DEPARTMENT OF COMPUTER SCIENCE

COURSE CURRICULUM & MARKING SCHEME

B.Sc. III, IV, V, VI Semester

INFORMATION TECHNOLOGY

(Based on Choice Based Credit System)

SESSION : 2024-25

ESTD : 1958

GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG, 491001 (C.G.)

(Former Name – Govt. Arts & Science College, Durg)

NAAC Accredited Grade A+, College with CPE - Phase III (UGC), STAR COLLEGE (DBT)

Phone : 0788-2212030

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Govt. V.Y.T. PG. Autonomous College Durg (C.G.)

SCHEME OF EXAMINATION
&
SYLLABUS

Of
Four Year Undergraduate Program

For

B.Sc. III, IV, V, VI Semester
(Information Technology)
For DSC and DSE

Session – 2024-25

(Approved by Board of studies)

Course Structure for CBCS

B.Sc. (IT)- III Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BIT 301(L)	DSC	Programming in C++	80	32	20	8			100	40	3	1		3
BIT302(P)		Programming in C++ Lab					50	20	50	20			1x2	1
BIT 303 (L)	DSE	Data Structure	80	32	20	8			100	40	3	1		4
		TOTAL							250	100				8

B.Sc. (IT) - IV Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BIT401(L)	DSC	Web Technology	80	32	20	8			100	40	3	1		3
BIT 402(P)		Web Technology Lab					50	20	50	20			1x2	1
BIT 403(L)	DSE	Database Management System	80	32	20	8			100	40	3	1		3
BIT 404(P)		Database Management System Lab					50	20	50	20			1X2	1
		TOTAL							300	120				8

The syllabus for B.Sc. (IT) is hereby approved for the session 2024-25.

Course Structure for CBCS

B.Sc. (IT)- V Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BIT 501(L)	DSC	Programming in JAVA	80	32	20	8			100	40	3	1		3
BIT502(P)		Programming in JAVA LAB					50	20	50	20			1x 2	1
BIT 503(L)	DSE1	Digital Electronics & Microprocessor	80	32	20	8			100	40	4	1		4
BIT 504(L)	DSE2	Cloud Computing	80	32	20	8			100	40	4	1		4
		TOTAL							350	140				12

B.Sc. (IT) - VI Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BIT401(L)	DSC	Programming in .NET	80	32	20	8			100	40	3	1		3
BIT 402(P)		Programming in .NET Lab					50	20	50	20			1x 2	1
BIT 403 (L+P)	DSE1	Data Communication and Networking	80	32	20	8			100	40	4	1		4
BIT 404 (L+P)	DSE2	E-Commerce and its Application	80	32	20	8			100	40	4	1		4
		TOTAL							350	100				12

The syllabus for B.Sc. (IT) is hereby approved for the session 2024-25.

GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
B.Sc. (IT) -III Semester
Session 2024-25

Part A: Fundamentals of IT				
Program: B.Sc.		Class: B.Sc.-IT	Semester: III	Session:2024-25
1	Course Code	BIT-301(L)		
2	Course Title	Programming in C++		
3	Course Type	DSC		
4.	Course Objectives	This course in tends to provide in depth knowledge of Object Oriented programming using C++.		
5.	Course Learning Outcome (CLO)	**On successful completion of the course, the student will be able to:** 1: Discuss the concepts of programming designingand get hands on with selection and iterativebuildingblocksforcoding. 2:Describemodular programmingapproachandlearnuserdefinedderivedata types 3:Discuss object oriented programming conceptsandfeaturesofOOPs usingC++ 4: Describe pointers and their usage using C++along with handling exceptions. 5: Describe Inheritance in C++.		
6	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation	
7	Total Marks	Max. Marks: 100		Min Passing Marks: 40

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	Topics (COURSE CONTENTS)	No. of Periods
I	**Introduction to Object Oriented Programming :** Concepts, Features of C++, Bottom up Approach, Structure of C++ program, Data types, Class and Objects, Access Specifies : Private, Public, Protected, I/O statements, Insertion and Extraction operator, Scope resolution operator, Array, this pointer	
II	**Constructor & Destructor:** Default constructor, Copy constructor, Parameterized constructor , Destructor. **Inheritance:** Definition, Concept of base and derived class, Types of Inheritance: Single, Multilevel, Multiple, Hierarchical and Hybrid Inheritance.	
III	**Pointer,Virtual Function & Polymorphism:** **Pointers** : & and * operator pointer variables, pointer to pointer, void pointer, pointer and array,pointer and functions, pointer and string, memory management, new and delete, pointer to object, this pointer. **Polymorphism:** Definition, Compile time polymorphism: Function overloading, Operator overloading, Run time polymorphism: Virtual Function, pure virtual function. Inline function, friend function, friend class. **Virtual function:** virtual function, virtual member function, access with pointer, pure virtual function.	
IV	**Managing Console I/O:** Introduction, C++ Stream, C++Stream Classes, Unformatted I/O Operations,Formatted Console I/O Operations, Managing Output with Manipulators. **Working with Files: Classes** for file stream operations,Opening and Closing a file,File Modes,Sequential Input and Output Operations,Updating a file :RandomAccess, Command Line Argument.	
V	**Exception Handling and Standard Template Library:**Definition, Exception basics, try, catch and throws keywords, Template, Components of STL.	

Part C -Learning Resources

Text Books, Reference Books, Other Resources

REFERENCE TEXT BOOKS:

1. **Programming in C++ - E. Balaguruswami**
2. **Mastering in C++ - VenuGopal**
3. **Object Oriented Programming in C++ - Robert Lafore**

4. Let us C++ - Y. Kanetkar

E Resources:

1. **Introduction (from SWAYAM/NPTEL)**
   https://onlinecourses.nptel.ac.in/noc19_cs38/preview
   https://onlinecourses.nptel.ac.in/noc22_cs103/preview
   https://www.youtube.com/watch?v=KG4hjVDw-p8&list=PLmp4ylk-B4KrM9uOEdvPIVFUkU3jNc6D2&index=2

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**

GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM

COURSE CURRICULUM 2024-25

COURSE CODE: BIT-302(P)
Lab Course- Programming Lab in 'C++'

PART A: INTRODUCTION				
	Program: B.Sc.	Class: B.Sc.-IT	Semester: III	Session:2024-25
1	Course Code	BIT-302(P)		
2	Course Title	Programming Lab in 'C++'		
3	Course Type			
4	Course Learning Outcome (CLO)	This Course will enable the students to: 1: Understand key features of the object-oriented programming language such as encapsulation (abstraction), inheritance, and polymorphism. 2: Design and implement object-oriented applications. 3. Analyze problems and implement simple C++ applications using an object-oriented software engineering approach.		
5	Credit Value	1Credit	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks: 50		Minimum Passing Marks:20

PART B: CONTENT OF THE COURSE

List of Experiments

LOOPS, DECISIONS, NESTED METHOD, MEMBER FUNCTION DEFINED OUTSIDE CLASS BODY:

1. Write program to generate following pattern

a)
```
A B C D E F G
A B C   E F G
A B       F G
A           G
```

b)
```
1
1 2
1 2 3
1 2 3 4
```

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

d)
```
    1
  1 2 1
1 3 3 1
1 4 6 4 1
```

2. Write member functions which when called asks pattern type; if user enters 11 then a member function is called which generates first pattern using for loop. If user enters 12 then a member function is called which generates first pattern using while loop. If user enters 13 then a member function is called which generates first pattern using do-while loop. If user enters 21 then a member function is called which generates second pattern using for loop and so on.
3. Write program to display number 1 to 10 in octal, decimal and hexadecimal system.
4. Write program to display number from one number system to another number system. The program must ask for the number system in which you will input integer value then program must ask the number system in which you will want, output of the input number after that you have to input the number in specified number system and program will give the output according to number system for output you mentioned earlier.

Array

5. Write a program using function to add, subtract and multiply two matrices of order 3×3, You have to create one function for addition, which accepts three array arguments. First two array arguments are matrices to add and third matrix is destination where the resultant of addition of first two matrix's is stored. In similar way create functions for matrix subtraction and multiplication.

6. Create a single program to perform following tasks without using library functions :
   a) To reverse the string accepted as argument.
   b) To count the number of characters in string passed as argument in form of character array.
   c) To copy the one string to other string; passed as arguments in form of source character array and destination character array without using library function.
   d) To count no. of vowels, consonants in each word of a sentence passed as argument in form of character array.

Class, Object, Array of object, Object Using Array

7. Create a class Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare an object of class student, Provide facilities to input data in data members and display result of student.

8. Create a class Student having data members to store roll number, name of student, name of three subjects, max marks, min marks, obtained marks. Declare array of object to hold data of 3 students. Provide facilities to display result of all students. Provide also facility to display result of specific student whose roll number is given.

9. Create a class Sarray having an array of integers having 5 elements as data member provide following facilities :
a) Constructor to get number in array elements
b) Sort the elements
c) Find largest element
d) Search for presence of particular value in array element.

Static member function

10. Create a class Simple with static member functions for following tasks:
a) To find factorial by recursive member function.
b) To check whether a no. is prime or not.
c) To generate Fibonacci series up to requested terms.

Object as argument to function, function returning object

11. Write program-using class having class name Darray. Darray has pointer to pointer to integer as data member to implement double dimension dynamic array and provide following facilities:
a) Constructor to input values in array elements.
b) Input member function to get input in array element
c) Output member function to print element value
d) Add member function to perform matrix addition using objects.
e) Subtract member function to perform matrix subtraction using objects
f) Multiply member function to perform matrix multiplication using objects

12. Write program to create class complex having data members to store real and imaginary part Provide following facilities :
a) Add to complex no,using object. b) Subtract two complexes no,using object.
b) Multiply two complexes no, using objects d) Divide two complex no. using objects.

