and Zhigang Xiang: " Computer graphics". Schaum's outline series, II edition.

GENERAL INSTRUCTIONS FOR PAPER SETTING

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BCA - 6.4.2 ELECTIVE-II OPERATIONS RESEARCH

PART-A

Unit1-Operations Research & Linear Programming

14 hrs

Operations research: Nature and meaning, models characteristics, advantages, scope. Linear Programming Problems: Formulation (both minimization and maximization type) solution of LPP using graphical method. General LPP. Basic solutions and degenerate solutions. Standard form and canonical form. Characteristic features of LPP. Simplex method for solving LPP.

Unit 2 - Transportation Problem

12 Hrs

Big-M method and 2 phase method for solving LPP. Transportation Problem - Formulation, Necessary and sufficient condition for the existence of feasible solution to a Transportation problem. Initial Basic Feasible Solution by North West Corner Rule, Least Cost Method and Vogel's Approximation Method. Optimal solution using U-V method.

PART-B

Unit 3 – Assignment Problem and Game Theory

14 Hrs

Assignment Problem.:Formulation, optimal solution using Hungarian algorithm, traveling salesman problem. Game Theory:Basic definitions, minmax - maxmin principle and optimal strategy solution of games with saddle point, dominance rule for solving a two-person Game, Graphical method for solving two-person game.

Unit 4 -Network analysis

10 Hrs

Basic differences between PERT and CPM, PERT, CPM, Network components and precedence relations, rules of network construction, errors and dummies in network, critical path analysis, project time cost trade-off, resource allocation.


References:

1. S. D. Sharma – Operations research
2. Hamdy A. Taha, "Operation Research – An introduction" 5th edition, PHI.,
3. KantiSwarup, P. K. Gupta &Manmohan – "Operation Research", 1996.
4. S. Kalavathy: "Operations Research", Second Edition – Vikas Publications

GENERAL INSTRUCTIONS FOR PAPER SETTING

In each paper unit-1 and unit-2 are Part-A and unit-3 and unit-4 are Part-B.

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5. The student has to attend at least one question from each unit.


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KUVEMPU



UNIVERSITY

Revised syllabus

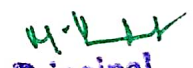
BCA, B. Sc (Computer Science) and BA (Computer Applications)

W.E.F 2019-20

**DEPARTMENT OF P.G. STUDIES AND RESEARCH IN
COMPUTER SCIENCE,**

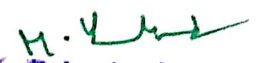
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SHIMOGA, KARNATAKA


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NEW SYLLABUS FOR B.Sc. (Computer Science)
(EFFECT FROM 2019-20)

Paper code	Semester	SUBJECT	Weekly hours	Internal marks	External marks	Practicals	Total
BSC1	I	CF &CP	4+3	10	50	40	100
BSC1	I	CF &CP	4+3	10	50	40	100
BSC2	II	DS	4+3	10	50	40	100
BSC3	III	DBMS	4+3	10	50	40	100
BSC4	IV	C++	4+3	10	50	40	100
		JAVA	4+3	10	50	40	100
BSC5	V	UNIX Programming	4+3	10	50	40	100
		Advanced JAVA	4+3	10	50	40	100
BSC6	VI	SE&CN	4+3	10	50	40	100


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Computer Science -I

BSC-1 Computers Fundamentals and C Programming

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Computer Systems:

10 hrs

Definition of a Computer, History of Computers, Generations of Computers, types of computer – based on size and working principle, Block diagram of a Computer with functional units(explanation), Parts of a computer system, Information processing Cycle. Definition of software and hardware, types of programming languages, assembler, compiler, interpreter, linker, loader (Definitions only), number system – decimal, binary, octal and hexadecimal number, inter-conversion of decimal to binary and vice-versa. ASCII codes. Algorithm-definition, Characteristics, notations. Flowchart-definition, Symbols used in writing the flow-chart Writing an algorithm and flow-chart of simple problems.

