Choose the correct option.

Q) A function in the base class is redefined in the inherited class. What is the term used to describe this situation?

1. Inheritance
2. Overriding
3. Overloading
4. Encapsulation

Choose the correct answer.

Q) What will the output of the following pseudo code statements ?

(Note: Assume that when two data types are processed through an operator, the answer maintains the same data type as that of the input. Also, all data types have enough range to accommodate any number. If two different data types are operated upon, the result assumes the data type that is more expressive.)

Integer a = 456, b, c, d = 10

b = a/d

c = a – b

print c

1. 410
2. 410.4
3. 411.4
4. 411

Choose the correct option.

Q) What is implied by the argument of a function?

1. The variables passed to the function when it is called
2. The value that the function returns on execution
3. The execution code inside function
4. Return type of the function

Choose the correct option.

Q)What is the minimum number of division checks required to check whether a number is prime or not?

1. (number-1) divisions
2. (number) divisions
3. (integer(number/2)-1 divisions
4. sqrt(number) divisions

Choose the correct option.

Q) Which of the given options implies that there are two loops that are nested?

1. Two loops, one after the other
2. Two loops, one inside the other
3. One loop with two different iteration counts
4. Two loop with the same iteration count

Passage

Class rocket

{

private:

integer height, weight

public: [\\statement](file:///\\Statement) 1

function input a, int b)

{

height = a;

weight = b;

}

}

function main( )

{

Rocket rocket 1, rocket2

}

Choose the correct answer.

Q) Refer to the given pseudocode. The code is similar to that in C++ and is self-explanatory. An accessible member Function and a data member for an object are accessed by the statements objectname. Functionname and objectname. Datamemnername, respectively.

What can be inferred from this code?

1. “rocket” is a class with “rocket1” and “rocket2” as its objects, with “height” and “weight” as its attributes.
2. “rocket” is a class with “rocket1” and “rocket2” as its objects, with “height” and “weight” as its objects.
3. “rocket” is a class with “rocket1” and “rocket2”, “height” and “weight” as its attributes.
4. “rocket” is a class with “rocket1” and “rocket2”, “height” and “weight” as its objects.

Choose the correct option.

Q)A programmer writes a code snippet in which a set of three lines occurs ten times in different parts of the program. What programming concept should be used to shorten the code length?

1. For loops
2. Functions
3. Arrays
4. Classes

Choose the correct option.

Q) In an implementation of a linked list, each node contains data and address. Which can the address field possibly contain?

1. Address of the next node in sequence
2. Its own address
3. Address of the last node
4. Address of the first node

Choose the correct option.

Q) The function given below takes an even integer "n" as the input and calculates the sum of first "n" even natural numbers. The function is called by the statement "sum(30)". How many times will the function "sum" be called to compute the sum?

function sum(n)

{

if (n equals 2)

return 2

else

return(n + sum(n-2))

end

}

1. 1
2. 30
3. 15
4. 16

Choose the correct option.

Q) Piyush wrote a Binary Search program which asked the user for two inputs – The list of numbers and the item to be searched for.

The list entered is (5,7,11,12,19,20,25) and

Number to be searched: 19

How many comparisons will be brought out by the program for searching this item using Binary Search?

1. 2
2. 3
3. 5
4. 7

Choose the correct option.

Q). What is the output of the program given below?

integer i = 0, j

while (i<2)

{

j = 0;

while (j <=3\*i)

{

print j

print blank space

j = j + 3

}

print end-of –line//takes the cursor to the next line

i = i + 1

}

1. 0

03

1. 03

036

1. 0

036

0369

1. 036

0369

036912

Choose the correct option.

Q) For which of the given options is the stack implementation useful?

1. Radix search
2. Breadth first search
3. Recursion
4. None of the above

Choose the correct option.

Q) What can be inherited by a derived class from a base class?

1. Data members
2. Member functions
3. Constructors and destructors
4. Data members and member functions

Choose the correct option.

Q) Which of the given options gives the lower bound on running time for an algorithm?

1. Best Case complexity of the algorithm
2. Average Case complexity of the algorithm
3. Worst Case complexity of the algorithm
4. Number of iterations taking place in the algorithm

Choose the correct option.

Q) Which of the given options is NOT a data type?

1. Integer
2. Character
3. Boolean
4. Array

Choose the correct option.

The following operations are performed on an empty stack “A”:

PUSH(1)

PUSH(2)

POP

PUSH(5)

PUSH(6)

POP

What will the stack contain after these operations?

(Note: The top of the stack is underlined in the options)

1. 5 6
2. 1 5
3. 5 6
4. 1 5

Choose the correct option.

. Q) How many nodes does a full binary tree with “n” non-leaf nodes contain?

1. log n
2. n + 1
3. 2n + 1
4. 2n

Choose the correct option.

Q) A programmer mistakenly writes “gor” instead of the keyword “for” used in loops, while writing a program in C ++. What will this result in ?

1. The code would not compile
2. The code would give an error while execution.
3. The code may work for some inputs and not for the others
4. The code would not create any problem.

Choose the correct option.

Q) Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same address by using the key .What is this search mechanism?

1. Linear search
2. Binary search
3. Hash coded search
4. None of the above

Choose the correct option.

Q) Which abstract data type can be used to represent a many-to-many relation?

1. Tree
2. Stack
3. Graph
4. Queue

Choose the correct option.

Q) Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

1. Run time is always more than the compile time.
2. Compile time is always more then the run time.
3. Compile time is a function of run time.
4. A program needs to be compiled once but can be run several times.

Choose the correct option.

Q) For the given array, find the arrangement of elements after 3rd pass of Selection Sort. Assume that the array is being sorted in ascending order.

List : 33,22,11,77,66,88,55

1. 22,11,33,66,77,55,88
2. 11,22,33,55,66,77,88
3. 11,22,33,55,66,88,77
4. 11,22,33,77,66,88,55

Choose the correct option.

