QUESTION PAPER - 2015 (T.S)

COMPUTER SCIENCE & ENGINEERING

Q.1 Four 256×8 PROM chips are used to produce a total capacity of 1024×8. How many address bus lines are required

(1) 2   (2) 8   (3) 10   (4) 16

Q.2 The boolean expression of n variables $(A_1 \wedge \neg A_1 \wedge A_2 \wedge \neg A_2 \wedge \ldots \wedge A_n \wedge \neg A_n)$ evaluates to (where $\wedge$ represents AND, $\neg$ represents NOT operation) :

(1) TRUE   (2) FALSE

(3) $(A_1 \vee A_2 \vee \ldots \vee A_n)$ (4) can't be determined

Q.3 What is the octal representation of the hexadecimal number $(459A)_{16}$

(1) $(17818)_8$ (2) $(105.232)_8$

(3) $(00110100\ 00001111)$ (4) $(42632)_8$

Q.4 A binary representation of the hexadecimal number $(3B7F)_{16}$ is

(1) 0011 1001 1110 1101   (2) 0011 1011 0111 1111

(3) 0011 0100 0000 1111   (4) 0110 0011 1011 1100

Q.5 A computer with a 32-bit word size uses 2's complement to represent numbers, The range of integers that can be represented by this computer is

(1) -2^{32} to 2^{32} (2) -2^{31} to 2^{32} (3) -2^{31} to $2^{31} -1$ (4) -2^{32} to 2^{31}

Q.6 A positive whole number M less than 100 is represented in base-2 notation, base-3 notation, and base-5 notation. It is found that in all three cases the last digit is 1, while in exacly two out of the three cases the leading digit is 1. Then M equals

(1) 31   (2) 63   (3) 75   (4) 91

Q.7 The NAND gate output will be low if the two inputs are

(1) 00   (2) 01   (3) 10   (4) 11

Q.8 How many control lines are there for an 8-to-1 multiplexer

(1) 1   (2) 3   (3) 4   (4) 5

Q.9 The simplification of the boolean expression $\overline{(AB\overline{C})} + \overline{(A\overline{B}C)}$ is

(1) 0 (false)   (2) 1 (true)   (3) A   (4) BC

Q.10 Which of the following digital logic families has minimum power dissipation

(1) TTL   (2) RTL   (3) DTL   (4) CMOS

Q.11 The gates required to build a half adder are

(1) four NAND gates   (2) XOR and AND

(3) XOR and OR   (4) XOR and NOR

Q.12 Which of the following is the fastest logic

(1) ECL   (2) TTL   (3) LSI   (4) CMOS

Q.13 The word length of a 32 bit microprocessor is equal to

(1) 4 bytes   (2) 32 bytes   (3) 2 bytes   (4) 8 bytes

Q.14 What is the size of the address bus (in bits) used by processors 80386/80486

(1) 16   (2) 32   (3) 36   (4) 64

Q.15 Which characteristic of RAM makes it NOT usable as secondary storage :

(1) volatile   (2) unreliable   (3) too costly   (4) too slow

Q.16 Which of the following is an example of a non-maskable interrupt in 8086

(1) RST 6.5   (2) trap   (3) INTR   (4) INT 3

Q.17 The first microprocessor built by the intel corporation was called

(1) 8008   (2) 8080   (3) 4004   (4) 8800

Q.18 The size of each segment in 8086 is :

(1) 16 KB   (2) 24 KB   (3) 50 KB   (4) 64 KB

Q.19 Acess to moving head disks requires their periods of time delay before information is brought into memory. The response that correctly lists the three time delays for the physical access of data in the order of their relative speeds from slowest to fastest is

(1) latency time, cache overhead time, seel time

(2) cache overhead time, cache overhead time, seek time

(3) transmission time, latency time, seek time

(4) seek time, latency time, transmission time

Q.20 In order to keep address of the memory location where the next instruction is located the following registers is used :

(1) memory data register   (2) instruction register

(3) program counter   (4) memory address register

Q.21 Which of the following is/are the reason/s for computers to use addressing mode techniques

(1) giving programming versatility to the user by providing facilities as pointers to memory counters for loop control

(2) to reduce the number of bits in the field of instruction

(3) specifying rules for modifying or interpreting address field of the instruction

