1.   Consider the following program

```
main()
{
        int x = 1;
        printf ("%d", (*char(char *)&x)) ;
}
```

Assuming required header files are included and if the machine in which this program is executed is little-endian, then the output will be

(a)   0
(b)   99999999
(c)   1
(d)   unpredictable

2.   Consider the following declaration :

```
structaddr {
        char  city[10];
        char  street[30];
        int pin ;
};
struct  {
        char name[30];
        Int  gender ;
        struct addr locate ;
} person , *kd = &person ;
```

Then   *(kd -> name +2)   can be used instead of

(a)   person.name +2
(b)   kd -> (name +2)
(c)   *((*kd).name + 2)
(d)   either (a) or (b), but not (c)

3.   If a variable can take only integral values from 0 to n, where n is an integer, then the variable can be represented as a bit-field whose width is (the log in the answers are to the base 2, and [log n] means the floor of log n)

(a)   [log(n)] + 1 bits
(b)   [log (n-1)] + 1   bits
(c)   [log (n+1)] + 1 bits
(d)   None of the above

4.   The following C program

```
main()
{
        fork() ; fork() ; printf ("yes");
}
```

If we execute this core segment, how many times the string **yes** will be printed?

(a)   Only once
(b)   2 times
(c)   4 times
(d)   8 times

5. Consider the following table in a relational database

Last Name	Rank	Room	Shift
Smith	Manager	234	Morning
Jones	Custodian	33	Afternoon
Smith	Custodian	33	Evening
Doe	Clerical	222	Morning

According to the data shown in the table, which of the following could be a candidate key of the table?
(a) {Last Name}
(b) {Room}
(c) {Shift}
(d) {Room, Shift}

6. A data driven machine is one that executes an instruction if the needed data is available. The physical ordering of the code listing does not dictate the course of execution. Consider the following pseudo-code

(A) **Multiply E by 0.5 to get F**   (B) **Add A and B to get E**
(C) **Add B with 0.5 to get D**   (D) **Add E and F to get G**
(E) **Add A with 10.5 to get C**

Assume A, B, C are already assigned values and the desired output is G. Which of the following sequence of execution is valid?

(a) B, C, D, A, E
(b) C, B, E, A, D
(c) A, B, C, D, E
(d) E, D, C, B, A

7. Assume A and B are non-zero positive integers. The following code segment
   while (A != B){
   *   If (A > B)*
   *   A -= B ;*
   *   else*
   *   B -= A ;*
   }
   cout<<A; // printing the value of A

   (a) Computes the LCM of two numbers
   (b) Divides the larger number by the smaller number
   (c) Computes the GCD of two numbers
   (d) Finds the smaller of two numbers

8. A language with string manipulation facilities uses the following operations.
   head(s)-   returns the first character of the string s
   tail(s)   -   returns all but the first character of the string s
   concat(s1, s2)   -   concatenates string s1 with s2.
   The output of ***concat(head(s), head(tail(tail(s))))*** , where ***s*** is ***acbc*** is

   (a) **ab**
   (b) **ba**
   (c) **ac**
   (d) **aa**

9.

In the diagram above, the inverter (NOT gate) and the AND-gates labeled 1 and 2 have delays of 9, 10 and 12 nanoseconds(ns), respectively. Wire delays are negligible. For certain values of **a** and **c**, together with certain transition of **b**, a glitch (spurious output) is generated for a short time, after which the output assumes its correct value. The duration of the glitch is

(a) 7 ns   (b) 9 ns   (c) 11 ns   (d) 13 ns

10. Which of the following comparisons between static and dynamic type checking is incorrect?
(a) Dynamic type checking slows down the execution
(b) Dynamic type checking offers more flexibility to the programmers
(c) In contrast to Static type checking, dynamic type checking may cause failure in runtime due to type errors
(d) Unlike static type checking, dynamic type checking is done during compilation

11. ——————————— can detect burst error of length less than or equal to degree of the polynomial and detects burst errors that affect odd number of bits.

