KPRIT Imagine. Innovate. Inspire.	**LESSON PLAN**	**Date: 18-10-2021 To 12-02-2022**
	Sub. Name : **Object Oriented Programming Through C++** **Branch: CSE,** **Semester & Year :II & I**	

OBJECT ORIENTED PROGRAMMING THROUGH C++

Lecture	**: 4 Periods/week**	**Internal Marks**	**25**
Tutorial	**: -**	**External Marks**	**75**
Credits	**: 4**	**External Examination**	**: 3 Hrs**

UNIT-I

Overview of C++:

Object Oriented paradigms, Data abstraction/control abstartction,OOPSprinciples,Origin of C++, Sample C++ program, dynamic initialization of variables , new and deleteoperators,C++ keywords,General form of C++ program, Type casting, Introducing C++ classes, Difference between class and structure.

UNIT - II

Classes and Objects: Defining Classes in C++, accessing class members, access specifiers(Public and Private),defining member functions, static data members, static member functions, friend functions, friend classes, inline functions, nested classes, passing objects to functions, returning objects, object assignment, Array of objects, Constructor and Destructors

UNIT – III

Inheritance: Base-class accesscontrol,accessspecifier (Protected), scope rules, Inheriting Multiple Base classes,constructors,destructors&inheritance passing parameters to base class constructors. Virtual base class.**String class**-Usage of standard library string class with example programs.

UNIT – IV

Polymorphism:

Pointers: Pointers to objects, 'this' Pointer, Pointers to derived types.

Operator Overloading: Overloading Unary Operators, and Overloading Binary Operators using friend functions, Function Overloading,

Virtual functions: Pure Virtual Functions, Abstract classes

Templates: Introduction, simple generic classes & generic function, simple example programs.STL-List, Vector, Array

UNIT – V

Files and Exception Handling:

Exception Handling: Fundamentals, exception handling options.

C++ I/O Systems Basics: C++ Streams, C++ Stream classes, Unformatted I/O Operations, Formatted I/O Operations, Formatting using Manipulators. C++

File I/O: Introduction, Classes for file stream Operations, Opening and closing a file, detecting end-of-file

TEXT BOOK

1. Herbert Schildt, The Complete Reference C++, Fourth Edition, TMH Publications.
2. Deitel&Deitel, C++ How to Program, Pearson Education, 3rd Edition.

REFERENCES

1. E.Balaguruswamy, Object Oriented Programming with C++, TMH Publications,3rd Edition.
2. Ashok N Kamthane, Object Oriented Programming with ANSI& Turbo C++.

Prerequisite:Learning C language .

Course Educational Objectives:

This course enables the students to know about

1. Object Oriented concepts,C++ language .
2. Classes &Objects,Inheritance,Polymorphism.
3. Templates ,Streams,Files

Course Outcomes(CO's):

After completion of the course, students will able to:

