

DEPARTMENT OF COMPUTER SCIENCE
J.R.N. Rajasthan Vidyapeeth (Deemed to be University), Udaipur (Raj.)
B.Sc. I Semester (CBCS)
Session 2020-21 onwards

The examination shall consist of one theory paper and one practical.

S. No.	Paper Code	CC/DS E/ SEC	Title	Hrs. /week	Internal Exam.	External Exam.	Total	Credit
					Max. marks	Max. marks		
1	BSC-106	CC	Object Oriented Programming using C++	4	30	70	100	4
2	BSC-107	CC	Practical	4	-	50	50	2

Note:

- CC - Core Course

B.Sc. Computer Science (CBCS) Programme
SEMESTER I
PAPER – I
Object Oriented Programming using C++ (BSC-106)

Unit -I

Programming Tools:Algorithm Definition and its properties, flow chart, basic symbols used in flow chart , advantages and disadvantages of flow chart, pseudo code, example of simple algorithms and flow charts, Introduction to program design, errors – syntax error, runtime error, logical error. Translators – Assembler, Compiler and Interpreter.

Unit -II

Basics of C++ Language:C++ introduction, procedural and object oriented programming paradigm, Structure of C++ procedural and object oriented programs, character set, comments, tokens – Identifier and Keywords, constants, variables, strings, operators and Data types,symbolic constants,Introduction to basic object oriented concepts –Abstraction, encapsulation, classes, objects, methods, constructor, destructor, inheritance, polymorphism, static and dynamic binding, overloading and message passing.

Unit -III

Program development: Basic steps of program development – analysis, design, coding, debugging, testing and maintenance, operators and its types arithmetic, relational, logical or Boolean,etc. precedence of operators,Introduction to structured programming: data types and their classification, basic data types integer, floating point data types, character data types, string data types, variable and constant declarations,Expression and its types, Assignment statement,Input using extraction operator >>and cin, output using insertion operator<< and cout, increment (++) and decrement (--) operations, I/O formatting using Manipulators, creating a simple C++ program.

Unit -IV

Control Structures and Function: Decision Structures: - Simple if, if – else, if – else – if ladder, nested if, switch case;

Loop Control Structures:- while , do while and for; Use of break, goto and continue, nested control statements, introduction to function, Types of functions : built-in functions, user defined functions,function declaration and prototypes, function parameters formal and

actual, call by value versus call by reference parameters.

Unit –V

Basic concept of Arrays, Structures and Pointers: Local and global variables, one dimensional array, two dimensional arrays; pointer data and pointer variables; Storage classes–auto, external, static, register.

Books Recommended:

1. The C Programming Language, Brian Kernighan and Dennis Ritchie, PHI Publications.
2. Let us C, Yashavant Kanetkar, BPB Publications.
3. Programming in C. Balaguruswamy, McGraw Hill Education.

B.Sc. Computer Science (CBCS) Programme
SEMESTER I

PRACTICAL : Object Oriented Programming using C++ Lab (BSC-107)

Implementation of following programs using C++

- Find area and perimeter of a circle.
- Find sum and average of five numbers.
- Program to implement arithmetic operations.
- Find roots of a quadratic equation.
- Temperature conversion from Fahrenheit to Celsius and vice versa.
- Calculate simple interest.
- Swapping of two numbers.
- Find larger of two numbers.
- Find larger of three numbers.
- To check whether a given number is positive, negative or zero.
- To check whether a given number is odd or even.
- To assign division to the students depending on percentage marks.
- To perform arithmetic operations using choice with switch case.
- To assign grades to the student depending upon marks.
- To generate and find sum of Natural numbers up to n.
- To generate and find sum of Even numbers up to n.
- To generate and find sum of Odd numbers up to n.
- Find factorial of a number.
- Generate terms of Fibonacci series up to n.
- To check whether a given no. is prime or not.
- To check whether a given no. is Armstrong or not.
- To check whether a given no. is Palindrome or not.
- To separate all the digits of a number and find sum digits.
- Reverse a given number.
- Generate Prime numbers up to n.
- Triangle pattern generation for different triangles.
- Find sum and average on n numbers stored in Array.
- Transpose of a matrix
- Addition of two matrices.
- Subtraction of two matrices.