Q). Two programmers, X and Y, are asked to write a code to evaluate the following expression:

a – b + c/(a-b) + (a-b)2

X writes the following code statements (Code A):

Print (a – b) + c/(a-b) + (a-b)\*(a-b)

Y writes the following code statements (Code B):

D = (a-b)

Print d + c/d + d\*d

Which statement is TRUE if the time taken to load a value in a variable for addition, multiplication or division between two operands is the same?

1. Code A uses lesser memory and is slower than Code B.
2. Code A uses lesser memory and is faster than Code B.
3. Code A uses more memory and is faster than Code B.
4. Code A uses more memory and is slower than Code B.

Choose the correct option.

Q). Which sorting algorithm yields approximately the same worst-case and average-case running time behavior in O(n logn)?

1. Bubble sort and Selection sort
2. Heap sort and Merge sort
3. Quick sort and Radix sort
4. Tree sort and Median-of-3 Quick sort

Choose the correct option.

Q). A librarian has to rearrange the library books on a shelf in a proper order at the end of each bay. Which sorting technique should be the librarian’s ideal choice?

1. Bubble sort
2. Insertion sort
3. Selection sort
4. Heap sort

Choose the correct option.

Q) A programmer writes a program to find an element in the array A[5] with the elements: 8 30 40 45 70. The program is run to find a number “X”, that is found in the first iteration of binary search. What is the value of “X”?

1. 40
2. 8
3. 70
4. 30

Choose the correct option.

2 Q) A language has 28 different letters in total. Each word in the language consists of a maximum of 7 letters. A programmer wants to create a data type to store a word of this language. She decides to store the word as an array of letters. How many bits should she assign to the data type to store all kinds of words of the language?

1. 7
2. 35
3. 28
4. 196

Choose the correct option.

3 Q) A programmer writes an efficient program to sum two square diagonal matrices (matrices with elements only on the diagonal positions). The size of each matrix is nXn. What is the time complexity of the algorithm?

1. Ɵ(n2)
2. Ɵ(n)
3. Ɵ(n\*log(n))
4. None of the above

Choose the correct option.

4 Q) Which of the given factors does NOT matter when dealing with a function call?

1. Number of formal parameters and informal parameters
2. Return type of the function
3. Respective data type of formal parameters and informal parameters
4. Operation brought out in the function’s boby

Passage

integer i = 1 // Statement 1

while (i<= 3 )

{

int j // Statement 2

while ( j<= i ) // Statement 3

{

print j

print blank space

j = j + 1 // Statement 4

}

print end-of-line //takes the cursor to the next line

i = i + 1

}

Choose the correct option.

Q) A programmer writes the program given in the ‘Passage’ to print the following pattern on the screen:

1

12

123

Will this program function properly? If not, which statement should be modified?

1. Statement 1
2. Statement 2
3. Statement 3
4. Statement 4
5. This program will function properly

Choose the correct option.

Q) A programmer is making a database of animals in a zoo along with their properties. The possible animals are dog, lion and zebra. Each one has attributes as herbivorous, color and nocturnal. The programmer uses the object- oriented programming paradigm for this. How will the system be conceptualized?

1. Class: Animal; objects: dog, lion and zebra; data members: herbivorous, color and nocturnal
2. Class: Animal; objects: herbivorous, color and nocturnal; data members: dog, lion and zebra
3. Classes: dog, lion and zebra; objects: Animal; data members: herbivorous, color and nocturnal
4. None of the above

Choose the correct option.

Q). Identify the lowest level format to which the computer converts a program in a higher language before execution?

1. English code
2. Machine code
3. Assembly language
4. System language

Choose the correct option.

Q) The function given below takes an even integer "n" as the input and calculates the sum of first "n" even natural numbers. The function is called by the statement "sum(30)". How many times will the function "sum" be called to compute the sum?

function sum(n)

{

if (n equals 2)

return 2

else

return(n + sum(n-2))

end

}

1. 1
2. 30
3. 15
4. 16

Choose the correct option.

Q)Which of the following structures is/are responsible for storing data in case of interrupts?

1). Linked List

2). Stack

3). Queue

1. Only 1
2. Only 2
3. Only 3
4. Both 1 and 2
5. Both 1 and 3

Choose the correct option.

Q) Which of the given options implies that there are two loops that are nested?

1. Two loops, one after the other
2. Two loops, one inside the other
3. One loop with two different iteration counts
4. Two loop with the same iteration count

Choose the correct option.

Q). In an implementation of a linked list, each node contains data and address. What can the address field possibly contain?

1. Address of the next node in sequence
2. Its own address
3. Address of the last node
4. Address of the first node

Choose the correct option

Q) Assume the following precedence (high to low). Operators in the same row have the same precedence.

( )

\* /

+ -

AND

OR

The precedence is from left to right in the expression for the operators with equal precedence.

Which statements is TRUE about the output of the code statements given below?

integer a = 40, b = 35, c = 20, d = 10

print a \*b / c – d

print a \* b / (c – d)

1. The outputs differ by 80.
2. The outputs are the same.
3. The outputs differ by 50.
4. The outputs differ by 160.

Choose the correct option

Q) What can be inherited by a derived class from a base class?

1. Data members
2. Member functions
3. Constructors and destructors
4. Data members and member functions

Choose the correct option

Q) What is the term given to the feature of a programming language that is designed to handle the run time errors of a program?

1. Exception Handling
2. Error handling
3. Debugging
4. Dynamic Error Handling

A programmer wants the program given below to print the largest number out of three numbers entered by the user.

int number!, number 2, number3, temp;

input number!, number2, number3;

if (number1>number2)

temp = number1

else

temp = number2

end if

if (??) // Statement 1

temp = number3

end if

print temp

Choose the correct option.

Q).Which should be used in place of "??" in Statement 1 in the code?

1. number3>number2
2. number3>temp
3. number3<temp
4. none of the above

Passage

function modify (y,z)

{

y = y + 1

z = z + 1

return y - z

}

function calculate( )

{

integer na = 5, b = 10, c

c = modify (a,b);

print a

print space

print c

}

Choose the correct option.

Q) Consider the given code Assume that “a” and ”b” are passed by value. What will be the output of the program be when the function *calculate()* is executed?

