Ques 1 : Choose the correct answer

**There is a new data-type which can take as values natural numbers between (and**

**including) 0 and 25. How many minimum bits are required to store this data-type.**

Option 1 : 4 Option 2 : 5 Option 3 : 1 Option 4 : 3

Ques 2 : Choose the correct answer

**A data type is stored as an 6 bit signed integer. Which of the following cannot be**

**represented by this data type?**

Option 1 : -12 Option 2 : 0 Option 3 : 32 Option 4 : 18

Ques 3 : Choose the correct answer

**A language has 28 different letters in total. Each word in the language is composed of**

**maximum 7 letters. You want to create a data-type to store a word of this language. You**

**decide to store the word as an array of letters. How many bits will you assign to the**

**data-type to be able to store all kinds of words of the language.**

Option 1 : 7 Option 2 : 35 Option 3 : 28 Option 4 : 196

Ques 4 : Choose the correct answer

**A 10-bit unsigned integer has the following range:**

Option 1 : 0 to 1000

Option 2 : 0 to 1024

Option 3 : 1 to 1025

Option 4 : 0 to 1023

Ques 5 : Choose the correct answer

**Rajni wants to create a data-type for the number of books in her book case. Her shelf**

**can accommodate a maximum of 75 books. She allocates 7 bits to the data-type. Later**

**another shelf is added to her book-case. She realizes that she can still use the same datatype**

**for storing the number of books in her book-case. What is the maximum possible**

**capacity of her new added shelf?**

Option 1 : 52 Option 2 : 127 Option 3 : 53 Option 4 : 75

Ques 6 : Choose the correct answer

**A new language has 15 possible letters, 8 different kinds of punctuation marks and a**

**blank character. Rahul wants to create two data types, first one which could store the**

**letters of the language and a second one which could store any character in the**

**language. The number of bits required to store these two data-types will respectively be:**

Option 1 : 3 and 4 Option 2 : 4 and 3 Option 3 : 4 and 5 Option 4 : 3 and 5

Ques 7 : Choose the correct answer

**Parul takes as input two numbers: a and b. a and b can take integer values between 0**

**and 255. She stores a, b and c as 1-byte data type. She writes the following code**

**statement to process a and b and put the result in c.**

**c = a + 2\*b**

**To her surprise her program gives the right output with some input values of a and b,**

**while gives an erroneous answer for others. For which of the following inputs will it give**

**a wrong answer?**

Option 1 :

a = 10

b =200

Option 2 :

a = 200

b= 10

Option 3 :

a = 50

b= 100

Option 4 :

a = 100

b = 50

Ques 8 : Choose the correct answer

**Prashant takes as input 2 integer numbers, a and b, whose value can be between 0 and**

**127. He stores them as 7 bit numbers. He writes the following code to process these**

**numbers to produce a third number c.**

**c = a - b**

**In how many minimum bits should Prashant store c?**

Option 1 : 6 bits Option 2 : 7 bits Option 3 : 8 bits Option 4 : 9 bits

Ques 9 : Choose the correct answer

**Ankita takes as input 2 integer numbers, a and b, whose value can be between 0 and 31.**

**He stores them as 5 bit numbers. He writes the following code to process these numbers**

**to produce a third number c.**

**c = 2\*(a - b)**

**In how many minimum bits should Ankita store c?**

Option 1 : 6 bits Option 2 : 7 bits Option 3 : 8 bits Option 4 : 9 bits

Ques 10 : Choose the correct answer

**A character in new programming language is stored in 2 bytes. A string is represented**

**as an array of characters. A word is stored as a string. Each byte in the memory has an**

**address. The word "Mahatma Gandhi" is stored in the memory with starting address**

**456. The letter 'd' will be at which memory address?**

Option 1 : 468 Option 2 : 480 Option 3 : 478 Option 4 : 467

Ques 11 : Choose the correct answer

**Stuti is making a questionnaire of True-false questions. She wants to define a data-type**

**which stores the response of the candidate for the question. What is the most-suited**

**data type for this purpose?**

Option 1 : integer Option 2 : boolean Option 3 : float Option 4 :character

Ques 12 : Choose the correct answer:

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.

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

**integer a = 456, b, c, d =10**

**b = a/d**

**c = a - b**

**print c**

Option 1 : 410 Option 2 : 410.4 Option 3 : 411.4 Option 4 : 411

Ques 13 : Choose the correct answer:

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 pseudo code refers to comment

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

**integer a = 984, b, c, d =10**

**print remainder(a,d) // remainder when a is divided by d**

**a = a/d**

**print remainder(a,d) // remainder when a is divided by d**

Option 1 : 48 Option 2 : Error Option 3 : 84 Option 4 : 44

Ques 14 : Choose the correct answer:

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

precedence:

(.)

\* /

+ -

AND

OR

For operators with equal precedence, the precedence is from left-to-right in expression.

**What will be the output of the following code statements?**

**integer a = 50, b = 25, c = 0**

**print ( a > 45 OR b > 50 AND c > 10 )**

Option 1 : 1 Option 2 : 0 Option 3 : -1 Option 4 : 10

Ques 15 : Choose the correct answer:

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

precedence:

(.)

\* /

+ -

AND

OR

For operators with equal precedence, the precedence is from left-to-right in expression.

**What will be the output of the following code statements?**

**integer a = 50, b = 25, c = 5**

**print a \* b / c + c**

Option 1 : 120 Option 2 : 125 Option 3 : 255 Option 4 : 250

Ques 16 : Choose the correct answer:

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

precedence:

(.)

\* /

+ -

AND

OR

For operators with equal precedence, the precedence is from left-to-right in expression.

**What will be the output of the following code statements?**

**integer a = 10, b = 35, c = 5**

**print a \* b / c - c**

Option 1 : 65 Option 2 : 60 Option 3 : Error Option 4 : 70

Ques 17 : Choose the correct answer:

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

precedence:

(.)

\* /

+ -

AND

OR

For operators with equal precedence, the precedence is from left-to-right in expression.

**integer a = 10, b = 35, c = 5**

**Comment about the output of the two statements?**

**print a \* b + c / d**

**print c / d + a \* b**

Option 1 : Differ due to left-to-right precedence

Option 2 : Differ by 10

Option 3 : Differ by 20

Option 4 : Same

Ques 18 : Choose the correct answer:

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

precedence:

(.)

\* /

+ -

AND

OR

For operators with equal precedence, the precedence is from left-to-right in expression.

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

**Comment about the output of the following two statements:**

**print a \* b / c – d**

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

Option 1 : Differ by 80

Option 2 : Same

Option 3 : Differ by 50

Option 4 : Differ by 160

Ques 19 : Choose the correct answer:

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

precedence:

(.)

\* /

+ -

AND

OR

For operators with equal precedence, the precedence is from left-to-right in expression.

**integer a = 60, b = 35, c = -30**

**What will be the output of the following two statements:**

**print ( a > 45 OR b > 50 AND c > 10 )**

**print ( ( a > 45 OR b > 50 ) AND c > 10 )**

Option 1 : 0 and 1 Option 2 : 0 and 0 Option 3 : 1 and 1 Option 4 : 1 and 0

Ques 20 : Choose the correct answer:

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 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**

Option 1 : 984 Option 2 : 98.4 Option 3 : 98 Option 4 : Error

Ques 21 : Choose the correct answer:

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 pseudo code refers to comment

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

**integer a = 984**

**//float is a data-type to store rational numbers.**

**float b= 10, c**

**c = a / b**

**print c**

Option 1 : 984 Option 2 : Error Option 3 : 98.4 Option 4 : 98

Ques 22 : Choose the correct answer

**Smriti wants to make a program to print the sum of square of the first 5 whole numbers**

**(0...4). She writes the following program:**

**integer i = 0 // statement 1**

**integer sum = 0 // statement 2**

**while ( i < 5 ) // statement 3**

**{**

**sum = i\*i // statement 4**

**i = i + 1 // statement 5**

**}**

**print sum // statement 6**

**Is her program correct? If not, which statement will you modify to correct it?**

Option 1 : No error, the program is correct.