(4) all the above

Q.22 Which of the following circuits is used to store one bit of data

(1) encoder   (2) register   (3) flip flop   (4) decoder

Q.23 An n-bit microprocessor has

(1) n-bit program counter   (2) n-bit address register

(3) n-bit ALU   (4) n-bit instruction register

Q.24 How many possible distinct operators could be there, if the operation code has n bits

(1) 2^n (2) $2n$ (3) $n/2$ (4) n^2

Q.25 "A ging fegisters" are

(1) register which keep track of when the program was last acessed

(2) counters to keep track of last accessed instruction

(3) counters which indicate how long ago their associated pages have been referenced

(4) counters to keep track of the latest data structures referred

Q.26 The 2's compliment form (using 6 bit word) of the number 1010 is

(1) 110111   (2) 111100   (3) 001011   (4) 110110

Q.27 A memory management technique used to improve computer performance is

(1) selecting memory chips based on their cost

(2) storing as much data as possible on disk

(3) using the cache to store data that will most likely by needed soon

(4) preventing data from being moved from the cache to primary memory

Q.28 Which of the following programming languages has an instruction set closest to the machine language of a computer

(1) BASIC   (2) fortran   (3) C++   (4) assembly language

Q.29 Object modules generated by assemblers that contain unresolved external references are resolved for two or more object modules by a/an

(1) linker   (2) loader   (3) operating system(4)   compiler

Q.30 A linear array country has n elements. Suppose INDIA appears randomly in the array and there is a linear search to find the location K of INDIA, that is, to find K such that country [K] = INDIA. Let f(n) denote the number of comparison in the linear search. Find the maximum value (worst case) of f(n).

(1) n^2 (2) K^2 (3) logn   (4) n

Answer Questions 31-32 using the following tree
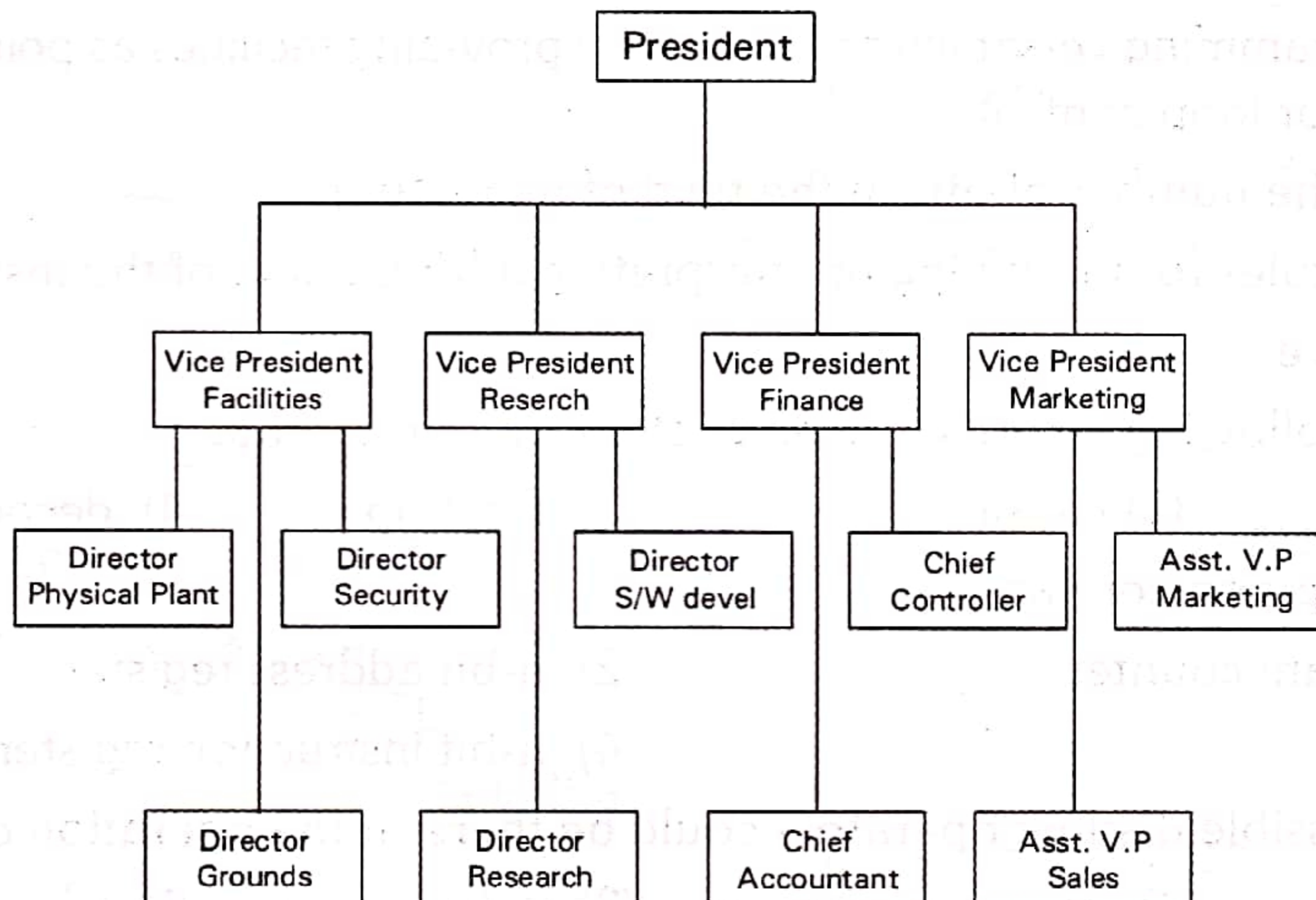
Q.31 How many leaf nodes are there in the tree