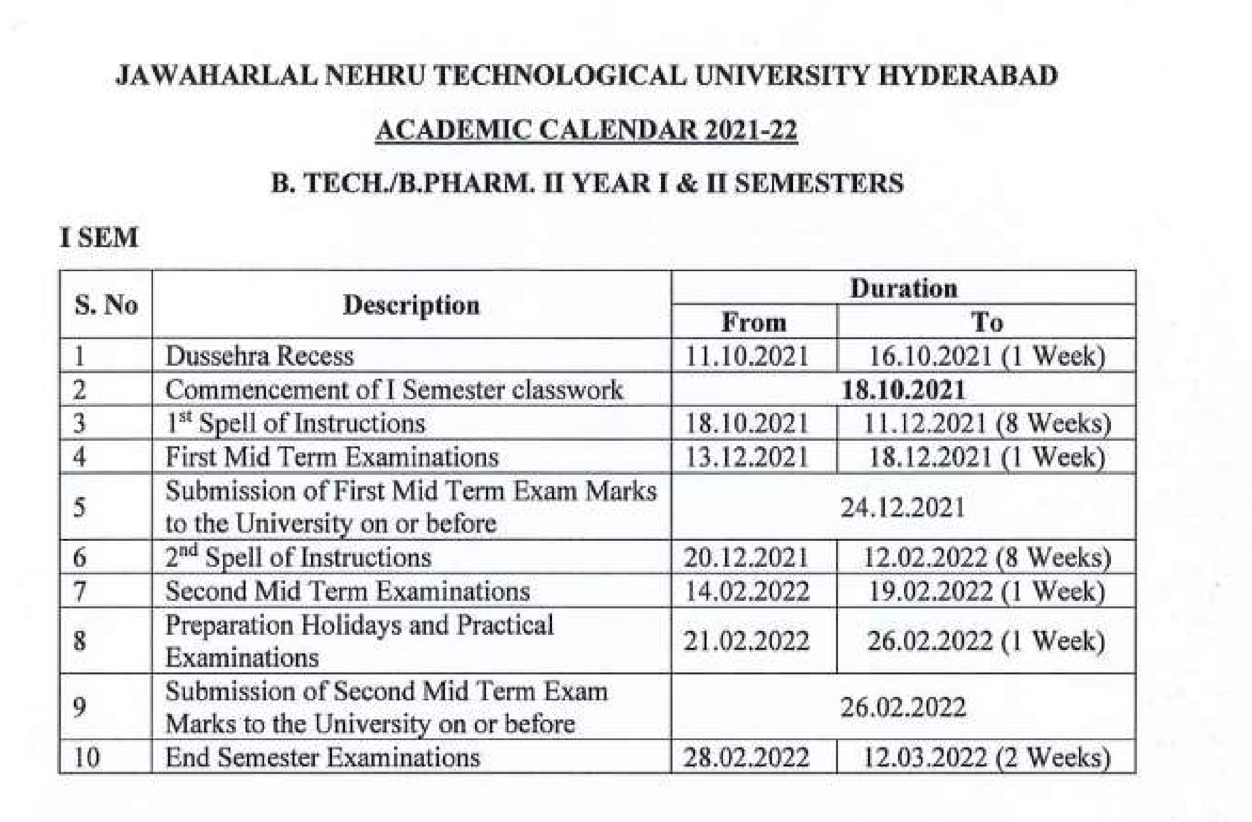
CO1: Able to Understand OOPs Concept ,C++ language features. Able to Understanding and Applying various Datatypes, Operators,Conversions in program design.

CO2: Able to Understand and Apply the concepts of Classes &Objects,friend function , constructors &destructors in program design.

CO3: Able to Design & implement various forms of inheritance, String classs,calling base class constructors .

CO4: Able to Apply & Analyze operator overloading, runtime polymorphism , Generic Programming.

CO5: Able to Analyze and explore various Stream classes, I/O operations and exception handling.



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

ACADEMIC CALENDAR 2021-22

B. TECH./B.PHARM. II YEAR I & II SEMESTERS

I SEM

S. No	Description	Duration	
		From	To
1	Dussehra Recess	11.10.2021	16.10.2021 (1 Week)
2	Commencement of I Semester classwork	**18.10.2021**	
3	1st Spell of Instructions	18.10.2021	11.12.2021 (8 Weeks)
4	First Mid Term Examinations	13.12.2021	18.12.2021 (1 Week)
5	Submission of First Mid Term Exam Marks to the University on or before	24.12.2021	
6	2nd Spell of Instructions	20.12.2021	12.02.2022 (8 Weeks)
7	Second Mid Term Examinations	14.02.2022	19.02.2022 (1 Week)
8	Preparation Holidays and Practical Examinations	21.02.2022	26.02.2022 (1 Week)
9	Submission of Second Mid Term Exam Marks to the University on or before	26.02.2022	
10	End Semester Examinations	28.02.2022	12.03.2022 (2 Weeks)

Kommuri Pratap Reddy institute of Technology	
Department of CSE	
Outcome Based Lesson Plan	
Academic year : 2021-22	**Course :OOP(C++)**
Programme : B.Tech	**Unit No. : 1 to 5**
Year & Sem : II & I	**Section : A**

S. No	Teaching Learning Process (TLP)	Delivery Methods (DM)	Assessment Methods (AM)
1	Solving Real World Problem	Chalk & Talk	Assignments
2	Explaining Application before Theory	ICT tools	Quiz
3	Solving Problems	Group discussions	Tutorials
4	Designing of Experiments	Industrial visit	Surprise Tests
5	Problems on Environmental, Economics, Health & Safety	Field work	Mid Exams
6	Problems on Professional & Ethics	Case studies	Model Exam
7	Seminar	Mini Projects	QAs
8	Problems using software	Numerical treatment	
9	Self-study	Design / Exercises	