Option 2 : Statement 1

Option 3 : Statement 4

Option 4 : statement 6

Ques 23 : Choose the correct answer

**Shashi wants to make a program to print the sum of the first 10 multiples of 5. She**

**writes the following program, where statement 5 is missing:**

**integer i = 0**

**integer sum = 0**

**while ( i <= 50 )**

**{**

**sum = sum + i**

**-- MISSING STATEMENT 5 --**

**}**

**print sum**

**Which of the following will you use for statement 5?**

Option 1 : i = 5 Option 2 : i = 5 \* i Option 3 : i = i + 1 Option 4 : i = i + 5

Ques 24 : Choose the correct answer

**Shantanu wants to make a program to print the sum of the first 7 multiples of 6. He**

**writes the following program:**

**integer i = 0 // statement 1**

**integer sum // statement 2**

**while ( i <= 42 ) // statement 3**

**{**

**sum = sum + i // statement 4**

**i = i + 6;**

**}**

**print sum // statement 6**

**Does this program have an error? If yes, which one statement will you modify to correct**

**the program?**

Option 1 : Statement 1

Option 2 : Statement 2

Option 3 : Statement 3

Option 4 : Statement 4

Ques 25 : Choose the correct answer

**Sharmili wants to make a program to print the sum of all perfect cubes, where the value**

**of the cubes go from 0 to 100. She writes the following program:**

**integer i = 0, a // statement 1**

**integer sum = 0;**

**a = ( i \* i \* i )**

**while ( i < 100 ) // statement 2**

**{**

**sum = sum + a // statement 3**

**i = i + 1**

**a = ( i \* i \* i ) // statement 4**

**}**

**print sum**

**Does this program have an error? If yes, which one statement will you modify to correct**

**the program?**

Option 1 : Statement 1

Option 2 : Statement 2

Option 3 : Statement 3

Option 4 : Statement 4

Option 5 : No error

Ques 26 : Choose the correct answer

**Bhavya wants to make a program to print the sum of all perfect squares, where the**

**value of the squares go from 0 to 50. She writes the following program:**

**integer i = 1, a // statement 1**

**integer sum = 0**

**while ( a < 50 ) // statement 2**

**{**

**sum = sum + a // statement 3**

**i = i + 1**

**a = ( i \* i ); // statement 4**

**}**

**print sum**

**Does this program have an error? If yes, which one statement will you modify to correct**

**the program?**

Option 1 : Statement 1

Option 2 : Statement 2

Option 3 : Statement 3

Option 4 : Statement 4

Option 5 : No error

Ques 27 : Choose the correct answer

**Vijay wants to print the following pattern on the screen:**

**2**

**2 4**

**2 4 6**

**2 4 6 8**

**He writes the following program:**

**integer i = 1, j=2 // statement 1**

**while ( i <= 4 ) // statement 2**

**{**

**j = 2;**

**while ( j <= ? ) // Statement 3**

**{**

**print j**

**print *blank space***

**j = j + 2**

**}**

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

**i = i + 1**

**}**

**What is the value of ? in statement 3 ::**

Option 1 : 8 Option 2 : i Option 3 : 2\*i Option 4 : 4

Ques 28 : Choose the correct answer

**Shravanti writes the following program:**

**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**

**}**

**What will be the output of the program?**

Option 1 : 0

0 3

Option 2 : 0 3

0 3 6

Option 3 : 0

0 3 6

0 3 6 9

Option 4 : 0 3 6

0 3 6 9

0 3 6 9 12

Ques 29 : Choose the correct answer

**Vijay wants to print the following pattern on the screen:**

**1**

**1 2**

**1 2 3**

**He writes the following program:**

**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**

**}**

**Will this program function correctly? If not which one statement will you modify to**

**make the program function correctly?**

Option 1 : Statement 1

Option 2 : Statement 2

Option 3 : Statement 3

Option 4 : Statement 4

Option 5 : Program does not have error.

Ques 30 : Choose the correct answer

**Charu writes the following program:**

**integer i = 1, j, a**

**while ( i <= 4 )**

**{**

**j = 1;**

**a = 0;**

**while ( a <= 5\*i )**

**{**

**a = 2^j;**

**print a**

**print *blank space***

**j = j + 1**

**}**

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

**i = i + 1**

**}**

**What will be the output of the program?**

Option 1 : 2

2 4

2 4 8

2 4 8 16

Option 2 : 2 4

2 4 8

2 4 8 16

2 4 8 16 32

Option 3 : 2 4

2 4 8

2 4 8

2 4 8 16

Option 4 : 2

2 4

2 4

2 4 8 16

Ques 31 : Choose the correct answer

**Himanshu wants to write a program to print the larger of the two inputted number. He**

**writes the following code:**

**int number1, number 2**

**input number1, number 2**

**if ("??") // Statement 1**

**print number1**

**else**

**print number2**

**end if**

**Fill in the ?? in statement 1.**

Option 1 : number1>number2

Option 2 : number2>number1

Option 3 : number2 equals number1

Option 4 : number1 <= number2

Ques 32 : Choose the correct answer

**Shalini wants to program to print the largest number out of three inputted numbers.**

**She writes the following program:**

**int number1, number 2, number3, temp;**

**input number1, number2, number3;**

**if (number1>number2)**

**temp = number1**

**else**

**temp = number2**

**end if**

**if (??) // Statement 1**

**temp = number3**

**end if**

**print temp**

**Fill in the ?? in Statement 1**

Option 1 : number3 > number2

Option 2 : number3 > temp

Option 3 : number3 < temp

Option 4 : number3 > number1

Ques 33 : Choose the correct answer

**Rohit writes the following program which inputs a number and prints "Double digit" if**

**the number is composed of two digits and "Not a double digit" if it is not.**

**int number;**

**if (number>10 AND number < 100)**

**print "Double digit"**

**else**

**print "Not a double digit"**

**end if**

**Rohit tries the following inputs: 5 and 66. The program works fine. He asks his brother**

**Ravi to try the program. When Ravi enters a number, the program doesn't work**

**correctly. What did Ravi enter?**

Option 1 : 8 Option 2 : 100 Option 3 : 99 Option 4 : 10

Ques 34 : Choose the correct answer

**Rohan writes the following program which inputs a number and prints "Triple digit" if**

**the number is composed of three digits and "Not triple digit" if it is not.**

**int number;**

**if (number>99)**

**print "Triple digit"**

**else**

**print "Not triple digit"**

**end if**

**Rohan tries the following inputs: 25 and 566. The program works fine. He asks his**

**brother Ravi to try the program. When Ravi enters a number, the program doesn't**

**work correctly. What did Ravi enter?**

Option 1 : 99 Option 2 : 100 Option 3 : 0 Option 4 : 1000

Ques 35 : Choose the correct answer

**Abhinav wants to find the largest number in a given list of 20 numbers. Which of the**

**following is an efficient approach to do this?**

Option 1 : Usebubble sort to sort the list in descending order and then print the first number of the series.

Option 2 : Use selection sort to sort the list in descending order and then print the first number of the series.

Option 3 : Implement one iteration of selection sort for descending order and print the first number in the series.

Option 4 : None of these

Ques 36 : Choose the correct answer

**Lavanya wants to find the smallest number out of 26 inputted numbers. How many**

**minimum comparisons he has to make?**

Option 1 : 25 Option 2 : 13 Option 3 : 26 Option 4 : 52

Ques 37 : Choose the correct answer

**A company offers commission for selling it products to its salesperson. The commission**

**rate is Rs. 5 per product. However if the salesperson sells more than 200 items, he gets a**

**commission of Rs. 10 on all items he sold after the first 200. Kanu writes a program to**

**calculate the commission for the salesperson:**

**integer numberProducts, commission**

**input numberProducts**

**if ( numberProducts > 200 )**

**-- MISSING STATEMENT --**

**else**

**commission = numberProducts \* 5**

**end if**

**print commission**

**Fill in the missing statement.**

Option 1 : commission = (numberProducts -200) \* 10

Option 2 : commission = 200 \* 5 + (numberProducts - 200) \* 10

Option 3 : commission = numberProducts \* 10

Option 4 : None of these

Ques 38 : Choose the correct answer

**Vikram wants to write a program which checks whether the inputted number is**

**divisible by any of the first 6 natural numbers (excluding 1). He writes the following**

**efficient code for it.**

**int number, n = 2, isdivisible=0**

**input number**

**while ( n <=6) // Statement 1**

**{**

**if ( remainder (number, n) == 0)**

**isdivisible = 1**

**end**

**n = n+1 // Statement 2**

**}**

**if (isdivisible equals 1)**

**print "It is divisible"**

**else**

**print "It is not divisible"**

**end**

**Vikram takes the program to Hari. Hari tells Vikram that though the code is correct, it**

**can be made more efficient. Hari modifies a single statement and makes the code more**

**efficient. Which statement does he modify and how?**

Option 1 : Statement 1 is changed to:

while (n <=6 AND isdivisible=0)

