Q1) What will be the space required for this piece of code?

int sum (int B[], int n)

{

int s = 0, j;

for (j = 0; j < n; j++)

s = s + B[j];

return s;

}// sizeof(int) = 2 bytes

1. 2n + 8
2. 2n + 4
3. 2n + 2
4. 2n

Q2) What will be the output of the following pseudo code?

For input e = 7 & f = 8.

work (input e, input f)

if (e < f)

return work (f, e)

elseif (f != 0)

return (e + work (e, f - 1))

else

return 0

1. 72
2. 88
3. 56
4. 65

Q3) What will be the output of the following pseudo code?

Input p = 9, w = 6

p = p + 1 ;

w = w - 1 ;

p = p + w

if (p > w)

print p

else

print w

1. 6
2. 5
3. 10
4. 15

Q4) What will be the output of the following pseudo-code?

Input t = 6, h = 9 and set x = 0

Integer c

if (h > t)

for (c = t; c < h; c = c + 1)

x = x + c

End for loop

print x

else

print error message print x

1. 21
2. 15
3. 9
4. 6

Q5) Consider a hash table with 9 slots. The hash function is h(k) = k mod 9. The collisions are resolved by chaining. The following 9 keys are inserted in the order: 14, 37, 28, 24, 11, 42, 21, 35, 19. The maximum, minimum, and average chain lengths in the hash table, respectively, are:

1. 3,0, and 1
2. 3,3, and 3
3. 4,0, and 1
4. 3,0, and 2

Q6) You have an array of n elements. Suppose you implement a quick sort by always choosing the central element of the array as the pivot. Then the tightest upper bound for the worst case performance is:

1. O(n2)
2. O(nlogn)
3. O(n3)
4. O(nlog2)

Q7) Let H be a graph with k vertices and d edges. What is the tightest upper bound on the running time on Depth First Search of H? Assume that the graph is represented using adjacency matrix.

1. O(k)
2. O(k+d)
3. O(k2)
4. O(dk)

Q8) Let Z be a Quick Sort Program to sort numbers in ascending order using the first element as a pivot. Let t1 and t2 be the number of comparisons for the inputs {1, 2, 3, 4, 5} and {3, 5, 4, 2, 1} respectively. Which one of the following holds?

1. t1 = 5
2. t1 < t2
3. t1 > t2
4. t1 = t2

Q9) What does the following piece of code do?

public void func (Tree root)

{

func(root.left());

func(root.right());

System.out.println(root.data());

}

1. Preorder traversal
2. Postorder traversal
3. Inorder traversal
4. Level order traversal

Q10) Tree is a binary search tree. Which of the following code will help us to find the minimum element of Tree?

i) public void min(Tree root)

{

while (root.left() != null)

{

root = root.left();

}

System.out.println(root.data());

}

ii) public void min(Tree root)

{

while(root != null)

{

root = root.left();

}

System.out.println(root.data());

}

iii) public void min (Tree root)

{

while (root.right () != null)

{

root = root.right ();

}

System.out.println (root.data ());

}

iv) public void min(Tree root)

{

while (root != null)

{

root = root.right();

}

System.out.println(root.data());

}

1. i
2. ii
3. iii
4. iv

Q11) What will be the output of the following pseudocode?

Integer i

Set i = 3

do

print i + 3

i = i - 1

while(i not equals 0)

end while

1. 666
2. 656
3. 555
4. 654

Q12) What would be the output of the following pseudocode?

Integer a

String str1

Set str1 = “goose”

a = stringLength(str1)

Print (a ^ 1)

1. 0
2. 4
3. 5
4. 3

Q13) What would be the output of the following pseudocode?

Integer a, b, c

Set a = 8, b = 51, c = 2

c = (a ^ c)^(a)

b = b mod 4

Print a + b + c

1. 13
2. 17
3. 26
4. 16

Q14) Consider an array A = {1, 2, 4, 5, 6, 11, 12} and a key which is equal to 10. How many comparisons would be done to find the key element in the array using the binary search?