Friend Function

13. Create class polar having data member radius and angle. It contains member function for taking input in data members and member function for displaying value of data members. Class polar contains declaration of

friend function add which accept two object of class polar and returns object of class polar after addition.Test the class using main function and objects of class polar.

14. Write program to create class having data member a feet and inch (A single object will store distance in form such as 5 feet 3 inch). It contains member functions for taking input in data members and member function for displaying value of data members. Class Distance contains declaration of friend function add which accept two object of class Distance and return object of class Distance after addition. Class Distance contains declaration of another friend function.Subtract that accept two object of class Distance and returns object of class Distance after subtraction. Test the class using main function and object of class distance.

15. Write a program to create class Mother having data member to store salary of Mother, create another class Father having data member to store salary of Father. Write a friend function, which accept objects of class Mother, and Father and paints Sum of Salary of Mother and Father object.

Friend Class

16. Write a program to create class Mother having data member to store salary of Mother, create another class Father having data member to store salary of Father. Declare class Father to be friend class of Mother Write a member function in Father, which accept object of class Mother and prints. Sum of Salary of Mother and Father Object. Create member function in each class to get input in data member and to display the value of data member.

Static Data Member

17. Create a class Counter having a static data member, which keeps track of no. of objects created of type Counter. ONE static member function must be created to increase value of static data member a s the object is created. One static member function must be created to decrease value of static data member as the object is destroyed. One static member function must be created to display the current value of static data member. Use main function to test the class Counter.

STRUCTURE AND CLASS

18. Define structure student. Structure has data members for storing name, rollno, name of three subjects and marks. Write member function to store and print data.

COPY CONSTRUCTOR, CONSTRUCTOR OVERLODING, THIS POINTER, CONSTRUCTOR WITH DEFAULT ARGUMENT.

19. Write program to create a class polar which has data member radius and angle, define overloaded constructor to initialize object and copy constructor to initialize one object by another existing object keep name of parameter of parameterized constructor same as data members. Test function of the program in main function.
20. Write program to create a class polar which has data member radius and angle,use constructor which default arguments to avoid constructor overloading and copy constructor to initialize one object by another existing object keep name of parameter of parameterized constructor same as data members. Test functioning of the program in main function.

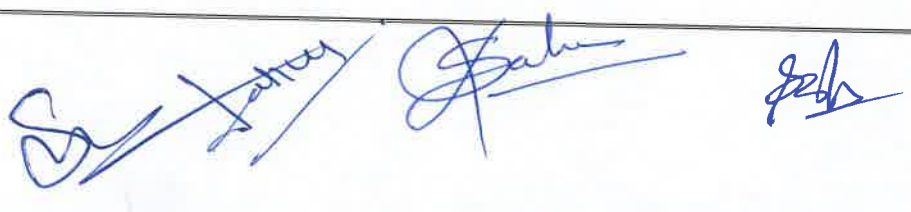
FUNCTION OVERLODED, REFERENCE VARIABLE, PARAMETER PASSING BY ADDRESS, STATIC FUNCTION

21. Write a class having name Calculate that uses static overloaded function to calculate area of circle, area of rectangle and area of triangle.
22. Write a class array. Sort that uses static overloaded function to sort an array of floats, an array of integers.
23. Write a program using class, which uses static overloaded function to swap two integers, two floats methods use reference variable.
24. Write a program using class, which use static overloaded function swap two integers, two floats methods use parameter passing by address.

STRING,POINTER, AND OPERATOR OVERLODING

25. Create class String having pointer to character as data member and Provide following Facilities :

a) Constructor for initialization and memory allocation.
b) Destructor for memory release.



c) Overloaded operators + to add two string object
d) Overloaded operators = to assign one string object to other string object.
e) Overloaded operators == to compare whether the two string objects are equal or not
f) Overloaded operator < to compare whether first-string object is less than second-string object.
g) Overloaded operator > to compare whether first-string object is greater than second-string object or not.
h) Overloaded operator <= to compare whether first string object is less than or equal to second string object or not
i) Overloaded operator >= to compare whether first string object is greater than or equal to second string object
j) Overloaded operator != to compare whether first string object is not equal to second string object or not.
k) Overloaded insertion and extraction operators for input in data member and display output of data members.

26. Create a class Matrix having data member double dimension array of floats of size 3×3. Provide following facilities:
a) Overloaded extraction operator for data input.
b) Overloaded insertion operator for data output.
c) Overloaded operator + for adding two matrix using objects.
d) Overloaded operator – for subtracting two using matrix objects.
e) Overloaded operator * for multiplying two using matrix objects.

OPERTOR OVERLODADING WITH FRIEND FUNCTION

27. Create a class Polar having radius and angel as data members.
Provide following facilities;
a) Overloaded insertion and extraction operators for data input and display.
b) Overloaded constructor for initialization of data members.
c) Overloaded operator + to add two polar co-ordinates using objects of class Polar .

28. Create class Degree-Celsius having a single data member to hold value of temperature in degree Celsius. Provide following facilities :
a) Overloaded operator ++ which will increase value of data member by 1 (consider post fix and prefix operator overloading).
b) Overloaded operator – – which will decrease value of data member by 1 (consider post fix and prefix operator overloading).
c) Overloaded insertion and extraction operators for input in data member and display value of data member.

OPERATOR OVERLOADING AND DATA TYPE CONVERSION

29. Create a class Fahrenheit that contains a data member to hold temperature in Fahrenheit. Create another class Celsius that contains a data member to hold temperature in Degree Celsius; in the same program and provide following facilities:
a) It should be possible to assign object of Fahrenheit class to object of Celsius class.
b) It should be possible to assign object of Celsius class to object of Fahrenheit class.
c) It should be possible to compare objects of class Fahrenheit and Celsius to find out which object contains higher temperature.

VOID POINTER, POINTER AND POINTER TO OBJECT

30. Create a program having pointer to void to store address of integer variable then print value of integer variable using pointer to void. Perform the same operation for float variable.
31. Write program to find biggest number among three numbers using pointer and function.
32. Write swapping program to demonstrate call by value, call by address and call by reference in a single program.

33. Write program to Create a class Employee having data members to store name of employee, employee id, salary. Provide member function for data input, output. Use Pointer to object to simulate array of object to store

information of 3 employees and test the program in function main.

INLINE FUNCTION

34. Write a program using inline function to calculate area of circle
35. Write a program using inline function to find minimum of two functions. The inline function should take two arguments and should return the minimum value.

INHERITANCE

36. Create a class account that stores customer name, account number and type of account .From this derive the classes cur acct and say acct to make them more specific to their requirements. Include necessary member functions in order to achieve the following tasks.
    a) Accept deposit from customer.
    b) Display the balance
    c) Computer and deposit interest.
    d) Permit withdrawal and update the balance.
    e) Check for the minimum balance, impose penalty, necessary and update the balance.
37. Create a class circle with data member radius; provide member function to Calculate area. Derive a class sphere from class circle, proved member function to calculate volume. Derive class cylinder from class sphere with additional data member for height and member function to calculate volume.

VIRTUAL AND PURE VIRTUAL FUNCTION

38.Create a base class shape having two data members with two- member function getdata (pure virtual function) and print area (not pure virtual function) Derive classes triangle and rectangle from class shape and redefine member function print area in both classes triangle and rectangle and test the functioning of classes using pointer to base class objects and normal objects.

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources
TEXT BOOKS Recommended:
Online Resources: (e- Resources/ e- Books/ e- Learning Portals) • https://www.shiksha.com/online-courses/programming-in-c-by-nptel-course-nptel23 • https://onlinecourses.nptel.ac.in/noc22_cs42/preview • https://onlinecourses.nptel.ac.in/noc21_cs02/preview

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)		Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) Marks Question - C: Short answer type question = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**	04 x 5 = 20 05 x 5

GOVT. V.Y.T. P.G. AUTONOMOUS COLLEGE, DURG (C.G.)
SYLLABUS FOR AY 2024-25
B.Sc. (IT) –III Semester
Data Structure
Course Code– B.Sc. (IT)-303(L)

Max Mark: 80 **Min Marks: 32**

Part A: Data Structure			
Program: **B.Sc.**	Class: **B.Sc. (IT) –III**	**Semester : III**	Session:**2024-25**
Course Code	**B.Sc. (IT)-303(L)**		
Course Title	**Data Structure**		
Course Type	**DSE**		
Course Objectives	The objective of the course is to present an introduction to analyse the asymptotic performance of algorithms, Write rigorous correctness proofs for algorithms and to Demonstrate a familiarity with major algorithms and data structures.		
Course Outcome	At the end of this course, the students will be able to: 1. Understand the basic concept of data structure 2. Describe the basics of array, record and pointers. 3. Understand and implement the uses of linked list, stack and queue. 4. Understand and implement the uses of trees. 5. Understand and implement the uses of various searching and sorting algorithm.		
Credit Value	**4Credits**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Maximum Marks :100**	**Minimum Passing Marks:40**	