Option 2 : Statement 1 is changed to:

while (n <=6 OR isdivisible=0)

Option 3 : Statement 1 is changed to:

while (isdivisible=0)

Option 4 : Statement 2 is changed to:

n = n + 2

Ques 39 : Choose the correct answer

**Rajiv wants to make a program which inputs two numbers: a and b (a>b) and**

**computes the number of terms between a and b (including a and b). What will be code**

**statement to do this:**

Option 1 : a - b Option 2 : a - b + 1 Option 3 : a + b Option 4 : a - b - 1

Ques 40 : Choose the correct answer

**I have a problem to solve which takes as input a number n. The problem has a property**

**that given the solution for (n-1), I can easily solve the problem for n. Which**

**programming technique will I use to solve such a problem?**

Option 1 : Iteration

Option 2 : Decisionmaking

Option 3 : Object Oriented Programming

Option 4 : Recursion

Ques 41 : Choose the correct answer:

A pseudo-code is used with the following meaning.

"pointer" is a data-type which contains memory address (or pointers)

Statement "a = \*b" puts the value at the memory address referenced by b into a.

Statement "a = &b" puts the memory address of b into a.

Statement "\*b = a" puts the value a at the memory address referenced by b.

**What is the output of the following code statements? The compiler saves the first integer**

**at the memory location 4062. Integer is one byte long.**

**integer a**

**pointer b**

**a = 20**

**b = &a**

**print \*b**

Option 1 : 4062 Option 2 : 4063 Option 3 : 20 Option 4 : 10

Ques 42 : Choose the correct answer:

A pseudo-code is used with the following meaning.

"pointer" is a data-type which contains memory address (or pointers)

Statement "a = \*b" puts the value at the memory address referenced by b into a.

Statement "a = &b" puts the memory address of b into a.

Statement "\*b = a" puts the value a at the memory address referenced by b.

**What is the output of the following code statements? The compiler saves the first integer**

**at the memory location 4165 and the rest at consecutive memory spaces in order of**

**declaration. Integer is one byte long.**

**integer a, b**

**pointer c, d**

**a = 30**

**c = &a**

**b = \*c**

**a = a + 10**

**print b**

Option 1 : 30 Option 2 : 4165 Option 3 : 40 Option 4 : 4166

Ques 43 : Choose the correct answer:

A pseudo-code is used with the following meaning.

"pointer" is a data-type which contains memory address (or pointers)

Statement "a = \*b" puts the value at the memory address referenced by b into a.

Statement "a = &b" puts the memory address of b into a.

Statement "\*b = a" puts the value a at the memory address referenced by b.

**What is the output of the following code statements? The compiler saves the first integer**

**at the memory location 4165 and the rest at consecutive memory spaces in order of**

**declaration. Integer is one byte long.**

**integer a**

**pointer c, d**

**a = 30**

**c = &a**

**d = c**

**a = a + 10**

**print \*c**

Option 1 : 30 Option 2 : 4165 Option 3 : 40 Option 4 : 4166

Ques 44 : Choose the correct answer

**What is space complexity of a program?**

Option 1 : Amount of hard-disk space required to store the program

Option 2 : Amount of hard-disk space required to compile the program

Option 3 : Amount of memory required by the program to run

Option 4 : Amount of memory required for the program to compile

Ques 45 : Choose the correct answer

**The memory space needed by an algorithm has a fixed part independent of the problem**

**instance solved and a variable part which changes according to the problem instance**

**solved. In general, which of these two is of prime concern to an algorithm designer?**

Option 1 : Fixed part

Option 2 : Variable Part

Option 3 : Product of fixed part and variable part

Option 4 : None of these

Ques 46 : Choose the correct answer

**While calculating time complexity of an algorithm, the designer concerns**

**himself/herself primarily with the run time and not the compile time. Why?**

Option 1 : Run time is always more than compile time.

Option 2 : Compile time is always more than run time.

Option 3 : Compile time is a function of run time.

Option 4 : A program needs to be compiled once but can be run several times.

Ques 47 : Choose the correct answer

**Pankaj and Mythili were both asked to write the code to evaluate the following**

**expression:**

**a - b + c/(a-b) + (a-b)2**

**Pankaj writes the following code statements (Code A):**

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

**Mythili writes the following code statements (Code B):**

**d = (a-b)**

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

**If the time taken to load a value in a variable, for addition, multiplication or division**

**between two operands is same, which of the following is true?**

Option 1 : Code A uses lesser memory and is slower than Code B

Option 2 : Code A uses lesser memory and is faster than Code B

Option 3 : Code An uses more memory and is faster than Code B

Option 4 : Code A uses more memory and is slower than Code B

Ques 48 : Choose the correct answer

**Vrinda writes an efficient program to sum two square diagonal matrices (matrices with**

**elements only on diagonal). The size of each matrix is nXn. What is the time complexity**

**of Vrinda's algorithm?**

Option 1 : θ(n^2) Option 2 : θ(n) Option 3 : θ(n\*log(n)) Option 4 : None of these

Ques 49 : Choose the correct answer

**Tarang writes an efficient program to add two upper triangular 10X10 matrices**

**(elements on diagonal retained). How many total additions will his program make?**

Option 1 : 100 Option 2 : 55 Option 3 : 25 Option 4 : 10

Ques 50 : Choose the correct answer

**Ravi and Rupali are asked to write a program to sum the rows of a 2X2 matrices stored**

**in the array A.**

**Ravi writes the following code (Code A):**

**for n = 0 to 1**

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

**end**

**Rupali writes the following code (Code B):**

**sumRow1[0] = A[0][1] + A[0][2]**

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

**Comment upon these codes (Assume no loop-unrolling done by compiler):**

Option 1 : Code A will execute faster than Code B.

Option 2 : Code B will execute faster than Code A

Option 3 : Code A is logically incorrect.

Option 4 : Code B is logically incorrect.

Ques 51 : Choose the correct answer

**There is an array of size n initialized with 0. Akanksha has to write a code which inserts**

**the value 3k at position 3k in the array, where k=0,1…(till possible). Akanksha writes an**

**efficient code to do so. What is the time complexity of her code?**

Option 1 : θ(n^2) Option 2 : θ(n)

Option 3 : θ(log3(n)) Option 4 : θ(3n)

Ques 52 : Choose the correct answer

**There are two matrices A and B of size nXn. The data in both these matrices resides**

**only at positions where both the indices are a perfect square. Rest all positions have 0 as**

**the data. Manuj has available a third matrix initialized with 0's at all positions. He**

**writes an efficient code to put the sum of A and B in C. What is the time complexity of**

**Manuj's program?**

Option 1 : θ(n^2) Option 2 : θ(n)

Option 3 : θ(n1/2)

Option 4 : θ(log(n))

Ques 53 : Choose the correct answer

**Ravi has to add an strictly upper triangular (no elements at diagonal) and a strictly**

**lower triangular square matrix (no elements at diagonal) and put the result in a third**

**matrix. What is the time complexity of Ravi's algorithm? Assume that storing a value in**

**a memory space takes negligible time, while each addition between values takes the**

**dominating amount of time.**

Option 1 : θ(n^2) Option 2 : θ(n) Option 3 : θ(1) Option 4 : None of these

Ques 54 : Choose the correct answer

**We have two 100X3 (rowsXcolumn) matrices containing mid-term exam marks and**

**end-term exam marks of 100 students. Each row refers to a particular student, while**

**columns refer to marks in English, Social Sciences and Maths. The end-term and midterm**

**marks of each student in each subject have to be added to get his total score in**

**each subject, to be put in a third matrix (100X3). Parinidhi writes a code (Code A),**

**where the outer loop iterates over the rows, while the inner loop iterates over the**

**columns. Shashi writes a code (Code B), where the outer loop iterates over the columns,**

**while the inner loop iterates over rows. Which of the following is true with regard to**

**their code ignoring any caching or memory storage effects?**

Option 1 : Code A is faster than Code B

Option 2 : Code B is faster than Code A

Option 3 : Code A and Code B will run in the same amount of time

Option 4 : The comparison between the speed of the codes cannot be made.