(a) Hamming Code   (b) CRC
(c) VRC   (d) None of the above

12. An array A consists of n integers in locations A[0], A[1] ….A[n-1]. It is required to shift the elements of the array cyclically to the left by k places, where 1 <= k <= (n-1). An incomplete algorithm for doing this in linear time, without using another array is given below. Complete the algorithm by filling in the blanks. Assume all the variables are suitably declared.

```
min = n ;  i = 0;
while (_____) {
        temp = A[i] ; j  =  i;
        while ( _____ ) {
                A[j] = _____;
                j= (j + k) mod n ;
                If ( j< min ) then
                        min = j;
        }
        A[ (n+ i – k)  mod  n ] = _____ ;
        i= _____ ;
}
```

(a) i>min ;   j != (n+i) mod n ;   A[j + k] ;   temp ;   i + 1 ;
(b) i<min ;   j != (n+i) mod n ;   A[j + k] ;   temp ;   i+ 1 ;
(c) i>min ;   j != (n+i + k) mod n ;   A[j + k] ;   temp ;   i +1 ;
(d) i<min ;   j != (n+i – k) mod n ;   A[(j + k) mod n] ;   temp ;   i + 1 ;

13. The difference between a named pipe and a regular file in Unix is that
    (a) Unlike a regular file, named pipe is a special file
    (b) The data in a pipe is transient, unlike the content of a regular file
    (c) Pipes forbid random accessing, while regular files do allow this.
    (d) All of the above

14. A class of 30 students occupy a classroom containing 5 rows of seats, with 8 seats in each row. If the students seat themselves at random, the probability that the sixth seat in the fifth row will be empty is
    (a) 1/5   (b) 1/3   (c) 1/4   (d) 2/5

15. The domain of the function *log(log sin(x))* is
    (a) $0 < x < \pi$
    (b) $2n\pi < x < (2n+1)\pi$, for n in N
    (c) Empty set
    (d) None of the above

16. The following paradigm can be used to find the solution of the problem in minimum time:

    Given a set of non-negative integer, and a value K, determine if there is a subset of the given set with sum equal to K:
    (a) Divide and Conquer
    (b) Dynamic Programming
    (c) Greedy Algorithm
    (d) Branch and Bound

17. (G, *) is an abelian group. Then
    (a) $x = x^{-1}$, for any x belonging to G
    (b) $x = x^2$, for any x belonging to G
    (c) $(x * y)^2 = x^2 * y^2$, for any x, y belonging to G
    (d) G is of finite order

18. Consider the following C code segment :
    ```
    #include <stdio.h>
    main()
    {
        int i, j , x ;
        scanf("%d", &x);
        i = 1 ; j = 1;
        while ( i< 10 ) {
            j = j * i ;
            i= i + 1;
            if ( i == x ) break ;
        }
    }
    ```
    For the program fragment above, which of the following statements about the variables i and j must be true after execution of this program? [!(exclamation) sign denotes factorial in the answer]
    (a) $(j = (x-1)!) \land (i \geq x)$
    (b) $(j = 9!) \land (i = 10)$
    (c) $((j = 10!) \land (i = 10)) \lor ((j = (x-1)!) \land (i = x))$
    (d) $((j = 9!) \land (i \geq 10)) \lor ((j = (x-1)!) \land (i = x))$

19. Given $\sqrt{224_r} = 13_r$ the value of radix r is

(a) 10   (b) 8

(c) 6   (d) 5

20. Determine the number of page faults when references to pages occur in the order - 1, 2, 4, 5, 2, 1, 2, 4. Assume that the main memory can accommodate 3 pages and the main memory already has the pages 1 and 2, with page 1 having brought earlier than page 2. (assume LRU i.e. Least-Recently-Used algorithm is applied)

(a) 3   (b) 4

(c) 5   (d) None of the above

21. Consider a system having m resources of the same type. These resources are shared by 3 processes A, B, C, which have peak time demands of 3, 4, 6 respectively. The minimum value of m that ensures that deadlock will never occur is

(a) 11   (b) 12

(c) 13   (d) 14

22. A computer has 1000K of main memory. The jobs arrive and finish in the following sequence.

         Job 1 requiring 200 K arrives
         Job 2 requiring 350 K arrives
         Job 3 requiring 300 K arrives
         Job 1 finishes
         Job 4 requiring 120 K arrives
         Job 5 requiring 150 K arrives
         Job 6 requiring 80 K   arrives

Among best fit and first fit, which performs better for this sequence?