(1) 4   (2) 13   (3) 14   (4) 9

Q.32 How many nodes have odd degree in the tree

(1) 4   (2) 2   (3) 0   (4) 1

Answer questions 33-35 using the following C-program segment :

```c
#include <stdio.h>
main ()
{
    int c,k;
    k = 0;
    while ((c=getchar())!=EOF)
            if (c=='/n')
                ++k;
    printf("%d/n",k);)
}
```

Q.33 What does the program segment do

(1) counts the number of occurrences of the character 'n' in the input lines

(2) counts the number of words in the input lines

(3) counts the number of paragraphs in the input lines

(4) counts the number of input lines
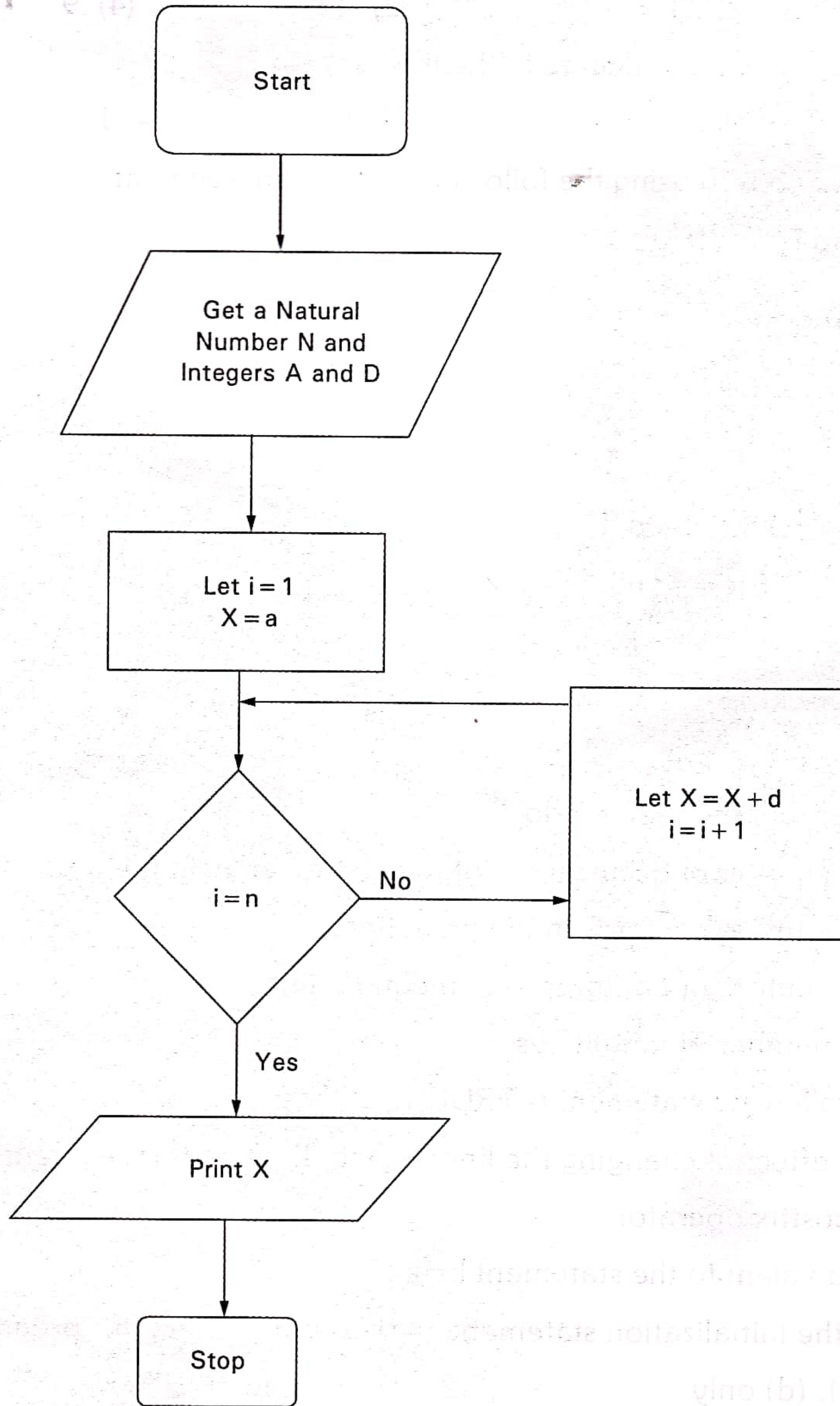
Q.34 Which of the following statement is TRUE