DEPARTMENT OF COMPUTER SCIENCE
J.R.N. Rajasthan Vidyapeeth (Deemed to be University), Udaipur (Raj.)
B.Sc. II Semester (CBCS)
Session 2020-21 onwards

The examination shall consist of one theory paper and one practical.

S. No.	Paper Code	CC/DS E/ SEC	Title	Hrs. /week	Internal Exam.	External Exam.	Total	Credit
					Max. marks	Max. marks		
1	BSC-206	CC	Data Structures Concepts and Implementation	4	30	70	100	4
2	BSC-207	CC	Practical	4	-	50	50	2

Note:

- CC - Core Course

B.Sc. Computer Science (CBCS) Programme

SEMESTER II

PAPER – I

Data Structures Concepts and Implementation (BSC-206)

Unit -I

Introduction to Data Structures: Data Structures, Storage Structure, File Structure, Types of Data Structures: Primitive, Non Primitive, Linear, Non Linear, Static and Dynamic, Linear Structure: Arrays, stack, operation on stack, implementation of stack as an array, queue, operations on queue, implementation of queue using an array.

Unit -II

Linked List Structure: List representation, operations on linked list - get node and free node operation, implementing the list operation, insertion and deletion in linked list

Unit -III

Tree Structure: Binary search tree, inserting, deleting and searching into binary search tree, implementing the insert, search and delete algorithms, tree traversals: preorder, inorder, postorder.

Unit -IV

Graph Structure: Graph representation - Adjacency matrix and adjacency list. Graph traversals - bfs and dfs. Shortest path, all pairs of shortest paths, transitive closure, reflexive transitive closure.

Unit -V

Searching and Sorting: Searching - sequential searching, binary searching, hashing. Sorting - selection sort, bubble sort, quick sort, merge sort, and insertion sort, efficiency considerations.

Books Recommended:

1. Fundamentals of data structure, Horowitz E Sartaj Sahni, Galgotia Publication Private Limited., New Delhi.

Data Structures through C++ a practical approach, G. S. Baluja, Dhanpat Rai & Company, New Delhi.

B.Sc. Computer Science (CBCS) Programme
SEMESTER II

PRACTICAL : Data Structures Concepts and Implementation (BSC-207)

Implementation of following Data Structures using C++:-

- Implementation of **object** and **class** based basic programs
- Implementation of Stack
- Implementation of Queue
- Implementation of Linked List
- Implementation of Linear Search
- Implementation of Binary Search
- Implementation of Selection Sort
- Implementation of Bubble Sort
- Implementation of Insertion Sort
- Implementation of Quick Sort
- Implementation of Merge Sort
- Implementation of Binary Search Tree

DEPARTMENT OF COMPUTER SCIENCE
J.R.N. Rajasthan Vidyapeeth (Deemed to be University), Udaipur (Raj.)
B.Sc. III Semester (CBCS)
Session 2021-2022 onwards

The examination shall consist of one theory paper and two practicals.

S. No.	Paper Code	CC/DS E/ SEC	Title	Hrs. /week	Internal Exam.	External Exam.	Total	Credit
					Max. marks	Max. marks		
1	BSC-306	CC	Numerical Computing	4	30	70	100	4
2	BSC-307	CC	Practical	4	-	50	50	2
3	BSC-317	SEC	Practical HTML Programming	4	-	100	100	4

Note:

- CC - Core Course
- SEC - Skill Enhancement Course

B.Sc. Computer Science (CBCS) Programme
SEMESTER III
PAPER – I
Numerical Computing (BSC-306)

Unit -I

Floating Point Arithmetic: Addition, Subtraction, Multiplication and division of floating point arithmetic, Accuracy of numbers, Normalization, errors in Numerical computation, Definition of errors and types of errors – rounding off error, Truncation error, relative error and percentage error with example.

UNIT - II

Solution to Non-Linear Equations: Transcendental and Polynomial Equations, Iterative Methods : Bisection method, RegulaFalsi Method, Secant method and Newton Raphson Method. Comparison of all iterative methods.

