

**SHREE ADARSH BCA COLLEGE-BOTAD**  
**BCA SEM-3 QUESTION BANK**

**C++**

1. Differentiate OOP and POP.
2. What is Class and Object? What are Data Members and Member functions? How to access data members and member functions explain with example.
3. Explain **Inline function** and **Friend function** with suitable example.
4. What is **constructor**? Explain various types of constructor with example.
5. What is **Destructor**? Explain Destructor with example.
6. What is **Operator Overloading**? Explain **Unary** Operator Overloading using suitable Example.
7. List types of Operator Overloading. Explain **Binary** Operator Overloading using suitable Example.
8. Explain following **Type Conversion** with Example.
  1. **Basic type to Class type**
  2. **Class type to Basic type**
  3. **One Class type to Another Class type**
9. What is **Inheritance**? Explain **Single, Multiple, Multilevel, and Hierarchical** Inheritances each with diagrams and Suitable Examples.
10. Explain **Virtual Class** with **Diamond problem (Hybrid Inheritance)** with suitable diagram and example.
11. Explain **Public, Private** and **Protected** Access Specifier/Modifier in detail.
12. Explain **Abstract Class** and **Pure Virtual Function** with example.
13. What is **Polymorphism**? Explain **Compile time** polymorphism with example.
14. What is **Polymorphism**? Explain **Runtime** polymorphism with example.
15. List rules of virtual functions and Explain Virtual function with Example.
16. Explain Virtual Destructor and Pure Virtual Destructor with Example.

**DATA STRUCTURE**

1. What is data structure? Explain types of data structure in detail.
2. Explain representation of array in memory.
3. Explain shell sort with example and algorithm.
4. Write down short note on doubly link list.
5. Write a menu driven program to perform all operation on doubly link list. Program terminates only user choose EXIT option.

```
Struct Student
{
    Struct student *prev;
    int roll_no;
    char name[20];
    struct student *next;
};
```

Operations: inserting a node at desired place, deleting a node at desired place, search and update.

6. What is stack? Explain various operations performed on stack with example.
7. Write down short note on polish notations.
8. Write down short note on queue.
9. What is queue? Explain various operations performed on queue with example using array.
10. Explain memory representation of binary tree.
11. What is graph? Explain matrix representation of graph.
12. Explain binary tree traversal techniques with suitable example. (in order, post order and pre order).

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**SYSTEM ANALYSIS & DESIGN**

1. What is System? Explain Characteristics of System.
2. What is System? Explain Types of system in detail
3. Explain Categories of Business Information System.
4. What is System Analyst? Explain its role in detail.
5. What is SDLC? Explain stages of SDLC in detail.
6. What is SSADM? Explain in detail.
7. Explain System Prototype Method.
8. What is Input design? Explain Objective of Input design.
9. Explain Input validation in detail.
10. What is Output Objective? Explain key output question in detail.
11. Explain Interview and Record Inspection in detail
12. Explain Questionnaire and Site Visit in detail.
13. What is DFD? Explain its Notation with detail.
14. What is Decision tree? Explain it with example.
15. What is Decision Table? Explain it with example.
16. Explain HIPO Chart with its example, advantage and disadvantage.

**OPERATING SYSTEM**

1. What is Operating System? Explain Function of OS.
2. List out different types of OS and explain it.
3. What is structure of OS? Explain Monolithic and Layered Architecture in detail
4. Write a short note on evaluation of OS.
5. What is process? Explain process Control Block in detail with example.
6. What is scheduler? Explain different Types of Schedulers.
7. Differentiate between Pre emptive and Non pre emptive algorithms.
8. Write a short note on SJF and RR in OS with advantage and disadvantages.
9. calculate the Average Waiting time and Avg Turn Around Time for the SJF(preemptive and non-preemptive), FIFO and Round Robin, time Slice for RR is 3 Ms.

Process no.	Arrival Time	Burst Time
P1	0	6
P2	2	1
P3	4	4
P4	5	3

10. Explain logical and physical memory mapping in OS with example.
11. Write a short note on Contiguous Memory allocation.
12. What is paging? Explain Page allocation and Hardware support for paging in OS.
13. Explain page Protection and sharing in paging.
14. What is paging? Explain it with Advantages and Disadvantages of Paging.
15. Explain segmentation in detail with example.
16. What is virtual memory? Explain it.
17. What is page Replacement Algorithms? Explain it brief.
18. Calculate total number of page fault for given reference string and frame number.  
Reference String: 1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3  
Frame Number: 3
19. What is deadlock? Explain deadlock prevention condition.
20. What is deadlock avoidance? Explain banker's algorithm in detail.
21. What is thread? Explain types of threads.
22. Write a short note on multithreads.