(a) there is no effect of changing the line ++k to k++ in this segment

(b) ++k is a postfix operator

(c) ++k is equivalent to the statement k=k+1

(d) removing the initialization statement k=0 does not affect this program

(1) (a), (b), (c), (d) only   (2) (b), (c) only

(3) (a), (c) only   (4) (d) only

Q.35 If we remove the following statement from the program, what does k represents now : if (c=='/n')

(1) counts the number of characters in the input lines

(2) counts the number of words in the input lines

(3) counts the number of paragraphs in the input lines

(4) counts the number of input lines

Answer Questions 36-37 using the following flow chart :

```
          ┌─────────────┐
          │    Start     │
          └──────┬──────┘
                 │
                 ▼
        ╱─────────────────╲
       ╱  Get a Natural    ╲
      ╱   Number N and      ╲
      ╲   Integers A and D  ╱
       ╲───────────────────╱
                 │
                 ▼
          ┌─────────────┐
          │  Let i = 1   │
          │   X = a      │
          └──────┬──────┘
                 │◄─────────────────────┐
                 ▼                        │
               ╱─╲                ┌─────────────┐
             ╱     ╲      No       │ Let X = X + d │
           ╱  i = n   ╲──────────► │   i = i + 1   │
             ╲     ╱                └─────────────┘
               ╲─╱
                │ Yes
                ▼
        ╱─────────────╲
       ╱   Print X      ╲
       ╲───────────────╱
                │
                ▼
          ┌─────────────┐
          │    Stop      │
          └─────────────┘
```

Q.36 What is the output of the program in the flowchart for n = 6, a = –10, d = 2

(1) –2

(2) 6

(3) 20

(4) 0

Q.37 What does the program calculate

(1) arithmetic progression

(2) geometric progression

(3) sum of n natural numbers

(4) harmonic progression

Use the following to answer question 38 :

Consider the following recursive function where n is a non-negative integer :

function calc (n:nonnegint) : nonnegint :

begin

               in n = 0 then

                    calc: = 0

           else

              calc: = n+calc (n–1)

end:

**Q.38** What value will calc return when it is invoked with n=8

(1) 0   (2) 8   (3) 36   (4) 64

Q.39 Let A be a stored array of n=10 elements. Which of the following denotes the average successful time for finding an arbitrary element x in A using a binary search? Assume that only one comparison is required to determince whether the target is equal to, less than, or greater than A[i].