Unit	**Part B – Topics**	**No. of Lecture**
1.	**UNIT-I: INTRODUCTION:** Introduction, Basic terminology, Elementary data organization, Data structure, Data structure operation, Algorithms: complexity, time-space Tradeoff. Mathematical Notation and functions, Algorithmic Notation	**12**
2	**UNIT — II CONCEPT OF ARRAYS, RECORDS AND POINTERS:** Linear Array; Single Dimensional Array, Multidimensional Array, Static Array, Dynamic Array; **Pointers:** Introduction of Pointer, **Records:** Record Structures.	12
3	**UNIT — III LINKED LISTS, STACKS, QUEUES, RECURSION:** Link lists, traversing a linked list, searching a linked list; Insertion into a linked List, Deletion from a Linked List, Stacks, Array Representation of Stack; Queues.	12

4	**UNIT—IV TREES:** Binary Trees, Representing Binary Trees in Memory, Traversing binary tree, Traversal Algorithms using stacks, header nodes; threads, Binary Search Tree, Searching and Inserting in Binary Search Tree, Deleting in Binary Search tree.	12
5	**UNIT – V SORTING AND SEARCHING:** **Sorting:** Bubble Sort, Quick Sort, Insertion Sort, Selection Sort, Merge Sort; **Searching:** Liner Search, Binary Search, Searching and data modification, Introduction to hashing.	**12**

Part C -Learning Resources
Text Books, Reference Books, Other Resources
BOOKS RECOMMENDED: *I. Data Structure* - **Seymour Lipschutz (Schaum's Series).** *2. Data Structure & Program Design* - **Robert L. Kruse, 3" Ed., Prentice Hall.**

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)		Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**	

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	**1. HOD- Dr. Sanat Kumar Sahu** .....
Subject Expert.....	**2. Mr. Dileep Kumar Sahu** .....
Alumni(member).....	**3. Dr. LatikaTamrakar**.....
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE D-URG

FOUR YEAR UNDERGRADUATE PROGRAM

COURSE CURRICULUM 2024-25

B.Sc.-IT (IV Semester)

PART A: INTRODUCTION				
Program: B.Sc.		Class: B.Sc.-IT	SEMESTER : IV	Session:2024-25
1	Course Code	BIT-401(L)		
2	Course Title	Web Technology		
3	Course Type	DSC		
4	Course Objective	Basic understanding of programming concepts and Web Development.		
5	Course Outcomes (CO)	At the end of this course, the students will be able to: CO 1. Create applications using HTML, CSS and Java Script. CO 2. Understand fundamental tools and technologies for web design. CO 3. Specify design rules in constructing web pages and sites. CO 4. Understand how Web pages are designed and created. CO 5. Design console-based GUI based and Web based application. CO 6. Front end designing using html, CSS, java script and bootstrap. CO 7. Understand the basics of PHP. CO 8. Learn to construct fully functional applications. Installation and troubleshooting instructions. CO 9. An introduction to relational databases, actual working examples and applications.		
6	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation	
7	Total Marks	Maximum Marks :100		Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE
Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	Topics (COURSE CONTENTS)	No. of Periods
I	**Introduction:** Overview of WWW, Web page, Web browsers, HTTP, URL, Hypertext, Web server, Tools for web site development, hosting options and domain name registration. **Markup language:** Introduction, DTD, Creating Web pages, Headings, Paragraphs, Lists, Hyperlinks, Tables, Web forms, Input Types, Input Attributes, Inserting images, Frames, Basics of DHTML, XML , XHTML.	9
II	**CSS:** Introduction, Syntax, measurement units, colors, Backgrounds, Font, Text, position, Align, Images, Link, Table, List, Padding.	9
III	**JavaScript:** Overview, syntax, Variables, Operators, Decision control statement, Looping statement, JavaScript functions, Java script Events, Cookies, Page Redirect, and Validation.	9
IV	**Bootstrap:** Introduction, Grid system, typography, tables, images, dropdowns, template and forms. PHP: Introduction, syntax, variables, operators, functions, include, get method, post method, cookies, session, PHP form validation.	9
V	Database Connectivity with MySql: Introduction to RDBMS, connection with MySql Database, performing basic database operation (DML) (Insert, Delete, Update, Select), setting query parameter, executing query join (Cross joins, Inner joins, Outer Joins, Self joins) Exception Handling: Understanding exception and error, try, catch, throw, error tracking and debugging.	9

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources

Text Book:

1. Internet and Internet Engineering, Daniel Minoli, TMH (Latest Edition)
2. Java Script, Gosslin, Vikas (Latest Edition)
3. HTML The Definite Guide, Chuck musiano& Bill Kenndy, O Reilly (Latest Edition).
4. Learning PHP, MySQL, books by ' O' riley Press

Online Resources:

1. Introduction to web-app
   https://www.youtube.com/watch?v=lZnp3tRRTzw&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=22
2. Building web-app
   https://www.youtube.com/watch?v=klEn4LqAQlE&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=3
3. Introduction to Java Script
   https://www.youtube.com/watch?v=fRbP92oScp0&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=10
4. Introduction to Database
   https://www.youtube.com/watch?v=mtc0HHrUKpI&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=12
5. Introduction to SQL
   https://www.youtube.com/watch?v=ar2naKy0aPw&list=PLJ5C_6qdAvBEJ6-TBzKoa1Ov21lwDzJfM&index=16
   https://www.shiksha.com/it-software/php-syllabus-chp

PART D: ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04x5 = 20 Marks Question - C: Short answer type question 5 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**

V.C. Nominee	**Departmental members**
Subject Expert	1. **HOD- Dr. Sanat Kumar Sahu** .....
Subject Expert.....	2. **Mr. Dileep Kumar Sahu** .....
Alumni(member).....	3. **Dr. LatikaTamrakar**.....
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
COURSE CURRICULUM 2024-25
B.Sc. (IT) – IV SEMESTER

PART A: INTRODUCTION				
	Program: B.Sc.	Class: B.Sc.-IT	Semester: IV	Session:2024-25
1	Course Code	BIT-402(P)		
2	Course Title	Practical Lab : Web Technology		
3	Course Type			
4	Course Learning Outcome (CLO)	**At the end of this course, the students will be able to:** 1. Create applications using HTML,understand fundamental tools and technologies for web design. 2. Specify design rules in constructing web pages and sites. 3. Understand how Web pages are designed and created. 4. Design console-based GUI based and Web based application. 5. Front end designing using html, CSS, java script and bootstrap. 6. Learn to construct fully functional Applications Using PHP. Installation and troubleshooting instructions. 7. An introduction to relational databases actual working examples and applications		
5	Credit Value	1Credit	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks: 50	Minimum Passing Marks:20	

1. **Scheme of Examination: -Practical examination** will be two programs and a project demonstration. It will be of 3 hours duration. All programs should be with flow chart and algorithms. The distribution of practical marks will be as follows:

Programme 1 - 10
Programme 2 - 10
Programme 3 - 10
Viva- Voice - 10
[Practical Copy + Internal Record] - 10

Total - 50

2. In every program there should be comment for each coded line or block of code.
3. Practical file should contain printed programs with name of author, date, path of program, unit no. and printed output.
4. All the following programs or a similar type of programs should be prepared.

List of Practical

HTML

Q.1. Write an HTML program to create the following table:

Class	Subject1	Subject2	Subject3
BCA I	Visual Basic	PC Software	Electronics
BCA II	C++	DBMS	English
BCA III	Java	Multimedia	CSA

Q.2. Write an HTML program to create the following lists:

1. C
2. C++
3. Fortran

4. COBOL

Q.3. Write an HTML program to demonstrate hyper linking between two web pages. Create a marquee and also insert an image in the page.

Q.4. Write an HTML program to create frames in HTML with 3 columns (Width = 30%, 30% , 40%).

Q.5. Write an HTML program to create a web page with a blue background and the following text:

New Delhi

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

Q.6. Create an HTML document and embed a flash movie in it.

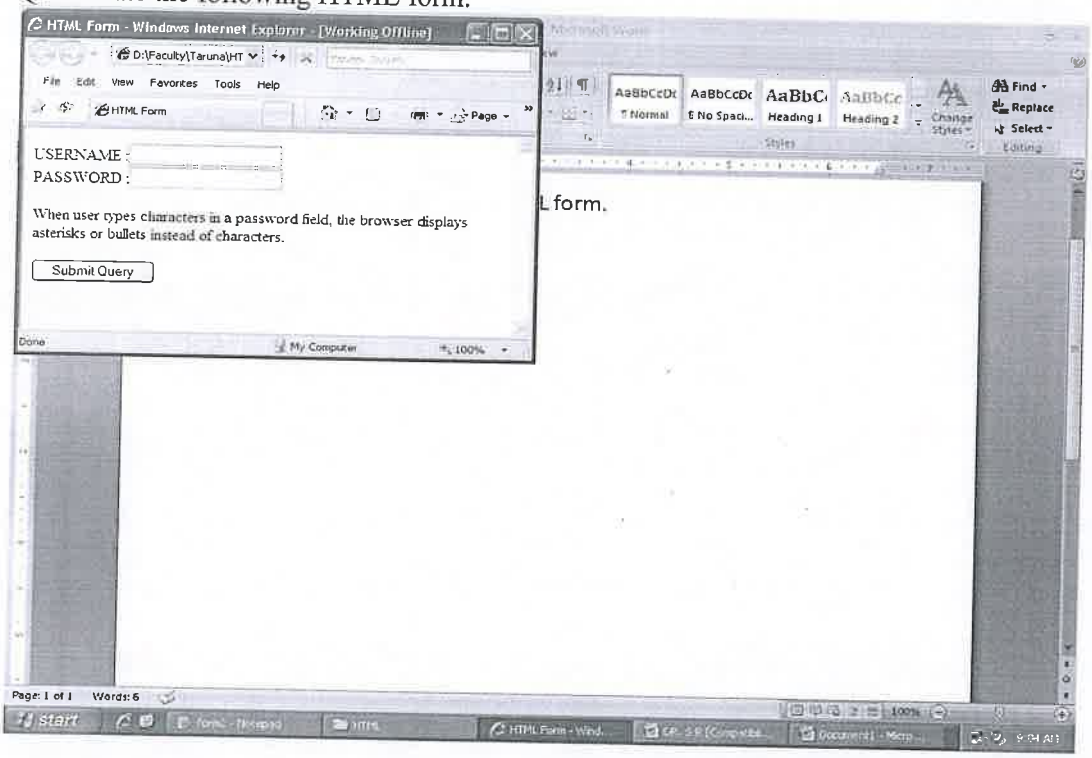
Q.7. Write the HTML coding to display the following table:

Name		Rahul	
Roll No.		101	
Subject	**Max**	**Min**	**Obtain**
Java	100	33	75
Multimedia	100	33	70

Q.8. Write an HTML program to create a form as the following:

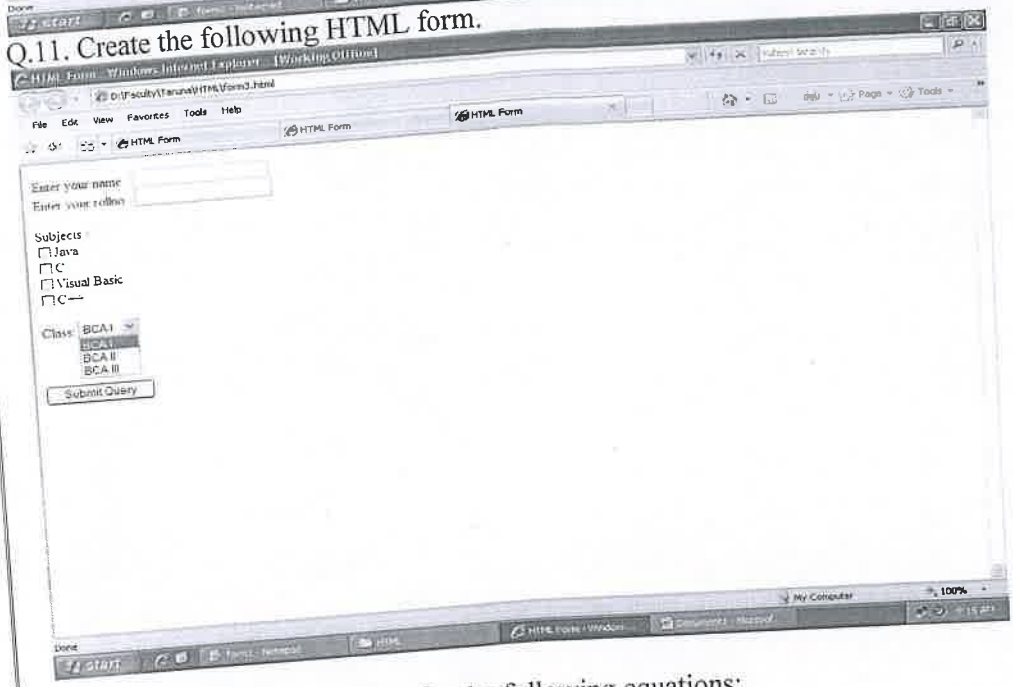
Enter Name:
Enter Roll No.:
Enter Age:
Enter DOB:

Q.9. Create the following HTML form.



Q.10. Create the following HTML form.

Q.11. Create the following HTML form.



Q.12. Write the HTML coding for the following equations:

$C_2H_5OH+PCL_5=C_2H_5CL+POCL_3+HCL$

$4H_3PO_3=3H_3PO_4+PH_3$

$PCL_3+CL_2=PCL_5$

Note: At least 5 programs of CSS, Java Script and PHP to be done separately.

Name and Signatures	Departmental members
V.C. Nominee	1. HOD- Dr. Sanat Kumar Sahu .....
Subject Expert	2. Mr. Dileep Kumar Sahu .....
Subject Expert.....	3. Dr. LatikaTamrakar.....
Alumni(member).....	
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. (IT) -IV Semester
Session 2024-2025

Part A: Database Management System			
Program: B.Sc.	**Class: B.Sc.-IT**	**SEMESTER : IV**	**Session:2024-25**
Course Code	**BIT-403 (L)**		
Course Title	**Database Management System**		
Course Type	**DSE**		
Course Objectives	The objective of the course is to present an introduction to database management systems, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.		
Course Learning Outcome (CLO)	At the end of this course, the students will be able to: 1. Understand the Databases and their design & development 2. Intellectual Cognitive/ analytical skills: Normalization of Databases. 3. Practical Skills: Using SQL and PL/SQL. 4. Transferable skills: Usage of DBMS design and administration. 5. Gather data to analyze and specify the requirements of a system. 6. Design system components and environments. 7. Build general and detailed models that assist programmers in implementing a system.		
Credit Value	**3Credits**	**1 credit =15 Hours – Learning and Observation**	
Total Marks	**Maximum Marks :100**	**Minimum Passing Marks:40**	

Unit	Part B – Topics	No. of Lecture
1.	**UNIT-I: Overview of Database Management** Data. Information and knowledge, increasing use of data as a corporate resource, data processing verses data management, file-oriented approach verses database oriented approach to data management, data independence, database administration roles, DBMS architecture, different kinds of DBMS users, importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational.	**12**
2	**UNIT-II: Relational Model & Relational Algebra** Entry-Relational model as a tool for conceptual design-entities, attributes and relationships. ER diagrams; Concept of keys, Case studies of ER modelling Generalization; specialization and aggregation converting an ER model into relational schema. Extended ER features. Introduction to UML, Representation in UML, diagram (Class Diagram etc.)	12
3	**UNIT-III: Relational Model & Relational Design** **Relational Algebra:** select, project, cross product different types of joins (inner join, outer joins, self-join); set operations, Tuple relational calculus, Domain relational calculus, Simple and complex queries using relational algebra, stand alone and embedded query languages.	12
4	**UNIT-IV: Structured Query Language (SQL)** Normalization concept in logical model; Pitfalls in database design, update anomalies: Functional dependencies, Join dependencies, Normal forms(1NF,2NF,3NF), Boyce Codd Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF, De-normalization.	12

5	**UNIT-V: Query Processing and Security** Introduction to SQL, constructs (SELECT-----FROM, WHERE----GROUP BY---HAVING-----ORDERBY------) INSERT, DELETE, UPDATE, DROP, VIEW definition and use, Temporary tables, Nested queries and correlated nested queries, Integrity constraints; Not Null unique, check, primary, key, foreign key, references, Inner and Outer joins. **Query processing:** parsing, translation, optimization, evaluation and overview of Query processing **protecting the Data Base:** Integrity, Security and Recovery. Domain Constraints, Referential Integrity, Assertion, Triggers, Security & Authorization in SQL.	12

Part C -Learning Resources
Text Books, Reference Books, Other Resources
BOOKS RECOMMENDED: 1. **Database System Concept:** *A. Silberschatz, H. F. Korth and S. Sudarshan, TMH* 2. **Fundamentals of database Systems:***Elmasri&Nawathe, pearson Education* 3. **An Introduction to Database Systems:** *C.J. Date, AWL publishing Company* 4. **SQL, PL/SQL**: *Ivan Bayross, BPB Publication* 5. **An Introduction to Database Systems**: *Bipin Desai, Galgotia publication.* 6. **Datebase Management System:***A. K. Majumdar& P. Bhattacharya, TMH.*

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods: **Maximum Marks:** **100 Marks** **Continuous Comprehensive Evaluation (CCE):** **20 Marks** **Semester End Exam (SEE):** **80 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)		Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D)from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**	

Name and Signature

V.C. Nominee	**Departmental members**
Subject Expert	**1. HOD- Dr. Sanat Kumar Sahu** .....
Subject Expert.....	**2. Mr. Dileep Kumar Sahu** .....
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Prof. from other Dept. of Sc. Faculty ...	
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GOVT. V.Y.T. PG. AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
COURSE CURRICULUM 2024-25
B.Sc. (IT) – IV SEMESTER
DBMS LAB
Course Code–BIT-404(P)

PART A: INTRODUCTION				
	Program: B.Sc.	Class: B.Sc.-IT	Semester: IV	Session:2024-25
1	Course Code	BIT-404(P)		
2	Course Title	Practical Lab : DBMS LAB		
3	Course Type			
4	Course Learning Outcome (CLO)	**At the end of this course, the students will be able to:** 1. To understand the basic database concepts, applications, data models, schema and instances and to demonstrate the use of constraints and relational algebra operations, the basics of SQL and construct queries using SQL 2. Demonstrate an understanding of the relational data model. 3. Transform an information model into a relational database schema and to use a DDL,DCL and DML, and/or utilities to implement the schema using a DBMS. 4. Formulate, using relational algebra, solutions to a broad range of query problems. 5. Formulate, using SQL, solutions to a broad range of query and data update problems		
5	Credit Value	1 Credit	1 credit = 15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks: 50		Minimum Passing Marks:20

1. **Scheme of Examination:-**

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

Program 1	**-10**
Program 2	**-10**
Program 3	**-10**
Viva	**-10**
(Practical Copy+ Practical Sessional)	**-10**
Total	**-50**

2. In every program there should be comment for each coded line or block of code.
3. Practical files should contain printed program with name of author, date,path of program, unit no and printed output.
4. All the following programs or a similar type of programs should be prepared.