Ques 55 : Choose the correct answer

**A code takes the following code steps (equivalently time unit) to execute: 5\*n3 + 6\*n2 +**

**1. Which of the following is not true about the time complexity of the program?**

Option 1 : It has a time complexity of O(n3)

Option 2 : It has a time complexity of O(n4)

Option 3 : It has a time complexity of O(n2)

Option 4 : It has a time complexity of θ(n3)

Ques 56 : Choose the correct answer

**We have two programs. We know that the first has a time complexity O(n2), while the**

**second has a complexity ω(n2). For sufficiently large n, which of the following cannot be**

**true?**

Option 1 : Both codes have same complexity

Option 2 : The first code has higher time complexity than the second

Option 3 : The second code has lower time complexity than the first code.

Option 4 : Both codes are the same.

Ques 57 : Choose the correct answer

**The time complexity of code A is θ(n), while for Code B it is θ(log(n)). Which of the**

**following is true for sufficiently large n?**

Option 1 : Both code have the same time complexity

Option 2 : Code A has higher time complexity

Option 3 : Code B has higher time complexity

Option 4 : No comparison can be made between the time complexity of the two codes.

Ques 58 : Choose the correct answer

**Rajini is given an efficient code for summing two nXn matrices and putting the result in**

**a third matrix. She is asked to find it's time complexity. She realizes that the number of**

**iterations required is more than n. What can she claim with regard to the complexity of**

**the code?**

Option 1 : It is O(n) Option 2 : It is O(n2) Option 3 : It is θ(n)

Option 4 : It is ω(n)

Ques 59 : Choose the correct answer

**Gautam is given two codes, A and B, to solve a problem, which have complexity θ(n)**

**and θ(n2) respectively. His client wants to solve a problem of size k, which Gautam does**

**not know. Which code will Gautam deliver to the client, so that the execution is faster?**

Option 1 : Code A Option 2 : Code B

Option 3 : Gautam cannot determine

Option 4 : Both codes have the same execution time, so deliver any.

Ques 60 : Choose the correct answer

**Surbhi is given two codes, A and B, to solve a problem, which have complexity O(n3)**

**and ω(n4) respectively. Her client wants to solve a problem of size k, which is**

**sufficiently large. Which code will Surbhi deliver to the client, so that the execution is**

**faster?**

Option 1 : Code A Option 2 : Code B

Option 3 : Surbhi cannot determine

Option 4 : Both codes have the same execution time, so deliver any.

Ques 61 : Choose the correct answer

**Vibhu is given two codes, A and B, to solve a problem, which have complexity O(n4) and**

**ω(n3) respectively. Her client wants to solve a problem of size k, which is sufficiently**

**large. Which code will Gautam deliver to the client, so that the execution is faster?**

Option 1 : Code A Option 2 : Code B

Option 3 : Vibhu cannot determine

Option 4 : Both codes have the same execution time, so deliver any.

Ques 62 : Choose the correct answer

**Pavithra is given two codes, A and B, to solve a problem, which have complexity θ(n3)**

**and ω(n3) respectively. Her client wants to solve a problem of size k, which is**

**sufficiently large. Which code should she deliver to the client in the present scenario?**

Option 1 : Code A

Option 2 : Code B

Option 3 : Both codes have the same execution time, so deliver any.

Option 4 : None of these

Ques 63 : Choose the correct answer

**Code A has to execute 4\*n2 + 64 program statements, while Code B has to execute 32\*n**

**program statements for a problem of size n. The time for executing a single program**

**statement is same for all statements. Rajesh was given a problem with a certain size k**

**and he delivered Code A. What could be the possible value of k?**

Option 1 : 1000 Option 2 : 5 Option 3 : 10 Option 4 : 3

Ques 64 : Choose the correct answer

**Saumya writes a code which has a function which calls itself. Which programming**

**concept is Saumya using?**

Option 1 : This is bad programming practice and should not be done.

Option 2 : Recursion

Option 3 : Decision Making

Option 4 : Overloading

Ques 65 : Choose the correct answer

**Shrishti writes the code for a function that computes the factorial of the inputted**

**number n.**

**function factorial(n)**

**{**

**if(n equals 1)**

**return 1**

**else**

**-- MISSING STATEMENT –**

**end**

**}**

**Fill in the missing statement.**

Option 1 : return factorial(n-1)

Option 2 : return n\*factorial(n)

Option 3 : return n\*(n-1)

Option 4 : return n\*factorial(n-1)

Ques 66 : Choose the correct answer

**Tanuj writes the code for a function that takes as input n and calculates the sum of first**

**n natural numbers.**

**Function sum( n )**

**{**

**if(??)**

**return 1**

**else**

**return (n + sum(n-1))**

**end**

**}**

**Fill in ?? in the code.**

Option 1 : n equals 1

Option 2 : n equals 2

Option 3 : n >= 1

Option 4 : n > 1

Ques 67 : Choose the correct answer

**Saloni writes the code for a function that takes as input n, an even integer and calculates**

**the sum of first n even natural numbers.**

**function sum( n )**

**{**

**if(n equals 2)**

**return 2**

**else**

**return (n + sum(n-2))**

**end**

**}**

**She**

**then calls the function by the statement, sum(30). How many times will the function**

**sum be called to compute this sum.**

Option 1 : 1

Option 2 : 30

Option 3 : 15

Option 4 : 16

Ques 68 : Choose the correct answer

**Consider the following function**

**function calculate( n )**

**{**

**if(n equals 5)**

**return 5**

**else**

**return (n + calculate(n-5))**

**end**

**}**

**Shishir calls the function by the statement, calculate(20). What value will the function**

**return?**

Option 1 : 50 Option 2 : 200 Option 3 : 35 Option 4 : 20

Ques 69 : Choose the correct answer

**Ravi is writing a program in C++. C++ uses the 'for' keyword for loops. Due to**

**distraction, Ravi writes 'gor' instead of 'for'. What will this result to?**

Option 1 : The code will not compile.

Option 2 : The code will give an error while in execution

Option 3 : The code may work for some inputs and not for others.

Option 4 : It will create no problems.

Ques 70 : Choose the correct answer

**What does a compiler do?**

Option 1 : Converts code from a high level language to a low level language

Option 2 : Necessarily converts the code into assembly language

Option 3 : Converts code from a low level language to a high level language

Option 4 : Necessarily converts the code into machine language

Ques 71 : Choose the correct answer

**A program is compiled by Tarun on his machine. Whether it will run on a different**

**computer will depend upon:**

Option 1 : Operating system on the computer

Option 2 : Hardware configuration of the computer

Option 3 : Both operating system and hardware configuration

Option 4 : The language of the program

Ques 72 : Choose the correct answer

**Sakshi writes a code in a high-level programming language on a Pentium-III machine,**

**which she wants to execute on a Motorola chip. What of the following will she run on**

**the code?**

Option 1 : An interpreter

Option 2 : A compiler

Option 3 : A crosscompiler

Option 4 : Linker

Ques 73 : Choose the correct answer

**Shahaana has a 10,000 line code. She is trying to debug it. She knows there is a logical**

**error in the first 25 lines of the code. Which of the following will be an efficient way of**

**debugging:**

Option 1 : Compile the whole code and step into it line by line

Option 2 : Use an interpreter on the first 25 lines.