1. 11 – 5
2. 10 -5
3. 6 -5
4. 5 -5

Choose the correct option

Q)A sorting mechanism uses the binary tree concept such that any number in the tree is larger than all the numbers in the sub-tree below it. What is this method called?

1. Selection sort
2. Insertion sort
3. Heap sort
4. Quick sort

Choose the correct option

Q) In which areas of a class are date and functions directly accessible outside the class?

1. Public
2. Private
3. Protected
4. None of the above

Choose the correct option

Q) The following operations are performed on an empty stack “A”.

PUSH( 1)

PUSH (2)

POP

PUSH(5)

PUSH(6)

POP

What will the stack contain after these operations?

(Note: The top of the stack is underlined in the options.)

1. 5 6
2. 1 5
3. 5 6
4. 1 5

Choose the correct option.

Q) How may nodes does a full binary tree with “n” non-leaf nodes contain?

1. log n
2. n + 1
3. 2n + 1
4. 2n

Choose the correct option.

Q) Which of the given options describes a tree?

1. An unconnected graph
2. A connected graph
3. A connected acyclic graph
4. A complete graph

Fill in the blank

Q) Merge sort requires O(n)space when implemented using \_\_\_\_\_\_\_\_\_\_\_ .

1. Array
2. Linked List
3. Both Array and Linked List
4. Merge Sort can be implemented using constant space irrespective of the implementing data structure

Choose the correct option.

Q) Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

1. Run time is always more than the compile time.
2. Compile time is always more than the run time.
3. Compile time is a function of run time.
4. A program needs to be compiled once but can be run several times.

Choose the correct option.

Q) A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

1. All numbers in one list are more than 100 while in the other are less than 100.
2. The ordering of numbers with respect to the magnitude in the two lists has different properties.
3. One list has all negative numbers while the other has all positive numbers.
4. One list contains 0 as an element while the other does not.

Choose the correct option.

Q) In which of the given methods is sorting NOT possible?

1. Insertion
2. Selection
3. Exchange
4. Deletion

Choose the correct option.

Q) A stack is implemented as a linear array A[0…N-1]. A programmer writes the function given below to pop out an element from the stack.

function POP( top,N )

{

if (X)

{

top = top -1

}

else

{

Print”Underflow”

}

return top

}

1.Q)Which should substitute the condition “X”?

1. top<N-1
2. top<N
3. top>1
4. top>=0

Choose the correct option.

2.Q) What is implied by the argument of a function?

1. The variables passed to the function when it is called
2. The value that the function returns on execution
3. The execution code inside function
4. Return type of the function

Passage

function main()

{

integer a=5

switch(a)

{

default: print “hello”

case 5: print “how are you?”

break

}

}

Choose the correct option:

A pseudo-code is used which is self explanatory.

3.Q) What will be the output generated when the given code is executed?

1. hello
2. How are you?
3. helloHow are you?
4. This code will generate a compile time error

Choose the correct option.

4.Q) How can a call to an overloaded function be ambiguous?

1. The name of the function might have been misspelled
2. There might be two or more functions with the same name
3. There might be two or more functions with equality appropriate signature
4. None of the above

Choose the correct option.

5..Q) A function in the base class is redefined in the inherited class. What is the term used to describe this situation?

1. Inheritance
2. Overriding
3. Overloading
4. Encapsulation

Choose the correct option.

6.Q)which of the given statements is TRUE about a breadth first search?

1. Beginning from a node,all the adjacent nodes are traversed first
2. Beginning from a node,each adjacent node is fully explored before traversing the next adjacent node
3. Beginning from a node,the nodes are traversed in cycle order
4. none of the above

PASSACE

integer i= 1 //Statement 1

While(i<=3)

{

Int j//Statement 2

While (j<= I ) // Statement 3

{

Print j

Print blank space

J=j+1//Statement 4

}

Print end-of-line//takes the cursor to the next line

I = I + 1

}

Choose the correct option.

A programmer writes the given program to print the fallowing pattern on the screen:

1

1 2

1 2 3

7.Q) Will this program function properly? If not, which statement should be modified?

1. Statement 1
2. statement 2
3. Statement 3
4. Statement 4
5. This program will function properly

Choose the correct option.

8. Q) What will be the most efficient approach to find the largest number in a list of twenty numbers?

1. Use bubble sort to sort the list in a descending order and then print the first number of the series
2. Use selection sort to sort the list in a descending order and then print the first number of the series
3. Implement one iteration of selection sort for descending order and print the first number in the series
4. None of the above

Choose the correct option.

9. Q) A language has 28 different letters in total. Each word in the language consists of a maximum of 7 letters. A programmer wants to create a data type to store a word of this language. She decides to store the word as an array of letters. How many bits should she assign to the data type to store all kinds of words of the language?

1. 7
2. 35
3. 28
4. 196

Choose the correct option.

10. Q) Which of the given properties states that any given key is equally likely to hash any of the slots available in a Hash Table?

1. Uniform Hashing
2. Simple Uniform Hashing
3. Optimal Hashing
4. Minimal Hashing

Choose the correct option.

11. Q). A complete binary tree has a property that the value at each node is at least as large as the values at its children nodes. What is this binary tree known as?

1. Binary search tree
2. AVL tree
3. Completely balanced tree
4. Heap

Choose the correct option.

12. Q) A data type is stored as a 6-dit signed integer. Which of the given options cannot be represented by this data type?

1. -12
2. 0
3. 32
4. 18

13. Q) What is the output of the program given below?

integer i = 0, j

while (i<2 )

{

j = 0;

while (j< 3\*i)

{

print j

print *blank space*

j = j + 3

}

print *end-of-line* // takes the cursor to the next line

i = i + 1

}

1. 0

0 3

1. 0 3

0 3 6

1. 0

0 3 6

0 3 6 9

1. 0 3 6

0 3 6 9

0 3 6 9 12

14. Q) Consider the code given below. How many times will “Hello” be printed if m<n and exactly one of (m,n) is even?

for i= m to n increment 2

{ print “Hello!”}

1. (n – m + 1)/2
2. 1 + (n – m)/2
3. 1 + (n – m )/2 if m is even, (n – m + 1)/2 if m is odd
4. (n – m + 1)/2 if m is even, 1 + (n – m )/2 if m is odd

Choose the correct option.