Unit 2- Introduction to Computer Systems:

10 hrs

Introduction to C, features of C , basic C program structure, character set, tokens, keywords and identifiers. Constants, variables, data types, variable declaration, symbolic constant definition.

Unit 3- Operators and Expressions:

08 hrs

C operators- arithmetic, relational, logical, bitwise, assignment, increment and decrement, conditional (?:) and special operators, Arithmetic expressions, precedence of operators and associativity. Type conversions, mathematical functions. Definition of macro and pre-processor directives, Managing I/O operation – reading and writing a character, formatted and unformatted/O functions.

Unit 4- Control Structures:

10 hrs

Conditional control statements- if, if-else, nested-if, switch , go to statement, while, do-while and for statements. Unconditional control statements- break, continue and return statements(definition and explanation with syntax, flowchart and examples)

Unit 5- Arrays, Strings and Functions:

10 hrs

Definitions of an array, types-one and two dimensional array,(definition, declaration, initialization with examples). Strings–definition, declaration and initialization of string variable, string handling functions- strcmp, strcpy, strcmp, strlen, strcmp, strcmp (explanation with syntax and examples) Functions – definition, need, syntax for function declaration, function prototype, category of functions, nesting of functions, function with arrays, scope of variables ,parameter passing mechanism- call by value and call by reference. Recursion and Recursive function(definitions only)

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Reference :

1. Fundamentals of Computers, V. Rajaraman.
2. Computer Concepts and C Programming, P.B. Kotur
3. Let us C ,YashwanthKanetkar
4. ANSI C, Balagurusamy

QUESTION PAPER PATTERN FOR I SEMESTER B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

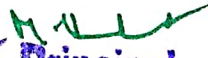
The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.


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PRACTICAL: C- PROGRAMMING LAB

1. Find the biggest of three numbers.
2. Arithmetic operations using switch statement.
3. Find the Fibonacci series between M and N.
4. Prime numbers between M and N
5. Binary to Decimal conversion
6. Sorting an unsorted array
7. Searching an element in an array.
8. Addition of two matrices
9. Multiplication of two matrices
10. Norm and trace of the matrix.
11. Count the numbers of vowels in a given string.
12. Find the factorial of a number using function.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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SECOND SEMESTER B.Sc (Computer science)

Computer Science -II

BSC-2 DATA STRUCTURES USING C

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Data Structure:

10 hrs

Definition of Structure, syntax and example for structure declaration. Definition of union, syntax and example for union declaration, difference between structure and union. Pointers–Definition, Declaration, Examples. Dynamic memory allocation functions – syntax and examples. Definition of Data Structure and types of data structures with examples.

Unit 2 – Stack and recursion:

10 hrs

Definition and example of stack (LIFO), operations of stack with algorithms, applications of stack, algorithm for the conversion of infix to postfix expression. evaluation of postfix expression, Tower of Hanoi problem and factorial of a number using recursion.

Unit 3- Queue:

10 hrs

Definition and example of Queue (FIFO), operations on queue, types of queue – ordinary queue and circular queue (definitions only), disadvantages of ordinary queue. Linked list–Definitions and types of lists (definitions only), operations of Single Linked List, implementation of stack using linked list, implementation of queue using linked list,

Unit 4- Tree :

10 hrs

Definition of a Tree, Definition of root, left sub tree, right sub tree, degree of node, terminal node, depth, Definition of Binary tree, types of binary trees (definition only), Algorithm for tree traversal.

Unit 5- Sorting and searching:

08 hrs

Definition of sorting, explanation of bubble sort, shell sort, radix sort and merge sort with examples. Definition of searching, explanation of Binary search and linear search with examples and algorithms.

References:

1. Systematic approach to data structure - Padmareddy
2. Programming in ANSI C - E Balaguruswamy
3. Datastructures and applications - Trembly and Sorenson

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QUESTION PAPER PATTERN FOR II SEMESTER B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.


Question 3 from Unit 4 & Unit 5.