Option 3 : Compile the whole code and run it

Option 4 : None of these

Ques 74 : Choose the correct answer

**Farhan writes a code to find the factorial of an inputted number. His code gives correct**

**answer for some inputs and incorrect answers for others. What kind of error does his**

**program have?**

Option 1 : Syntactical error

Option 2 : Run-time Error

Option 3 : Logical Error

Option 4 : None of these

Ques 75 : Choose the correct answer

**Reshama is debugging a piece of code which takes several iterations of modifying and**

**executing code, while Mohammad has to deliver a product to the customer, which the**

**customer will run multiple times. Reshama wants her debug cycle to take minimum**

**possible time, while Mohammad wants that his products run time is minimum. What**

**tools should Reshama and Mohammad respectively use on their code?**

Option 1 : Compiler, Interpreter

Option 2 : Interpreter, Compiler

Option 3 : Compiler, Compiler

Option 4 : Interpreter, Interpreter

Ques 76 : Choose the correct answer

**Gautam writes a program to run on a Motorola processor on his Pentium computer. He**

**wants to see how the program will execute on the Motorola processor using his Pentium**

**machine. What tool will he use?**

Option 1 : Compiler

Option 2 : Interpreter

Option 3 :Assembler

Option 4 :Simulator

Ques 77 : Choose the correct answer

**Consider the following code:**

**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**

**}**

**Assume that a and b were passed by value. What will be the output on executing**

**function calculate( )?**

Option 1 : 11 -5

Option 2 : 10 -5

Option 3 : 6 -5

Option 4 : 5 -5

Ques 78 : Choose the correct answer

**Consider the following code:**

**function modify(b,a)**

**{**

**return a - b**

**}**

**function calculate( )**

**{**

**integer a = 5, b = 12, c**

**c = modify(a, b);**

**print c**

**}**

**Assume that a and b were passed by reference. What will be the output of the program**

**on executing function calculate( ) ?**

Option 1 : 7

Option 2 : -7

Option 3 : Error

Option 4 : 8

Ques 79 : Choose the correct answer

**Consider the following code:**

**function modify(y,z)**

**{**

**y = y + 1**

**z = z + 1**

**return y - z**

**}**

**function calculate( )**

**{**

**integer a = 12, b = 20, c**

**c = modify(a, b);**

**print a**

**print *space***

**print c**

**}**

**Assume that a and b were passed by reference. What will be the output of the function**

**calculate( ) ?**

Option 1 : 12 -8

Option 2 : 13 -8

Option 3 : 12 8

Option 4 : 13 8

Ques 80 : Choose the correct answer

**Afzal writes a piece of code, where a set of three lines occur around 10 times in different**

**parts of the program. What programming concept can he use to shorten his program**

**code length?**

Option 1 : Use for loops

Option 2 : Use functions

Option 3 : Use arrays

Option 4 : Use classes

Ques 81 : Choose the correct answer

**Geetika writes a piece of code, where a set of eight lines occur around 10 times in**

**different parts of the program (Code A). She passes on the code to Deva. Deva puts the**

**set of eight lines in a function definition and calls them at the 10 points in the program**

**(Code B). Which code will run faster using an interpreter?**

Option 1 : Code A Option 2 : Code B

Option 3 : Code A and Code B will run with the same speed

Option 4 : None of these

Ques 82 : Choose the correct answer

**Consider the following code:**

**function modify(a,b)**

**{**

**integer c, d = 2**

**c = a\*d + b**

**return c**

**}**

**function calculate( )**

**{**

**integer a = 5, b = 20, c**

**integer d = 10**

**c = modify(a, b);**

**c = c + d**

**print c**

**}**

**Assume that a and b were passed by value. What will be the output of the function**

**calculate( ) ?**

Option 1 : 80 Option 2 : 40 Option 3 : 32 Option 4 : 72

Ques 83 : Choose the correct answer

**Consider the following code:**

**function modify(w,u)**

**{**

**w = w + 2**

**u = u - 3**

**return (w - u)**

**}**

**function calculate( )**

**{**

**integer a = 10, b = 20, c**

**c = modify(a, b);**

**print a**

**print *space***

**print b**

**}**

**Assume that a was passed by value and b was passed by reference. What will be the**

**output of the program on executing function calculate( ) ?**

Option 1 : 12 17 Option 2 : 10 17 Option 3 : 12 20 Option 4 : 10 20

Ques 84 : Choose the correct answer

**Consider the following function:**

**function run( )**

**{**

**integer a = 0 // Statement 1**

**while (a < 5)**

**{**

**integer c = 0 // Statement 2**

**c = c + 1 // Statement 3**

**a = a + 1**

**}**

**print c // Statement 4**

**}**

**At which statement in this program will the compiler detect an error?**

Option 1 : Statement 1

Option 2 : Statement 2

Option 3 : Statement 3

Option 4 : Statement 4

Ques 85 : Choose the correct answer

**Which one of the following is the lowest level format to which the computer converts a**

**higher language program before execution?**

Option 1 : English code

Option 2 : Machine Code

Option 3 : Assembly Language

Option 4 : System Language

Ques 86 : Choose the correct answer

**If you want to write a function that swaps the values of two variables, you must pass**

**them by:**

Option 1 : Value only

Option 2 : Reference only

Option 3 : Either A or B

Option 4 : Neither A nor B

Ques 87 : Choose the correct answer

**Consider the following code:**

**if (condition 1) {**

**if (condition 2)**

**{ // Statement A }**

**else**

**if (condition 3)**

**{ // Statement B }**

**else**

**{ // Statement C }**

**else**

**if (condition 4)**

**{ // Statement D }**

**else**

**{ // Statement E}**

**}**

**Which of the following conditions will allow execution of statement C?**

Option 1 :

condition1 AND condition3

Option 2 :

condition1 AND condition4 AND !condition2

Option 3 :

NOT(condition2) AND NOT(condition3)

Option 4 :

condition1 AND NOT(condition2) AND NOT(condition3)

Ques 88 : Choose the correct answer

**Consider the following code:**

**if (condition 1) {**

**if (condition 2)**

**{ // Statement A }**

**else**

**if (condition 3)**

**{ // Statement B}**

**else**

**{// Statement C }**

**else**

**if (condition 4)**

**{// Statement D}**

**else**

**{// Statement E}**

**}**

**Which of the following conditions will allow execution of statement E?**

Option 1 :

condition1 AND condition3

Option 2 :

NOT(condition1) AND condition2 AND NOT(condition4)

Option 3 :

NOT(condition2) AND NOT(condition3)

Option 4 :

condition1 AND condition4 AND NOT(condition2) AND NOT(condition3)

Ques 89 : Choose the correct answer

**Consider the following code:**

**if (condition 1) {**

**if (condition 2)**

**{ // Statement A }**

**else**

**if (condition 3)**

**{ // Statement B}**

**else**

**{// Statement C }**

**else**

**if (condition 4)**

**{// Statement D}**

**else**

**{// Statement E}**

**}**

**Which of the following condition will allow execution of statement A?**

Option 1 :

NOT(condition2) AND NOT(condition3)

Option 2 :

condition1 AND condition4 AND NOT(condition2) AND NOT(condition3)

Option 3 :

condition1 AND condition2 AND condition4

Option 4 :

NOT(condition1) AND condition2 AND NOT(condition4)

Ques 90 : Choose the correct answer

**What does the following function do?**

**function operation (int a, int b)**

**{**

**if (a < b)**

**{ return operation(b, a) }**

**else**

**{ return a }**

**}**

Option 1 : Returns the max of (a,b)

Option 2 : Returns the min of (a,b)

Option 3 : Loops forever

Option 4 : Always returns the second parameter

Ques 91 : Choose the correct answer

**What does the following function do?**

**function operation (int a, int b)**

**{**

**if (a > b)**

**{ return operation(b, a) }**

**else**

**{ return a; }**

**}**

Option 1 : Always returns the first parameter

Option 2 : Returns the min of (a,b)

Option 3 : Returns the max of (a,b)

