

GOVERNMENT OF INDIA : : DEPARTMENT OF SPACE
INDIAN SPACE RESEARCH ORGANISATION

ISRO Centralised Recruitment Board

Written Test for Recruitment to the post of Scientist/Engineer 'SC', 2018

| Test Booklet | | COMPUTER SCIENCE | A |
|---------------------------------------|---|--------------------------------|----------|
| Date | : | APRIL 22, 2018 (Sunday) | |
| Time | : | 1230 Hrs. to 1400 Hrs. | |
| Test Duration (Minutes) | : | 90 | |
| No. of Questions | : | 80 | |
| No. of Pages (Other than cover sheet) | : | 22 | |

Instructions to the candidate

1. The question paper is in the form of test booklet. All candidates will be assessed on identical questions.
2. A separate **OMR** answer sheet with carbon impression is provided to all candidates for answering. After completion of the test, the carbon impression of the OMR sheet will be detached and handed over to candidate by the invigilator which should be carefully retained by the candidate for all future reference.
3. Each objective question is provided with a text and/or figures wherever applicable with **multiple answer choices (a), (b), (c) and (d)**. Only one of them is correct.
4. Read the instructions on the **OMR** sheet carefully. Use only **Blue or Black Ink Ball Point Pen** for writing on OMR sheet and marking your answers.
5. All objective type questions carry equal marks of **THREE** for a correct answer, **ZERO** for no answer and minus **ONE** for a wrong answer.
6. **Multiple answers** for a question will be regarded as a wrong answer.
7. Although the test stresses on accuracy more than speed, it is important for you to use your time as effectively as possible.
8. Do not waste time on questions, which are too difficult for you. You can go on to other questions and come back to the difficult ones later.
9. Question booklets have been marked with **A** or **B** or **C** or **D** or **E** on the right hand top corner, which is mandatory to be written on the OMR sheet in the box and bubbled appropriately, failing which, the answer sheet will not be evaluated.
10. Space available in the booklet could be used for rough work, if required. No separate sheet will be provided.
11. Before signing the attendance sheet, the candidate should write the Booklet Code in the attendance sheet. Candidates should sign against THEIR names only.
12. **At the end of the test (1) Written Test Call Letter(s) with photograph pasted on it and (2) OMR Answer Sheet shall be returned to the Invigilator and shall not be carried by the candidate under any circumstances.**

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 :

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

Then $*(kd \rightarrow \text{name} + 2)$ can be used instead of

- (a) $\text{person.name} + 2$
(b) $kd \rightarrow (\text{name} + 2)$
(c) $*(kd.\text{name} + 2)$
(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 $\lfloor \log n \rfloor$ means the floor of $\log n$)

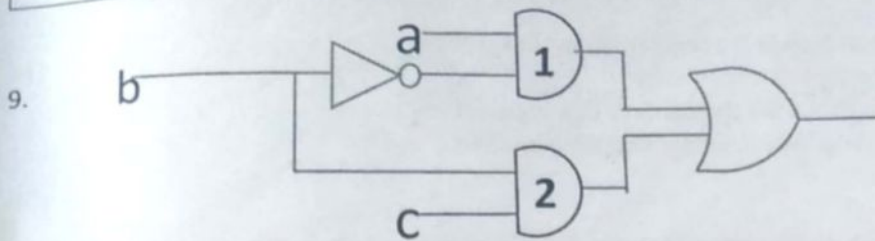
- (a) $\lfloor \log(n) \rfloor + 1$ bits
(b) $\lfloor \log(n-1) \rfloor + 1$ bits
(c) $\lfloor \log(n+1) \rfloor + 1$ bits
(d) None of the above

4. The following C program

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

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

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



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 $1 \leq k \leq (n-1)$. 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 = _____ ;
}
```

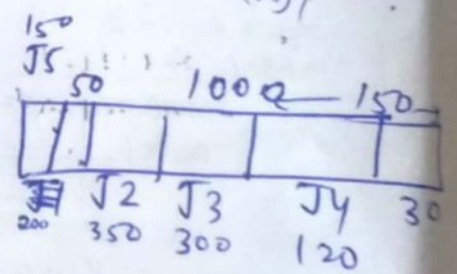
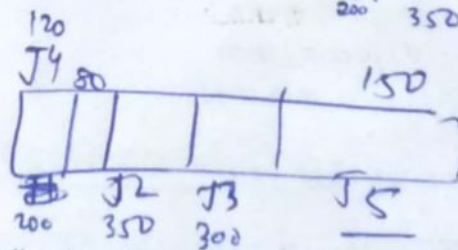
- (a) $i > \text{min}$; $j \neq (n+i) \bmod n$; **A[j + k] ;** **temp ;** $i + 1$;
 (b) $i < \text{min}$; $j \neq (n+i) \bmod n$; **A[j + k] ;** **temp ;** $i + 1$;
 (c) $i > \text{min}$; $j \neq (n+i + k) \bmod n$; **A[j + k] ;** **temp ;** $i + 1$;
 (d) $i < \text{min}$; $j \neq (n+i - k) \bmod n$; **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 \mathbb{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;
    }
}
```