UNIT - III

Solution to Linear Equation: Direct Methods: Matrix, LU decomposition method, Gauss Elimination Method, Iterative methods: Gauss Seidel Method, Comparison of Direct and Iterative Method

UNIT - IV

Interpolation: Introduction, Lagrange's Interpolation Formula, Divided Differences, Newton's Divide difference formula, Interpolation formulas using differences: Newton's Forward and Backward interpolation formula; Curve fitting using least square fit, Linear Regression, Fitting a straight line, Fitting a polynomial.

UNIT – V

Numerical Solution to Ordinary Differential Equation and Numerical Integration: Simpson's one-third rule, Simpson's three-eighth rule, Trapezoidal rule, Taylor series method, Euler Method and Runge – Kutta's (RK) Methods.

Books Recommended:

1. Computer oriented Numerical Methods, V. Rajaraman, PHI New Delhi
2. Numerical Analysis : Gokhroo, Saini
3. Numerical Methods : G. S. Salaria

**B.Sc. Computer Science (CBCS) Programme
SEMESTER III**

PRACTICAL : Numerical Computing Lab (BSC-307)

Implement following using C++:

1. To convert a given Real number in Normalized Floating Point Mode.
2. To Add two numbers represented in Normalized Floating Point Mode.
3. To Subtract two numbers represented in Normalized Floating Point Mode.
4. To Multiply two numbers represented in Normalized Floating Point Mode.
5. To Divide two numbers represented in Normalized Floating Point Mode.
6. To find the root of a given Non-Linear equation using Bisection Method.
7. To find the root of a given Non-Linear equation using False Position Method.
8. To find the root of a given Non-Linear equation using Secant Method.
9. To find the root of a given Non-Linear equation using Newton Raphson Method.
10. To find the numeric solution of given Differential Equation using Euler's Method.
11. To find the numeric solution of given Differential Equation using RungeKutta 2nd order Method.
12. To find the numeric solution of given Differential Equation using RungeKutta 4th order Method.
13. To interpolate the given data using Lagrange Interpolation Method.
14. To solve the given set of simultaneous algebraic equations using Gauss-Seidel method.
15. To solve the given set of simultaneous algebraic equations using Gauss-Elimination method.
16. To estimate the coefficients of Linear Regression (Fit a straight Line) for the set of given data.
17. To Integrate the function using Simpson's 1/3 Rule.
18. To Integrate the function using Simpson's 3/8 Rule.
19. To Integrate the function using Trapezoidal Rule.

B.Sc. Computer Science (CBCS) Programme
SEMESTER III


PRACTICAL : HTML Programming (BSC-317)

Create an HTML document with the following formatting options:

- I. Bold
- II. Italics
- III. Underline
- IV. Headings (Using H1 to H6 heading styles)
- V. Font (Type, Size and Color)
- VI. Background (Colored background/Image in background)
- VII. Paragraph
- VIII. Line Break
- IX. Horizontal Rule
- X. Pre tag

Create an HTML document which consists of:

- I. Ordered List
- II. Unordered List
- III. Nested List
- IV. Image



XYZ Ltd's Update

1. Introduction
2. Company Financial Update
 - First Quarter
 - Second Quarter
 - Third Quarter
 - Fourth Quarter
3. Advertising Update
 - Result of Newspaper Campaign
 - Additions to staff
 - New Thoughts on Television
4. Human Resources Update

- A. Safety Considerations
 - 1. Body substance isolation
 - 2. Sense safety
 - 3. Initial size-up
- B. Initial Patient Assessment
 - 1. General Impression
 - 2. Unresponsiveness
 - i. Alert to person, place and time
 - ii. Verbal response to audible stimuli
 - iii. Pain evokes verbal or physical response
 - iv. Unresponsive to all stimuli
- C. Patient Critical Needs
 - 1. Airway
 - 2. Breathing
 - i. Use oxygen if indicated
 - ii. Consider use of assisting with bag value mask
 - 3. Circulation
 - 4. Bleeding

Create an HTML document which implements Internal linking as well as External linking.

Create a table using HTML which consists of columns for Roll No., Student's name and grade.

Result		
Roll No.	Name	Grade

Create a Table with the following view:

			Place an image here	

Create a form using HTML which has the following types of controls:

- I. Text Box
- II. Option/radio buttons
- III. Check boxes
- IV. Reset and Submit buttons

Subscribe to XYZ News Magazine and Emails

Interested in receiving daily small updates of all latest News? Well, now you can. And best of all, it is free! Just fill out this form and submit it by clicking the "send it In" button. We will put you on our mailing list and you will receive your first email in 3-5 days.