Two programmers, X and Y are asked to write a code to evaluate the following expression:

a – b + c/(a-b) + (a-b)2

X writes the following code statements (code A):

print (a-b) + c/(a-b) + (a-b)\*(a-b)

Y writes the following code statements (code B):

d = (a-b)

*print d+ c/d + d\*d*

15. Q) Which statement is TRUE if the time taken to load a value in a variable for addition, multiplication or division between two operands is the same?

1. Code A uses lesser memory and is slower than Code B.
2. Code A uses lesser memory and is faster than Code B.
3. Code A uses more memory and is faster than Code B.
4. Code A uses more memory and is slower than Code B.

16. Q) Parthiv has included several classes and their objects in his project, Now he wants to use something that will hold all these objects ( of different classes). Which of the given options provides him with the best alternate?

1. Store them in database
2. Final class
3. Generic Class
4. Anonymous Class

passage

class entity

{

private:

integer a,b

public:

integer c

function entity () {a= 0; b=0}

function compare ( )

{if (a>b) return 1;

return 0

}

}

function main( )

{

entity black

int value , value2 = 5

value = black. compare() // Statement 1

black.c = value02 // Statement2

print black a // Statement 3

}

17.Q) Refer to the given pseudocode. The code is similar to that in C ++ and is self-explanatory. An accessible member function and a data member for an object are accessed by the statements *objectname, functionname and objectname. datamembername,* respectively. Ibentify the statement with an error.

1. Statement 1
2. Statement 2
3. Statement 3
4. None of the above

Choose the correct option.

18. Q) A queue is implemented as a singly linked-list. Each node has an element and a pointer to another node. The *Rear* and the *Front* contain the addresses of the rear and the front nodes, respectively. What can be inferred about the linked list if the condition (*rear isequal front*) is true?

1. It has no elements
2. It has one element
3. There is an error
4. None of the above

Choose the correct option.

19. Q)A sorting mechanism uses the binary tree concept such that any number in the tree is larger than all the numbers in the sub-tree belowit. What is this method called?

1. Selection sort
2. Insertion sort
3. Heap sort
4. Quick sort

Choose the correct option.

.20. Q) What is the maximum number of edges in an undirected graph with “n” vertices?

1. n\*(n-1)/2
2. n\*(n+1)/2
3. n\*n
4. 2\*n

Choose the correct option.

21. Q). Which of the given sorting techniques has its best case performance done in (n log n) steps?

1. Insertion sort
2. Bubble sort
3. Selection sort
4. Merge sort

Choose the correct option.

22. Q)A programmer tries to debug a code of 10,000 lines. It is known that there is a logical error in the first 25 lines of the code. Which is an efficient way to debug the code?

1. Compile the entire code and check it line by line.
2. Use an interpreter on the first 25lines of code.
3. Compile the entire code and run it.
4. None of the above can be used to debug the code.

Choose the correct option.

23. Q) A programmer mistakenly writes “gor” instead of the keyword “for” used in loops, while writing a program in C++. What will this result in ?

1. The code would not compile.
2. The code would give an error while execution.
3. The code may work for some inputs and not for the others.
4. The code would not create any problem.

Choose the correct option.

24. Q) A programmer writes a sorting algorithm that takes different amount of time to sort two different lists of equal size. What is the possible difference between the two lists?

1. All numbers in one list are more than 100 while in the other are less than 100.
2. The ordering of numbers with respect to the magnitude in the two lists has different properties.
3. One list has all negative numbers while the other has all positive numbers.
4. One list contains 0 as an element while the other does not.

Choose the correct option.

25. Q) A sorting algorithm iteratively traverses through a list to exchange the first element with any element less than it. It then repeats with a new first element. What is this sorting algorithm called?

1. Insertion sort
2. Selection sort
3. Heap sort
4. Quick sort

1Q) Which expression gives the maximum number of nodes at level I’ of a binary tree?

(Note: The root is at level 1.)

1. 2I-1
2. 3I-1
3. 2I
4. 2I -1

2 Q) identify the lowest level format to which the computer converts a program in ahigher language before execution?

1. English code
2. Machine code
3. Assembly language
4. System language

3Q) The function given below takes an even integer "n" as the input and calculates the sum of first "n" even natural numbers. The function is called by the statement "sum(30)". How many times will the function "sum" be called to compute the sum?

function sum(n)

{

if (??)

return 1

else

return(n+sum(n-1))

end

}

1. n equals 1
2. n equals 2
3. n>=1
4. n>1

Passage

Class rocket

{

private:

integer height, weight

public: [\\statement](file:///\\Statement) 1

function input a, int b)

{

height = a;

weight = b;

}

}

function main( )

{

Rocket rocket 1, rocket2

}

Choose the correct answer.

4Q) Refer to the given pseudocode. The code is similar to that in C++ and is self-explanatory. An accessible member Funcction and a data member for an object are accessed by the statements objectname. Functionname and objectname. datamemnername, respectively.

What can be inferred from this code?

1. “rocket” is a class with “rocket1” and “rocket2” as its objects, with “height” and “weight” as its attributes.
2. “rocket” is a class with “rocket1” and “rocket2” as its objects, with “height” and “weight” as its objects.
3. “rocket” is a class with “rocket1” and “rocket2”, “height” and “weight” as its attributes.
4. “rocket” is a class with “rocket1” and “rocket2”, “height” and “weight” as its objects.

Choose the correct answer.

Passage

function main()

{

static integer abc = 5

print abc—

if ( abc )

maina() // calling main function

}

Choose the correct answer:

A pseudo-code is used which is self explanatory.

// in pseudo code refers to comment

5Q) What will be the output of the given code?

1. 43210
2. 54321
3. This code will enter an infinite loop
4. This code will generate an error

6Q) How can a call to an overloaded function be ambiguous?