Option 4 : Loops forever

Ques 92 : Choose the correct answer

**function g(int n)**

**{**

**if (n > 0) return 1;**

**else return -1;**

**}**

**function f(int a, int b)**

**{**

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

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

**return 0;**

**}**

**If f(a,b) is called, what is returned?**

Option 1 : Always -1

Option 2 : 1 if a > b, -1 if a < b, 0 otherwise

Option 3 : -1 if a > b, 1 if a < b, 0 otherwise

Option 4 : 0 if a equals b, -1 otherwise

Ques 93 : Choose the correct answer

**function g(int n)**

**{**

**if (n > 0) return 1;**

**else return -1;**

**}**

**function f(int a, int b)**

**{**

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

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

**return 0;**

**}**

**If f(a,b) is called, what is returned?**

Option 1 : 1 if a > b, -1 if a < b, 0 otherwise

Option 2 : Always +1

Option 3 : 0 if a equals b, +1 otherwise

Option 4 : -1 if a > b, 1 if a < b, 0 otherwise

Ques 94 : Choose the correct answer

**function g(int n)**

**{**

**if (n > 0) return 1;**

**else return -1;**

**}**

**function f(int a, int b)**

**{**

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

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

**return 0;**

**}**

**If f(a,b) is called, what is returned?**

Option 1 : Always +1

Option 2 : 1 if a > b, -1 if a < b, 0 otherwise

Option 3 : -1 if a > b, 1 if a < b, 0 otherwise

Option 4 : 0 if a equals b, -1 otherwise

Ques 95 : Choose the correct answer

**function g(int n)**

**{**

**if (n > 0) return 1;**

**else return -1;**

**}**

**function f(int a, int b)**

**{**

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

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

**return 0;**

**}**

**If f(a,b) is called, what is returned?**

Option 1 : Always +1

Option 2 : -1 if a > b, 1 if a < b, 0 otherwise

Option 3 : 1 if a > b, -1 if a < b, 0 otherwise

Option 4 : 0 if a equals b, -1 otherwise

Ques 96 : Choose the correct answer

**Consider the following code:**

**for i= m to n increment 2**

**{ print "Hello!" }**

**Assuming m < n and exactly one of (m,n) is even, how many times will Hello be printed?**

Option 1 : (n - m + 1)/2

Option 2 : 1 + (n - m)/2

Option 3 : 1 + (n - m)/2 if m is even, (n - m + 1)/2 if m is odd

Option 4 : (n - m + 1)/2 if m is even, 1 + (n - m)/2 if m is odd

Ques 97 : Choose the correct answer

**Consider the following code:**

**for i= m to n increment 2**

**{ print "Hello!" }**

**Assuming m < n and (m,n) are either both even or both odd, How many times will Hello**

**be printed?**

Option 1 : (n - m + 1)/2

Option 2 : 1 + (n - m)/2

Option 3 : 1 + (n - m)/2 if m is even, (n - m + 1)/2 if m is odd

Option 4 : (n - m + 1)/2 if m is even, 1 + (n - m)/2 if m is odd

Ques 98 : Choose the correct answer

**Assuming n > 2, What value does the following function compute for odd n?**

**function f (int n)**

**{**

**if (n equals 1) { return 1 }**

**if (n equals 2) { return f(n-1) + n/2 }**

**return f(n-2) + n;**

**}**

Option 1 : 1 + 2 + 3+ 4 + ... + n

Option 2 : 1 + 3 + 5+ 7 + ... + n

Option 3 : n/2 + (1+ 3 + 5 + 7 + ... +n)

Option 4 : 1 + (1 +3 + 5 + 7 + ... + n)

Ques 99 : Choose the correct answer

**Assuming n > 2, What value does the following function compute for even n?**

**int f (int n)**

**{**

**if (n equals 1) { return 1 }**

**if (n equals 2) { return f(n-1) + n/2 }**

**return f(n-2) + n**

**}**

Option 1 : 1 + 2 + 3+ 4 + ... + n

Option 2 : 1 + (2 + 4+ 6 + 8 + ... + n)

Option 3 : 1 + n/2 +(4 + 6 + 8 + ... + n)

Option 4 : 2 + 4 +6 + 8 + ... + n

Ques 100 : Choose the correct answer

**The for loop is equivalent to a while loop when**

Option 1 : There is no initialization expression

Option 2 : There is no increment expression

Option 3 : A and B combined are true

Option 4 : It is never equivalent

Ques 101 : Choose the correct answer

**Consider the statement**

**while (a < 10.0) { a = a\*a }**

**Assuming a is positive, for what value of a will this code statement result in an infinite**

**loop?**

Option 1 : a < 1.0

Option 2 : a < sqrt(10)

Option 3 : a > sqrt(10)

Option 4 : a = 0

Ques 102 : Choose the correct answer

**int area(double radius)**

**{**

**return PI\*radius\*radius;**

**}**

**Which of the following is always true about the function area?**

Option 1 : It returns the area of a circle within the limits of double precision.

Option 2 : It returns the area of a circle within the limits of the constant PI.

Option 3 : It returns the area of a circle within the limits of precision of double, or the constant PI, whichever is lower.

Option 4 : None of the above.

Ques 103 : Choose the correct answer

**What does this function compute for positive n?**

**function f(int n)**

**{**

**if (n equals 1)**

**{ return 1 }**

**else**

**{ return f(n-1)/f(n-1) + n }**

**}**

Option 1 : 1 + n

Option 2 : 1 + 2 + 3+ ... + n

Option 3 : 1 + n, if n > 1, 1 otherwise

Option 4 : None of the above

Ques 104 : Choose the correct answer

**Which of these is not a data type?**

Option 1 : integer

Option 2 : character

Option 3 : boolean

Option 4 : array

Ques 105 : Choose the correct answer

**The construct "if (condition) then A else B" is for which of the following purposes?**

Option 1 : Decision- Making

Option 2 : Iteration

Option 3 : Recursion

Option 4 : Object Oriented Programming

Ques 106 : Choose the correct answer

**In a sequential programming language, code statements are executed in which order?**

Option 1 : All are executed simultaneously.

Option 2 : From top to bottom

Option 3 : From bottom to top

Option 4 : None of these

Ques 107 : Choose the correct answer

**A for-loop is used for which of the following purposes?**

Option 1 : Decision- Making

Option 2 : Iteration

Option 3 : Recursion

Option 4 : None of these

Ques 108 : Choose the correct answer

**There are two loops which are nested. This implies which one of the following?**

Option 1 : Two loop, one after the other

Option 2 : Two loops, one inside the others

Option 3 : One loop with two different iteration counts

Option 4 : Two loops with the same iteration count

Ques 109 : Choose the correct answer

**How will 47 be stored as an unsigned 8-bit binary number?**

Option 1 : 10111101

Option 2 : 00101111

Option 3 : 10111000

Option 4 : 00101101

Ques 110 : Choose the correct answer

**An integer X is saved as an unsigned 8-bit number, 00001011.What is X?**

Option 1 : 22

Option 2 : 11

Option 3 : 10

Option 4 : None of these

Ques 111 : Choose the correct answer

**A variable cannot be used…**

Option 1 : Before it is declared

Option 2 : After it is declared

Option 3 : In the function it is declared in

Option 4 : Can always be used

Ques 112 : Choose the correct answer

**What is implied by the argument of a function?**

Option 1 : The variables passed to it when it is called

Option 2 : The value it returns on execution

Option 3 : The execution code inside it

Option 4 : Its return type

Ques 113 : Choose the correct answer

**Which of the following is true about comments?**

Option 1 : They are executed only once.

Option 2 : They are not executed

Option 3 : A good program does not contain them

Option 4 : They increase program execution time.

Ques 114 : Choose the correct answer

**Neelam wants to share her code with a colleague, who may modify it. Thus she wants to**

**include the date of the program creation, the author and other information with the**

**program. What component should she use?**

Option 1 : Header files

Option 2 : Iteration

Option 3 : Comments

Option 4 : Preprocessor directive

Ques 115 : Choose the correct answer

**Shashi writes a program in C++ and passes it on to Pankaj. Pankaj does some**

**indentation in some statements of the code. What will this lead to?**

Option 1 : Faster Execution

Option 2 : Lower memory requirement

Option 3 : Correction of errors

Option 4 : Better readability

Ques 116 : Choose the correct answer

**Zenab and Shashi independently write a program to find the the mass of one mole of**

**water, which includes mass of hydrogen and oxygen. Zenab defines the variables:**

**integer hydrogen, oxygen, water // Code A**

**while Shashi defines the three quantities as:**

**integer a, b, c // Code B**

**Which is a better programming practice and why?**

Option 1 : Code B is better because variable names are shorter

Option 2 : Code A is better because the variable names are understandable and non-confusing

Option 3 : Code A will run correctly, while Code B will give an error.

Option 4 : Code B will run correctly, while Code A will give an error.

Ques 117 : Choose the correct answer

**For solving a problem, which of these is the first step in developing a working program**

**for it?**

Option 1 : Writing the program in the programming language

Option 2 : Writing a step-by-step algorithm to solve the problem.

Option 3 : Compiling the libraries required.

Option 4 : Code debugging

Ques 118 : Choose the correct answer

**A robust program has which one of the following features?**

Option 1 : It runs correctly on some inputs

Option 2 : It is robust to hardware damage

Option 3 : It can handle incorrect input data or data types.