(a) First fit   (b) Best fit

(c) Both perform the same   (d) None of the above

23. Disk requests come to a disk driver for cylinders in the order 10, 22, 20, 2, 40, 6 and 38, at a time when the disk drive is reading from cylinder 20. The seek time is 6 ms /cylinder. The total seek time, if the disk arm scheduling algorithms is first-come-first-served is

(a) 360 ms   (b) 850 ms

(c) 900 ms   (d) None of the above

24. Choose the correct statement –

(a) $A = \{a^n b^n \mid n = 1, 2, 3, \ldots.\}$ is a regular language

(b) The set **B**, consisting of all strings made up of only **a's** and **b's** having equal number of **a's** and **b's** defines a regular language

(c) $L(A * B) \cap B$ gives the set **A**

(d) None of the above

25. CFG (Context Free Grammar) is not closed under

(a) Union (b) Complementation

(c) Kleene star (d) Product

26.
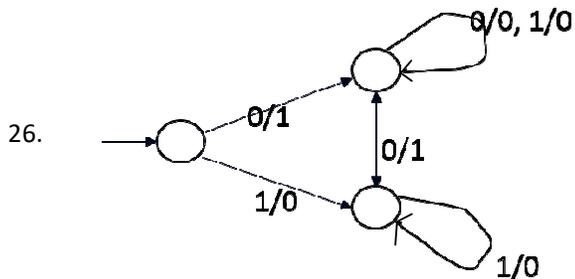
The FSM (Finite State Machine) machine pictured in the figure above

(a) Complements a given bit pattern

(b) Finds 2's complement of a given bit pattern

(c) Increments a given bit pattern by 1

(d) Changes the sign bit

27. A CFG(Context Free Grammar) is said to be in Chomsky Normal Form (CNF), if all the productions are of the form A -> BC or A -> a. Let G be a CFG in CNF. To derive a string of terminals of length x, the number of products to be used is

(a) 2x – 1 (b) 2x

(c) 2x + 1 (d) 2^x

28. Incremental-Compiler is a compiler

    (a) which is written in a language that is different from the source language

    (b) compiles the whole source code to generate object code afresh

    (c) compiles only those portion of source code that have been modified.

    (d) that runs on one machine but produces object code for another machine

29. DU-chains(Definition-Use) in compiler design

    (a) consist of a definition of a variable and all its uses, reachable from that definition

    (b) are created using a form of static code analysis

    (c) are prerequisite for many compiler optimization including constant propagation and common sub-expression elimination

    (d) All of the above

30. Which of the following comment about peep-hole optimization is true?

    (a) It is applied to small part of the code and applied repeatedly

    (b) It can be used to optimize intermediate code

    (c) It can be applied to a portion of the code that is not contiguous

    (d) It is applied in symbol table to optimize the memory requirements.

31. A byte addressable computer has a memory capacity of 2^m KB(kbytes) and can perform 2^n operations. An instruction involving 3 operands and one operator needs maximum of

    (a) 3m bits

    (b) 3m + n bits

    (c) m + n bits

    (d) none of the above

32. A computer uses ternary system instead of the traditional binary system. An n bit string in the binary system will occupy

(a) 3 + n ternary digits

(b) 2n/3 ternary digits

(c) $n(\log_2 3)$ ternary digits

(d) $n(\log_3 2)$ ternary digits

33. Which of the following is application of Breath First Search on the graph?

(a) Finding diameter of the graph

(b) Finding bipartite graph

(c) Both (a) and (b)

(d) None of the above

34. Micro program is

(a) the name of a source program in micro computers

(b) set of microinstructions that defines the individual operations in response to a machine-language instruction

(c) a primitive form of macros used in assembly language programming

(d) a very small segment of machine code

35. Given two sorted list of size m and n respectively. The number of comparisons needed the worst case by the merge sort algorithm will be

(a) m x n

(b) maximum of m and n

(c) minimum of m and n

(d) m+n -1

36. A has table with 10 buckets with one slot per bucket is depicted here. The symbols, S1 to S7 are initially entered using a hashing function with linear probing. The maximum number of comparisons needed in searching an item that is not present is

0	S7
1	S1
2	
3	S4
4	S2
5	
6	S5
7	
8	S6
9	S3

(a) 4   (b) 5

(c) 6   (d) 3

37. The running time of an algorithm is given by

$$T(n) = T(n-1) + T(n-2) - T(n-3) , \text{ if } n > 3$$
$$= n , \text{ otherwise}$$

Then what should be the relation between *T(1), T(2)* and *T(3)*, so that the order of the algorithm is constant ?