List of Practical

1. Using the following database,

   Colleges (ename, city, address, phone, afdate)
   Staffs (sid, sname, saddres, contacts)
   Staffjoines (sid, cname, dept, DOJ, post salary0
   Techings (sid, class, paperid, fsession, tsession)
   Subject (paperid subject paperno, papername)

   Write SQL statements for the following –

   a) Create the above tables with the given specifications and constraints.
   b) Insert about 10 rows as are appropriate to solve the following queries.
   c) List the name of the teachers teaching computer subjects.

d) List the name and cities of all staff working in your college.
e) List the names and cities of all staff working in your college who earn more than 15,000
f) Find the staffs whose names start with 'M' or 'R' and ends with 'A' and /or 7 characters long
g) Find the staffs whose date of joining is 2005.
h) Modify the database so that staff N1 now works in C2 College
i) List the names of subjects, which T1 teaches in this session or all sessions.
j) Find the classes that T1 do not teach at present session.

a. Find the colleges who have most number of staffs.
b. Find the staffs that earn a higher salary who earn greater than average salary of their college.
c. Find the colleges whose average salary is more than average salary of C2
d. Find the college that has the smallest payroll.
e. Find the colleges where the total salary is greater than the average salary of all colleges
f. List maximum average, minimum salary of each college.

a. List the names of the teachers, departments teaching in more than one department
b. Acquire details of staffs by name in a college of each college.
c. Find the names of staff that earn more than each staff of C2 College.
d. Give all principals a 10% rise in salary unless their salary become greater than 20,000 in such case give 5% rise.
e. Find all staff that do not work in same cities as the colleges they work.
f. List names of employees in ascending order according to salary who are working in your college or all colleges.

a. Create a view having fields sname, cname, dept, DOJ, and post
b. Create a view consisting of cname, average salary and total salary of all staff in that college.
c. Select the colleges having highest and lowest average salary using above views.

2. Create the following database,

Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)
Fee Structure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)

a) Create the above tables with the given specifications and constraints.
b) Insert about 10 rows as are appropriate to solve the following queries.
c) Get full detail of all students who took admission this year class wise
d) Get detail of students who took admission in Bhilai colleges.
e) Calculate the total amount of fees collected in this session
i) By your college ii) by each college iii) by all colleges
a) List the students who have not payed full fee
i) in your college ii) in all colleges
b) List the number of admission in your class in every year.
c) List the students in the session who are not in the colleges in the same city as they live in.
d) List the students in colleges in your city and also live in your city.

3. Create the following database,

Subjects (paperid, subject, paper, papername)
Test (paperid, date, time, max, min)
Score (rollno, paperid, marks, attendence)
Students (admno, rollno, class, yearsem)

a. Create the above tables with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. List the students who were present in a paper of a subject.
d. List all roll numbers who have passed in fi9rst division
e. List all student in BCOM-II who have scored higher than average
i) in your college ii) in every college
f. List the highest score, average and minimum score in BCOM-II

i) In your college ii) in every college

4. Using the following database

   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   Staff Joins (sid, cname, dept, DOJ, post salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

   Write SQL statements for the following –

   a. Create the above tables with the given specifications and constraints.
   b. Insert about 10 rows as are appropriate to solve the following queries.
   c. List the name of the teachers teaching computer subjects.
   d. List the names and cities of all staff working in your college.
   e. List the names and cities of all staff working in your college who earn more than 15,000
   f. Using the following database

      Colleges (cname, city, address, phone, afdate)

5. Using the following database

   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   Staff Joins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

   a. Find the staffs whose names start with 'M' or 'R' and ends with 'A' and/or 7 characters long.
   b. Find the staffs whose date of joining is 2005.
   c. Modify the database so that staff N1 now works in C2 college
   d. List the names of subjects which T1 teaches in this session or all sessions.

6. Using the following database

   Colleges (cname, city, address, phone, afdate)
   Staff (sid, sname, saddress, contacts)
   Staff Joins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

   a. Find the classess that T1 do not teach at present session.
   b. Find the college who have most number of staffs.
   c. Find the staffs who earn a higher salary who earn greater than everage salary of their college.
   d. Find the colleges whose average salary is more than average salary of C2
   e. Find the college that has the smallest payroll.
   f. Find the colleges where the total salary is greater than the average salary of all colleges.
   g. List maximum, average, minimum salary of each college

7. Using the following database

   Colleges (cname, city, address, phone, afdate)
   Staffs (sid, sname, saddress, contacts)
   Staff Joins (sid, cname, dept, DOJ, post, salary)
   Teachings (sid, class, paperid, fsession, tsession)
   Subjects (paperid, subject, paperno, papername)

   a. Find the classes that T1 do not teach at present session.
   b. List the names of the teachers, departments teaching in more than one departments.
   c. Acquire details of staffs by name in a college or each college.
   d. Find the names of staff who earn more than each staff of C2 college.
   e. Give all principals a 10% rise in salary unless their salary becomes greater than 20,000 in such case give 5% rise.
   f. Find all staff who do not work in same cities as the colleges they work.
   g. List names of employees in ascending order according to salary who are working in your college or all colleges.

8. Using the following database

Colleges (cname, city, address, phone, afdate)
Staffs (sid, sname, saddress, contacts)
Staff Joins (sid, cname, dept, DOJ, post, salary)
Teachings (sid, class, paperid, fsession, tsession)
Subjects (paperid, subject, paperno, papername)

a. Find the classes that T1 do not teach at present session.
b. Create a view having fields sname, cname, dept, DOJ, and post
c. Create a view consisting of cname, average salary and total salary of all staff in that college.
d. Select the colleges having highest and lowest average salary using above views.
e. List the staff names of a department using above views.

9. Enrollment (enrollno, name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, yearsem, data, cname)

a. Create the above tabls with the given specifications and constraints.
b. Insert about 10 rows as are appropriate to solve the following queries.
c. Get fullo detail of all students who took admission this year Classwise
d. Get detail of students who took admision in Bhilai colleges.
e. Calculate the total amount of fees collected in this session
i) by your college ii) by each college iii) by all colleges

10. Enrollment (enrollno. Name, gender, DOB, address, phone)
Admission (admno, enrollno, course, yearsem, date, cname)
Colleges (cname, city, address, phone, afdate)
Fee Structure (course, yearsem, fee)
Payment (billno, admno, amount, pdate, purpose)

a. List the students who have not payed full fee
i) In your college ii) in all colleges
b. List the number of admissions in your class in every year.
c. List the students in the session who are nt in the colleges in the same city as they live in.
d. List the student in colleges in your city and also live in your city.

11. Subjects (paperid, subject, paper, papername)
Test (paperid, date, time, max, min)
Score (rollno, paperid, marks, attendence)
Students (admno, rollno, class, yearsem)

a. Create the above tables with the given specifications and Constraints
b. Insert about 10 rows as are appropriate to solve the following queries.
c. List the students who were present in paper of a subject.
d. List all roll numbers who have passed in first division.
e. List all students in BCOM-III who have scored higher than average
i) in your college ii) in every college
f. List the highest score, average and minimum score in BCOM-III
i) in your college ii) in every college

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	**1. HOD- Dr. Sanat Kumar Sahu** .....
Subject Expert.....	**2. Mr. Dileep Kumar Sahu** .....
Alumni(member).....	**3. Dr. LatikaTamrakar**.....
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

Course Structure for CBCS

B.Sc. (IT)- V Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BIT 501(L)	DSC	Programming in JAVA	80	32	20	8			100	40	3	1		3
BIT502(P)		Programming in JAVA LAB					50	20	50	20			1x 2	1
BIT 503(L)	DSE1	Digital Electronics & Microprocessor	80	32	20	8			100	40	4	1		4
BIT 504(L)	DSE2	Cloud Computing	80	32	20	8			100	40	4	1		4
		TOTAL							350	140				12

B.Sc. (IT) - VI Semester

Course Code	Course Type	Course Name	Theory Marks		Internal Marks		Practical Marks		Total Marks		Teaching Load per Week			Credits
											L	T	P	
			Max. (A)	Min. (B)	Max. (C)	Min. (D)	Max. (E)	Min. (F)	Max.	Min.				
BIT401(L)	DSC	Programming in .NET	80	32	20	8			100	40	3	1		3
BIT 402(P)		Programming in .NET Lab					50	20	50	20			1x 2	1
BIT 403 (L+P)	DSE1	Data Communication and Networking	80	32	20	8			100	40	4	1		4
BIT 404 (L+P)	DSE2	E-Commerce and its Application	80	32	20	8			100	40	4	1		4
		TOTAL							350	100				12

The syllabus for B.Sc. (IT) is hereby approved for the session 2024-25.

