



Seat No. : \_\_\_\_\_

**DJ-116**

**December-2025**

**5 Year Integrated M.Sc., Sem.-III**

**Data Structures with Object Oriented Programming  
(Computer Science)**

**Time : 2:30 Hours]**

**[Max. Marks : 50**

1. (A) Explain implicit and explicit type conversion with appropriate examples. **5+5**  
(B) Explain function overloading with example.

**OR**

1. Give examples of **10**  
(A) Scope resolution operator  
(B) Reference variable  
(C) Inline function

2. (A) Can we have more than one constructor in a class ? Explain the need of such situation. **5+5**  
(B) Explain static data members with example.

**OR**

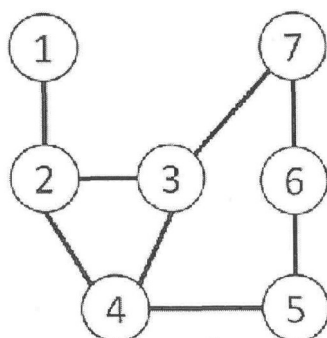
2. Give appropriate examples to demonstrate **5+5**  
(A) Default Arguments  
(B) Virtual class and multiple inheritance

3. (A) Explain function template with an example. **5+5**  
(B) Explain following with suitable example :  
(1) `cout.setf(arg1,arg2);`  
(2) extraction and insertion operator

**OR**

3. Explain following with suitable examples : 5+5
- (A) exception handling in C++
- (B) reading and writing the data from and to binary files

4. (A) For the following graph, give 5+5
- (1) breadth first traversal
- (2) depth first traversal

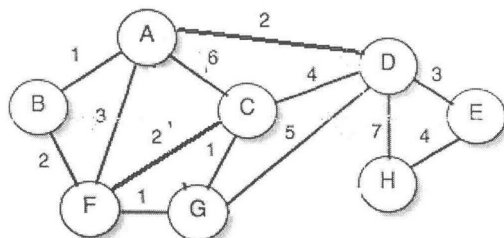


- (B) For the following traversals, construct binary tree :

Preorder : P A S T Q E D X M R C F  
 Inorder : T S Q A E D P M X C R F

**OR**

4. (A) Execute step by step heap sort on the following data to sort in ascending order : 5+5
- 4, 23, 56, 87, 26, 44, 33, 18, 14, 53
- (B) For the following graph find minimum spanning tree using prim's and kruskal's algorithm :



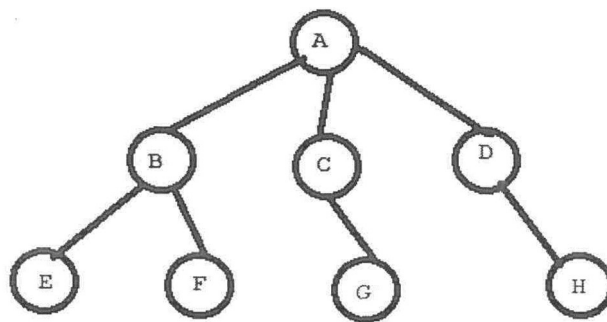
5. Answer any **10** out of **12** :

**10**

- (1) State one major difference between class and structure.
- (2) Data items in a class must always be private. (True/False)
- (3) An abstract class is one that is not used to create objects. (True/False)
- (4) Virtual functions are used to create pointers to base class. (True/False)
- (5) What will the output of the following in C++ :

```
cout.fill('*');  
cout.width(10);  
cout<<5250<<endl;
```

- (6) Convert the following forest in binary tree :



- (7) In C++ one try block can be associated to only one catch statement. (True/False)
  - (8) In C++, function would perform different operations depending on the argument list in the function call. What is this concept called ?
  - (9) Give example of threaded binary tree.
  - (10) Give example of directed weighted graph.
  - (11) Give example of skewed tree.
  - (12) Give example of 4-way tree.
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