(a) *T(1) = T(2) = T(3)*   (b) *T(1) + T(3) = 2*T(2)*

(c) *T(1) −T(3) = T(2)*   (d) *T(1) + T(2) = T(3)*

38. The number of edges in a regular graph of degree d and n vertices is

(a) maximum of n and d   (b) n +d

(c) nd   (d) nd/2

39. Perform window to viewport transformation for the point (20, 15). Assume that (X_{wmin}, Y_{wmin}) is (0,0) ; (X_{wmax}, Y_{wmax}) is (100,100) ; (X_{vmin}, Y_{vmin}) is (5,5) ; (X_{vmax}, Y_{vmax}) is (20,20). The value of x and y in the viewport is

(a) x = 4 , y = 4   (b) x = 3 , y = 3

(c) x = 8 , y = 7.25   (d) x = 3 , y = 4

40. Given relations **R(w,x)** and **S(y,z),** the result of

       SELECT DISTINCT w, x
       FROM R, S

Is guaranteed to be same as **R**, if

(a) R has no duplicates and S is non-empty

(b) R and S have no duplicates

(c) S has no duplicates and R is non-empty

(d) R and S have the same number of tuples

41. For a database relation **R(a,b,c,d)** where the domains of **a, b, c** and **d** include only atomic values, only the following functional dependencies and those that can be inferred from them hold

      a -> c
      b -> d

The relation is in
(a) First normal form but not in second normal form
(b) Second normal form but not in third normal form
(c) Third normal form
(d) None of the above

42. Consider the set of relations given below and the SQL query that follows:

Students : (Roll_number, Name, Date_of_birth)

Courses: (Course_number, Course_name, Instructor)

Grades: (Roll_number, Course_number, Grade)

SELECT DISTINCT Name

FROM Students, Courses, Grades

WHERE Students.Roll_number = Grades.Roll_number

          AND   Courses.Instructor =Sriram

          AND   Courses.Course_number = Grades.Course_number

          AND   Grades.Grade = A

Which of the following sets is computed by the above query?
(a) Names of Students who have got an A grade in all courses taught by Sriram
(b) Names of Students who have got an A grade in all courses
(c) Names of Students who have got an A grade in at least one of the courses taught by Sriram
(d) None of the above

43. Consider the following C++ program
```
int  a (int  m)
{ return ++m ; }

int  b(int&m)
{ return  ++m;}

intc(char  &m)
{ return  ++m ; }

void  main ()
{
        int  p =  0 , q=0, r = 0 ;
        p  += a(b(p)) ;
        q+=  b(a(q)) ;
        r += a(c(r)) ;
        cout<< p <<q  <<  r ;
}
```
Assuming the required header files are already included, the above program
(a) results in compilation error   (b) print 123
(c) print 111   (d) print 322

44. Station A uses 32 byte packets to transmit messages to Station B using a sliding window protocol. The round trip delay between A and B is 80 ms and the bottleneck bandwidth on the path between A and B is 128 kbps. What is the optimal window size that A should use?

(a) 20

(b) 40

(c) 160

(d) 320

45. Assuming that for a given network layer implementation, connection establishment overhead is 100 bytes and disconnection overhead is 28 bytes. What would be the minimum size of the packet the transport layer needs to keep up, if it wishes to implement a datagram service above the network layer and needs to keep its overhead to a minimum of 12.5%. (Ignore transport layer overhead)

(a) 512 bytes

(b) 768 bytes

(c) 1152 bytes

(d) 1024 bytes

46. In cryptography, the following uses transposition ciphers and the keyword is LAYER. Encrypt the following message. (Spaces are omitted during encryption)

WELCOME TO NETWORK SECURITY !