1. The name of the function might have been misspelled
2. There might be two or more functions with the same name
3. There might be two or more functions with equality appropriate signature
4. None of the above

Choose the correct option.

7Q) Which of the following statements is TRUE about a breadth first search?

1. Beginning from a node, all the adjacent nodes are traversed first
2. Beginning from a node,each adjacent node is fully explored before traversing the next adjacent node
3. Beginning from a node, the nodes are traversed in cyclic order
4. None of the above

Choose the correct option.

8Q) What will happen if some indentations are made in some statements of a code written in C++?

1. Faster execution of the code
2. Lower mwmory requirement for the code
3. Correction of errors in the code
4. Better readability of the code.

Choose the correct option.

9Q) Which of the following implies that there are two loops that are nested?

1. Two loops, one after the other
2. Two loops, one inside the other
3. One loop with two different iteration counts
4. Two loop with the same iteration count

**Passage**

Function modify(y,z)

{

Y=y+1;

Z=z+1;

Return y-z

}

Function calculate ()

{

Integer a=5, b=10, c

C= modify (a,b);

Print a

Print space

Print c

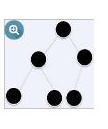
}

Choose the correct option.

10Q) Consider the code given in the ‘passage’. Assume that “a” and “b” are passed by value. What will the output of the program be when the function calculate() is executed?

1. 11 -5
2. 10 -5
3. 6 -5
4. 5 -5

11Q) PASSAGE



Choose the correct option.

For the Binary tree shown in the figure, which of the given options stands true?

1. It is a full tree but not a complete tree
2. It is a full tree as well as a complete tree
3. It is not a full tree but a complete tree
4. It is a neither a full tree nor a complete tree

12.Q) A programmer wants the program given below to print the largest number out of three numbers entered by the user.

int number1, number 2, number 3, temp;

input number 1, number 2, number 3;

if (number1>number2)

temp = number 1

else

temd = number 2

end if

if (??) // Statement 1

temp = number 3

end if

print temp

12Q) Which should be used in place of “??” in Statement 1 in the code?

1. number3> number2
2. number3> temp
3. number3> temp
4. number3> number1

13Q)In an implementation of a linked list, each node contains data and address. Which of the following can the address field possibly contain?

1. Address of the next node in sequence
2. Its own address
3. Address of the last node
4. Address of the first node

14Q)What will be returned if f(a,b) is called in the following functions?

function g(int n)

{

if (n>0) return 1;

else retuen -1;

}

function f(int a, int b)

{

if (a>b) return g(a-b);

if (a<b) return g(-b+a);

retun 0;

}

1. Always +1
2. 1 if a>b, -1 if a<b, 0 otherwise
3. -1 if a>b, -1 if a<b, 0 otherwise
4. 0 if a equals b, -1 otherwise

15Q)What is the term given to the feature of a programming language that is designed to handle the run time errors of a program?

1. Exception Handling
2. Error handling
3. Debugging
4. Dynamic Error Handling

Choose the correct option.

16Q) Which of the given options is NOT a data type?

1. Integer
2. Character
3. Boolean
4. Array

Choose the correct option.

17Q) Whch of the following describes a tree?

1. An unconnected graph
2. A connected graph
3. An connected acyclic graph
4. A complete graph

18Q) What is a function contained within a class called?

1. A member function
2. An operator
3. A class function
4. A method

19Q)Which of the following statements is TRUE about a variable?

1. A variable cannot be used before it is declared
2. A variable cannot be used after it is declared
3. A variable cannot be used in the function it is declared in.
4. A variable can always be used.

20 Q) A programmer mistakenly writes “gor” instead of the keyword “for” used in loops. While writing a program in C++. What will this result in ?

1. The code would not compile.
2. The code would give an error while execution.
3. The code may work for some inputs and not for the others.
4. The code would not create any problem.

21Q) Every element of a data structure has an address and a key associated with it. A search mechanism deals with two or more values assigned to the same addredd by using the key. What is this search mechanism?

1. Linear search
2. Binary search
3. Hash coded search
4. None of the above

22Q) Which of the following statements is not true in the context of anonymous Union data type?

1. It is a Union that does not have any name
2. It is not followed by a declaratory
3. It defines an unnamed object
4. It defines a data type

Choose the correct answer.

23Q) What is the maximum number of edges in an undirected graph with “n” vertices?

1. n\*(n-1)/2
2. n\*(n+1)/2
3. n\*n
4. 2\*n

Choose the correct answer.

24Q) Which sorting algorithms yields approximately the same worst-case and average-case running time behavior in O(n logn)?

1. Bubble sort and Selection sort
2. Heap sort and Merge sort
3. Qulck sort and Radix sort
4. Tree sort and Median-of-3 Quick sort

25Q) In which of the following methods is sorting NOT possible?

1. Insertion
2. Selection
3. Exchange
4. Deletion

Choose the correct option

Q) For which of the following is the stack implementation useful?

1. Radix search
2. Breadth first search
3. Recursion
4. None of the above

Choose the correct option

Q)Which expression give the maximum number of nodes at level “1” of abinary tree?

[Note:The root is at level 1]

1. 2 i-1
2. 3 i-1
3. 2I
4. 2I-1

Choose the correct option

Q)Ashmia wants to print a patren which includes checking and changing varaiables value iteratively.she decides to use a lopp/condition.which of the following options should she use such that the body of the loop/condiotion is executed atleast once whether the varaiables satisfies the entering condition or not?

1. For loop
2. While lopp
3. Do while loop
4. Switch case

Passage

class brush

{

private:

integer size, c

rcode

function getdata( ) { …. }// Statement 1

public:

integer name // Statement 2

function putdata( ) { …. }

}

function main

{

brush b1, b2

print b1.name //Statement 3

b2.getdata( ) //Statement 4

}

Choose the correct option

Q) Refer to the pseudocode given in the ‘Passage’. The code is similar to that in C++ and is self-explanatory. An accessible member Funcction and a data member for an object are accessed by the statements objectname. Functionname and objectname. Datamemnername, respectively. Which statement should be deleted from the code to rectify the error in it?