FF




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) $(j = (x-1)!) \wedge (i \geq x)$
 (b) $(j = 9!) \wedge (i = 10)$
 (c) $((j = 10!) \wedge (i = 10)) \vee ((j = (x-1)!) \wedge (i = x))$
 (d) $((j = 9!) \wedge (i \geq 10)) \vee ((j = (x-1)!) \wedge (i = x))$

$$2x^2 + 28x + 4 = x^2 + 6x + 9$$

$$x^2 - 4x - 5 = 0$$

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

- (a) 10
(c) 6

- (b) 8
(d) 5

$$(2x^2 + 28x + 4) = (x + 3)^2$$

$$2x^2 + 28x + 4 = x^2 + 9 + 6x$$

$$x^2 - 4x - 5 = 0$$

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
(c) 5

- (b) 4
(d) None of the above

Handwritten table for LRU algorithm:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 4 | 5 | 2 | 1 | 2 | 4 |
| 1 | 2 | 2 | 2 | 2 | 1 | 2 | 1 |

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

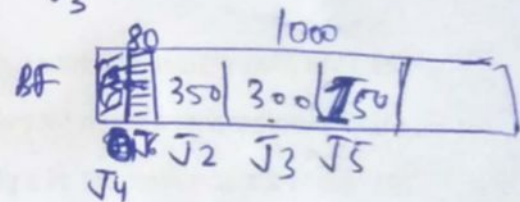
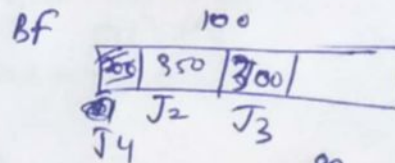
- (a) 11
(c) 13

- (b) 12
(d) 14

$$2 + 3 + 5 + 1$$

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

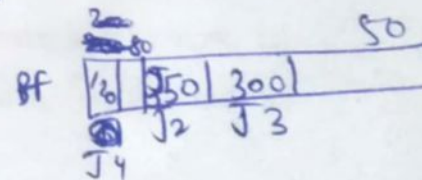
- Job 1 requiring 200 K arrives
Job 2 requiring 350 K arrives
Job 3 requiring 300 K arrives
Job 1 finishes
Job 4 requiring 120 K arrives
Job 5 requiring 150 K arrives
Job 6 requiring 80 K arrives



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

- (a) First fit
(c) Both perform the same

- (b) Best fit
(d) None of the above



23.

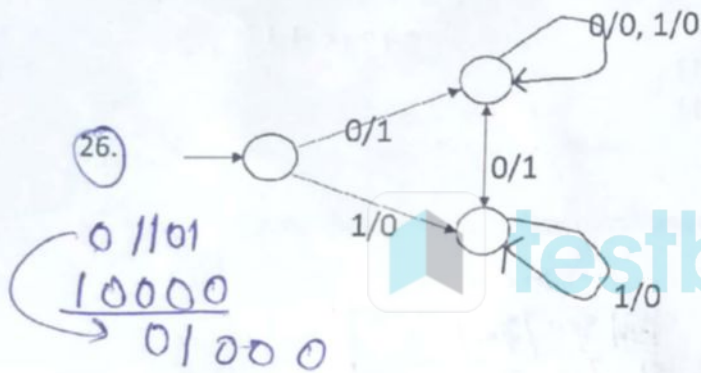
Disk requests come to a disk driver for cylinders in the order 10, 22, 20, 2, 40, 6 and 38, at a time when the disk drive is reading from cylinder 20. The seek time is 6 ms /cylinder. The total seek time, if the disk arm scheduling algorithms is first-come-first-served is