Please fill the following boxes to help us send the emails and our news letter:

First Name:

Last Name:

Business:

We must have a correct e-mail address to send you the news letter:

Email:

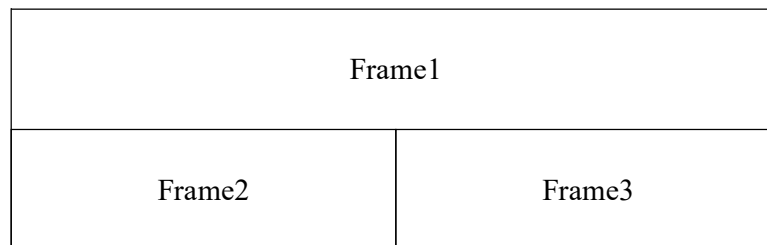
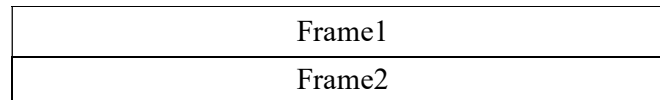
How did you hear about XYZ News Magazine and Emails?

Here on the Web In a magazine Television Other

Would you like to be on our regular mailing list?

Yes, we love junk emails

Create HTML documents (having multiple frames) in the following three formats:



DEPARTMENT OF COMPUTER SCIENCE
J.R.N. Rajasthan Vidyapeeth (Deemed to be University), Udaipur (Raj.)
B.Sc. IV Semester (CBCS)
Session 2021-2022 onwards

The examination shall consist of one theory paper and two practicals.

S. No.	Paper Code	CC/DS E/ SEC	Title	Hrs. /week	Internal Exam.	External Exam.	Total	Credit
					Max. marks	Max.		
1	BSC-406	CC	Introduction to Web Design	4	30	70	100	4
2	BSC-407	CC	Practical	4	-	50	50	2
3	BSC-417	SEC	Practical R Programming	4	-	100	100	4

Note:

- CC - Core Course
- SEC - Skill Enhancement Course

B.Sc. Computer Science (CBCS) Programme
SEMESTER IV
PAPER – I
Introduction to Web Design (BSC-406)

Unit -I

Web Design Principles: Brief History of Internet, Internet basics, World Wide Web, need to create a web site, Basic principles involved in developing a web site, Planning process, Five Golden rules of web designing, Page design, Home Page Layout

UNIT - II

Introduction to HTML:What is HTML, HTML Documents, Basic structure of an HTML document, Creating an HTML document, head and body sections, Mark up Tags, Heading-Paragraphs, Line Breaks, HTML Tags, image, anchor.

UNIT - III

Elements of HTML:Introduction to elements of HTML, Working with Text, Working with Lists, Working with Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls, Sending Form Data to the Server, get and post method.

UNIT - IV

Introduction to Cascading Style Sheets:Concept of CSS, Benefits of CSS, CSS Versions History, CSS Syntax,Types of CSS – Internal, Inline, External, Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, Controlling Fonts) CSS Id and Class selectors, Box Model(Introduction, Border properties, Padding Properties, Margin properties), CSS Colour.

UNIT – V

Web Publishing or Hosting:Creating the website structure, Saving the site, working on the web site, Putting your site on the web.

Books Recommended:

1. The complete reference HTML & CSS: Thomas A. Powell, Paperback
2. Internet and WWW-how to program, Deitel&Deitel, Goldberg, Pearson
3. Web Technology, Rajkamal, TMH
4. Web Technology: Theory and Practice, M. Srinivasan

**B.Sc. Computer Science (CBCS) Programme
SEMESTER IV**

PRACTICAL (BSC-407)

Describe HTML tags used in following categories by illustrating their purpose, syntax and example:-