Detailed Lesson Plan

S.NO	TOPIC TO BE COVERED	Date		TLP	DM	AM
		Tentative	Actual			
UNIT – I						

1	OOP Paradigm	19/10		2	1	1, 2, 7
2	OOPS principles	22/10		2	1	
3	OOPS principles	23/10		2	1	
4	C++ Overview	24/10		2	1	
5	C++ Characteristics	25/10		2	1	
6	Types,operators,type casting	28/10		2	1	
7	Types,operators,type casting	29/10		2	1	
8	dynamic initialization of variables	30/10		2	1	
9	*new* and *delete* operators	01/11		2	1,9	
10	*new* and *delete* operators	01/11		2	1.9	
11	Difference between class and structure, declaration of variables	05/11		2	1,9	
12	Difference between class and structure, declaration of variables	07/11		2	1	
13	Simple C++ programs	08/11		2	1	
		UNIT – II				
14	Defining Classes in C++, accessing class members,	12/11		2	1,9	
15	access specifies(Public and Private),defining member functions,	13/11		2	1,9	
16	static data members, static member functions	14/11		2	1,9	
17	static data members, static member functions	15/11		2	1,9	
18	Friend functions, friend classes,	16/11		2	1,9	
19	Friend functions	19/11		2	1,9	
20	Friend functions	20/11				3,4
21	inline functions	22/11		3	1,9	
22	object assignment	23/11		3	1,9	
23	passing objects to functions	26/11		2	1,9	

24	passing objects to functions	27/11		3	1,9	
25	Returning objects	28/11		2	1,9	
26	Array of objects	29/11		2	1,9	
27	Array of objects	30/11		3	1,9	
28	Constructor and Destructor	02/11		3	1,9	
29	Constructor and Destructor	03/12		3	1,9	
30	Constructor and Destructor	04/12		3	1,9	
31	Constructor and Destructor	05/12		3	9	
32	**MID – I Exams**	13/12				5
33		14/12				
34		15/12				
UNIT – III9						
35	Base class, derived class, access specifier (Protected),	8/12		2	1	1, 2, 7
36	scope rules, base class	9/12		2	1,9	
37	scope rules, base class	10/12		2	1	
38	virtual base class, single inheritance	18/12		2	1	
39	virtual base class, single inheritance	19/12		2	1	
40	multiple inheritance, multilevel inheritance,	20/12		2	1,9	
41	multiple inheritance, multilevel inheritance,	23/12		2	1,9	
42	hierarchical inheritance and hybrid inheritance, calling base class constructors	28/12		2	1,9	
43	hierarchical inheritance and hybrid inheritance, calling base class constructors	29/12		2,3	1,9	
44	calling base class constructors	30/12		2,3	1,9	

45	**String class-**Usage of standard library *string class* with example programs	02/1		2,3	1,9	
46	String class	02/1		2	1	
47	String class examples	3/1		2	1,9	
UNIT - IV						
48	**Polymorphism:**	06/1		2	1,9	
49	Pointers, Pointers to objects	07/1		2	1,9	
50	'this' Pointer, Pointers to derived Classes.	08/1		2	1,9	
51	Concept of Polymorphism, Compile time Polymorphism:	09/1				3, 4
52	Operator Overloading	10/1		2	1	1, 2, 7
53	Overloading Unary Operators,	16/1		2	1	
54	Overloading Binary Operators,.	17/1		2	1,9	
55	Function Overloading **Run time Polymorphism:** Virtual functions,	20/1		2	1,9	
56	Function Overloading **Run time Polymorphism:** Virtual functions	21/1		2,3	1,9	
57	Function Overloading **Run time Polymorphism:** Virtual functions	22/1		2,3	1,9	
58	Pure Virtual Functions	23/1		2	1,9	
59	**GENERIC PROGRAMMING**	24/1		2	1,9	
60	**Templates**: Introduction, Class Templates.	27/1		2,3	1,9	
61	Class Templates	28/1		2	1,9	
62	Function Templates	29/1		3	9	
63	Function Templates	30/1		2,3	1,9	
64	Lists vectors	2/2		2,3	1,9	
65	Arrays	2/2		2,3	1,9	
UNIT – V						
68	**Exception handling: Introduction**	3/2		2	1	
69	Mechanism, try, throw and catch	3/2		2	1	
70	Catching all Exceptions, Multiple catches	05/2		2	1	
71	C++ Streams, Stream Classes	05/2		2	1	
72	C++ Streams, Stream Classes	07/2		2	1	