(a) WMEKREETSILTWETCOOCYONRU!

(b) EETSICOOCYWMEKRONRU!LTWET

(c) LTWETONRU!WMEKRCOOCYEETSI

(d) ONRU!COOCYLTWETEETSIWMEKR

47. In a particular program, it is found that 1% of the code accounts for 50% of the execution time. To code a program in C++, it takes 100 man-days. Coding in assembly language is 10 times harder than coding in C++, but runs 5 times faster. Converting an existing C++ program into an assembly language program is 4 times faster.

To completely write the program in C++ and rewrite the 1% code in assembly language, if a project team needs 13 days, the team consists of

(a) 13 programmers

(b) 10 programmers

(c) 8 programmers

(d) 100/13 programmers

48. In unit testing of a module, it is found that for a set of test data, at the maximum 90% of the code alone were tested with the probability of success 0.9. The reliability of the module is

(a) Greater than 0.9   (b) Equal to 0.9

(c) At most 0.81   (d) At least 0.81

49. In a file which contains 1 million records and the order of the tree is 100, then what is the maximum number of nodes to be accessed if B+ tree index is used?

(a) 5   (b) 4

(c) 3   (d) 10

50. A particular disk unit uses a bit string to record the occupancy or vacancy of its tracks, with 0 denoting vacant and I for occupied. A 32-bit segment of this string has hexadecimal value D4FE2003. The percentage of occupied tracks for the corresponding part of the disk, to the nearest percentage is

(a) 12   (b) 25

(c) 38   (d) 44

51. Which of the following is dense index?

(a) Primary index

(b) Clusters index

(c) Secondary index

(d) Secondary non key index

52. In E-R model, Y is the dominant entity and X is subordinate entity

(a) If X is deleted, then Y is also deleted

(b) If Y is deleted, then X is also deleted

(c) If Y is deleted, then X is not deleted

(d) None of the above

53. Immunity of the external schemas (or application programs) to changes in the conceptual schema is referred to as:

(a) Physical Data Independence

(b) Logical Data Independence

(c) Both (a) and (b)

(d) None of the above

54. The set of attributes X will be fully functionally dependent on the set of attributes Y if the following conditions are satisfied.

(a) X is functionally dependent on Y

(b) X is not functionally dependent on any subset of Y

(c) Both (a) and (b)

(d) None of these

55. Let us assume that transaction T1 has arrived before transaction T2. Consider the schedule

S=r1(A); r2(B) ; w2(A) ; w1(B)

Which of the following is true?
(a) Allowed under basic timestamp protocol.
(b) Not allowed under basic timestamp protocols because T1 is rolled back.
(c) Not allowed under basic timestamp protocols because T2 is rolled back,
(d) None of these

56. The time complexity of computing the transitive closure of binary relation on a set of n elements is known to be

(a) O(n)
(b) O($n * \log(n)$)

(c) O($n^{\frac{3}{2}}$)
(d) O(n^3)

57. Given a binary-max heap. The elements are stored in an arrays as 25, 14, 16, 13, 10, 8, 12. What is the content of the array after two delete operations?

(a) 14,13,8,12,10   (b) 14,12,13,10,8

(c) 14,13,12,8,10   (d) 14,13,12,10,8

58. The Functions Point (FP) metric is

(a) Calculated from user requirement

(b) Calculated from lines of code

(c) Calculated from software complexity assessment

(d) None of the above

59. The lower degree of cohesion is kind of

(a) Logical Cohesion   (b) Coincidental Cohesion

(c) Procedural Cohesion   (d) Communicational Cohesion

60. What is the output of the following program?

```
main ( ){
int x = 2, y = 5;
if(x < y) return (x = x+y);
        else printf ("z1");
printf("z2");
}
```

(a) z2   (b) z1z2

(c) Compilation error   (d) None of these

61. The Operating System of a computer may periodically collect all the free memory space to form contiguous block of free space. This is called

(a) Concatenation   (b) Garbage collection

(c) Collision   (d) Dynamic Memory Allocation

62. Any set of Boolean operators that is sufficient to represent all Boolean expressions is said to be complete. Which of the following is not complete?