PRACTICAL: DATA STRUCTURES LAB

1. Implementation of stack
2. Evaluation of postfix expression
3. Conversion of infix to postfix
4. Tower of Hanoi
5. Implementation of queue
6. Implementation of stack using linked list
7. Implementation of queue using linked list
8. Quick sort
9. Shell sort
10. Binary search

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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THIRD SEMESTER BSc (Computer science)

Computer Science -III

BSC-3OBJECT ORIENTED PROGRAMMING WITH C++

Theory Examination- 50 Max marks. Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to OOPS: 10 hrs

Object Oriented Programming paradigm, Basic concepts of Object Oriented Programming- Classes, Objects, Data Abstraction and Encapsulation, Polymorphism, Inheritance, Dynamic Binding, Message passing, Benefits of OOP, applications of OOP.

Unit 2-Introduction to C++: 10 hrs

Difference between C and C++, Structure of a C++ program, input and output statements, tokens - Keywords, identifiers, constants, strings and operators, reference variables – definition and example, special operators in C++, brief introduction to control structures in C++.

Unit 3-Classes Objects and Member Functions: 10 hrs

Difference between structure and class, syntax and example for class declaration, Definition of data member and member function, Defining member function inside and outside the class, inline functions, array of objects, default arguments, static data members and static member functions, function overloading, definition of friend function, syntax and example for the declaration of friend function, special characteristics of friend function.

Unit 4- Constructors, destructors and Operator overloading: 09 hrs

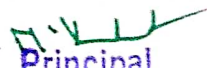
Definition of a constructor, types - parameterized constructor, default constructor, copy constructor, special characteristics of constructor, definition of a destructor, special characteristics of destructor, definition to Operator overloading, overloading binary operator (+) to add two complex numbers, rules for operator overloading.

Unit 5: Inheritance and templates: 09 hrs

Definition of Inheritance, forms of inheritance, syntax and example for defining derived classes, visibility modes, explanation of multilevel inheritance and hybrid inheritance with examples. Definition of templates, syntax and example for class and function template.

Reference Books:

1. Object Oriented Programming with C++ - E Balaguruswamy
2. C++ - The Complete Language – BjarneSchildt
3. Object Oriented Programming in Turbo C++ - Robert Lafore


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QUESTION PAPER PATTERN FOR III SEMESTER B.Sc (Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.
The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

PRACTICAL: C++ LAB

1. Write a c++ program to find the result of a student using class concept
2. Define a class to represent product details it includes data member pname, pcode, price, pquality include member function a) to get product detail b) to display the product details and total price using class concept
3. Write a c++ program to print Fibonacci series using constructor
4. Write a c++ program to find biggest of two numbers and three numbers using function overloading
5. write a c++ program to calculate area of triangle, rectangle and circle using function overloading
6. write a c++ program to calculate family income using friend function
7. write a c++ program to add two complex numbers using operator overloading
8. write a c++ program to implement multiple inheritance by creating classes: father , mother and son
9. write a c++ program to swap two numbers using function template
10. write a c++ program to sort an array using function template

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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FOURTH SEMESTER B.Sc (Computer science)
Computer Science -IV

BSC-4 DATABASE MANAGEMENT SYSTEM

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to DBMS:

10 hrs

Meaning of data and information, definitions of database, applications of database system, definition of DBMS, disadvantages of file processing system (advantages of DBMS), three levels of data abstraction, difference between schema and instance, definition of data models, types of data models (brief explanation), database languages – DDL and DML.

Unit 2- E-R model:

10 hrs

Different types of database users, functions of Database Administrator (DBA), basic-concepts - Primary keys, foreign key, super key, definition of E-R diagram, symbols used in E-R Diagram, E-R diagram for Banking enterprise, E-R diagram for Book store, types of entities, entity sets, attributes, types of attributes, weak entity sets, cardinality ratios (mapping cardinality).

Unit 3- Relational Model:

10 hrs

Fundamental operations of Relational algebra - select, project, union, set difference, join, division operations (explanation with examples). Types of aggregate functions – MAX, MIN, SUM, COUNT and AVERAGE (Definition with example).

Unit 4- SQL:

09 hrs

Definition of Query, explanation of basic structure of SQL – Select, from and where clauses in SQL, data types in SQL, explanation of set operation in SQL – Union, intersection, except, NULL values.