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
COURSE CURRICULUM 2024-25
B.SC.-IT (V SEMESTER)
PROGRAMMING IN JAVA
COURSE CODE– BIT-501 (L)

PART A: INTRODUCTION				
Program: B.Sc.		Class: B.Sc.-IT	SEMESTER : V	Session:2024-25
1	Course Code	BIT-501(L)		
2	Course Title	PROGRAMMING IN JAVA		
3	Course Type	DSC		
4	Course Objective	This course intends to provide in-depth knowledge of Object oriented programming using Java and to solve real-life problems through software development using Java.		
5	Course Outcomes (CO)	**At the end of this course, the students will be able to:** 1.Understand the concepts of basics of Java programming Language and get hands on with selection and iterative building blocks for coding. **2:** Understand and implement the concept of Inheritance, Interface and packages in java. **3:** Understand and implement the exception handling and multithreading mechanism using java. **4:** Describe basics of input-output streams and JDBC programming in java **5:** Describe fundamental of software development using the concept of Applet and AWT in java		
6	Credit Value	3Credits	1 credit =15 Hours – Learning and Observation	
7	Total Marks	Maximum Marks :100		Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	Part B – Topics	No. of Lecture
I	**UNIT – I : Introduction** History of java, C++ verses Java, features of java, data types, control structures: if else, switch case, looping statement: while, do while, for loop, new version of for loop, break, continue statement, arrays and its types , string and String Buffer class, Wrapper Classes, vectors.	9
II	**UNIT – II:** Basics of class and object, constructor and its types, methods and its types, method overloading, this keyword. **Inheritance:** Basics types, method Overriding, using abstract classes, uses of final keyword final classes, using super. **Packages and Interfaces:** Defined CLASSPATH, importing packages, implementing interface.	9
III	**UNIT – III :** **Exception Handling: Basics of** Exception handling, types of exception, using try and catch, throwing exceptions, user defined exceptions, finally, throw verses throws. **Multithreaded Programming:** Java thread model, thread life cycle. Various functions of Thread class and Runnable interface, creating threads, and thread priorities, synchronization. Inter thread communication.	9

IV	**UNIT – IV:** **Input/Output:** Basic of Streams, Byte and Character Stream, IO stream package, predefined streams, reading and writing from console and reading and writing from files. **Networking:** Networking Basics. TCP/IP client & server sockets, URL connection.	9
V	**UNIT – V: Shell Programming** **Applets:** Fundamentals, life cycle, overriding update, HTML APPLET tag, passing parameters. Developing single applets. **Introduction to AWT:** Window fundamentals, creating windowed, programs working with graphics, using AWT controls, menus. Delegation event model: handling mouse and keyboard events.	9

PART C -LEARNING RESOURCES
Text Books, Reference Books, Other Resources
BOOKS RECOMMENDED: **BOOKS RECOMMENDED:** 1. JAVA COMPLETE REFERENCE - BY HERBERT SCHILDT 2. PROGRAMMING WITH JAVA - BY E. BALAGURUSAMY 3. JAVA PROGRAMMING - KHALID MUGHAL

Name and Signatures

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Subject Expert.....	2. **Mr. Dileep Kumar Sahu**.....
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Specialist from Industry	

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG

FOUR YEAR UNDERGRADUATE PROGRAM

COURSE CURRICULUM 2024-25

B.SC.-IT (V SEMESTER)

COURSE CODE– BIT- 502 (P)

PROGRAMMING IN JAVA LAB

1. Scheme of Examination:-

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

Programme 1 - 5
Programme 2 - 5
Programme 3 - 5
Viva - 5
[Practical Copy + Internal Record] – 5

Total - 25

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

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

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

List of Practical:

Java Programs to implement the basics of Java.

1. WAP that implements the Concept of Encapsulation.
2. WAP to demonstrate concept of Polymorphism (Overloading and Overridding)
3. WAP the use Boolean data type and print the Prime number Series up to 50.
4. WAP for matrix multiplication using input/output Stream.
5. WAP to add the elements of Vector as arguments of main method (Run time) and rearrange them, and copy it into an Array.
6. WAP to check that the given String is palindrome or not.
7. WAP to arrange the String in alphabetical order.
8. WAP for String Buffer class which perform the all methods of that class.
9. WAP to calculate Simple Interest using the Wrapper Class.
10. WAP to calculate Area of various geometrical figures using the abstract class.
11. WAP where Single class implements more than one interfaces and with help of interface reference variable user call the methods.
12. WAP that use the multiple catch statements within the try-catch mechanism.
13. WAP where user will create a self-Exception using the "throw" keyword.
14. WAP for multithread using the isAlive(), join() and synchronized() methods of Thread class.
15. WAP to create a package using command and one package will import the another package.
16. WAP for AWT to create Menu and Popup Menu for Frame.
17. WAP for Applet that handle the KeyBoard Events.
18. WAP, which support the TCP/IP protocol, where client gives the message and server will be, receive the message.
19. WAP to illustrate the use of all methods of URL class.
20. WAP for JDBC to insert the values into the existing table by using prepared Statement.
21. WAP for JDBC to display the records from the existing table.
22. WAP to demonstrate the Border Layout using applet.
23. WAP for Applet who generate the MouseMotionListener Event.
24. WAP for display the checkboxes, Labels and TextFields on an AWT.
25. WAP to calculate the Area of various geometrical figures using the abstract class.
26. WAP for creating a file and to store data into that file.(Using the FileWriterIOStream)
27. WAP to display your file in DOS console use the Input/Output Stream.
28. WAP to create an Applet using the HTML file, where Parameter Pass for font Size and Font type and Applet message will change to corresponding parameters.

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FOUR YEAR UNDERGRADUATE PROGRAM
COURSE CURRICULUM 2024-25
~~PROGRAMMING IN JAVA LAB~~
COURSE CODE: BIT-503 (L)
DSE-DIGITAL ELECTRONICS AND MICROPROCESSOR

PART A: INTRODUCTION			
Program: B.Sc.	**Class: B.Sc.-IT**	**SEMESTER : V**	**Session: 2024-25**
Course Code	**BIT-503(L)**		
Course Title	**Digital Electronics and Microprocessor**		
Course Type	**DSE 1**		
Course Objectives	The objective of this course is to impart a foundational understanding of Digital Electronics and Microprocessor Architecture.		
Course Outcomes	At the end of this course, the students will be able to: 1. Gain knowledge about essential logic families and acquire insights into the characteristics and advantages of Logic Gates. 2. Comprehend Computer Number Systems and Computer Codes. 3. Cultivate an understanding of Circuit design and simplification through Boolean logic and K-map. 4. Gasp the concepts of Combinational Logic and Sequential Logic circuits. Explore the internal architecture of microprocessors and understand their functions.		

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 60 Periods (60 Hours)

Unit	Part B – Topics	No. of Lecture
I	Digital Electronics: Logic Families, Scale of Integration, RTL, DTL, TTL and its characteristics, Emitter Coupled Logic (ECL), CMOS Logic Family, NMOS and PMOS Logic, Comparison of Different Logic Families. Logic Gates Basics: AND Gate, OR Gate, NOT Gate, NOR Gate, NAND Gate, Exclusive-OR (XOR) Gate, Exclusive-NOR (XNOR) Gate, Truth Tables for Logic Gates, Truth Tables for Combinational Logic.	**12**
II	Data Representation: Decimal, Octal, Binary, Hexadecimal, Conversation from one number system to another number system, Binary Math: Binary Addition, Binary Subtraction, Binary Complements, One's & Two's Complement, Binary Subtraction using Two's Complement, Overflow and Underflow, Codes: ASCII code, EBCDIC codes, Grey codes, Excess-3, BCD codes, Error detection and Correcting codes	12
III	Boolean Algebra and Karnaugh Maps:Boolean algebra, Basic Boolean Law, Demerger's theorem, Map Simplification minimizing technique, Sum of products, Product of sums, Converting SOP & POS to Truth Table & Truth Table to Expression, K Map, Minimization techniques of Boolean Expression using K-Maps, "Don't Care" Conditions	12
IV	Combinational and Sequential Circuit: Introduction to Combinational and Sequential Circuit, Adders: Half adder & Full adder, Subtractor, Seven-Segment Displays Circuits, Encoder, Decoders, Multiplexers,	12

	De-multiplexers, Flip-Flop, D Latch, RS Flip Flop, J-K Flip-Flop, Registers	
V	Central Processing Unit: CPU Organization, Instruction, Addressing Modes, Interrupts and Exceptions, Microprocessors: 8085-architecture, operation, pin configuration and functions, bus organization, control signal generation for external operations- fetch, IO/M, read/write, machine cycles and bus timings. Addressing mode, instruction set, Overview/concept of peripheral interfacing devices-8251, 8253, 8255 and 8279,Intel 8086, Brief Description of Intel Microprocessor	12

PART C -LEARNING RESOURCES

Text Books, Reference Books, Other Resources

BOOKS RECOMMENDED:

1. Computer Fundamentals: Architecture and Organization, B Ram New Age International Pvt Ltd
2. 8085 Microprocessors Architecture Application and Programming", Ramesh S. Goankar, PenramInternational,5th Edition
3. Modern Digital Electronics, R.P. Jain, TMH
4. Digital Principles & Application, Leach &Malvino, TMH
5. Digital Logic Design, Morries Mano, PHI
6. Digital Circuit & Design, S. Aligahanan, S. Aribazhagan, Bikas Publishing House.
7. Fundamentals of Digital Electronics & Microprocessor, Anokh Singh, A.K. Chhabra, S.Chand
8. Digital Circuits and Logic Design, Samuel Lee, PHI publication

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	**4. HOD- Dr. Sanat Kumar Sahu**.....
Subject Expert.....	**5. Mr. Dileep Kumar Sahu**.....
Alumni(member).....	**6. Dr. Latika Tamrakar** .....
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM

COURSE CURRICULUM 2024-25

V SEMESTER : Theory Course
DSE2

PART A: INTRODUCTION				
Program: B.Sc. (UG)		Class: B.Sc. (IT) Semester - V		Session:2024-2025
1	Course Code	BIT-504		
2	Course Title	DSE2- Cloud Computing		
3	Course Type	Theory		
4	Course Learning Outcome (CLO)	This Course will enable the students to: • Describe cloud computing concepts. • Identify various cloud services. • Evaluate various cloud delivery models. • Assess cloud characteristics and service attributes, for compliance with enterprise objectives. • Contrast the risks and benefits of implementing cloud computing		
5	Credit Value	4 Credits	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks :100		Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE		
Total no. of Teaching/ Learning Periods = 60 Periods (60 Hours)		
Unit	**Topics (COURSE CONTENTS)**	**No. of Periods**
I	**Fundamental Cloud Computing:** Concepts, Terminology, Technologies, Benefits, Challenges, SLAs and business cost metrics associated with cloud computing, SaaS, IaaS, PaaS delivery models, Common cloud deployment models and cloud characteristics, Various applications of cloud computing.	12
II	**Cloud Architecture:** The technology architecture of cloud platforms and cloud-based solutions and services and their utilization via a set of cloud computing design patterns, Hybrid cloud deployment models, Compound design patterns and solution architectures that span cloud and on-premise environments.	12
III	**Cloud Security & Governance:** The cloud security mechanisms, cloud security architecture, A set of security design patterns, The definition of cloud governance precepts, Roles, Practices and processes, Common governance challenges and pitfalls specific to cloud computing.	12
IV	**Cloud Storage:** The cloud storage devices, Structures and technologies, cloud storage mechanisms, Persistent storage, Redundant storage, Cloud-attached storage, Cloud-remote storage, Cloud storage gateways, Cloud storage brokers, Direct Attached Storage (DAS), Network Attached Storage (NAS), Storage Area Network (SAN), Various cloud storage-related design patterns.	12
V	**Cloud Virtualization & Microservices:** Core topic areas pertaining to the fundamental virtualization mechanisms and types used within contemporary cloud computing platforms are explored along with various key performance indicators and related metrics, Microservices of Cloud Computing.	12

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources

Text Books :

1. Cloud Computing: Concepts, Technology & Architecture, Erl, Pearson Education India; 1 edition, 2014
2. Cloud Computing: Fundamentals By Timothy Chou's.

Reference Books:

1. The Basics of Cloud Computing: Understanding the Fundamentals of Cloud Computing in Theory and Practice 1st Edition byDerrick Rountree (Author), Ileana Castrillo (Author)

2. —Cloud Computing, A Practical Approachl Toby Velte, Anthony Velte, Robert Elsenpeter, McGraw-Hill Osborne Media; 1 edition [ISBN: 0071626948], 2009.

Online Resources: (e- Resources/ e- Books/ e- Learning Portals):

1. https://www.javatpoint.com/cloud-computing
2. https://www.geeksforgeeks.org/cloud-computing-tutorial/
3. https://www.tutorialspoint.com/cloud_computing/index.htm
4. https://www.w3schools.com/aws/aws_cloudessentials_cloudcomputing.php
5. https://www.simplilearn.com/tutorials/cloud-computing-tutorial
6. https://intellipaat.com/blog/cloud-computing-tutorial/

PART D: ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods:		
Maximum Marks:	**100 Marks**	
Continuous Comprehensive Evaluation (CCE):	**20 Marks**	
Semester End Exam (SEE):	**80 Marks**	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks	
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit**	
	Question - A & B: (Compulsory) Very short answer type (02 each)	04 x 5 = 20 Marks
	Question - C: Short answer type question	05 x 5 = 25 Marks
	Question -D: Long answer type question	07 x 5 = 35 Marks
	Total	**= 80 Marks**

Name & Signature of Members of Board of Studies

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
COURSE CURRICULUM 2024-25
B.Sc.(IT)-VI Semester
PROGRAMMING IN .NET
COURSE CODE– BIT-601 (L)

PART A: INTRODUCTION			
Program: B.Sc.	Class: B.Sc.-IT	SEMESTER : VI	Session:2024-25
Course Code	BIT-601 (L)		
Course Title	PROGRAMMING IN .NET		
Course Type	DSC		
Course Objectives	The objective of the VB.NET framework is to provide a robust, scalable, and easy-to-use platform for developing modern, high-performance Windows applications and services.		
Course Outcome	**On successful completion of the course, the student will be able to:** 1. Study and use of .NET framework and object-oriented programming. 2. Develop the console and GUI applications using .Net programming. 3. Evaluate the .NET framework namespace contents. 4. Understand the procedures, File I/O, Error handling and Message queues.		
Credit Value	3Credits	1 credit =15 Hours – Learning and Observation	
Total Marks	Maximum Marks :100		Minimum Passing Marks:40

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Unit	Part B – Topics	No. of Lecture
I	**UNIT – I : Introduction to .NET:** Overview of .net framework, Features and architecture, Managed Execution process, CLR, Common language specification, JIT Compilation, MSIL, Namespace, Assemblies, Metadata common type, System, Visual development and event driven programming , Cross language, Interoperability, Garbage collection.	9
II	**UNIT – II: Programming with .NET Framework:** Windows form: working with Visual Studio IDE, Creating a .NET solution, MDI application, Components and controls, Data types, Variable, Type conversions, Operators, Methods and events, Scope and lifetime of variables, Creating Enumerations.	9
III	**UNIT – III : Control Structures:** Control Structures: conditional statement, Loops, Arrays, Types of methods, Method data, Creating Sub Procedures and Function, Introduction to exception handling try catch statement, finally statement, throw, user defined Exception.	9
IV	**UNIT – IV: GUI Programming:** GUI Programming with window forms, Showing & hiding, Textbox, RichText box, Label, Button, Listbox, Combobox, Checkbox, Picturebox, Radio button, Toggle button, Panel, Groupbox, Scrollbar, Timer, Dialog boxes, OpenfileDialog, Save File dialog, Print dialog, Front dialog, Color dialog, Designing menus and sub menus, Msgbox and Inputbox.	9
V	**UNIT – V: Database Programming with ADO.net** – ADO .Net Architecture, .Net data provider, dataset components, creating database application using Window forms (Database connectivity through ADO.Net), Accessing data using server explorer, Data Adapters and Data sets, Command & Data reader, Data bind controls, displaying data in data grid	9

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

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FOUR YEAR UNDERGRADUATE PROGRAM
COURSE CURRICULUM 2024-25
PROGRAMMING IN .NET LAB
COURSE CODE– BIT-602 (P)

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

1. Scheme of Examination:-
Practical examination will be of 3 hours duration. The distribution of practical marks will be as follows:
Programme 1 - 5
Programme 2 - 5
Progamme 3- 5
Viva - 5
[Practical Copy + Internal Record] – 5
Total - 25
2 In every program there should be comment for each coded line or block of code
3 Practical file should contain printed programs with name of author, date, path of Program, unit no. and printed output.
4 All the following programs or a similar type of programs should be prepared

List of Programs

1) Write a program to addition, subtraction, multiplication and division of any two numbers.
2) Write a program to find the maximum between three numbers.
3) Write a program to check whether a number is negative, positive or zero.
4) Write a program to check whether a year is a leap year or not.
5) Percentage < 40%: Grade F
6) Design an application to input basic salary of an employee and calculate its Gross salary following:
    a. Basic Salary <= 10000: HRA = 20%, DA = B0%
    b. Basic Salary <n20000: HRA = 30%, DA = 90%
    c. Basic Salary> 20000: HRA = 30%, DA = 95%
7) Design an application to input electricity unit charges and calculate the given condition:
    a. For first 50 units Rs. 0.50/unit
    b. For next 100 units Rs. 0.75/unit
    c. For next 100 units Rs. 1.20/unit
    d. For unit above 250 Rs. 1.50/unit
8) An additional surcharge of 20% is added to the bill
9) Write a program to convert decimal to binary number system using bitwise operators.
10) Write a program to swap two numbers using the bitwise operator.
11) Write a program to create Simple Calculator using a select case.
12) Write a program to find the sum of all natural numbers between 1 to n.
13) Write a program to enter any number and print its reverse.
14) Write a program to enter any number and check whether the number is palindrome or not.
15) Write a program to check whether a number is Armstrong number or not
16) Write a program to print Fibonacci series up to n terms.
17) Write a program to print Pascal triangles up to n rows.
18) Write a program to print all negative elements in an array.
19) Design a digital clock using timer control
20) Create an application that offers various food items to select from check boxes and a mode of payment using a radio button. It then displays the total amount payable.
21) Create an application to implement the working of Context menu on textbox
22) Write a program to illustrate all functionalities of list box and combo box.
23) Write a program for temperature conversion using a radio button.
24) Write a program to launch a rocket using Picture Box and Timer control
25) Write a program to change the back color of any control using a scroll box.
26) Write a program to search an element for a one dimensional array.

27) Design a menu such that it contains submenu such as Addition, Subtraction, Scalar Multiplication, Transpose of two metrics.
28) Write a program to find greatest among three given number using user define procedures
29) Write a program to check whether given number neon or not using user defined function
30) Write a program to check whether a given number is Niven or not using procedure.
31) Write a program to check whether a given number is duck number or not
32) Write a program to check whether a given number is a spy number or not.
33) Write a program to check whether a given number
34) Design the following application using radio button and checkbox:
35) Develop an application which is similar to notepad using menus.
36) Develop an application for facilitating purchasing order.
37) Develop an application for a billing system in a coffee shop.
38) Develop an application which is similar to login form.
39) Define structure student structure student has written member for storing name roll number name of three subjects and marks with member function to store and print data.
40) create a class circle with data member radius provide member function to calculate area driver class fare from class circle provide member function to calculate volume derived class cylinder from class is fair with additional data member for height and member function to calculate volume
41) Write a program that implements the concept of encapsulation.
42) Write a program to demonstrate the concept of function overloading.
43) Create a class student having a data member to store roll number name of the student name of three subject Max marks, Min marks, obtained marks. Declare an object of class. Provide facilities to input data in data members and display result of students
44) Create a class array having an array of integer having five elements at data member provide following facilities: a) constructor to get number in array element b) sort the elements
45) Create a table for employees and write a program using a data set to add, delete , edit and navigate records.
46) Write a program to access a database using ADO.NET and display key columns in the combo box or list box when an item is selected in it its corresponding records are shown in data grid control.
47) Write a program to calculate factorial of a number using user defined procedure.

