

# Aryan College

## C++ & DS

### Unit I:

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1. What is type conversion in c++? [2013]
2. Define encapsulation? [2013]
3. What is an inline substitution? [2013,2016]
4. What is a macro and how it is different from pre-processor? [2013]
5. What is a constructor? what are the rules governing the declaration of a constructor? [2013,2015]
6. Create a class to overload following operators through friend function- [2013]
  - a. <<
  - b. --
  - c. >
  - d. ()
7. Explain the concept of friend function, write a program to access the private data of a class by non-member function through friend, where the friend function is declared in – [2013]
  - a). Location of private category.
  - b). within the scope of class definition.
8. What is arithmetic operators in c++? [2014]
9. What is the use of friend function in c++? [2014, 2015]
10. What is type casting? [2014]
11. Define class structure? [2014]
12. Define the use of scope resolution operator? [2014]
13. What is data abstraction? [2014]
14. What is operator overloading? Write a program in c++ to explain the concept of operator overloading? [2014]
15. Differentiate between constructor and destructor? [2014,2016]
16. Write a c++ program to overload binary operator? [2014]
17. What is object oriented programming? [2015]
18. What is procedural programming? [2015]
19. Define class in OOP? [2015,2017]
20. What do you understand by overloading? [2015]
21. What is the difference between a reserved word and a standard identifier? [2015]
22. Write a program that converts inches to centimeter(when user enters the input in inches the program converts it to centimeter). [2015]
23. What is a recursive constructor? [2015]
24. What are the selection statements available in c++?write a program that accepts user age as an input and print “you are a child” if age <18,print “you are an adult” if 18<age< 65 and prints “you are a senior citizen” if age is more than 65 years. [2015]
25. Discuss the usage of for, while and do-while loop in c++.write a program to compute and print the sum of squares till 1 for the input no.(e.g. if the user inputs 5 the program should calculate  $1^2+2^2+3^2+4^2+5^2=55$  as output). [2015]
26. What is a class ?illustrate the difference between interface and implementation of a class? [2015]
27. Short notes: [2015]
  - a. Objects in c++
  - b. Function overloading
28. What is data hiding? [2016]
29. What is a reference variable? [2016]
30. What do you understand by recursion? [2016]
31. What is a copy constructor? [2016,2017]
32. Explain call by reference and call by address giving suitable example? [2016,2017]
33. Explain visibility labels? [2016]
34. Difference between static and non-static member function? [2016]
35. What is operator overloading? Hat are the advantages of it.name the operators that cannot be overloaded? [2016]
36. Create a class distance with two private members feet and inches ,overload binary operator + to add two objects and – to subtract two objects of distance class? [2016]

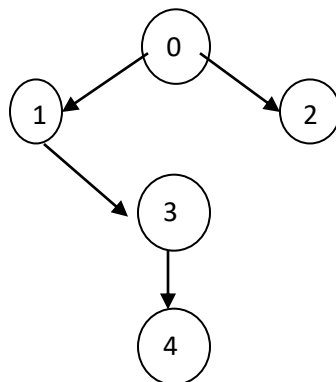
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37. What is a constructor. list the characteristics of the constructor .write a c++ program to show constructor overloading? [2016]
38. What is data type in c++? [2017]
39. Explain the header files in c++? [2017]
40. What is class functions? [2017]
41. What is overloaded increment operator? [2017]
42. What is the work of destructor? [2017]
43. Explain the I/O stream in c++? [2017]
44. A).How are member functions different from other global function? [2017]  
B). How is basic difference between manipulators and IOS member functions in implementation ?give examples.
45. Describe in brief steps involved in OOAnalysis? [2017]
46. Explain the following: [2017]
  - a. Function prototyping.
  - b. Overload resolution.

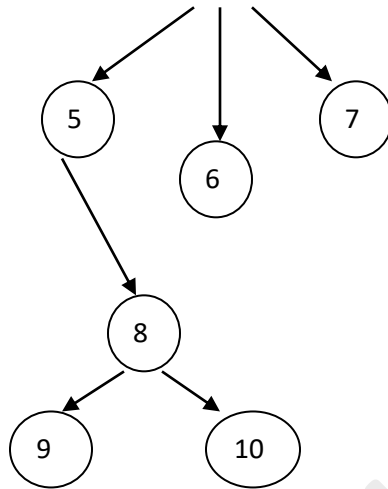
## Unit II:

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1. How is pointer variable different from an ordinary variable? [2013]
2. Define function template? [2013]
3. What is a nested class? how it is defined and declared in c++? [2013]
4. What is an abstract class? What are the advantages of using it in program? [2013,2015,2016]
5. Explain the following with syntactic rules and example- [2013,2016,2017]
  1. public inheritance
  2. protected inheritance
  3. private inheritance
6. what is dynamic initialization of objects and how it can be achieved? Explain with the help of example? [2013]
7. explain the difference between class templates and function templates? [2013]
8. Explain the following file functions with the help of an example- [2013]
  1. read()
  2. write
  3. get
  4. put
9. Explain the difference between virtual base class and virtual function with the help of example? [2013]



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10. What is data binding? [2014]
11. What are private and protected member of class? [2014,2016]
12. What is polymorphism? [2014,2015,2016]
13. Explain access specifiers in c++? [2014]
14. Explain virtual function in detail? [2014,2015]
15. What are abstract classes? What is the advantage of it? [2014]
16. What is the templates in c++ ?explain template class with suitable example? [2014]
17. Write short on: [2014]
  - a).Pointer to class
18. What is inheritance? [2015]
19. How can we provide direct access to private member? [2015]
20. Give advantages of new operator over malloc function? [2016]
21. What is a function overloading? difference between overloading and overriding? Explain with a c++ program? [2016]
22. Explain the following data conversion between objects and basic data type giving an example: [2016]
  - a. Basic data type to class type.
  - b. Class type to basic type. [2016,2017]
  - c. Class type to another class type.
23. Explain run-time and compile time polymorphism. how run-time polymorphism is achieved in c++. write a c++ program to explain the concept. [2016]
24. Differentiate between `Int*q=P;` and `n=*P;` ? [2017]
25. What is function overriding? [2017]
26. Explain the following:- [2017]
  - a. File pointers.
27. Write a template function that swaps the value of 2 arguments passed to it. In main(),use the functions with integers and characters? [2017]
28. Write a global function which uses the above operators and print the number of times it appears(frequency)? [2017]
29. In the following output, the following flag constants are used with stream member function self. What effect does each have? [2017]
  - a. `IOS::fixed`
  - b. `IOS::showprint`
  - c. `IOS::scientific`
  - d. `IOS::right`

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## Unit III:

1. Define a dequeue? [ 2013,2016]
2. List out the basic operations carried out in a linked list? [2013]
3. State the difference between arrays and linked list? [2013,2014]
4. Explain doubly linked list and its following operations with the help of an example- [ 2013,2016]
  - i. Insertion.
  - ii. deletion.
  - iii. updation of desired position.
5. Write the algorithm to convert infix into postfix expressions and explain the conversion with the help of suitable example? [ 2013]
6. What is linked representation of stacks? give an example ?write the algorithm of linked representation of the following stack operations. [2013]
  - i. explain dynamic memory allocation in detail?
  - ii. PUSH
  - iii. POP
7. Explain doubly and circular link list .write an algorithm to insert an element in link list? [2014]
8. a)Apply bubble sort on given series: [2014]
  - i. 4 10 5 1 14 17 22 3 8 11 9b).What is priority based que ? explain.
9. Write short note on: [2014]
  - i. Sparse table
10. Implement a stack class for stacks of int , include a default constructor ,a destructor and usual operations : push(),pop(), isEmpty() and is full() use an array implementation [ 2015,2016,2017]
11. Short note on: [2015]
  - a. Linked lists.
  - b. Algorithm for quick sort
  - c. Algorithm for bubble sort.
  - d. BFS and DFS and the difference between the two approaches.
12. Write a c++ program for quick sort? [2016]

## Unit IV:

1. What d you mean by balanced trees? [2013]
2. Write the prefix form of the expression -A+B-C+D? [2013]
3. What is pre-order traversal? Explain it with the help of example? [2013]
4. What is minimal spanning tree? Explain kruskal algorithm with the help of suitable example?2013
5. What is binary tree? Explain the traversing in binary search tree? [2014]
6. What is sorting? Explain binary sorting in brief? [2014]
7. Explain prim's algorithm with the help of example? [2014]
8. What is heap? Explain heap sort.
9. Short note: [2014]
  - i. BFS
  - ii. postfix, prefix and infix
10. What is binary search tree? [2015]
11. Short Note: [2015]
  - a. Post Order graph.
12. Difference between BFS and DFS. [2015]
13. Write a c++ program to convert a infix string to postfix? [2016]
14. Explain kruskal algorithm? [2016]
15. Explain binary search tree. write its pre-order traversal method? [2017]
16. Describe in brief the steps involved in OoAnalysis? [2017]