- Basic structure of HTML page : Doctype, html, head, body
- HTML Head section tags : title, base, link, meta, script, style
- Heading Tags : H1 to H6
- Formatting Tags : Text formatting tags, Computer output, HTML Citations, Quotations and Definition Tags
- Anchor Tag : a
- Image Tag : img
- Table Tags : table, tr, th, td, caption, colgroup, col, thead, tbody, tfoot
- List Tags : ol, ul, li, dl, dt, dd
- Form Tags : form, input, textarea, label, fieldset, legend, select, optgroup, option, button
- Frame Tags : frameset, frame, noframe
- Grouping or Block or Layout Tags : div, span
- Write a HTML script that prints your Name, Address and cell number in different styles onto the screen.
- Write a HTML script to Print your name using five different fonts and colors.
- Write a HTML script to Print a paragraph with 4 - 5 sentences. Each sentence should be a different font and color.
- Write a HTML script to display your CV containing your photograph.
- Write a HTML script to Print a paragraph with given output in separate lines ($1^2 = 1$
 $2^2 = 4$ $3^2 = 9$ $4^2 = 16$ $5^2 = 25$ $6^2 = 36$ $7^2 = 49$ $8^2 = 64$ $9^2 = 81$ $10^2 = 100$).
- Write a HTML script to create a web page providing links to various search engines (Google, yahoo, altavista, lycos, Bing, Ask, etc).
- Write a HTML script to create links to five different pages on five different university websites that should all open in a new window.
- Write a HTML script to create a page with a link at the top of it that when clicked will jump all the way to the bottom of the page and vice versa.

- Write a HTML script to display an image that has a border of size 2, a width of 200, and a height of 200 and is aligned center.
- Write a HTML script to display five different images. Skip two lines between each image. Each image should have a title.
- Write a HTML script to display an image that when clicked will link to itself and will display the image in the browser by itself.
- Write a HTML script using basic text formatting tags <h1>, <p>,
, <pre>.
- Write a HTML script using presentational element tags , <i>, , <sup>, <sub>, <big>, <small>, <hr>
- Write a HTML script using phrase element tags <blockquote>, <cite>, <abbr>, <acronym>, <kbd>, <address>
- Write a HTML script using different list types.
- Write a HTML script that displays ingredients and instructions to prepare a recipe.
- Write a HTML script using grouping elements <div> and
- Write a HTML script using images, audios, videos.
- Write a HTML script to create your time table.
- Write a HTML script to create a form using text inputs, password inputs, multiple line text input, buttons, check boxes, radio buttons, select boxes, file select boxes.
- Write a HTML script to create a frames and links between frames.
- Write a HTML script to create different types of style sheets.
- Write a HTML script to create CSS on links, lists, tables and generated content.
- Write a HTML script to create login form and verify username and password.
- Write a HTML script for creating following tables:-

<i>My tech stock picks</i>					
NAME	SYMBOL	CURRENT	52WK HI	52WK LO	P/E RATIO
Microsoft	MSFT	86-3/8	119-15/16	75-1/2	56.09
Cisco Systems	CSCO	72-1/8	82	24-13/16	400.69
America Online	AOL	63	95-13/16	38-15/32	350.00
Qwest Communications	Q	44-7/16	66	25-3/4	74.06
Dell Computers	DELL	53-59/64	59-11/16	31-3/8	86.97

- Write a HTML script to construct a pair of tables side by side within another table. Using the table attributes of cellspacing, cellpadding and border, get your table to look like the following and center it across the width of the page.

Rubber	baby	She	sells
buggy	bumpers	sea	shells

- Write a HTML script to construct this puzzle looking thing. It will exercise your knowledge of colspan and rowspan. It's not as easy as it looks. Keep at it until you work it out...Note that the bottom cell is empty but not missing.

Top		
way left	middle up	way right
	middle down	

- Using the different search engine URL's, make a framed page layout like this.

Yahoo will be the page that first loads in the right frame. Google and Ask also load in the right frame by clicking onto their links.



- Write html code to generate following output.

- Coffee
- Tea
 - Black Tea
 - Green Tea
- Milk

A Description List

- Coffee - 500 gms
- Milk - 1 ltr Tetra Pack

- Create a webpage about the course details of a college.

