Mphasis Coding Programming Model Placement Paper

1. What is the output of the following code snippet?

```
#include<stdio.h>

main()
{
const int a = 5;

a++;
printf("%d", a);
}
```

a. Compiler Error
b. 5
c. Runtime Error
d. 6

2. The following postfix expression with single digit operands is evaluated using a stack:
8 2 3 ^ / 2 3 * + 5 1 * -
Note that ^ is the exponentiation operator. The top two elements of the stack after the first * is evaluated are:

1. 5,7
2. 3,2
3. 1,5
4. 6,1

3. A tree has 5 levels and each node has either 4 children or no children. All nodes on the same level have the same number of children. How many nodes are there in the tree? (Root is Level 1)
a) 341

b) 256

c) 1024

d) None of these

4. 4. In tree construction which of the following is a suitable efficient data structure?

a) Array

b) Linked List

c) Stack

d) Queue

5. Postfix form of ((A + B) * C - (D - E) ^ (F + G)) is

a) AB + C * DE - FG + ^ -

b) AB + C * DE - F - G + ^

c) ABC + * DE - - FG + ^

d) ^ - * +ABC - DE + FG

5. A characteristic of data that binary search uses but linear search ignores is

a) length of the list

b) order of the list

c) the maximum value of the list

d) None of these

6. The time complexity of the linear search algorithm is

a) O(log n)

b) O(n)

c) O(n2)

d) O(1)

7. There is a class which contains two integers as private members. There are two member functions (public) defined on it, one to add the two integers

and another to subtract the two integers. Ravi wants to add a new functionality, which enables multiplication of the two numbers. Which one of the following options he should adopt?

a) He should define a third member function (public) which multiplies the two numbers.

b) He should define member functions (public) to return the value of both the integers and then multiply them in his code. By returning the values, he can in future do any operation on them giving extensibility to the code.

c) He should define a third member function (private) which multiplies the two numbers.

d) He should define member functions (private) to return the value of both the integers and then multiply them in his code. By returning the values, he can in future do any operation on them giving extensibility to the code.

8. class book

{

private:

string title, grade

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```
integer price, tax

public:

function book( ) { title = "Sanskrit"; price = 100; tax = 5;}

function input(string name ) { title = name }

}


function main {

book one, two

input("Maths")

}
```

What will be the value of one.title, one.price and two.title?

a) Maths, cannot be determined, cannot be determined

b) Sanskrit, 100, Sanskrit

c) Maths, 100, Sanskrit

d) Maths, 100, cannot be determined

9. A Priority-Queue is implemented as a Max-Heap. Initially, it has 5 elements. The level-order traversal of the heap is given below: 10, 8, 5, 3, 2 Two new elements "1' and "7' are inserted in the heap in that order. The level-order traversal of the heap after the insertion of the elements is:

1. 10, 8, 7, 1, 2, 3, 5

2. 10, 8, 7, 2, 3, 1, 5

3. 10, 8, 7, 3, 2, 1, 5

4. 10, 8, 7, 5, 3, 2, 1

10. We are given a set of n distinct elements and an unlabeled binary tree with n nodes. In how many ways can we populate the tree with the given set so that it becomes a binary search tree?

1. n!

2. 0

3. (1/(n+1)).2nCn

4. **1**

11. The default executable generation on UNIX for a C program is ____

1. a

2. out.a

3. a.exe

4. A.out

12. What is the output of the following program?

```
#include<stdio.h>

main()
{
union abc {

int x;

char ch;
```

```
}var;
```

```
var.ch = 'A';
```

```
printf("%d", var.x);
```

```
}
```

1. Garbage Value

2. 65

3. A

4. 97

13. What is the output of the following program?

```
#include<stdio.h>
```

```
main()
```

```
{
```

char s1[50], s2[50] = "Hello";

s1 = s2;

printf("%s", s1);

}

1. Runtime Error

2. Hello

3. No Output

4. Compile Error

14. What is the output of the following program?

#include<stdio.h>

main()

{

int x = 1;

```
do

printf("%d ", x);

while(x++<=1);

}
```

1. 1

2. 1 2

3. No Output

4. Compile Error

15. What does the following function do for a given Linked List with first node as head?

```
void fun1(struct node* head)

{

if(head == NULL)

return;
```

```
fun1(head->next);

printf("%d ", head->data);

}
```

1. Prints all nodes of linked list in reverse order

2. Prints alternate nodes of Linked List

3. Prints alternate nodes in the revserse order

4. Prints all nodes of the linkes list

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16. Which is private member functions access scope?

1. Member functions which are accessible in derived class

2. Member functions which can only be used within the class

3. Member functions which cant be accessed inside the class

4. Member functions which can used outside the class.

17. A pseudo-code is used. Assume that when two data-types are processed through an operator, the answer maintains the same data-type as the input data-types.

- Assume that all data-types have enough range to accommodate any number.
- If two different data-types are operated on, the result assumes the more expressive data-type.
- // in the pseudo code refers to comment

What will be the output of the following pseudo-code statements:

integer a = 984, b=10

// float is a data-type to store real numbers.

float c

c = a / b

print c

a) 984

b) 98.4

c) 98

d) Error

17. Sorting is not possible by using which of the following methods?

a) Insertion

b) Selection

c) Exchange

d) Deletion

18. A full binary tree with n non-leaf nodes contains

a) (log n) nodes

b) n + 1 nodes

c) 2n + 1 nodes

d) 2n nodes

19. A complete binary tree with the property that the value at each node is at least as large as the values at its children is known as

a) Binary Search Tree

b) AVL Tree

c) Completely Balanced Tree

d) Heap

20. How to calculate the number of numerical digits in a string?

To calculate the number of digits in a string, the below steps are followed:

Get the string on which count has to be performed

Use the replaceAll function, which replaces all the numerical digits with "".

Get the length of the string without digits.

21. When a syntax error occurs?

A syntax error occurs when the program violates one or more grammatical rules of the programming language. These errors are detected at compile time, i.e., when the translator (compiler or interpreter) attempts to translate the program.

22. What is an algorithm?

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An algorithm is a finite set of steps which, if followed, accomplish a particular task. An algorithm must be clear, finite and effective.

23. Which function among the following can't be accessed outside the class in java in same package?

1. protected show ()

2. public void show ()

3. void show ()

3. static void show ()

24. Which syntax among the following shows that a member is private in a class?

1. private functionName(parameters)

2. functionName(parameters)

3. None of these

4. private(functionName(parameters))

25. In java, which rule must be followed?

1. keyword private preceding each private number

2. keyword private preceding list of private member's

3. keyword private with a colon befre the list of private member's

4. keyword private with arrow before each private member