1. Statement 1
2. Statement 2
3. Statement 3
4. Statement 4

Choose the correct option.

The function given below takes an even integer "n" as the input and calculates the sum of first "n" even natural numbers. The function is called by the statement "sum(30)". How many times will the function "sum" be called to compute the sum?

function sum(n)

{

if (n equals 2)

return 2

else

return(n + sum(n-2))

end

}

1. 1
2. 30
3. 15
4. 16

Choose the correct option

.Q) Which of the following statements is TRUE about a breadth first search?

1. Beginning from a node, all the adjacent nodes are traversed first
2. Beginning from a node,each adjacent node is fully explored before traversing the next adjacent node
3. Beginning from a node, the nodes are traversed in cyclic order
4. None of the above

Passage

integer i = 1 // Statement 1

while (i<= 3 )

{

int j // Statement 2

while ( j<= i ) // Statement 3

{

print j

print blank space

j = j + 1 // Statement 4

}

print end-of-line //takes the cursor to the next line

i = i + 1

}

Choose the correct option

Q) A programmer writes the program given in the ‘Passage’ to print the following pattern on the screen:

1

12

123

Q) Will this program function properly? If not, which statement should be modified?

1. Statement 1
2. Statement 2
3. Statement 3
4. Statement 4
5. This program will function properly

**Passage**

Function preordertraverse(node)

{

Print node🡪value

If (Condition X)

{preordertraverse(node 🡪left)}

If (condition Y)

{preordertraverse(node🡪right)}

return

}

Choose the correct option.

Q)Consider a binary tree implementation. The root address is stored in the variable *root*. The address of a node is given in the variable *node*. The value of the node and its right and left child nodes can be accessed using the given statements .

*node🡪 value*

*node🡪 right*

*node🡪 left*

Q)A programmer writes the givenfunction to do a preorder traversal of the tree.

What are Condition X and Condition Y?

1. Condition X: node🡪left isnotequal

Condition Y: node🡪right isnotequal

1. Condition X:node🡪right isnotequal

Condition Y: node 🡪 left isnoteqaul

1. Condition X: node🡪left iseqaual

Condition Y: node🡪right iseqaual

1. Condition X:node🡪right iseqaual

Choose the correct option

Q) What is implied by the argument of a function?

1. The variables passed to the function when it is called
2. The value that the function returns on execution
3. The execution code inside function
4. Return type of the function

Choose the correct option

Q)A programmer writes a code snippet in which a set of three lines occurs ten times in different parts of the program.what programming concepts should be used to shorten the code length?

1. For loops
2. Functions
3. Arrays
4. Classes

Choose the correct option

Q)How many nodes does a full binary tree with “n” leaves contain?

1. 2n-+1 nodes
2. log 2n nodes
3. 2 n-1 nodes
4. 2n nodes

Class rocket

{

private:

integer height, weight

public: [\\statement](file:///\\Statement) 1

function input a, int b)

{

height = a;

weight = b;

}

}

function main( )

{

Rocket rocket 1, rocket2

}

Choose the correct option

Q) Refer to the pseudocode given in the ‘Passage’. The code is similar to that in C++ and is self-explanatory. An accessible member Funcction and a data member for an object are accessed by the statements objectname. Functionname and objectname. datamemnername, respectively.

What can be inferred from this code?

1. “rocket” is a class with “rocket1” and “rocket2” as its objects, with “height” and “weight” as its attributes.
2. “rocket” is a class with “rocket1” and “rocket2” as its objects, with “height” and “weight” as its objects.
3. “rocket” is a class with “rocket1” and “rocket2”, “height” and “weight” as its attributes.
4. “rocket” is a class with “rocket1” and “rocket2”, “height” and “weight” as its objects.

Choose the correct option

Q)Yukta created an interface to use it in different parts of the program by implementing it.

But she forgot to specify the acess specifer for each contained method.what will be the acess specifier of the methods that will be inherited/implemented?

1. Public
2. Private
3. Protected
4. An error wil be generated

Choose the correct option

Q)In which of the given situations can a constructor be invoked?

1. When an object is created
2. When an object is assigned the value 0
3. Only at the end of the code
4. When the scope of the object is over

Choose the correct option

Q)A sorting mechanism uses the binary tree concept such that any number in the tree is larger than all the numbers in the sub-tree below it. What is this method called?

1. Selection sort
2. Insertion sort
3. Heap sort
4. Qulck sort

Choose the correct option

Q) Which of the following is NOT a data type?

1. Integer
2. Character
3. Boolean
4. Array

Choose the correct option

Q)A data type is stored as a 6-bit signed integer. Which of the given options cannot be represented by this data type?

1. -12
2. 0
3. 32
4. 18

Choose the correct option

Q) Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

1. Run time is always more than the compile time.
2. Compile time is always more than the run time.
3. Compile time is a function of run time.
4. A program needs to be compiled once but can be run several times

Choose the correct option

Q) Which of the given sorting techniques has its best case performance done in (n log n) steps?

1. Insertion sort
2. Bubble sort
3. Selection sort
4. Merge sort

X and Y are asked to write a program to sum the rows of a 2X2 matrix stored in an array A.

X writes the code (Code A) as follows:

For n = 0 to 1

sumRow1 [n] = A[n][1] + A[n][2]

end

Y writes the code (Code b) as follows:

Sum Row1[0] =A[0][1] + A[0][2]

Sum Row1[1] = A[1][1] + A[1][2]

Choose the correct option

Q)Which of the following statements is correct about these codes if no loop unrolling is done by the compiler?

1. Code A would execute faster than Code B.
2. Code B would execute faster than Code A.
3. Code A is logically incorrect.
4. Code B is logically incorrect.

Choose the correct option

Q) Which of the following sorting algorithms yields approximately the same worst-case and average-case running time behavior in O(n logn)?

1. Bubble sort and Selection sort
2. Heap sort and Merge sort
3. Qulck sort and Radix sort
4. Tree sort and Median-of-3 Quick sort

Choose the correct option

Two programmers independently write a program to find the mass of one mole of water. that includes the masses of hydrogen and oxygen.