(1) 1.6   (2) 2.9   (3) 4.2   (4) 5.5

Q.40 A binary tree having n nodes out of which only one is leaf node

(1) has height $2^n - 1$ (2) has height $2^n - 1$

(3) has height n – 1   (4) has height n

Q.41 The preorder Traversal of the following tree is given as
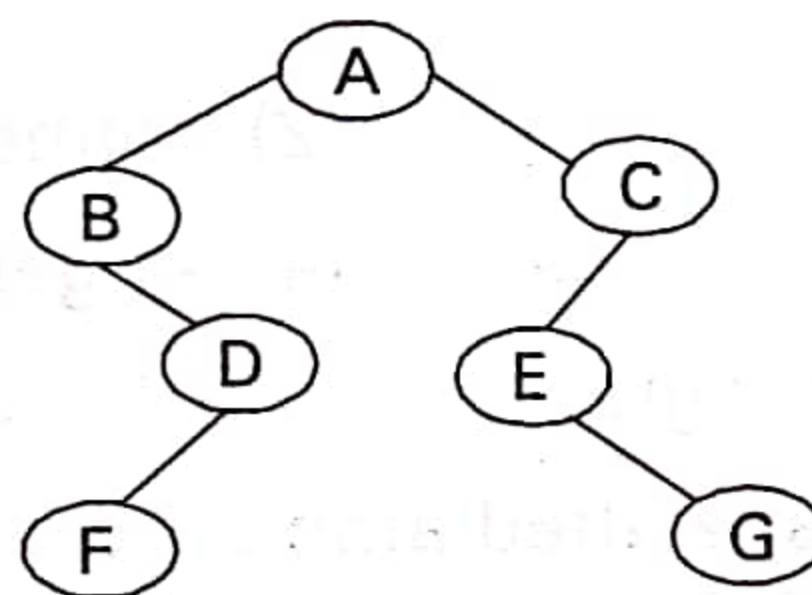
(1) ABDFCEG   (2) ABFDCEG   (3) ABDFCGE   (4) FDBAGEC

Q.42 Which of the following shows that correct relationship among some of the more common computing times for algorithms

(1) $0(\log n) < 0 (n*\log n) < 0 (n) < (n^2) < 0 (2^n)$

(2) $0 (n) < 0 (\log n) < 0 (n*\log n) < 0 (2^n) < 0 (n^2)$

(3) $0 (n) < 0 (\log n) < 0 (n*\log n) < 0 (n^2) < 0 (2^n)$

(4) $0 (\log n) < 0 (n) < 0 (n*\log n) < 0 (n^2) < 0 (2^n)$

Q.43 How many comparisons are required to sort an array of length 5 if selection sort is used and the array is already sorted in the opposite order

(1) 0   (2) 1   (3) 10   (4) 20

Q.44 Which sorting technique will operate in quadratic time relative to the number of elements in the array (on the average)

(1) bubble sort   (2) quick sort   (3) merge sort   (4) radix sort

Q.45 IP addresses are converted to

(1) a hierarchy of domain names

(2) alphanumeric string

(3) a binary string

(4) a hexadecimal string

Q.46 A web page is located using a

(1) uniform resource locator

(2) universal record linking

(3) universal record locator

(4) uniformly reachable links

Q.47 Which of the following is not a scripting language

(1) HTML   (2) XML   (3) java script   (4) post script

Q.48 Hubs are present in the network

(1) to interconnect the LAN with WANs

(2) to diagnose line failures, measure and manage traffic flow simplify re-configuring of LANs

(3) to interconnect the WANs with WANs

(4) to isolate intranet from internet

Q.49 The topology with the highest reliability is

(1) mesh topology   (2) bus topology   (3) ring topology (4) star topology

Q.50 Which of the following OSI layer is more closely related to physical communication facilities

(1) session   (2) data link   (3) network   (4) application

Q.51 Which of the following scheduling policies is best suitable for time shared operating systems

(1) first come first serve

(2) round robin

(3) shortest job first

(4) largest job first

Q.52 A critical section is a part of a program

(1) that should run in a certain specified amount of time

(2) that avoids deadlocks

(3) where shared resources are accessed

(4) that is a critical part of the operating system

Q.53 Which among the following is NOT a valid page replacement policy

(1) least recently used

(2) first in first out

(3) optimal page replacement policy

(4) rarely used

Q.54 A process is a

(1) program in main memory

(2) program in secondary memory

(3) method

(4) program in execution

Q.55 To avoid race condition, the maximum, the maximum number of process that may be simultaneously inside the critical section is

(1) zero   (2) one   (3) two   (4) more than two

Q.56 "External" fragmentation occurs in
    (1) segmentation   (2) swapping
    (3) pure demand paging   (4) paging

Q.57 In which of the following page replacement policies belady's anomaly occurs
    (1) SFU   (2) LRU   (3) LFU   (4) FIFO

Q.58 Which of the following techniques is used for increasing the priority of a waiting process.
    (1) revocation   (2) aging   (3) relocation   (4) swapping