(a) { AND, OR }
(b) (AND, NOT }
(c) { NOT, OR }
(d) { NOR }

63. Consider a singly linked list of the form where F is a pointer to the first element in the linked list and L is the pointer to the last element in the list. The time of which of the following operations depends on the length of the list?

(a) Delete the last element of the list
(b) Delete the first element of the list
(c) Add an element after the last element of the list
(d) Interchange the first two elements of the list

64. A particular BNF definition for a "word" is given by the following rules.

<word>   :: = <letter> | <letter><charpair> | <letter><intpair>
<charpair> :: = <letter><letter> | <charpair><letter><letter>
<intpair> :: = <integer><integer> | <intpair><integer><integer>
<letter>   :: = a | b | c | ..... | y | z
<integer> :: = 0 | 1 | 2 | .... | 9

Which of the following lexical entries can be derived from < word > ?

I.   pick
II. picks
III. c44

(a) I, II and III
(b) I and II only
(c) I and III only
(d) II and III only

65. Of the following, which best characterizes computers that use memory-mapped I/O?

   (a) The computer provides special instructions for manipulating I/O ports
   (b) I/O ports are placed at addresses on the bus and are accessed just like other memory locations
   (c) To perform I/O operations, it is sufficient to place the data in an address register and call channel to perform the operation
   (d) I/O can be performed only when memory management hardware is turned on

66. Of the following sorting algorithms, which has a running time that is least dependent on the initial ordering of the input?

   (a) Merge Sort
   (b) Insertion Sort
   (c) Selection Sort
   (d) Quick Sort

67. Processes P1 and P2 have a producer-consumer relationship, communicating by the use of a set of shared buffers.

   P1: repeat
   > *Obtain an empty buffer*
   > *Fill it*
   > *Return a full buffer*
   > *forever*

   P2: repeat
   > *Obtain a full buffer*
   > *Empty it*
   > *Return an empty buffer*
   > *forever*

   Increasing the number of buffers is likely to do which of the following?

   I.   Increase the rate at which requests are satisfied (throughput)
   II. Decrease the likelihood of deadlock
   III. Increase the ease of achieving a correct implementation

   (a) III only
   (b) II only
   (c) I only
   (d) II and III only

68. In multi-programmed systems, it is advantageous if some programs such as editors and compilers can be shared by several users.

Which of the following must be true of multi-programmed systems in order that a single copy of a program can be shared by several users?

I.   The program is a macro
II.   The program is recursive
III. The program is reentrant

(a) I only   (b) II only
(c) III only   (d) I, II and III

69. Let P be a procedure that for some inputs calls itself (i.e. is recursive). If P is guaranteed to terminate, which of the following statement(s) must be true?

I.   P has a local variable
II.   P has an execution path where it does not call itself
III. P either refers to a global variable or has at least one parameter

(a) I only
(b) II only
(c) III only
(d) II and III only

70. Consider the following C program
     #include <stdio.h>
     main()
     {
     float sum = 0.0 , j = 1.0, i = 2.0;
     while (i/j > 0.001){
            j = j + 1;
            sum = sum + i/j ;
            printf ("%f\n", sum);
      }
     }

How many lines of output does this program produce?
(a) 0 – 9   lines of output
(b) 10 – 19 lines out output
(c) 20 – 29 lines of output
(d) More than 29 lines of output

71. A particular parallel program computation requires 100 sec when executed on a single processor. If 40% of this computation is inherently sequential (i.e. will not benefit from additional processors), then theoretically best possible elapsed times of this program running with 2 and 4 processors, respectively, are

(a) 20 sec and 10 sec   (b) 30 sec and 15 sec

(c) 50 sec and 25 sec   (d) 70 sec and 55 sec

72. Consider the following C code segment

```
int  f ( int x )
{
        if ( x< 1 ) return  1;
        else  return ( f(x-1) + g(x) ) ;
}
int g ( int x )
{
        if ( x< 2 ) return 2 ;
        else return ( f(x-1) + g(x/2));
}
```

Of the following, which best describes the growth of $f(x)$ as a function of x ?