The first programmer defines the variables as:

integer hydrogen, oxygen, water // Code A

The second programmer defines three quantities as:

integer a, b, c // Code B

Choose the correct option

Q) Which of the two is a better programming practice and why?

1. Code B is better because variable names are shorter.
2. Code A is better because the variable names are understandable and non-confusing.
3. Code A would run correctly while Code B would give an error.
4. Code B would run correctly while Code A would give an error.

Choose the correct option.

Q) A programmer writes a sorting algorithm that takes different of time to sort two different lists of equal size. What is the possible difference between the two lists?

1. All numbers in one list are more than 100 while in the other are less than 100.
2. The ordering of numbers with respect to the magnitude in the two lists has different properties.
3. One list has all negative numbers while the other has all positive numbers.
4. One list contains 0 as an element while the other does not.

Choose the correct option.

Q) A programmer is making a database of animals in a zoo along with their properties. The possible animals are dog, lion and zebra. Each one has attributes as herbivorous, color and nocturnal. The programmer uses the object- oriented programming paradigm for this. How will the system be conceptualized?

1. Class: Animal; objects: dog lion and zebra; data members: herbivorous, color and nocturnal
2. Class: Animal; objects: herbivorous, color and nocturnal; data members: dog, lion and zebra
3. Classes: dog,lion and zebra; objects: Animal;data members: herbivorous,color and nocturnal
4. None of the above

Choose the correct option.

Q) For which of the given options is the stack implementation useful?

1. Radix search
2. Breadth first search
3. Recursion
4. None of the above

Choose the correct option.

Q) How does inheritance relate to abstraction?

1. A base class is an abstraction of all its derived classes.
2. A derived class is an abstraction of all its base classes.
3. Base and derived classes are abstractions of each other.
4. Inheritance prevents abstraction.

Choose the correct option.

Q) What is the term given to the variable whose scope is beyond all the scopes i.e., it can be accessed by all the scopes?

1. Universal Variable
2. Global Variable
3. External Variable
4. Auto Variable
5. Both 2 and 3

Choose the correct option.

Q) The function given below takes an even integer "n" as the input and calculates the sum of first "n" even natural numbers. The function is called by the statement "sum(30)". How many times will the function "sum" be called to compute the sum?

function sum(n)

{

if (n equals 2)

return 2

else

return (n + sum(n-2))

end

}

1. 1
2. 30
3. 15
4. 16

Choose the correct option.

Q) Which of the given options describes a tree?

1. An unconnected graph
2. A connected graph
3. A connected acyclic graph
4. A complete graph

Choose the correct option.

Q) The function given below takes a number “n” as the input and calculates the sum of first “n” natural numbers. Which statements should be inserted in place of “??” to get the required output?

function sum(n)

{

if (??)

return 1

else

return (n + sum(n-1))

end

}

1. n equals 1
2. n equals 2
3. n>= 1
4. n>1

Choose the correct option.

Q)A programmer writes a code snippet in which a set of three lines occurs ten times in different parts of the program. What programming concept should be used to shorten the code length?

1. For loops
2. Functions
3. Arrays
4. Classes

Choose the correct option.

Q)What will be returned if f(a,b) is called in the following functions?

function g(int n)

{

if (n>0) return 1;

else retuen -1;

}

function f(int a, int b)

{

if (a>b) return g(a-b);

if (a<b) return g(-b+a);

retun 0;

}

1. Always +1
2. 1 if a>b, -1 if a<b, 0 otherwise
3. -1 if a>b, -1 if a<b, 0 otherwise
4. 0 if a equals b, -1 otherwise

Choose the correct option.

Q).What is the minimum number of stacks of size “n” required to implement a queue of size “n”?

1. 1
2. 2
3. 3
4. 4

Choose the correct answer.

9. Q) Which of the following structures is/ are responsible for storing data in case of interrupts?

1. Linked List

2. Stack

3. Queue

1. Only 1
2. Only 2
3. Only 3
4. Both 1 and 2
5. Both 1 and 3

**Passage**

Function modify(y,z)

{

Y=y+1;

Z=z+1;

Return y-z

}

Function calculate ()

{

Integer a=5, b=10, c

C= modify (a,b);

Print a

Print space

Print c

}

Choose the correct option.

Q) Consider the givencode. Assume that “a” and “b” are passed by value. What will the output of the program be when the function calculate() is executed?

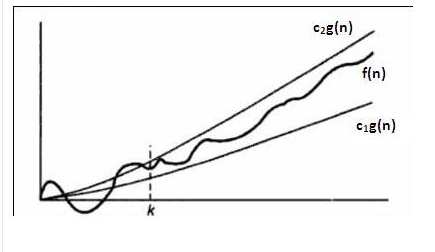
1. 11 -5
2. 10 -5
3. 6 -5
4. 5 -5

Choose the correct option.

Q) A data type is stored as a 6-bit signed integer. Which of the given options cannot be represented by this data type?

1. -12
2. 0
3. 32
4. 18

PASSAGE



Choose the correct option

Q) What can you say about f(n) and g(n) from the curve shown in the figure?

1. f(n)=Θ (g(n))
2. f(n)=θ(g(n))
3. f(n)=o(n)
4. f(n)=O(n)

Choose the correct option

Q).A complete binary tree has a property that the value at each node is at least as large as the values at its children nodes. What is this binary tree known as?

1. Binary search tree
2. AVL tree
3. Completely balanced tree
4. Heap

Choose the correct option

Q) What is the average time required to perform a successful sequential search for an element in an array A (1 : n)?

1. (n+1)/2
2. log2n
3. n(n+1)/2
4. n2

Choose the correct option

Q) How are protected members of a base class accessed in the derived class when inherited privately in C++?

1. Privately
2. Publicly
3. Protectedly
4. Not inherited

Choose the correct option

A[0…19] is an array of maximum size 20. The number of elements it contains is stored in the variable number Elements. Currently, it contains 11 elements. A programmer wants to insert an element *val* after the mth element in the array and writes the following code for it:

For X

A[n + 1] = A[n]

End

A[m] = val

Which statement should be used in place of X in order to achieve the required result?