ABC Information Technology College
Anamagar, Kathmandu

Course Details:

- Complete Course
 - Basic Computer Training
 - Diploma in Computer Application
- Crash Courses
 - Accounting Course

□ E-banking Course

3. Other Courses

i. Secretariat Training

ii. Photography Training

B.Sc. Computer Science (CBCS) Programme
SEMESTER IV

PRACTICAL : R Programming (BSC-417)

1. Write a program that prints 'Hello World' to the screen.
2. Write a program that asks the user for a number n and prints the sum of the numbers 1 to n
3. Write a program that prints a multiplication table for numbers up to 12.
4. Write a function that returns the largest element in a list.
5. Write a function that computes the running total of a list.
6. Write a function that tests whether a string is a palindrome.
7. Implement the following sorting algorithms: Selection sort, Insertion sort, Bubble Sort
8. Implement linear search.
9. Implement binary search.
10. Implement matrices addition , subtraction and Multiplication.

DEPARTMENT OF COMPUTER SCIENCE
J.R.N. Rajasthan Vidyapeeth (Deemed to be University), Udaipur (Raj.)
B.Sc. V Semester (CBCS)
Session 2022-2023 onwards

The examination shall consist of one theory paper and one practical.

S. No.	Paper Code	CC/DS E/ SEC	Title	Hrs. /week	Internal Exam.	External Exam.	Total	Credit
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1	BSC-511	DSE-I	Fundamental of Operating System	4	30	70	100	4
2	BSC-512	DSE-II	Cryptography	4	30	70	100	4
3	BSC-513	DSE-I	Practical	4	-	50	50	2
4	BSC-514	DSE-II	Practical	4	-	50	50	2
5	BSC-530	SEC	Practical PHP Programming	4	-	100	100	4

Note:

- DSE - Discipline Specific Elective Courses
- SEC - Skill Enhancement Course

- Students will opt any one Discipline Specific Elective Courses (DSE) out of given options.

B.Sc. Computer Science (CBCS) Programme
SEMESTER V
PAPER – I
Fundamentals of Operating System (BSC-511)

Unit -I

Introduction: Operating System and its goals, functions of operating system, OS as an interface and resource manager, types of OS: batch, multi-tasking, time sharing, multiprocessor, real time, hand held; Shell and Kernel, system calls and types, system program, Traps.

UNIT - II

Processes: The Process concept and overview, program versus process, attributes of process, its memory representation, process life cycle, PCB, process classification: I/O and CPU bound, OS services for process management

UNIT - III

Scheduling: CPU scheduling and its need, scheduling criteria, scheduling queues, schedulers: long, short and medium term, context switching, dispatcher, scheduling algorithms: FCFS, RR, SJF, priority scheduling, Gantt chart, calculation of turnaround and average waiting time.

UNIT - IV

Process Synchronization and Deadlocks: The critical section problem, semaphores and their types, classical problems of synchronization: bounded buffer, readers-writers, dining-philosopher; deadlock, necessary conditions, deadlock avoidance, methods of handling deadlock

UNIT – V

Memory Management: Define memory, memory fragmentation: internal and external, memory management techniques: paging using page table, page replacement, virtual memory concept, thrashing

Linux: Introduction to Linux operating system, features of Linux, basic Linux commands and shell programming basics.

Books Recommended:

1. Operating System Concepts, Silberschatz G.G., John Wiley & Sons Inc.
2. An Introduction to Operating Systems, Deitel. H.M., Addison Wesley Publishing Company.
3. Operating System Concepts, Peterson, J.L., Abraham Silberschatz, Addison Wesley Publishing Company.

B.Sc. Computer Science (CBCS) Programme
SEMESTER V
PAPER – II
Cryptography (BSC-512)

Unit-I

Overview of cryptography: Need of security, cryptographic goals, security approaches, basic terminology and concepts, symmetric key encryption - block cipher and stream cipher, substitution cipher and transposition ciphers, key space, public key cryptography, symmetric key v/s public key cryptography.

Unit-II

Protocols and mechanisms, key management through symmetric key and public key techniques, attacks on encryption schemes, attacks on protocols, models for evaluating security, perspective for computational security.

Unit-III

Elementary number theory: Prime numbers, Fermat's and Euler's theorems, Testing for primality, Chinese remainder theorem, discrete logarithms.

Unit-IV

Finite fields: Review of groups, rings and fields; Modular Arithmetic, Euclidean Algorithms, Finite fields of the form $GF(p)$, Polynomial Arithmetic, Finite fields of the form $GF(2)$.