73	Unformatted I/O Operations	08/2		2	1	1, 2, 7
74	**Formatted I/O Operations**	09/2		2	1,6	
75	Formatted using manipulators	09/2		2	1	
76	**C++ Files: Introduction**	10/2		2	1	
77	Opening and closing of a file	11/2		2	1,9	
78	**Detecting end of file,** Programs on files	12/2		2,3	1,9	
79	Programs on file operations	13/2		2,3	1,9	
80	Programs on file operations	14/2		2,3	1,9	
81	**MID – II Exams**	15/2				5
82		16/2				
83		17/2				

ASSESSMENT SUMMARY:

Assessment Task	Weightage (Marks)	**Course Outcomes**				
		CO1	CO2	CO3	CO4	CO5
Assignments, Quiz, Tutorials etc.	05					
Mid Exams	20					
Model Exams	--					
End Exam	75					
Attendance	--					
Total	100					

MAPPING COURSE OUTCOMES WITH PROGRAMME OUTCOMES:

Course Code	Unit	Course Outcomes					Programme Outcomes											
		1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12
CS305 PC	I	×					2											
	II		×				2											
	III			×			2											
	IV				×		2											

	V					×	2											

Course Code	Unit	Course Outcomes					Programme Specific Outcomes					
		1	2	3	4	5	1	2	3	4	5	6
CS305 PC	I	×					3		1			
	II		×				3		1			
	III			×			3		1			
	IV				×		3		1			
	V					×	3		1			

Name	Instructor	Head of the Department
	G SUJATHA	Dr. Muthi Reddy
Signature		

KPRIT Imagine. Innovate. Inspire.	**LESSON PLAN**	**Date: 18-10-21** **To** **02-12-22**
	Sub Code:L167 **Sub Name: OBJECT ORIENTED PROGRAMMING THROUG C++ LAB** **Branch: CSE Year:II B.Tech Semester : III**	

L167 – OBJECT ORIENTED PROGRAMMING THROUG C++ LAB.

Lab : 3 Periods/week **Internal Marks 25**

External Marks 75

Credits : 2 **External Examination : 3 Hrs**

Week – 1:

1. Write a C++ program to find the sum of individual digits of a positive integer.

2. Write a C++ program to generate the first ‘n’ terms of the sequence. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are formed by adding the preceding two terms in the sequence.

3. Write a C++ program to generate all the **prime numbers** between 1 and n. Where ‘n’ is a value supplied by the user.

Week – 2:

4. Write a C++ programs that use both **recursive** and **non-recursive** functions

   a) To find the factorial of a given integer.

   b) To find the GCD of two given integers.

   c) To find the nth Fibonacci number.

Week – 3:

5. Write a C++ program to perform addition, suCSraction and multiplication operations on two complex numbers using **classes and objects.**

6. Write a C++ program to find out the total and average marks of 10 students using **Classes and objects?**

Week – 4:

7. Write a C++ program to implement **static data members** and **static member functions**

8. Write a C++ program to implement the **matrix ADT using** a class. The operations Supported by this ADT are:

a) Reading a matrix. c) Addition of matrices.

b) Displaying a matrix d) Multiplication of matrices.

Week –5:

9. Write a C++ program to illustrate the usage of following:

Default Constructor, **Parameterized** Constructor, **Copy** Constructor and **Destructor**

10. Write a C++ program that illustrates the following:

a) **Friend** Function b) **inlin**e function

Week –6 :

11. Write C++ programs that illustrates the usage of following forms of **inheritance.** (Exercise the access specified *protected* also)

a) Single Inheritance b) Multiple Inheritance

c) Multi level Inheritance d) Hierarchical Inheritance

Week –7 :

12. Write a C++ program to call base class constructors in the following forms of inheritance.

a) Single Inheritance b) Multiple Inheritance

c) Multi level Inheritance d) Hierarchical Inheritance

Week –8 :

13. Write a C++ program that illustrates the concept of **Function over loading**?

14. Write a C++ program that overloads the **binary + operator** to concatenate two strings and to add two complex numbers.

<u>Week –9 :</u>

15. Write a C++ program that overloads the **unary ++ operator** to increment each element of the given one dimensional array by ‘1’?

