**1. Vincent has a paper route. Each morning, he delivers 37 newspapers to customers in his neighborhood. It takes Vincent 50 minutes to deliver all the papers. If Vincent is sick or has other plans, his friend Thomas, who lives on the same street, will sometimes deliver the papers for him.**

A. Vincent and Thomas live in the same neighborhood.
B. It takes Thomas more than 50 minutes to deliver the papers.
C. It is dark outside when Vincent begins his deliveries.
D. Thomas would like to have his own paper route.

**2. Tim's commute never bothered him because there were always seats available on the train and he was able to spend his 40 minutes comfortably reading the newspaper or catching up on paperwork. Ever since the train schedule changed, the train has been extremely crowded, and by the time the doors open at his station, there isn't a seat to be found.**

A. Tim would be better off taking the bus to work.
B. Tim's commute is less comfortable since the train schedule changed.
C. Many commuters will complain about the new train schedule.
D. Tim will likely look for a new job closer to home.

**3. Ten new television shows appeared during the month of September. Five of the shows were sitcoms, three were hour-long dramas, and two were news-magazine shows. By January, only seven of these new shows were still on the air. Five of the shows that remained were sitcoms.**

A. Only one of the news-magazine shows remained on the air.
B. Only one of the hour-long dramas remained on the air.
C. At least one of the shows that was cancelled was an hour-long drama.
D. Television viewers prefer sitcoms over hour-long dramas.

**4. Georgia is older than her cousin Marsha. Marsha's brother Bart is older than Georgia. When Marsha and Bart are visiting with Georgia, all three like to play a game of Monopoly. Marsha wins more often than Georgia does.**

A. When he plays Monopoly with Marsha and Georgia, Bart often loses.
B. Of the three, Georgia is the oldest.
C. Georgia hates to lose at Monopoly.
D. Of the three, Marsha is the youngest.

**5. Sara lives in a large city on the East Coast. Her younger cousin Marlee lives in the Mid-west in a small town with fewer than 1,000 residents. Marlee has visited Sara several times during the past five years. In the same period of time, Sara has visited Marlee only once.**

A. Marlee likes Sara better than Sara likes Marlee.
B. Sara thinks small towns are boring.
C. Sara is older than Marlee.
D. Marlee wants to move to the East Coast.

**6. Look at this series: 2, 1, (1/2), (1/4), ... What number should come next?**

A. (1/3) B. (1/8) C. (2/8) D. (1/16)

**7. Look at this series: 36, 34, 30, 28, 24, ... What number should come next?**

A. 20 B. 22 C. 23 D. 26

**8. SCD, TEF, UGH,_____, WKL**

A. CMN B. UJI C. VIJ D. IJT

**9. Look at this series: VI, 10, V, 11, , 12, III, ... What number should fill the blank?**

A. II B. IV C. IX D. 14

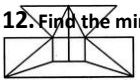
**10. Look at this series: 0.15, 0.3,_____, 1.2, 2.4, ... What number should fill the blank?**

A. 4.8 B. 0.006 C. 0.6 D. 0.9

**11. Find the number of triangles in the given figure.**

A.8 B.10 C.12 D.14

**12. Find the minimum number of straight lines required to make the given figure.**



A.16 B.17 C.18 D.19

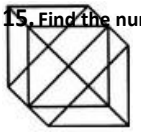
**13. Find the number of triangles in the given figure.**

A.22 B.24 C.26 D.28

**14. Find the number of triangles in the given figure.**

A.12 B.18 C.22 D.26

**15. Find the number of triangles in the given figure.**

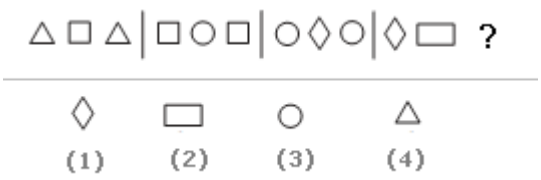


A.18 B.20 C.24 D.27

**16. Look carefully at the sequence of symbols to find the pattern. Select correct pattern.**


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

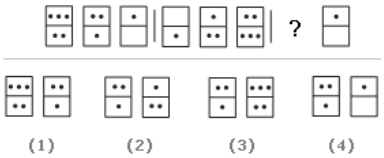
**17. Look carefully at the sequence of symbols to find the pattern. Select correct pattern.**






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

**18.** **Look carefully at the sequence of symbols to find the pattern. Select correct pattern.**

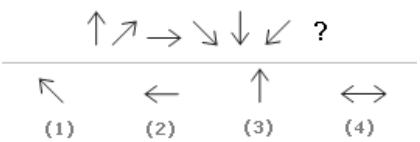



A.1 B.2 C.3 D.4

**19.** **Look carefully at the sequence of symbols to find the pattern. Select correct pattern.**


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

**20.** **Look carefully at the sequence of symbols to find the pattern. Select correct pattern.**




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

**21.** Total number of words formed by 2 vowels and 3 consonants taken from 4 vowels and 5 consonants is equal to

A.60 B.120 C.7200 D.none of these

**22.** Ramesh has 6 friends. In how mallY ways can he invite one or more of them at a dinner?

A.61 B.62 C.63 D.64

**23.** The number of words from the letters of the word 'BHARAT' in which Band H will never come together, is

A.360 B.240 C.120 D.none of these

**24.** Two jars of capacity 3 and 5 litres are filled with mixtures of alcohol and water. In the smaller jar 25% of the mixture is alcohol and in the larger 25% of the mixture is water. The jars are emptied into a 9 litre cask and remaining volume is filled up with water. Then percentage of alcohol in the cask will be