- (a) 360 ms
(c) 900 ms

- (b) 850 ms
(d) None of the above

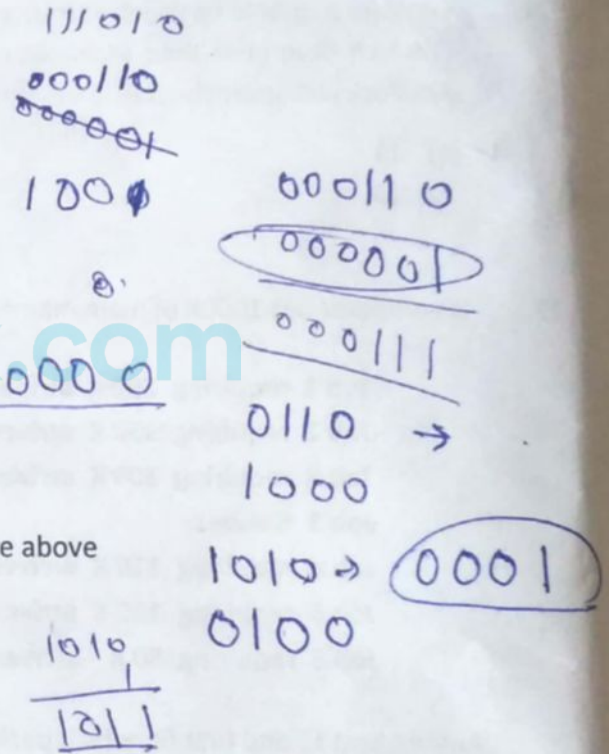
24. Choose the correct statement –
- (a) $A = \{a^n b^n \mid n = 1, 2, 3, \dots\}$ is a regular language
 - (b) The set B , consisting of all strings made up of only a 's and b 's having equal number of a 's and b 's defines a regular language
 - ✓ (c) $L(A * B) \cap B$ gives the set A
 - (d) None of the above

25. CFG (Context Free Grammar) is not closed under
- (a) Union
 - ✓ (b) Complementation
 - (c) Kleene star
 - (d) Product



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 $A \rightarrow BC$ or $A \rightarrow a$. Let G be a CFG in CNF. To derive a string of terminals of length x , the number of products to be used is

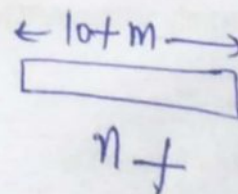
- ✓ (a) $2x - 1$
- (b) $2x$
- (c) $2x + 1$
- (d) 2^x

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  testbook.com
- (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) $m \times n$
 - (b) maximum of m and n
 - (c) minimum of m and n
 - ✓ (d) $m+n-1$