16. Write a C++ program that illustrates **run time polymorphism** by using virtual functions.

<u>Week –10 :</u>

17. Write a **template** based C++ program to check whether the given item is existed in the array or not.

18. Write an example C++ program to illustrate the procedure of exceptions **handling.**

<u>Week-11:</u>

19. Write a C++ program to display the contents **of a text file.**

20. Write a C++ program which **copies the contents of one file to another.**

Pre requisite: C Language.

<u>CEOs</u>:

This course enables the students to execute programs in

7. Object oriented concepts++ language.
8. Classes &Objects, Inheritance, Polymorphism.
9. Templates ,Streams, Files

Course Outcomes (CO’s)

After undergoing this laboratory module, the student will be able to:

CO1: Implement and test the concepts of Classes &Objects, friend functions, constructors &destructors in program design of a few example exercises.

CO2: Design & implement a few forms of inheritance through a few exercises.

CO3: Test the performance of Polymorphism and Generic Programming through a few exercises.

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LESSON PLAN

Sub. Name : OOP LAB (CS302PC)

Faculty Name: G.Sujatha **Branch: CSE**

Class: II B.Tech. I SEM **Section: B1**

Date:

18-10-21

To

12-02-22

No. of Periods	**Tentative Date**	**Actual Date**	**Lab Cycles**	**Signature**
1.	22/10/2021		Basics using C language	
2.	29/10/2021		Introduction to C++	
3.	05/10/2021		WEEK – 1	
4.	12/10/2021		WEEK – 2	
5.	19/10/2021		WEEK – 3	
6.	26/10/2021		WEEK – 4	
7.	09/11/2021		WEEK – 5	
8.	16/11/2021		WEEK – 6	
9.	07/12/2021		WEEK – 7	
10.	14/12/2021		WEEK – 7	
11.	21/12/2021		WEEK – 8	
12.	28/12/2021		WEEK – 9	
13.	5/01/2022		WEEK – 10	
14.	15/01/2022		WEEK – 11	
15	20/01/2022		WEEK – 11	
16.	03/02/2022		INTERNAL EXAM	

KPRIT Imagine. Innovate. Inspire.	**LESSON PLAN** **Sub. Name : OOP LAB (L167)** **Faculty Name: A.S.R.C.Murthy Branch: CSE** **Class: II B.Tech II SEM Section:B 2**	**Date:** **18-10-21** **To** **12-02-22**

No. of Periods	Tentative Date	Actual Date	Lab Cycles	Signature
1.	20/10/2021		Basics using C language	
2.	27/10/2021		Introduction to C++	
3.	03/11/2021		WEEK – 1	
4.	17/11/2021		WEEK – 2	
5.	24/11/2021		WEEK – 3	
6.	31/11/2021		WEEK – 4	
7.	07/12/2021		WEEK – 5	
8.	14/12/2021		WEEK – 6	
9.	21/12/2021		WEEK – 7	
10.	28/12/2021		WEEK – 7	
11.	05/01/2022		WEEK – 8	
12.	19/01/2022		WEEK – 9	
13.	15/01/2022		WEEK – 10	
14.	22/01/2022		WEEK – 10	
15.	29/01/2022		WEEK – 11	
16.	03/2/2022		INTERNAL EXAM	

	Prepared by	Approved by
Signature		
Name	G SUJATHA	Dr. Muthi Reddy
Designation	Asst. Professor, CSE Department	Professor, H.O.D of CSE.
Date		

Question Bank
Object Oriented Programming Using C++

Q1. Multiple Choice Questions

1) The binding of data & functions into a single unit is called as

   a) Class b) Dynamic Binding c) Encapsulation

2) In case of OOP the focus is on

   a) Data b) Procedures c) Inheritance

3) The ability of a function or operator to act in different ways of different ways ondifferent data types is called as

   a) Inheritance b) Overloading c) Encapsulation

4) The process of building a new classes from existing ones is called as

   a) Inheritance b) Dynamic Binding c) Overloading

5) Which stream is used to input values to variables in the program?

   a) Cin b) Cout c) main

6) Which stream is used to display output?

   b) Cin b) Cout c) main

7) The values placed within the parentheses of a function are called

   a) Arguments b) Statements c) Escape Sequence

8) Which of the following terms describes data that remains the same throughout aprogram?

   a) Constant b) Variable c) Integer

9) Which of the following statements are true with respect to the use of friend keyword \Inside a class?