Q.59 Using LRU algorithm, find the number of page faults that occurs when references to the pages occur in the order 1, 2, 4, 5, 2, 1, 2, 3. Assume that the main memory can accomodate 3 pages and memory already has pages 1 and 2 in it. Page 1 is brought earlier than page 2
    (1) 2   (2) 3   (3) 4   (4) 5

Q.60 Overlaying is a
    (1) method to increase the size of the main memory
    (2) programming method that allows programs to be larger than the computer's main memory
    (3) a method to increase logical memory
    (4) a method to increase both main memory and logical memory

Q.61 Dirty bit is used to indicate
    (1) page that is rarely accessed
    (2) page with corrupted data
    (3) page with unused data
    (4) page that is modified after being loaded into cache memory

Q.62 Context switching never takes place in
    (1) round robin scheduling
    (2) pre-emptive scheduling
    (3) first come first serve scheduling
    (4) pre-emptive shortest job first scheduling

Q.63 Thrashing occurs due to
    (1) decrease in degree of multiprogramming
    (2) increase in degree of multiprogramming
    (3) increase in size of virtual memory
    (4) decrease in size of virtual memory

Q.64 Computer system has 6 units of resources type R, which are shared by n cometing processes. Each process may need 3 units of resourc of type R. What is the maximum value of n for which the system is guaranteed to be deadlock-free
    (1) 1   (2) 2   (3) 3   (4) 4

Q.65 Which of the following class of languages is used to work with RDBMS

    (1) static languages

    (2) query languages

    (3) embedded programs

    (4) system programs

Q.66 Which of the following normal forms is adequate for designing relational datavase

    (1) 2 NF   (2) 3 NF   (3) 4 NF   (4) BCNF

Q.67 In relational model the data is stored and organized in two dimensional tables called

    (1) schema   (2) fields   (3) records   (4) relations

Q.68 The SQL operations REVOKE, ALTER USER and GRANT are included in

    (1) DCL (data control language)

    (2) DDL (data definition language)

    (3) DML (data manipulation language)

    (4) DAS (data aquisition language)

Q.69 EMP is a table with three columns EMP_ NUM, EMP_NAME and EMP_ADDR. Which of the following is correct syntax to create an index on column EMP_NUM

    (1) create index EMP (EMP_NUM);

    (2) create index emp_ind on EMP(EMP_NUM);

    (3) create index EMP(EMP_NUM) emp_ind;

    (4) create index emp_ind on EMP;

Q.70 Which type of PL/SQL statement is used to increase the price values by 15 percent for items with more than 10,000 in stock and by 30 percent for items with fewer than 1000 in stock

    (1) a simple INSERT loop

    (2) a simple UPDATE statement

    (3) WHILE loop

    (4) an IF...THEN...ELSE statement

Q.71 Which of the following section of a PL/SQL routine contains functions for error trapping

    (1) definition   (2) declaration   (3) exception   (4) execution

Q.72 Which of the following statement is used to get the quantity and description of each item that was ordered before july 1, 2009, and whose price is less than 5.00 or greater than 10.00 from the table stock

    (1) SELECT quantity, description FROM stock WHERE (price < 5.00 OR price > 10.00) AND order _ date < '01 - jul 2009';

    (2) SELECT quantity, description FROM stock WHERE price BETWEEN 5.00 and 10.00 OR order _ date < '01 - jul - 2009';

    (3) SELECT quanity, description FROM stock WHERE price <5.00 OR price>10.00 AND order_date> '01-jul-2009';

    (4) SELECT quantity, description FROM stock WHERE price IN (5.00, 10.00) OR order_date < '01 - july - 2009';

Q.73 Operator overloading feature in C++ comes under

    (1) polymorphism   (2) inheritance   (3) encapsulation (4) abstraction

Q.74 Which of the following is the C++ features where more than one user-defined functions can have the same name but perform different operations

(1) inheritance   (2) operator overloading

(3) function overloading   (4) friend function

Q.75 In C++, private data of class can be accessed only through

(1) member functions   (2) member data

(3) friend function   (4) inheritance

Q.76 Which of the following operators cannot be overloaded in C++

(1) addition   (2) multiplication

(3) division   (4) scope resolution operator

Q.77 Pure virtual functions is an example of

(1) runtime polymorphism   (2) inheritance

(3) friend function   (4) overloading

Q.78 The following statement: int num [2][3]={{1,2}, {3,4}, {5,6}}

(1) assigns a value 3 to num [1][2]   (2) assigns a value 2 to num [1][2]