Unit 5: Relational database design:

09 hrs

Pitfalls in relational database design, definition of Normalization, Various types of Normal forms (Definitions only) – First Normal form, Second Normal form, Third Normal form, Boyce-Codd Normal Form (BCNF).

Reference Books:

1. Korth, Sudarshan "Database System concepts", McGraw Hill-IV Edition.
2. Navathe, Silberchatz and Elmasri "fundamentals of database Systems"-Addison Wesley
3. C.J. Date "Introduction to Database systems" Addison-wesley.
4. Bipin C Desai "Introduction to Data base system" Galgotia publications

QUESTION PAPER PATTERN FOR IV SEMESTER B.Sc (Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

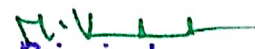
The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.


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PRACTICAL: SQL LAB

I. Use default emp and dept tables to write SQL statements for following queries

1. Find the employee details in ascending order of their name and descending order of their salary
2. Find names of all employees whose name starts with 's' and having atleast 6 characters in it
3. Find the name of all managers and number of employees under them
4. Find the details of all employees in the research department
5. Find the minimum, maximum and average salary of each department
6. Find department name having least number of employees
7. Find the department name having highest annual payroll
8. Add an employee under the manager smith
9. Find the employees who are not getting commission

II. Create tables as below

Student(name string, regno string primary key, dob date, doj date ,course string foreign key)

Markscard(regno foreign key, sem string, sub1 number, sub2 number, sub3 number, tot number, avge number, result string)

Write SQL statements for the following queries.

1. List the names of students studying in BCA course in the order of their joining
2. Find the name of student who has scored highest marks in every sem of each course
3. Count the number of students in each course
4. Find the course having second highest number of students
5. Find the course having least students in I semester
6. Raise marks of sub3 in III sem BCA students by 5% if the student has failed in that subject
7. Display the details of student 'xxx' in every semester.
8. Find the names of all juniors of 'yyy' in course 'c1'
9. Find all students studying with 'xxx' and elder to him (compare DOB)


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III. Dept(deptno integer pkey, dname string not null, loc string not null)
Emp(eno integer pkey, ename string, deptnokey, desgn string not null, bsal number>0)
Salary(enolkey,da,hra,gross,it,pf,net,comm)

Designations are: manager,clerk,salesman

Comm=5% of basic if desgn=salesman otherwise null

Da=15% bsalhra = 7% of bsal gross=bsal+da+hra

It =0 if gross<15000

= 10% of gross if gross between 15000 and 30000

=20% of gross if gross between 30000 and 50000

= 30% of gross otherwise

pf = 10% of gross or 1000 whichever is less

Write SQL statements for

1. Count the number of employees in every designation
2. List the employees of every department in descending order of their net salary
3. List the name and salary of highest salary payer in every department
4. List the name of employee paying highest IT
5. List the total IT paid by each department
6. List the departments in every location
7. Raise the basic salary by 10% for the managers of every department.
8. Find number of employees having at least 10 years of experience in every department.
9. Count the number of employees who are not getting commission in every department

PRACTICAL EXAM SCHEME

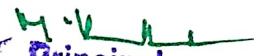
Practical Proper - 30 Marks

Table creation & data insertion =10 marks

SQL queries- 4 X 5 marks =20 marks[Queries writing 3 marks (each) and Execution 2 marks (each)]

Viva – voce - 05 Marks

Record - 05 Marks


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FIFTH SEMESTER BSc (Computer science)
Computer Science -V

BSC-5.1 JAVA PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Java:

12 hrs

History of Java, Java features, Difference between C/C++ and Java, Java program structure, Java tokens, Statements, JVM, Java and Internet, Java and WWW, Web browsers, Java support system, Java Development Kit (JDK), Application Programming Interface(API), Java Runtime Environment (JRE). Introduction to packages in Java, Applets, Operators & Expressions, Data types, Constants and Variables, Type conversions, Mathematical functions; Control Statements: Decision making and Branching with while, do-while, for and labeled loops; Arrays, Vectors & Strings: Initialization, Declaration