a) A private data member can be declared as a friend

b) A function may be declared as a friend

c) A class may be declared as a friend

10) What are the functions that can have access to the protected members of a class?

a) A function that is a friend of the class

b) A member function of a class that is a friend of the class

c) A member function of a derived class

11) In a class, all members are__________by default.

a) Public b) Private c) Protected

12) Member functions of a class are normally declared as

a) Public b) Private c) Protected

13) Whenever an object is destroyed which function is called?

a) Constructor b) Destructor c) Copy Constructor

14) To request dynamic memory which operator is used?

a) New b) Destructor c) Delete

15) ________is used to destroy a memory space.

a) New b) Destructor c) Delete

16) A___________has the same name as that of class.

a) Constructor b) Destructor c) Delete

17) Which of the following way is legal to access a class data member using the thisPointer?

a) this->x b) this.x c) this+x

18) From the following list which operator is not overloaded?

a) Conditional Operator b) Comma Operator c) Division Operator

19) C++ program can not run if____________function not in the program.

a) Inline b) Mainc) Friend

20) Function overloading is the concept of______________

a) Inheritance b) Polymorphism c) Data Hiding

21) Which parameter is used for go to end of file?

a) ios::ate b) ios::in c) ios::out

22) Which concept allows you to reuse the written code?

a) Encapsulation b) Abstraction c) Inheritance

23) What is a friend function in C++?

a) A function which can access all the private, protected and public members of a class

b) A function which is allowed to access public and protected members of a class

c) A function which is allowed to access only public members of a class

24) Which keyword is used to represent a friend function?

a) friend

b) Friend

c) Friend_func

25) Which value will it take when both user and default values are given?

a) user value

b) default value

c) custom value

Q2. Answer the following in one or two lines

1) Define constructor. List the types of constructor.
2) What is virtual base class?
3) Define polymorphism. How is compile time polymorphism achieved?
4) List any four modes of opening a file.

5) What is the difference between ‘call by value’ and ‘call by reference’?

6) List any two advantages of C++ over C.

7) What is the difference between normal function and static function?

8) What do you mean by cascading of I/O operators?

9) Why are manipulators used? Which file should be included while using manipulators?

10) What is exception handling? What are the keywords used in exception handling?

11) List the types of inheritance.

12) Is there a need to call a constructor function explicitly? Jstify.

13) What is this pointer?

14) Define the term Class.

15) Define the term Encapsulation.

16) What is stream? Enlist various stream classes.

17) Define const member function.

18) What is class template?

19) List the situation where inline function does not work.

20) Define eof() function.

21) What is friend function?

22) What is function prototype?

23) Write any two advantages of inheritance.

24) Write any four operators that can be overloaded.

25) What is fstream?

26) Define constructor.

27) What is the use of setw and endl?

28) What is pure virtual function?

29) What is the use of this pointer?

30) What is reference variable.

Q3) Give answer of the following

1) Explain features of object oriented programming language?

2) Explain how to pass default argument with the help of suitable example and also writein which situation default arguments are used?

3) How is memory allocated dynamically in C++? Explain.

4) Explain the use of setw(),setprecision(),setiosflags() and setfill() manipulators withthe help of suitable example.

5) Write note on constructors in derived class.

6) What is inline function? Explain with example.

7) Explain the functions of manipulation of file pointers.

8) Explain the characteristics of friend function.

9) Explain unary and binary operator overloading with the help of member functions.

10) Write a note on static data member.

11) Differentiate between C and C++.

12) What is function overloading. Write the steps to find unique match duringcompilation.

13) Explain the structure of C++ program with the example.

14) What are the rules for defining virtual function?

15) Define inheritance. Explain the visibility scope of private, public and protected accessspecifiers.

16) What is constructor? Explain default constructor and copy constructor.

17) Define file. Explain different ways to open a file.

18) Explain different uses of scope resolution operator in C++.

19) What is inline function? Write advantages of inline function overmacros.

20) Explain abstract class with the help of suitable example.

21) What is constructor? Give any four special characteristics of constructor.

22) Explain any four characteristics of friend function.

23) What is file mode? Explain any four file modes supported by C++.

24) How exceptions are handled in C++.

25) Explain rules of operator overloading.

Q4) Write programs for the following

1) Write a program to swap two integers using function template.

2) Write a program to display the contents of a text file in the reverse order.

3) Write a program to calculate area of a rectangle and a triangle using functionoverloading.