(a) Linear   (b) Exponential

(c) Quadratic   (d) Cubic

73. For a multi-processor architecture, In which protocol a write transaction is forwarded to only those processors that are known to possess a copy of newly altered cache line ?

(a) Snoopy bus protocol

(b) Cache coherency protocol

(c) Directory based protocol

(d) None of the above

74. Avalanche effect in cryptography

    (a) Is desirable property of cryptographic algorithm
    (b) Is undesirable property of cryptographic algorithm
    (c) Has no effect on encryption algorithm
    (d) None of the above

75. In neural network, the network capacity is defined as

    (a) The traffic carry capacity of the network
    (b) The total number of nodes in the network
    (c) The number of patterns that can be stored and recalled in a network
    (d) None of the above

76. Cloaking is a search engine optimization (SEO) technique. During cloaking

    (a) Content presented to search engine spider is different from that presented to user's browser
    (b) Content present to search engine spider and browser is same
    (c) Contents of user's requested website are changed
    (d) None of the above

77. What is one advantage of setting up a DMZ(Demilitarized Zone) with two firewalls?

    (a) You can control where traffic goes in the three networks
    (b) You can do stateful packet filtering
    (c) You can do load balancing
    (d) Improve network performance

78. Which one of the following algorithm is not used in asymmetric key cryptography?

    (a) RSA Algorithm
    (b) Diffie-Hellman Algorithm
    (c) Electronic Code Book Algorithm
    (d) None of the above

79. A doubly linked list is declared as

struct Node {
        int Value ;
        *struct Node *Fwd ;*
        *struct Node *Bwd ;*
};

Where **Fwd** and **Bwd** represent forward and backward link to the adjacent elements of the list. Which of the following segments of code deletes the node pointed to by **X** from the doubly linked list, if it is assumed that X points to neither the first nor the last node of the list?

(a) **X->Bwd->Fwd = X->Fwd; X->Fwd->Bwd = X->Bwd ;**
(b) **X->Bwd.Fwd = X->Fwd ; X.Fwd->Bwd = X->Bwd ;**
(c) **X.Bwd->Fwd = X.Bwd ; X->Fwd.Bwd = X.Bwd ;**
(d) **X->Bwd->Fwd = X->Bwd ; X->Fwd->Bwd = X->Fwd ;**

80. If Tree-1 and Tree-2 are the trees indicated below :
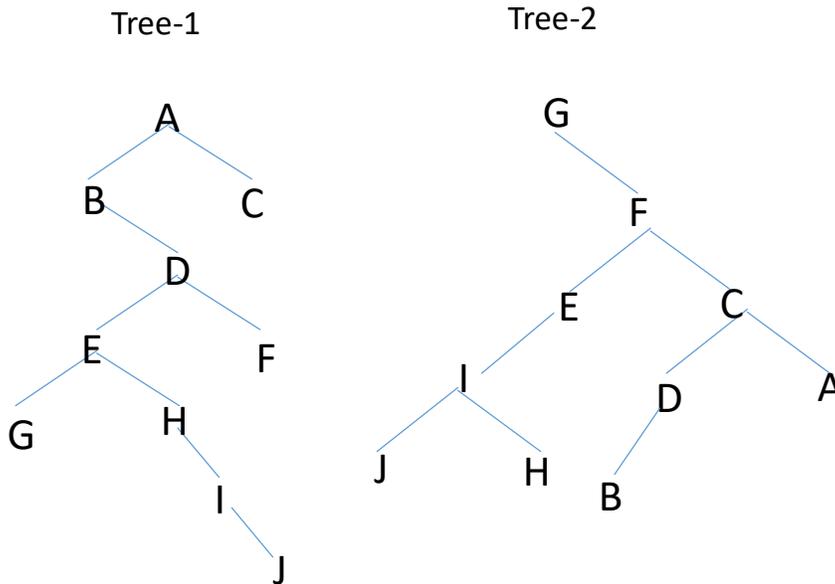
Which traversals of Tree-1 and Tree-2, respectively, will produce the same sequence?

(a) Preorder, postorder   (b)   Postorder, inorder
(c) Postorder, preorder   (d)   Inorder, preorder