Unit-V

Data Encryption Techniques: Algorithms for block and stream ciphers, private key encryption – DES, AES, RC4; Algorithms for public key encryption – RSA, DH Key exchange, KERBEROS, elliptic curve cryptosystems.

Book Recommended

1. W. Stallings, Cryptography and Network Security Principles and Practices, 4th Ed., Prentice-Hall of India, 2006.
2. C. Pfleeger and S.L. Pfleeger, Security in Computing, 3rd Ed., Prentice-Hall of India, 2007.
3. M.Y. Rhee, Network Security, John Wiley and Sons, NY, 2002.

B.Sc. Computer Science (CBCS) Programme
SEMESTER V

PRACTICAL-I (BSC-513)

- Study Linux operating system in terms of practice of basic Linux commands
- Write a shell program to display list of user currently logged in.
- Write a shell program to display “HELLO WORLD”.
- Write a shell program to display login name, date & time of login, current working directory, no. of users login and calender.
- Write a shell program to Input your name and display it
- Write a shell program to add two numbers
- Write a shell program to copy a file from source to target
- Write a shell program to find larger of two numbers
- Write a shell program to print the contents of a file
- Write a shell program to Greet user: G. Mor., Eve. or Night as per the time.
- Write a shell program to see whether argument is positive or negative
- Write a shell program to Print table of a number supplied from command line
- Write a shell script program to check whether the given number is even or odd.
- Write a shell script program to check whether given file is a directory or not.
- Write a shell script program to copy contents of one file to another.

B.Sc. Computer Science (CBCS) Programme
SEMESTER V

PRACTICAL-II (BSC-514)

Practical based on theory paper Cryptography (BSC-512)

DEPARTMENT OF COMPUTER SCIENCE
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B.Sc. VI Semester (CBCS)
Session 2022-2023 onwards

The examination shall consist of one theory paper and one practical.

S. No.	Paper Code	CC/DS E/ SEC	Title	Hrs. /week	Internal Exam.	External Exam.	Total	Credit
					Max. marks	Max. marks		
1	BSC-611	DSE-I	Computer Networks	4	30	70	100	4
2	BSC-612	DSE-II	Database Management System	4	30	70	100	4
3	BSC-613	DSE-I	Practical	4	-	50	50	2
4	BSC-614	DSE-II	Practical	4	-	50	50	2
5	BSC-630	SEC	Practical MySQL(PL/SQL)	4	-	100	100	4

Note:

- DSE - Discipline Specific Elective Courses
- SEC - Skill Enhancement Course
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B.Sc. Computer Science (CBCS) Programme
SEMESTER VI
PAPER – I
Computer Networks (BSC-611)

Unit-I

Basic Concepts: Components of data communication, distributed processing, Line configuration, topology, transmission mode, and categories of networks. OSI and TCP/IP Models: Layers and their functions, comparison of models.

Unit-II

Digital Transmission: Interfaces and Modems: DTE-DCE Interface, modems, cable modems. Transmission Media: Guided and unguided, Attenuation, distortion, noise, throughput, propagation speed and time, wavelength, Shannon Capacity.

Unit-III

Telephony: Multiplexing, error detection and correction, Many to one, one to many, WDM, TDM, FDM, circuit switching, packet switching and message switching. Data Link control protocols: Line discipline, flow control, error control, synchronous and asynchronous protocols overview. ISDN: Services, historical outline, subscriber's access, ISDN, Layers, and broadband ISDN.

Unit-IV

Devices: Repeaters, bridges, gateways, routers, The Network Layer, Design Issues, Network Layer Addressing and Routing concepts (Forwarding Function, Filtering Function); Routing Methods (Static and dynamic routing, Distributed routing, Hierarchical Routing); Distance Vector Protocol, Link State protocol.

Unit-V

Transport and upper layers in OSI Model: Transport layer functions, connection management, Functions of session layers, Presentation layer, and Application layer.