36. A hash 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

✓ (a) 4
(c) 6

(b) 5
(d) 3

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

(a) $T(1) = T(2) = T(3)$

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

(c) $T(1) - T(3) = T(2)$

(d) $T(1) + T(2) = T(3)$

(a) maximum of n and d

(b) $n + d$

(c) nd

(d) $nd/2$

(a) $x = 4, y = 4$

(b) $x = 3, y = 3$

(c) $x = 8, y = 7.25$

(d) $x = 3, y = 4$

```
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

$a \rightarrow c$
 $b \rightarrow d$

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

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 1 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



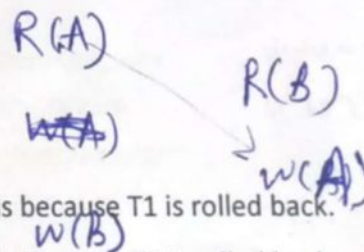
55. Let us assume that transaction T1 has arrived before transaction T2. Consider the schedule

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

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



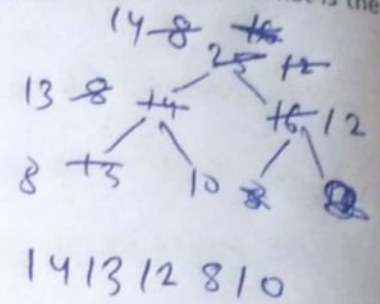
56. The time complexity of computing the transitive closure of binary relation on a set of n elements is known to be

- (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 array 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
☒ (c) 14,13,12,8,10

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

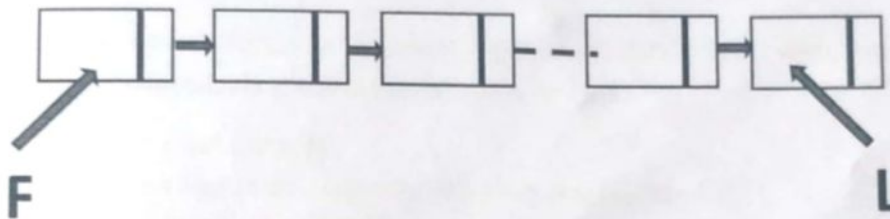
61. The Operating System of a computer may periodically collect all the free memory space to form contiguous block of free space. This is called

- (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.

$\langle \text{word} \rangle :: = \langle \text{letter} \rangle \mid \langle \text{letter} \rangle \langle \text{charpair} \rangle \mid \langle \text{letter} \rangle \langle \text{intpair} \rangle$
 $\langle \text{charpair} \rangle :: = \langle \text{letter} \rangle \langle \text{letter} \rangle \mid \langle \text{charpair} \rangle \langle \text{letter} \rangle \langle \text{letter} \rangle$
 $\langle \text{intpair} \rangle :: = \langle \text{integer} \rangle \langle \text{integer} \rangle \mid \langle \text{intpair} \rangle \langle \text{integer} \rangle \langle \text{integer} \rangle$
 $\langle \text{letter} \rangle :: = a \mid b \mid c \mid \dots \mid y \mid z$
 $\langle \text{integer} \rangle :: = 0 \mid 1 \mid 2 \mid \dots \mid 9$

Which of the following lexical entries can be derived from $\langle \text{word} \rangle$?

- 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

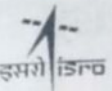
Empty it

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

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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?

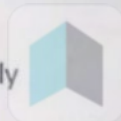
- I. The program is a macro
- II. The program is recursive
- III. The program is reentrant

- (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



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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

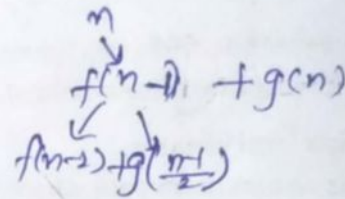
71. A particular parallel program computation requires 100 sec when executed on a single processor. If 40% of this computation is inherently sequential (i.e. will not benefit from additional processors), then theoretically best possible elapsed times of this program running with 2 and 4 processors, respectively,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

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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

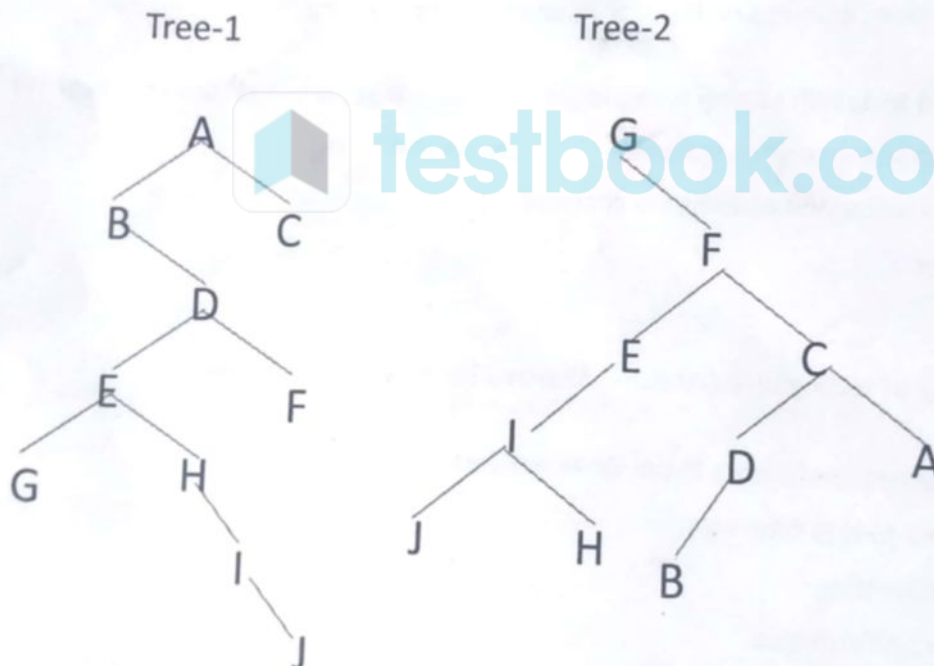
```
struct Node {
    int Value;
    struct Node *Fwd;
    struct Node *Bwd;
};
```

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) $X \rightarrow Bwd \rightarrow Fwd = X \rightarrow Fwd$; $X \rightarrow Fwd \rightarrow Bwd = X \rightarrow Bwd$;
- (b) $X \rightarrow Bwd.Fwd = X \rightarrow Fwd$; $X.Fwd \rightarrow Bwd = X \rightarrow Bwd$;
- (c) $X.Bwd \rightarrow Fwd = X.Bwd$; $X \rightarrow Fwd.Bwd = X.Bwd$;
- (d) $X \rightarrow Bwd \rightarrow Fwd = X \rightarrow Bwd$; $X \rightarrow Fwd \rightarrow Bwd = X \rightarrow Fwd$;



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
- (c) Postorder, preorder
- ✓ (b) Postorder, inorder
- (d) Inorder, preorder

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G J I H E F B D C A

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