Option 4 : None of these

Ques 119 : Choose the correct answer

**Tarun wants to write a code to divide two numbers. He wants to warn the user and**

**terminate the program if he or she enters 0 as the divisor. Which programming**

**construct can he use to do this?**

Option 1 : Iteration

Option 2 : Decision- making

Option 3 : Recursion

Option 4 : None of these

Ques 120 : Choose the correct answer

**To solve a problem, it is broken in to a sequence of smaller sub-problems, till a stage**

**that the sub-problem can be easily solved. What is this design approach called?**

Option 1 : Top-down Approach

Option 2 : Bottom- Up Approach

Option 3 : Procedural Programming

Option 4 : None of these

Ques 121 : Choose the correct answer

**The time complexity of linear search algorithm over an array of n elements is**

Option 1 : O (log2 n)

Option 2 : O (n)

Option 3 : O (n log2n )

Option 4 : O (n2)

Ques 122 : Choose the correct answer

**Rajesh implements queue as a singly-linked linked list. The queue has n elements. The**

**time complexity to ADD a new element to the queue:**

Option 1 : O (1)

Option 2 : O (log2 n)

Option 3 : O (n)

Option 4 : O (nlog2 n )

Ques 123 : Choose the correct answer

**The time required to insert an element in a stack with linked list implementation is**

Option 1 : O (1)

Option 2 : O (log2 n)

Option 3 : O (n)

Option 4 : O (nlog2 n )

Ques 124 : Choose the correct answer

**In the following sorting procedures, which one will be the slowest for any given array?**

Option 1 : Quick sort

Option 2 : Heap sort

Option 3 : Merge Sort

Option 4 : Bubble sort

Ques 125 : Choose the correct answer

**Pankaj stores n data elements in a hash table. He is able to get the best efficiency**

**achievable by a hash table. What is the time complexity of accessing any element from**

**this hash table?**

Option 1 : O(1)

Option 2 : O(n2)

Option 3 : O(log n)

Option 4 : O(n)

Ques 126 : Choose the correct answer

**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?**

Option 1 : Linear Search

Option 2 : Binary search

Option 3 : Hash Coded Search

Option 4 : None of these

Ques 127 : Choose the correct answer

**The order of magnitude of the worst case performance of a hash coded search (over N**

**elements) is**

Option 1 : N

Option 2 : N log2 N

Option 3 : log2 N

Option 4 : not dependent upon N

Ques 128 : Choose the correct answer

**A sorting algorithm traverses through a list, comparing adjacent elements and**

**switching them under certain conditions. What is this sorting algorithm called?**

Option 1 : insertion sort

Option 2 : heap sort

Option 3 : quick sort

Option 4 : bubble sort

Ques 129 : Choose the correct answer

**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?**

Option 1 : insertion sort

Option 2 : selection sort

Option 3 : heap sort

Option 4 : quick sort

Ques 130 : Choose the correct answer

**A sort which uses the binary tree concept such that any number in the tree is larger**

**than all the numbers in the subtree below it is called**

Option 1 : selection sort

Option 2 : insertion sort

Option 3 : heap sort

Option 4 : quick sort

Ques 131 : Choose the correct answer

**The average time required to perform a successful sequential search for an element in**

**an array A(1 : n) is given by**

Option 1 : (n+1) / 2

Option 2 : log2n

Option 3 : n(n+1) /2

Option 4 : n2

Ques 132 : Choose the correct answer

**How many comparisons are needed to sort an array of length 5 if a straight selection**

**sort is used and array is already in the opposite order?**

Option 1 : 1

Option 2 : 10

Option 3 : 50

Option 4 : 20

Ques 133 : Choose the correct answer

**Queues serve a major role in**

Option 1 : simulation of recursion

Option 2 : simulation of arbitrary linked list

Option 3 : simulation of limited resource allocation

Option 4 : expression evaluation

Ques 134 : Choose the correct answer

**The average search time of hashing with linear probing will be less if the load factor**

Option 1 : is far less than one

Option 2 : equals one

Option 3 : is far greater than one

Option 4 : none of these

Ques 135 : Choose the correct answer

**Number of vertices of odd degree in a graph is**

Option 1 : is always even

Option 2 : always odd

Option 3 : either even or odd

Option 4 : always zero

Ques 136 : Choose the correct answer

**The algorithm design technique used in the quick sort algorithm is**

Option 1 : Dynamic programming

Option 2 : Back tracking

Option 3 : Divide and conquer

Option 4 : Greedy Search

Ques 137 : Choose the correct answer

**Linked lists are not suitable for**

Option 1 : Insertion sort

Option 2 : Binary search

Option 3 : Queue implementation

Option 4 : None of these

Ques 138 : Choose the correct answer

**A connected graph is the one which**

Option 1 : Cannot be partitioned without removing an edge

Option 2 : Can be partitioned without removing an edge

Option 3 : does not contain a cycle

Option 4 : Has even number of vertices

Ques 139 : Choose the correct answer

**Stack is useful for implementing**

Option 1 : radix search

Option 2 : breadth first search

Option 3 : recursion

Option 4 : none of these

Ques 140 : Choose the correct answer

**Which of the following is useful in traversing a given graph by breadth first search?**

Option 1 : stack

Option 2 : set

Option 3 : list

Option 4 : queue

Ques 141 : Choose the correct answer

**Which of the following is useful in implementing quick sort?**

Option 1 : stack

Option 2 : set

Option 3 : list

Option 4 : queue

Ques 142 : Choose the correct answer

**Which of the following abstract data types can be used to represent a many-to-many**

**relation?**

Option 1 : Tree

Option 2 : Stack

Option 3 : Graph

Option 4 : Queue

Ques 143 : Choose the correct answer

**Two lists, A and B are implemented as singly linked link-lists. The address of the first**

**and last node are stored in variables *firstA* and *lastA* for list A and *firstB* and *lastB* for**

**list B. Given the address of a node is given in the variable *node*, the element stored in**

**the node can be accessed by the statement *node->data* and the address to the next node**

**can be accessed by *node->next*. Pankaj wants to append list B at end of list A. Which of**

**the following statements should he use?**

Option 1 : lastB -> next = firstA

Option 2 : lastA = firstB

Option 3 : lastA- >next = firstB

Option 4 : lastB = firstA

Ques 144 : Choose the correct answer

**Which of the following sorting algorithms yield approximately the same worst-case and**

**average-case running time behaviour in O (n log n)?**

Option 1 : Bubble sort and Selection sort

Option 2 : Heap sort and Merge sort

Option 3 : Quick sort and Radix sort

Option 4 : Tree sort and Median of- 3 Quick sort

Ques 145 : Choose the correct answer

**A complete binary tree with 5 levels has how many nodes? (Root is Level 1)**

Option 1 : 15

Option 2 : 25

Option 3 : 63

Option 4 : 31

Ques 146 : Choose the correct answer

**The maximum number of nodes on level I of a binary tree is which of the following?**

**(Root is Level 1)**

Option 1 : 2l-1

Option 2 : 3l-1

Option 3 : 2l

Option 4 : 2l – 1

Ques 147 : Choose the correct answer

**Consider an array on which bubble sort is used. The bubble sort would compare the**

**element A[x] to which of the following elements in a single iteration.**

Option 1 : A [x+1]

Option 2 : A [x+2]

Option 3 : A [x+2x]

Option 4 : All of these.