1. n = (m + 1) to (numberElements-1) increment 1
2. n = m to numberElements increment 1
3. n = m to (numberElements-1) increment 1
4. n = (m + 1) to (numberElements) increment 1

Choose the correct option

Q)A programmer tries to debug a code of 10,000 lines. It is known that there is a logical error in the first 25 lines of the code. Which is an efficient way to debug the code?

1. Compile the entire code and check it line by line.
2. Use an interpreter on the first 25lines of code.
3. Compile the entire code and run it.
4. None of the above can be used to debug the code.

Choose the correct option

Q) A programmer writes an efficient program to add two upper triangular 10X10 matrices with the elements on the diagonals retained. How many total additions will the program make?

1. 100
2. 55
3. 25
4. 10

Choose the correct option

Q).Hema has a certain list of data elements. She wants to use a technique from the given list of sorting techniques with its worst case complexity less than O(n\*n)

1)Quick sort

2)merge sort

3)Heap sort

Which of the above mentioned techniques can she use to bring out the same?

1. Only 1
2. Only 2
3. Only 3
4. Both2 and 3
5. Both 1 and 3

Choose the correct option

Q).Codes A and B have complexities Θ(n3) and o(n3),respectively A, sufficiently large problem with size “k” needs to be solved. Which of the two codes should be used?

1. Code A
2. Code B
3. Any of the two codes can be used since both have the same execution time
4. None of the above

Choose the correct option

Q) A sorting algorithm iteratively traverses through a list to exchange the first element with any element less than it. It then repeats with a new first elements. What is this sorting algorithm called?

1. Insertion sort
2. Selection sort
3. Heap sort
4. Quick sort

Choose the correct option

Q).which of the given sorting methods is stable?

1. Straight insertion sort
2. Binary insertion sort
3. Shell sort
4. Heap sort

.Q) A function in the base class is redefined in the inherited class. What is the term used to describe this situation?

1. Inheritance
2. Overriding
3. Overloading
4. Encapsulation

Choose the correct option.

Q).The function given below takes a number “n” as the input and calculates the sum of first “n” natural numbers.which statement should be inserted in place of “??” to get the required output?

Function sum(n)

{

if(??)

Return 1

else

Return (n+sum(n-1))

End

}

1. n equals 1
2. B.n equals 2
3. C.n>=1
4. D.n>1

Q).How can a call to an overloaded function be ambiguous?

1. The name of the function might have be misspelled
2. There might be two or more functions with same name
3. There might be two or more functions with equally appropriate signatures
4. None of the above

Passage:  
function MyBinarySearch(array arr, integer low, integer high, integer item)  
{  
if ( low > high )  
{  
return -1  
}  
integer mid = (low + high)/2  
if ( arr[mid] equals item )  
{  
return mid  
}  
else if ( arr[mid] > item )  
{  
return //missing statement 1  
}  
else  
{  
return //missing statement 2  
}  
}  
Choose the correct option:

A pseudo-code is used which is self explanatory. // in pseudo code refers to comment

Q) Harshul uses the given code to implement Binary Searchrecursively. Find the statement that will replace missingstatement 1 in the given code such that it works efficiently  
A). MyBinarySearch(arr, low+1, mid-1, item)

B). MyBinarySearch(arr, mid+1, high-1, item).

C). MyBinarySearch(arr, mid+1, high, item)  
D). MyBinarySearch(arr, low, mid-1, item)  
Choose the correct option.

Q) What is implied by the argument of a function?

A. The variables passed to the function when it is called  
B. The value that the function returns on execution  
C. The execution code inside the function  
D. Return type of the function

Choose the correct option.

Q)In which of the given situations can a constructor be invoked?

1. When an object is created
2. When an object is assigned the value 0
3. Only at the end of the code
4. When the scope of the object is over

Choose the correct option.

Q) Which of the given options implies that there are two loops that are nested?

1. Two loops, one after the other
2. Two loops, one inside the other
3. One loop with two different iteration counts
4. Two loop with the same iteration count

Choose the correct option.

Q) In an implementation of a linked list, each node contains data and address, What can the address field possibly contain?

1. Address of the next node in sequence
2. It’s own address
3. Address of the last node
4. Address of the first node

Choose the correct option.

Q)A programmer prepares a questionnaire with “true or false “ type of questions. He wants to define a data-type that stores the response of the candidate for the question. What is the most-suited data type for this purpose?

1. Integer
2. Boolean
3. Float
4. Character

Choose the correct option.

Q) Parthiv has included several classes and their objects in his project, Now he wants to use something that will hold all these objects ( of different classes) Which of the given options provides him with the best alternate?

1. Store them in database
2. Final class
3. Generic Class
4. Anonymous Class

Choose the correct answer.

Q) Which of the given options describes a tree?

1. An unconnected graph
2. An connected graph
3. An connected acyclic graph
4. An complete graph

Q) A programmer mistakenly writes “gor” instead of the keyword “for” used in loops. While writing a program in C++. What will this result in ?

1. The code would not compile.
2. The code would give an error while execution.
3. The code may work for some inputs and not for the others.
4. The code would not create any problem.

Choose the correct option.

Q) Which of the following statements is TRUE about a breadth first search?

1. Beginning from a node, all the adjacent nodes are traversed first
2. Beginning from a node,each adjacent node is fully explored before traversing the next adjacent node
3. Beginning from a node, the nodes are traversed in cyclic order
4. None of the above

Choose the correct option.

Q) Why is an algorithm designer concerned primarily about the run time and not the compile time while calculating time complexity of an algorithm?

1. Run time is always more than compile time.
2. Compile time is always more than the run time.
3. Compile time is a function of run time.
4. A program needs to be compiled once but can be run several times.

Choose the correct option.

Q)A programmer tries to debug a code of 10,000 lines. It is known that there is a logical error in the first 25 lines of the code. Which of the following is an efficient way to debug the code?

1. Compile the entire code and check it line by line.
2. Use an interpreter on the irst 25lines of code.
3. Comple the entire code and run it.
4. None of the above can be used to debug the code.