Unit 2-Overview:

10 hrs

Class, Objects, Constructor, Method overloading, Static members; Inheritance: Single, Multilevel, Hierarchical, Visibility modes, Method overriding, Final variable, Abstract methods and classes; Interface: Defining, Extending and implementing assigning interface variables

Unit 3-Packages and multithreading:

10 hrs

Java API Packages, using system packages, naming convention, accessing and using a package, adding a class to packages, hiding classes. Multithreaded programming: Creating a thread, extending the thread class, stopping and blocking a thread, life cycle of a thread, using thread methods, thread exceptions, thread priority, synchronization, implementing the runnable interface.

Unit 4-Exceptions and Debugging:

08 hrs

Meaning of errors and exceptions, Dealing with errors, Classifications of exceptions, syntax of handling exceptions, advertising the exceptions, throwing and re-throwing exceptions, creating Exception classes, multiple catch statements, finally clause, Debugging techniques – tricks for debugging, Assertions, Java Debugger (JDB).

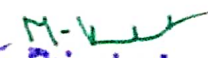
Unit 5-Applets and Graphics:

08 hrs

Applets basics, applets and application, Life cycle, Life cycle of Applet programming- passing parameter to applets, paint and repaint methods, Graphics class, Line, Rectangle, Circle, Ellipse, Arcs and Polygon, drawing bar charts.

Reference Books:

1. Programming with Java- A primer, 4th Edition, by E Balaguruswamy.
2. The Complete Reference – Patrick Naughton and Schildt
3. Programming in Java – Joseph L Weber


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QUESTION PAPER PATTERN FOR V SEMESTER B.Sc (Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks. The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

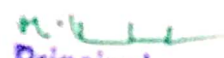
The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.

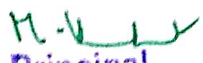

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PRACTICAL: JAVA PROGRAMMING LAB

1. Write a Java program to generate first n odd numbers and pick and display prime numbers among them. Read value for n as command line argument.
2. Write a Java program to create a vector, add elements at the end, at specified location onto the vector and display the elements. Write an option driven program using switch...case.
3. Write a java program to find area of geometric figures using method overloading.
4. Write a Java program to find the circumference and area of the circle using interface.
5. Write a java program to sort the alphabets in the given string.
6. Write a java program to accept student information using array of objects and constructor initialisation.
7. Write a java program to implement constructor overloading by passing different number of parameter of different types.
8. Write a program to implement an applet by passing parameter to HTML
9. Write an applet program to display human face
10. Create an applet to display concentric n circles, input value for n.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viya – voce - 05 Marks
- Record - 05 Marks


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(Computer Science)
Computer Science -VI

BSC-5.2 UNIX PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1.Introduction to Operating system:

10hrs

Definition of OS, functions of operating systems. Early systems – Simple monitors, Batch Systems, Multiprogramming, Time Sharing, Real time, Parallel and Distributed systems Scheduling concepts, Scheduling algorithms: FCFS, Shortest job first, priority scheduling, round robin, Definition of deadlock problem, deadlock characteristics, deadlock prevention and avoidance. File concept –allocation and access methods, directory structures, Contiguous allocation.

Unit 2- Introduction to Unix :

08 hrs

The Unix operating system, , A brief Session, The Unix Architecture, Features of UNIX, POSIX and Single UNIX specification, Locating commands, Internal and External commands, Command Structure, Flexibility of command Usage, Man Browsing the Manual Pages ON-line, Understanding the man Documentation. General-Purpose Utilities: Cal command, date command, echo, printf, bc, script, passwd, who, uname

Unit 3- The File System in Unix:

10 hrs

The file, The Parent –Child Relationship, The HOME Variable, pwd, cd, mkdir, rmdir, Absolute Pathname, Relative Pathname, ls, The Unix File system. Handling Ordinary Files: Cat, cp, rm, mv, more, Thelp subsystem: Printing a File, File, wc, od, cmp, comm, diff, dos2unix and unix2dos, compressing and archiving files, gzip, and gunzip, tar, zip and unzip. Basic File Attributes: Listing file attributes, listing directory attributes, File Ownership, File Permissions, changing file permissions, Directory Permissions, Changing File Ownership