(3) assigns a value 4 to num [2][2]   (4) gives an error message

Q.79 The output of following program is: int main {cout<<"Hello world!";return 0;}

(1) hello world   (2) hello world!   (3) syntax error   (4) 0

Q.80 The output of the following C++ code is :

```
int a = 50;
void main()
{
    int a = 100;
    cout<<a<<;;a;
}
```

(1) 100 50   (2) 100 100   (3) 50 100   (4) syntax error

Q.81 Which of the following is the correct way to access a class data member using the pointer this

(1) *this->x   (2) this.x   (3) this->x   (4) *this.x

Q.82 Which of the following is the correct syntax for declaring a function as constant

(1) int fun (viod) const {/*statements*/}

(2) const int fun (viod) {/*statements*/}

(3) int const fun (viod) {/*statements*/}

(4) both 2 and 3

Q.83 Object is defined as a/an

(1) real world entity   (2) runtime entity

(3) instance of a class   (4) class

Q.84 What happens is string arg [ ] is not written in the main() method

(1) code will compile but JVM cannot run the code

(2) results in syntax error

(3) code will not compile

(4) code will compile and run successfully

Q.85 In which class is standard output variable 'out' defined

(1) void   (2) process   (3) system   (4) runtime

Q.86 The method used to read a string from the keyboard using scanner class is

(1) nextInt( )   (2) next ( )   (3) nextFloat ( )   (4) nextDouble( )

Q.87 An exception cannot be handled using

(1) finally   (2) catch   (3) try   (4) out

Q.88 Consider the following program :

```
                 import my library.*;
                 public class show my class
                 {.
                     // code for the class...
                 }
```

What is the name of the java file containing this program

(1) my library, java   (2) showMyClass.java

(3) showMyClass   (4) showMy Class.class

Q.89 Which of the following statement is TRUE

(1) int is the name of a class available in the package java. lang

(2) in java, an instance field declared public generates a compilation error

(3) instance variable names may only contain letters and digits

(4) a class has always a constructor (possibly automatically supplied by the java compiler).

Q.90 Which does the following code segment implement

```
    static int test (int n)
    {
        return (n<1?1:n*test(n-1));
    }
```

(1) a recursive function for fibonacci sequence

(2) a recursive function for calculation of prime numbers

(3) a recursive function for calculation of natural numbers

(4) a recursive function for finding factrorial

Q.91 What will be the output of following code?

```
import java.util.*;
class arraylist
    {
        Public static void main (string args[ ] )
        {
            array list arrlist = new array list();
            system.out.print1n("Initial size of arrlist="+arrlist.size());]
        }
    }
```

(1) initial size of arrlist = 3   (2) initial size of arrlist = 0

(3) initial size of arrlist = 1   (4) initial size of arrlist = 2

Q.92 Which of the following creates platform independent code from a source file

(1) compiler   (2) GUI   (3) byte code   (4) JVM

Q.93 Which of the following is NOT an ASP component

(1) adRotator   (2) counter   (3) link counter   (4) file access

Q.94 What is the name of the standard components in ASP that displays different advertisements each time a user enters or refreshes a page

(1) advertisement   (2) adrotator   (3) advertise   (4) rotateads

Q.95 What is the correct way to include the file "time.inc|

(1) <%#include file =" %>   (2) <%include file ="time.inc"%>

(3) <include file ="time.inc">   (4) <%#include file ='time.inc'%>

Q.96 What is the correct way to create a filesystem object

(1) create ("filesystem object")

(2) createobject"scripting.filesystemobject"

(3) server.createobject ("scripting.filesystemobject")

(4) server.createobject ("filesystemobject"

Q.97 HTML stands for

(1) hyper tech markup language   (2) high tech markup language

(3) hyper text markup language   (4) high text markup language

Q.98 Which of the following HTML tags allows you to add a row in a table

(1) <td>and</td>   (2)
and</br>

(3) <th>and</th>   (4) <tr>and</tr>

Q.99 Which of the following is the correct HTML tag for inserting a line break

(1)
          (2) <1b>   (3) <break>   (4) <breakline>

Q.100 Which of the following tags is used to display pictures (i.e., images) in HTML

(1) <GIF src = picture file>   (2) <PIC src = picture file>

(3) <GR src = picture file>   (4) <IMG src = picture file>