4) Write a C++ program to calculate area and circumference of a circle using inline function.

5) Design a base class person (name, address, phone-no). Derive a class employee (eno,ename) from person. Derive a class manager (designation, department, basic-salary)

from employee. Accept all details of n managers and display manager having highestsalary.

6) Create a C++ class sumdata to perform the following functions: int sum(int,int)- returns addition of two integer arguments.

float sum(float, float, float)- returns the addition of three float arguments.

7) Write a C++ program which will accept 'n' integers from user, write all even integers into "even.dat" file and write all odd integers into "odd.dat" file. Display the contentsof both the files.

8) Write a program to overload == operator to compare two strings.

9) Write C++ program to accept item details(Imo, Iname, Iprice) of five items. Display item name with the highest price. (Use array of objects)

10) Write a C++ program to calculate simple interest amount. Use default value for rate,

11) Write a C++ program to find area of triangle, circle and rectangle using functionoverloading.

12) Design a class Student. Include data members rollno, name, city and age. Writemember functions:

    i) To accept information of 'n' students

    ii) To display information of 'n' students

    iii) To search details of a student using rollno(use array of objects)

13) Write a C++ program to create a class Worker with data members as worker-name,no-of-hours-worked, pay-rate. Write necessary member functions to calculate and display the salary of worker. Write necessary member functions to calculate and display the salary of worker.(Use default value for pay-rate)

14) Write a C++ program to create a base class Increment. Write necessary member functions to overload the operator unary pre and post increment '++' for an integernumber.

15) Design a C++ class which contains functions display(). Write a program to count no. Of times display() function is called.(Use static data member).

16) Write a C++ program to read "ABC.txt". Write all even numbers in "even.txt" and odd numbers in "odd.txt". Display contents of both the files.

17) Design a base class Customer (name, phoneNo). Derive a class Depositor (accNo, bal) from Customer. Again derive a class Borrower (loanNo, loan-amt) from

Depositor. Write necessary member functions to read and display the details of nCustomers.

18) Write a C++ program to swap two numbers by using function template.

19) Write a program to read contents from the file “sample.txt”. Store all the charactersfrom this file into the file in “character.txt” and all digits into the file “digit.txt”.

20) Define a C++ class Cstring to represent a string. Define parameterized constructor andmember function to display string . Overload unary to change the case of the string object.

21) Design a base class Person (name, address) and derived class as Student(rollno,percentage). Write member functions to accept and display information of student.(use virtual function).

22) Write a C++ program to sort integer and float array elements in ascending order byusing function overloading

23) Design a base class staff (staffno, name, salary) and two derived classes as teaching staff(subject) and nonteaching staff(post). Write necessary member function to acceptand display information of all staff members.

24) Write a C++ program to find out minimum and average of two integer numbers oftwo different classes using friend function.

25) Create a class pair that contains two integer data members. Define appropriateconstructor to initialize a pair object, Define member functions:

    i) To find maximum of a pair.

    ii) To add integers of the pair.

UNIT – 1:

10 MARKS:

1. Explain basic concepts / properties / principleof OOPS in detail.
2. Difference between Procedural Oriented Programming Languages(POPs) and OOPS.
3. i) Write benefits of OOPS

   ii) Write applications of OOPS
4. Explain generations of programming languages.

5 MARKS:

1. Write about OOPS paradigm.
2. Write about object oriented languages.

UNIT – 2:

10 MARKS:

1. Explain about control structure in C++.
2. Explain different data types in C++.
3. Explain about types of array in C++.
4. i)Write about scope resolution operator

   ii) Write about function with default arguments.
5. Explain different operators in C++.

5 MARKS:

1. Explain about function overloading.
2. Write about reference variable.
3. Write about multi-dimensional array with example.
4. Write about Inline function with example.
5. Write about access specifier in C++.

Extra: Structure of C++, Comments, Variables, Keyword, Identifier, Constant, scope of variable , storage classes.

UNIT – 3:

10 MARKS:

1. Explain about static keyword.
2. Explain types of constructor in C++.
3. Explain about friend function and friend classes.
4. How to create classes and objects in C++ with example.
5. Write about member function object as argument and return type with example.

5 MARKS:

1. Write about destructor with example.
2. Discuss about array of object.
3. Explain about defining member function.
4. Write about dynamic constructor.
5. Write difference between structure and classes.
6. Write difference between constructor and destructor.