Unit 4-The Vi Editor


10 hrs

Vi basics, Input Mode, Saving Text and Quitting, Navigation, Editing Text, Undoing Last Editing Instructions(U and U), Repeating the last command(.), Searching for a Pattern(/ and ?), Substitution

Unit 5-The Shell

08 hrs

The shell's Interpretive Cycle, Shell Offering, Pattern Matching, Escaping and Quoting, Redirection, /dev/null and /dev/tty, Pipes, tee, Command Substitution, Shell variables. Essential shell programming: Shell scripts, read, using command line arguments, exit and exit status of command, the logical operators && and ||- conditional execution, the if conditional, using test and to evaluate expressions, the case conditional, expr, \$0: calling a script by different names, while, for, set and shift, the here document (<<), trap, debugging shell scripts with set -x, sample validation and data entry scripts.


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Reference Books:

1. Sumitabha Das, UNIX System V.4, Concepts and Applications, TMH.
2. Operating systems concepts, Korth

QUESTION PAPER PATTERN FOR V SEMESTER B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

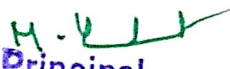
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The student has to attend only 02 questions.

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Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.

Question 3 from Unit 4 & Unit 5.



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PRACTICAL: UNIX PROGRAMMING LAB

1. Write a shell script program to perform all arithmetic operation on floating point.
2. Write a shell script program to check whether the given number is positive or negative.
3. Write a shell script program to reverse a number.
4. Write a shell script program to find sum of digit of a number.
5. Write a shell script program to find the sum of the series (sum = $1 + \frac{1}{2} + \dots + \frac{1}{n}$)
6. Write a shell script program to add, subtract and multiply the two given number passed as command line argument.
7. Write a shell script to count number of characters in a given string
8. Write a shell script program to read pattern and file name and search whether the given pattern in a file or not.
9. Write a shell script to read filename from command line argument check whether the file is regular file or directory or by both.
10. Find the number of directory file and ordinary files in the current

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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SIXTH SEMESTER BSc

Computer Science -VII

BSC-6.1 ADVANCED JAVA PROGRAMMING

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1-Review of Java Concepts and AWT, Graphics Programming: 10 hrs

Review of Java Concepts .AWT and AWT Classes, Window fundamentals – Component, Container, Panel, Window, Frame, Canvas. Working with frame window. Graphics Programming: Graphics class, methods, drawing objects, line graphs, polygon classes, working with colours and fonts. Advanced graphics operations using Java2D. Designing, simple User Interfaces (UIs) using AWT, Layout Managers.

Unit 2- Swings and event handling: 10 hrs

Event Handling: Basics of Event Handling, the delegation event model, AWT event hierarchy and event classes, Event Listener Interfaces, Adapter Classes, Event queue. Swing: Meaning, need, difference between AWT and swing. The Model-View-Controller (MVC) design patterns, Creating simple UIs using swing, and handling basic events.

Unit 3-Java Beans, Java Archives (JAR): 08 hrs

Meaning and need of Java Beans, Advantages, Bean writing process, Bean properties. Java Archives (JARs): Meaning, need, the JAR utility, Creating JAR files.

Unit 4-File Management and JDBC: 10 hrs


File, creating a file, writing to a file, opening a file, reading from a file, file management, checking existence of a file, deleting a file. JDBC: Meaning, need, concept and structure of JDBC, relation with ODBC, JDBC driver types and their meaning, the JDBC process – loading the driver, connecting to the DBMS, creating and executing SQL statement, Connection object, Statement object, Prepared Statement object, Callable Statement, Result Set, JDBC Exceptions.

Unit 5-Basic concepts of Collections, Generics and Network programming: 10 hrs

Collections: Meaning, need, Collection interfaces, Concrete Collections – Array List, Hash set, Map. Generics: Meaning, need, benefits, generics usage, basics of generic types, type parameter naming conventions, type wildcards, using type wildcards, generic methods, bound types, writing simple generic container, implementing the container, implementing constructors, implementing generic methods.