Ques 148 : Choose the correct answer

**In an implementation of a linked list, each node contains data and address. Which of the**

**following could the address field possibly contain?**

Option 1 : Address of next node in sequence

Option 2 : It's own address

Option 3 : Address of last node

Option 4 : Address of first node

Ques 149 : Choose the correct answer

**Surbhi wants to implement a particular data structure using a static array. She uses the**

**concept of circular list to implement the data structure, because this allows her to**

**efficiently use all fields of the array. Which data structure is Surbhi implementing?**

Option 1 : a stack

Option 2 : a queue

Option 3 : Binary Tree

Option 4 : None of these

Ques 150 : Choose the correct answer

**Which of the following is a bad implementation for a queue?**

Option 1 : Circular List

Option 2 : Doubly linked list

Option 3 : Singly linked List

Option 4 : Linear Static Array

Ques 151 : Choose the correct answer

**Which of the following statements are true about a doubly-linked list?**

Option 1 : it may be either linear or circular

Option 2 : it must contain a header node

Option 3 : it will occupy same memory space as that of linear linked list, both having same number of nodes

Option 4 : None of these

Ques 152 : Choose the correct answer

**Which of the following data structure may give overflow error, even though the current**

**number of element in it is less than its size ?**

Option 1 : Queue implemented in a linear array

Option 2 : Queue implemented in a circularly connected array

Option 3 : Stack implemented in a linear array

Option 4 : none of these

Ques 153 : Choose the correct answer

**Number of possible ordered trees with 3 nodes A, B, C is**

Option 1 : 16

Option 2 : 12

Option 3 : 13

Option 4 : 14

Ques 154 : Choose the correct answer

**The best sorting methods if number of swapping done is the only measure of efficiency**

**Is**

Option 1 : Bubble sort

Option 2 : Selection sort

Option 3 : Insertion sort

Option 4 : Quick sort

Ques 155 : Choose the correct answer

**As part of the maintenance work, you are entrusted with the work of rearranging the**

**library books in a shelf in proper order, at the end of each day. The ideal choice will be**

Option 1 : bubble sort

Option 2 : insertion sort

Option 3 : selection sort

Option 4 : heap sort

Ques 156 : Choose the correct answer

**A hash table can store a maximum of 10 records. Currently there are records in**

**locations 1, 3, 4, 7, 8, 9, 10. The probability of a new record going into location 2, with a**

**hash function resolving collisions by linear probing is**

Option 1 : 0.6

Option 2 : 0.1

Option 3 : 0.2

Option 4 : 0.5

Ques 157 : Choose the correct answer

**A full binary tree with n leaves contains**

Option 1 : 2n + 1 nodes

Option 2 : log2 n nodes

Option 3 : 2n – 1 nodes

Option 4 : 2n nodes

Ques 158 : Choose the correct answer

**An array contains the following elements in order: 7 6 12 30 18. Insertion sort is used to**

**sort the array in ascending order. How many times will an insertion be made?**

Option 1 : 2

Option 2 : 3

Option 3 : 4

Option 4 : 5

Ques 159 : Choose the correct answer

**An array of 5 numbers has the following entries in order: 7 4 5 10 8. Prashant uses**

**selection sort to sort this array in descending order. What will the array contain after**

**two iterations of selection sort?**

Option 1 : 10 8 7 5 4

Option 2 : 10 8 5 7 4

Option 3 : 8 10 5 7 4

Option 4 : None of these

Ques 160 : Choose the correct answer

**Srishti writes a program to find an element in the array A[5] with the following**

**elements in order: 8 30 40 45 70. She runs the program to find a number X. X is found**

**in the first iteration of binary search. What is the value of X?**

Option 1 : 40

Option 2 : 8

Option 3 : 70

Option 4 : 30

Ques 161 : Choose the correct answer

**The array A has n elements. We want to determine the position of X in the array. We**

**know that X is present in the array A and X can be present at any location in the array**

**with equal probability. How many comparisons will be required on average to find the**

**element X using linear search?**

Option 1 : n

Option 2 : (n+1)/2

Option 3 : 2\*n

Option 4 : n^2

Ques 162 : Choose the correct answer

**A is an empty stack. The following operations are done on it.**

**PUSH(1)**

**PUSH(2)**

**POP**

**PUSH(5)**

**PUSH(6)**

**POP**

**What will the stack contain after these operations. (Top of the stack is underlined)**

Option 1 : 5 6

Option 2 : 1 5

Option 3 : 5 6

Option 4 : 1 5

Ques 163 : Choose the correct answer

**A stack is implemented as a linear array A[0…N-1]. Farhan writes the following**

**functions for pushing an element E in to the stack.**

**function PUSH( top, E, N )**

**{**

**if(X)**

**{**

**top= top+1**

**A[top] = E**

**}**

**else**

**{**

**print "Overflow"**

**}**

**return top**

**}**

**Fill in the condition X**

Option 1 : top< N

Option 2 : top

Option 3 : top > 0

Option 4 : top > 1

Ques 164 : Choose the correct answer

**A stack is implemented as a linear array A[0…N-1]. Noor writes the following functions**

**for popping an element from the stack.**

**function POP( top, N )**

**{**

**if(X)**

**{**

**top = top - 1**

**}**

**else**

**{**

**print "Underflow"**

**}**

**return top**

**}**

**Fill in the condition X**

Option 1 : top< N-1

Option 2 : top

Option 3 : top>1

Option 4 : top >= 0

Ques 165 : Choose the correct answer

**Q is an empty queue. The following operations are done on it:**

**ADD 5**

**ADD 7**

**ADD 46**

**DELETE**

**ADD 13**

**DELETE**

**DELETE**

**ADD 10**

**What will be the content of Q after these operations. Front is marked by (F) and Rear is**

**marked by (R).**

Option 1 : 10(R) 13(F)

Option 2 : 5(R) 10(F)

Option 3 : 13(R) 10(F)

Option 4 : 10(R) 5(F)

Ques 166 : Choose the correct answer

**A queue is implemented as a (singly linked) linked-list for easy addition and deletion of**

**elements. Each node has an element and pointer to another node. Which node will point**

**to empty/no location?**

Option 1 : Front

Option 2 : Rear

Option 3 : Both

Option 4 : None of these

Ques 167 : Choose the correct answer

**A stack is implemented as a (singly-linked) linked-list, where each node contains data**

**and address of another node. The top node will contain the address of which node?**

Option 1 : No node. It will be empty

Option 2 : The node containing the first element pushed into the stack.

Option 3 : The node containing the element which was pushed just before the top element.

Option 4 : None of these

Ques 168 : Choose the correct answer

**A queue is implemented by a linear array of size 10 (and not as a circularly connected**

**array). Front and Rear are represented as an index in the array. To add an element, the**

**rear index is incremented and the element is added. To delete an element, the front**

**index is incremented. The following operations are done on an empty queue.**

**ADD 1; DELETE; ADD 2; ADD 3; ADD 4; DELETE, DELETE**

**After this set of operations, what is the maximum capacity of the queue?**

Option 1 : 6

Option 2 : 7

Option 3 : 10

Option 4 : None of these

Ques 169 : Choose the correct answer

**A queue is implemented as a (singly linked) linked-list. Each node has an element and**

**pointer to another node. *Rear* and *Front* contain the addresses of the rear and front**

**node respectively. If the condition (rear isequal front) is true and neither is NULL, what**

**do we infer about the linked list?**

Option 1 : It has no elements

Option 2 : It has one element

Option 3 : There is an error

Option 4 : None of these

Ques 170 : Choose the correct answer

**Jaswinder has a book of tickets and wants to store ticket numbers in a data structure.**

**New tickets are added to the end of the booklet. Ticket at the top of the stack is issued to**

**the customer. Which data structure should Jaswinder use to represent the ticket**

**booklet?**

Option 1 : Queue

Option 2 : Stack

Option 3 : Array

Option 4 : Graph

Ques 171: Which of the given option named pigeon of the class Bird in C++?

1. Pigeon bird
2. Bird pigeon
3. Object pigeon of bird
4. None of these.

Ques 172: What is the default scope of fields in a class of a C++ program?

1. Protected
2. Public
3. Private
4. None of these

Ques 173: Consider a binary tree implementation. The root address is stored in the variable root. Given the address of a node in variable node, its value, right and root child node address can be accessed using the following statements respectively: node-> value, node -> right, node-> left. Srikanth writes the following function to do a preorder traversal of the tree.

function preordertraverse(node)

{

print node -> value if (Condition X)

{preordertraverse(node->left) } if (Condition Y)

{preordertraverse(node->right) } return

}

What is condition X and Condition Y?

(a)Condition X: node -> left isnotequal null Condition Y: node -> right isnotequal null

(b)Condition X: node -> right isnotequal null Condition Y: node -> left isnotequal null

(c)Condition X: node -> left isequal null

Condition Y: node -> right isequal null

(d) Condition X: node -> right isequal null Condition Y: node -> left isequal null

Ques 174: What can be inherited by a derived class from a base class?

1. Data members
2. Member functions
3. Constructor and destructor
4. Data members and member functions

Ques 175: How many nodes does a binary tree with n non leaf nodes contain?

1. Log n
2. N+1
3. 2n+1
4. 2n

Ques 176: How are protected members of a base class accessed in the dervived class when inherited privately in c++?

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