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

Q15) What would be the output of the following pseudocode?

Integer i, j, k

Set k = 8

for(each i from 1 to 1)

        for(each j from the value of i to 1)

            print k+1

        end for

end for

1. 2
2. 9
3. 7
4. 8

Q16) What will be the output of the following pseudocode?

Integer a, b

Set a = 15, b = 7

a = a mod (a - 3)

b = b mod (b – 3)

a = a mod 1

b = b mod 1

Print a + b

1. 15
2. 7
3. 2
4. 0

Q17) What will be the output of the following pseudocode?

Integer a, b, c

Set b = 5, a = 2, c = 2

if(b>a && a>c && c>b)

b = a + 1

Else

a = b + 1

End if

Print a + b + c

1. 2
2. 13
3. 26
4. 5

Q18) For which of the following applications can you use hashing?

1. To construct a message authentication code.

2. For Timestamping

3. For detecting a cycle in a graph

Choose the correct answer from the options given below.

1. Only 1 and 3
2. Only 2 and 3
3. Only 1
4. Only 1 and 2

Q19) Consider an array of float. Calculate the difference between the address of the 1st and 4th element, assuming float occupies 4 bytes of memory.

1. 16
2. 4
3. 12
4. 8

Q20) What is the second part of a node in a linked list that contains the address of the next node called?

A.  data

B.  pointer

C.  element

D.  Link

Q21) **What is the output of the code given below?**

#include <stdio.h>

int main()

{

    char ch = 'A';

    printf("%d\n", ch);

    return 0;

}

1. A
2. ‘A’
3. 65
4. 97

Q22) **Which of the following is not a valid declaration in C?**

1. short int x;

2. signed short x;

3. short x;

4. unsigned short x;

1. 3 and 4
2. 1
3. 2
4. All are valid

Q23) What will be the output of the following code snippet?

#include <stdio.h>

int foo(int\* a, int\* b)

{

    int sum = \*a + \*b;

    \*b = \*a;

    return \*a = sum - \*b;

}

int main()

{

    int i = 0, j = 1, k = 2, l;

    l = i++ || foo(&j, &k);

    printf("%d %d %d %d", i, j, k, l);

    return 0;

}

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

Q24) What is correct about the below program?

#include <stdio.h>

int i;

int main()

{

    if (i);

    else

        printf("Ëlse");

    return 0;

}

1. if block is executed.
2. else block is executed
3. It is unpredictable as i is not initialized.
4. Error: misplaced else

Q25) **Consider the following C function**

void swap ( int x, int y )

{

     int tmp;

     tmp = x;

     x = y;

     y = tmp;

}

In order to exchange the values of two variables a and b:

1. Call swap (a, b)
2. Call swap (&a, &b)
3. swap(a, b) cannot be used as it does not return any value
4. swap(a, b) cannot be used as the parameters passed by value

Q26) What will be output of following pseudo code:

if(0)

print True

print False

1. True
2. False
3. Error
4. No output

Q27) What will be output of following pseudo code:

Integer i=0;

while(i++<5)

print i

end while

1. 1 2 3 4 5
2. 1 2 3 4
3. 0 1 2 3 4
4. Infinite loop

Q28) What will be output of following pseudo code:

Character ch1 = ‘1’ , ch2 = ‘2’

Character ch = ch1 + ch2

Print c-32

1. A
2. B
3. C
4. D

Q29) What will be output of following pseudo code:

Integer fun(Integer n)

if(n>100)

return n-10

return fun(fun(n+11))

1. 91
2. 100
3. 110
4. 121

Q 30) What will be output of following pseudo code if n=1?

void reverse(int n)

if(n greater than 5)

exit

print n

return reverse(n++)

end function reverse()

1. 1 2 3 4 5
2. 1 2 4 6 8
3. 1 2 5 3 4
4. None of the above