References:

1. Complete Reference – Java 2: Herbert Schildt, 5th / 7th Edition, Tata McGraw-Hill
2. Thinking in Java: Bruce Eckel
3. Core Java 2: Volume I – Fundamentals: Cay S. Horstmann, Gary Cornell, Pearson Education Asia.
4. Core Java 2: Volume II – Advanced Features: Cay S. Horstmann, Gary Cornell

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QUESTION PAPER PATTERN FOR B.Sc(Computer science)

PART -I: 05 Marks

There shall be 05 questions each carrying 01 Marks from all units

PART -II: 10 Marks

There shall be 05 questions each carrying 02 Marks from all units

PART- III: 15 Marks

There shall be 05 questions from 05 units, each question carrying 05 Marks, The student has to attend only 03 questions out of 05 questions.

PART- IV: 20 Marks

There shall be 03 questions and each carrying 10 Marks.

The student has to attend only 02 questions.

(Each question should have at least two sub questions)

Question 1 from Unit 1

Question 2 from Unit 2 & Unit 3.


Question 3 from Unit 4 & Unit 5.

PRACTICAL: ADVANCED JAVA PROGRAMMING LAB

1. Write an applet to add, remove, select an item in a list
2. Write an applet to display selected geometric figure from a list.
3. Write a program to implement mouse events
4. Write a program to implement keyboard events
5. Write a Java program (console) to store the typed text to a file.
6. Write a Java program to display the content of a file.
7. Write a Java program with JDBC to store the details of a person on to an Oracle database table.
8. Write a Java program with JDBC to access and display the details of a person stored in an Oracle database table.
9. Write a Java program with JDBC to access and delete the details of a given person stored in an Oracle database table.
10. Write a Java program to demonstrate the use of generics.

PRACTICAL EXAM SCHEME

- Practical Proper - 30 Marks
- ✓ Program Flowchart/Algorithm 05 Marks
- ✓ Program Writing 15 Marks
- ✓ Correct output with proper display 10 Marks
(Partial output – 05 marks)
- Viva – voce - 05 Marks
- Record - 05 Marks


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SIXTH SEMESTER BSc

Computer Science -VIII

BSC-6.2 SOFTWARE ENGINEERING AND COMPUTER NETWORKS

Theory Examination- 50 Max marks.

Number of Teaching hours –48

Internal Assessment- 10 Max marks

Unit 1- Introduction to Software Engineering:

10 hrs

IEEE definition of Software and Software Engineering, Software Problems, Software engineering challenges, Software quality attributes, phases in software development (Phased Development process), Definition of Software process, Components of software process, desired characteristics of software process, Software development process models- waterfall model, prototype model and spiral model .

Unit 2- Software design:

09 hrs

Definition of SRS, need for SRS, Characteristics of SRS, Structure of SRS, design objectives ,design principles, module level concepts – coupling and cohesion.

Unit 3- Coding and testing :

09 hrs

Definition of Coding, Programming principles and guidelines, top down and bottom-up Approaches, definition of testing, testing fundamentals, levels of testing, Difference between black box testing and white box testing.

Unit 4-Introduction to Computer networks Network Hardware:

10 hrs

Definition of computer network, Goals of computer network, Types of Networks based on transmission technology - Broadcast, point- to -point, Types of Networks based on size & scale - LAN, WAN, MAN, Protocol hierarchies (Network software), Network topologies – Bus, Mesh, Ring, tree and star.

Unit 5- Network Software, Reference models and Transmission Media:

10 hrs

Reference models - OSI / ISO model, TCP / IP model, ARPANET, Transmission Media - twisted pair, coaxial cable, fiber optics cable, Internet and its applications, Wireless media - Bluetooth, Wi-Fi, internet and its applications

References:

- 1, An integrated approach to Software Engineering: Pankaj Jalote.
2. Software Engineering a practitioners approach: Roger Pressman.
3. Computer Networks: 5th Edition, Andrew S Tanenbaum.


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