Books Recommended

1. A.S. Tanenbaum, Computer Networks, 4th Ed., Pearson Education Asia, 2003.
2. Behrouz A. Forouzan, Data Communication and Networking, 2nd Ed., Tata McGraw Hill.
3. D. E. Comer, Internetworking with TCP/IP, Pearson Education Asia, 2001.
4. William Stallings, Data and Computer Communications, 7th Ed., Pearson education Asia, 2002.

B.Sc. Computer Science (CBCS) Programme
SEMESTER VI
PAPER – II
Database Management System (BSC-612)

UNIT-I

Introduction: Purpose of the data base system as traditional limitations, database, dbms and its characteristics, rdbms, data model, data independence, data definition language, data manipulation language, data base administrator, data base users, overall structure.

UNIT-II

ER Model : entities, attributes, mapping constrains, keys, E-R diagram, reduction E-R diagrams to tables, generalization, aggregation, design of an E-R database scheme.

UNIT-III

Relational Data Objects -Domains and Relations: Domains, relations, kinds of relations, relations and predicates, relational databases.

Relational Data Integrity - Candidate keys and related matters: Candidate keys. Primary and alternate keys. Foreign keys, foreign key rules, nulls. Candidate keys and nulls, foreign key and nulls.

UNIT-IV

The SQL Language: Data definition, retrieval and update operations. Table expressions, conditional expressions,

Views: Introduction, what are views for, data definition, data manipulation, SQL support.

UNIT-V

File and system structure: overall system structure, basic file organisations, logical and physical file organization, sequential and random, indexing and hashing

Books Recommended:

1. Database Systems, Date C.J., Addison Wesley.
2. Database Systems Concepts, Henry Korth, McGraw Hill.

B.Sc. Computer Science (CBCS) Programme
SEMESTER VI

PRACTICAL-I (BSC-613)

1. Study of different types of Network cables and Practically implement the cross-wired cable and straight through cable using clamping tool.
2. Study of Network Devices in Detail.
3. Study of network IP.
4. Connect the computers in Local Area Network.
5. Study of basic network command and Network configuration commands.
6. Configure a Network topology using packet tracer software.
7. Configure a Network topology using packet tracer software.
8. Configure a Network using Distance Vector Routing protocol.
9. Configure Network using Link State Vector Routing protocol.

**B.Sc. Computer Science (CBCS) Programme
Semester VI**

PRACTICAL-II (BSC-614)

DBMS List of Practicals using MySQL/MS Access

1. Introduction to SQL.
2. Create Database.
3. Create Tables structures.
4. Insert values into tables.
5. Perform SQL queries on database and tables.
6. Example: Execute the following queries using these commands:
create a table 'Emp' with
attributes 'ename', 'ecity', 'salary', 'enumber', 'eaddress', 'deptname'.
Create another table 'Company' with attributes 'cname', 'ccity', 'empnumber'
7. Execute the following queries using these commands:
 - Find the names of all employees who live in Delhi.
 - Increase the salary of all employees by Rs. 5,000.
 - Change the Company City to Gurgaon where the Company name is 'TCS'.
8. Execute the following queries using these commands:
 - Find the names of all employees who live in 'Gurgaon' and whose salary is between Rs. 20,000 and Rs. 30,000.
 - Find the company names where the company city is 'Delhi' and the number of employees is not between 5000 and 10,000.
9. To study the aggregate functions (sum, count, max, min, average) and execute the following queries using these commands:
 - Find the sum and average of salaries of all employees in computer science department.
 - Find the maximum and the minimum salary in the HR department.

**B.Sc. Computer Science (CBCS) Programme
Semester VI**

Skill Enhancement Course

MySQL(PL/SQL) (PRACTICAL) (BSC-630)

[SQL COMMANDS]

- 1) SQL* formatting commands
- 2) To create a table, alter and drop table.
- 3) To perform select, update, insert and delete operation in a table.
- 4) To make use of different clauses viz where, group by, having, order by, union and intersection,
- 5) To study different constraints.

[SQL FUNCTION]

- 6) To use oracle function viz aggregate, numeric, conversion, string function.
- 7) To understand use and working with joins.
- 8) To make use of transaction control statement viz rollback, commit and save point.
- 9) To make views of a table.
- 10) To make indexes of a table.

[PL/SQL]

- 11) To understand working with PL/SQL
- 12) To implement Cursor on a table.
- 13) To implement trigger on a table