Note: This is a tentative list; the teachers' concern can add more program as per requirement.

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	**1. HOD- Dr. Sanat Kumar Sahu**.....
Subject Expert.....	**2. Mr. Dileep Kumar Sahu**.....
Alumni(member).....	**3. Dr. Latika Tamrakar** .....
Prof. from other Dept. of Sc. Faculty.....	
Specialist from Industry	

GOVT. V.Y.T.PG AUTONOMOUS COLLEGE DURG
FOUR YEAR UNDERGRADUATE PROGRAM
COURSE CURRICULUM 2024-25
B.Sc.(IT)-VI Semester
DSE- DATA COMMUNICATION AND NETWORKING
COURSE CODE– BIT-603 (L)

MAX MARK: 60 **Min Marks:24**

PART A: INTRODUCTION			
Program: B.Sc.	**Class: B.Sc.-IT**	**SEMESTER : VI**	Session:**2024-2025**
Course Code	**BIT-603(L)**		
Course Title	**DATA COMMUNICATION AND NETWORKING**		
Course Type	**DSE**		
Course Objectives	To understand network architecture, protocols, and security, enabling efficient design, implementation, and management of robust computer networks.		
Course Outcome	**On successful completion of the course, the student will be able to:** ➢ Understand the fundamentals and functionalities of computer network, Data Communications System and its components. ➢ Analyze the different types of network topologies and protocols. ➢ Analyze various layers of OSI and TCP/IP models. ➢ Explore wireless and wired LANs		
Credit Value	**4 Credits**		
Total Marks	**Max. Marks: 25**	**Min Passing Marks: 10**	

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 45 Periods (45 Hours)

Unit	Part B – Topics	No. of Lecture
I	**UNIT – I : Introduction** Introduction to Computer Network and Physical Layer: Fundamentals of Computer network, types of computer networks: LAN, MAN, WAN, Network topologies, Transmission modes, ISO-OSI reference model, TCP/IP model, Comparison of OSI and TCP/IP models	**12**
II	**UNIT – II:** Concept of Analog and Digital Signals, Bandwidth, Multiplexing: TDM, FDM, WDM, CDMA, Transmission Media -Guided, Unguided, switching techniques: Circuit Switching, Message Switching, Packet Switching.	12
III	**UNIT – III:** Data Link Layer: Functions of Data Link Layer, Framing, Error detection and correction codes: checksum, CRC, hamming code, Flow Control: Stop & Wait and Sliding Window Protocols, Error Control: Stop & wait ARQ, Go-back-n, Selective Repeat ARQ, Data link protocols: HDLC and PPP, Medium Access Sublayer: LLC Protocol, IEEE Project 802 series of network standard and CSMA/CD.	12

IV	**UNIT – IV:** Network Layer and Transport Layer: Functions of Network Layer, Routing Protocols & Algorithms, IPv4, IPv6, X.25, Networking & Internetworking devices, Functions of Transport Layer, Flow Control & Buffering, Transport Layer Protocols: TCP, UDP & SCTP, Network, Principles of Congestion Control.	12
V	**UNIT – V:** Common Network Architecture: Wireless LANs 802.11 standards, Overview of VSAT and VPN. Session Layer: Overview, functioning and protocol. Application Layer: BOOTP, DHCP, DNS, TELNET, World Wide Web (WWW), File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP), Email Protocols: MIME & SMTP, POP, IMAP, Proxy Server.	**12**

PART C -LEARNING RESOURCES

Text Books, Reference Books, Other Resources

BOOKS RECOMMENDED:

1. Andrew S. Tanenbaum, Computer Networks, PHI / Pearson Education Inc.
2. Behrouz A. Forouzan, Data Communication and Networking, Tata McGraw-Hill.
3. William Stallings, Data and Computer Communication, Pearson Education.
4. Nader F. Mir, Computer and Communication Networks, Pearson Education, 2007. Black, Data & Computer Communication, PHI

Note: The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

Name and Signatures

V.C. Nominee	**Departmental members**
Subject Expert	1. **HOD- Dr. Sanat Kumar Sahu**.....
Subject Expert.....	2. **Mr. Dileep Kumar Sahu**.....
Alumni(member).....	3. **Dr. Latika Tamrakar** .....
Prof. from other Dept. of Sc. Faculty	
Specialist from Industry	

DSE2PART A: INTRODUCTION				
Program: BSC (UG)		Class: BSc(IT) Semester - VI		Session:2024-2025
1	Course Code	BIT-604		
2	Course Title	DSE2- **E-Commerce and its Application**		
3	Course Type	Theory		
4	Course Learning Outcome (CLO)	**This Course will enable the students to:** • Analyze the impact of E-commerce on business models and • strategy. • Describe the major types of E-commerce. • Explain the process that should be followed in building an • E-commerce presence. • Identify the key securit threats in the E-commerce environment.		
5	Credit Value	4 Credits	1 credit =15 Hours – Learning and Observation	
6	Total Marks	Maximum Marks :100		Minimum Passing Marks:40

PART B: CONTENT OF THE COURSE

PART B: CONTENT OF THE COURSE

Total no. of Teaching/ Learning Periods = 60 Periods (60 Hours)

Unit	Topics (COURSE CONTENTS)	No. of Periods
I	History of E-commerce and Indian Business Context: E-Commerce –Emergence of the Internet – Emergence of the WWW – Advantages of E-Commerce – Transition to E-Commerce in India – The Internet and India – E-transition Challenges for Indian Corporate. Business Models for Ecommerce: Business Model – E-business Models Based on the Relationship of Transaction Parties - E-business Models Based on the Relationship of Transaction Types.	12
II	Enabling Technologies of the World Wide Web: World Wide Web – Internet Client-Server Applications –Networks and Internets – Software Agents – Internet Standards and Specifications – ISP. e-Marketing :Traditional Marketing – Identifying Web Presence Goals – Online Marketing – E-advertising – E-branding.	12
III	E-Security: Information system Security – Security on the Internet – E-business Risk Management Issues – Information Security Environment in India. Legal and Ethical Issues : Cybers talking – Privacy is at Risk in the Internet Age – Phishing – Application Fraud – Skimming – Copyright – Internet Gambling – Threats to Children.	12
IV	e-Payment Systems: Main Concerns in Internet Banking – Digital Payment Requirements – Digital Token-based e-payment Systems – Classification of New Payment Systems – Properties of Electronic Cash – Cheque Payment Systems on the Internet – Risk and e-Payment Systems – Designing e-payment Systems – Digital Signature – Online Financial Services in India - Online Stock Trading.	12
V	Information systems for Mobile Commerce: What is Mobile Commerce? – Wireless Applications –Cellular Network – Wireless Spectrum – Technologies for Mobile Commerce – Wireless Technologies –Different Generations in Wireless Communication – Security Issues Pertaining to Cellular Technology. Portals for E-Business: Portals – Human Resource Management – Various HRIS Modules.	12

PART C - LEARNING RESOURCES
Text Books, Reference Books, Other Resources

TEXT BOOK:

1. P.T.Joseph, S.J., *"E-Commerce - An Indian Perspective"*, PHI 2012, 4th Edition.

REFERENCE BOOKS:

1. David Whiteley , *"E-Commerce Strategy, Technologies and Applications"*, Tata McGraw Hill, 2001.
2. Ravi Kalakota, Andrew B Whinston, *"Frontiers of Electronic Commerce"*, Pearson 2006, 12th Impression.

WEB REFERENCES:

- https://www.docsity.com/en/e-commerce-notes-pdf-lecture-notes-universitylevel/2484734/
- https://magnetoitsolutions.com/blog/advantages-and-disadvantages-of-ecommerce
- https://www.researchgate.net/publication/320547139ECommerce_Merits_and_Demerits_A_Review_Paper.

PART D: ASSESSMENT AND EVALUATION	
Suggested Continuous Evaluation Methods:	
Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test of 20 Marks each and Assignment of 20 Marks
Semester End Exam (SEE)	**Pattern -FOUR Questions (A, B, C, D) from each Unit** Question - A & B: (Compulsory) Very short answer type (02 each) 04 x 5 = 20 Marks Question - C: Short answer type question 05 x 5 = 25 Marks Question -D: Long answer type question 07 x 5 = 35 Marks **Total = 80 Marks**

Name & Signature of Members of Board of Studies

The Course Curriculum 2024-25 for Program B. Sc. IT - II, III, IV, V, VI Semesters on 05-07-2024 is hereby approved for the Session 2024-25.

Name and Signatures:

Subject Expert ..... Subject Expert ..... Subject Expert ..... Representative from Industry/entrepreneur ..... Student representative ..... Other prof. from Science faculty	Departmental members: 1. H.O.D- Dr. Sanat Kumar Sahu 2. Mr. Dileep Kumar Sahu 3. Dr. Latika Tamrakar