A. 0% B.37.5% C.60% D. None of these

**25.** The function f(x) = 3x(x - 2) has a

A. minimum at x = 1 B. maximum at x = 1 C. minimum at x = 2 D. maximum at x = 2

**26.** Value of the definite integral

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{\sin 2x}{1+\cos x}\,dx \text{ is}$$

A.-2ln2 B.2 C.0 D.$(\ln 2)^2$

**27.** The interval in which the Lagrange's theorem is applicable for the function f(x) = 1/x is

A. [-3, 3] B.[-2, 2] C.[2, 3] D.[-1, 1]

**28.** The function $f(x) = x^3 - 6x^2 + 9x + 25$ has

A.a maxima at x= 1 and a minima at x = 3 B. a maxima at x = 3 and a minima at x = 1

C. no maxima, but a minima at x = 1 D. a maxima at x = 1, but no minima

**29.** If $\phi(x) = \int_{x^2}^{v} \sqrt{t}\,dt$, $then \frac{d\phi}{dx}$

A.$2x^2$ B.√x C.0 D.1

**30.** The minimum value of $| x^2 - 5x + 21 |$ is

`A.-5 B.0 C.-1 D.-2

# Technical

**1. The memory address of the first element of an array is called**
a. floor address b. foundation address c. first address d. base address

**2. The memory address of fifth element of an array can be calculated by the formula**
a. LOC(Array[5]=Base(Array)+w(5-lower bound), where w is the number of words per memory cell for the array
b. LOC(Array[5])=Base(Array[5])+(5-lower bound), where w is the number of words per memory cell for the array
c. LOC(Array[5])=Base(Array[4])+(5-Upper bound), where w is the number of words per memory cell for the array
d. None of above

**3. Which of the following data structures are indexed structures?**
a. linear arrays b. linked lists c. both of above d. none of above

**4. Which of the following is not the required condition for binary search algorithm?**
a. The list must be sorted
b. there should be the direct access to the middle element in any sublist
c. There must be mechanism to delete and/or insert elements in list
d. none of above

**5. Which of the following is not a limitation of binary search algorithm?**
a. must use a sorted array
b. requirement of sorted array is expensive when a lot of insertion and deletions are needed
c. there must be a mechanism to access middle element directly
d. binary search algorithm is not efficient when the data elements are more than 1000.

**6. Two dimensional arrays are also called**
a. tables arrays b. matrix arrays c. both of above d. none of above

**7. A variable P is called pointer if**
a. P contains the address of an element in DATA.
b. P points to the address of first element in DATA
c. P can store only memory addresses
d. P contain the DATA and the address of DATA

**8. Which of the following data structure can't store the non-homogeneous data elements?**
a. Arrays b. Records c. Pointers d. None

**9. Which of the following data structure store the homogeneous data elements?**
a. Arrays b. Records c. Pointers d. None

**10. Each data item in a record may be a group item composed of sub-items; those items which are indecomposable are called**
a. elementary items b. atoms c. scalars d. all of above

**11. The difference between linear array and a record is**
a. An array is suitable for homogeneous data but hte data items in a record may have different data type
b. In a record, there may not be a natural ordering in opposed to linear array.
c. A record form a hierarchical structure but a lienear array does not
d. All of above

**12. Which of the following statement is false?**
a. Arrays are dense lists and static data structure
b. data elements in linked list need not be stored in adjecent space in memory
c. pointers store the next data element of a list
d. linked lists are collection of the nodes that contain information part and next pointer

**13. Binary search algorithm can not be applied to**
a. sorted linked list b. sorted binary trees c. sorted linear array d. pointer array

**14. When new data are to be inserted into a data structure, but there is no available space; this situation is usually called**
a. underflow b. overflow c. housefull d. saturated

**15. The situation when in a linked list START=NULL is**
a. underflow b. overflow c. housefull d. saturated

**16. Which of the following is two way list?**
a. grounded header list b. circular header list c. linked list with header and trailer nodes d. none of above

**17. Which of the following name does not relate to stacks?**
a. FIFO lists b. LIFO list c. Piles d. Push-down lists

**18. The term "push" and "pop" is related to the**
a. array b. lists c. stacks d. all of above

**19. A data structure where elements can be added or removed at either end but not in the middle**
a. Linked lists b. Stacks c. Queues d. Deque

**20. When inorder traversing a tree resulted E A C K F H D B G; the preorder traversal would return**
a. FAEKCDBHG b. FAEKCDHGB c. EAFKHDCBG d. FEAKDCHBG

**21. Two main measures for the efficiency of an algorithm are**
a. Processor and memory b. Complexity and capacity c. Time and space d. Data and space

**22. The time factor when determining the efficiency of algorithm is measured by**
a. Counting microseconds b. Counting the number of key operations c. Counting the number of statements d. Counting the kilobytes of algorithm

**23. The space factor when determining the efficiency of algorithm is measured by**
a. Counting the maximum memory needed by the algorithm b. Counting the minimum memory needed by the algorithm c. Counting the average memory needed by the algorithm d. Counting the maximum disk space needed by the algorithm

**24. Which of the following case does not exist in complexity theory**
a. Best case b. Worst case c. Average case d. Null case

**25. The Worst case occur in linear search algorithm when**
a. Item is somewhere in the middle of the array b. Item is not in the array at all c. Item is the last element in the array
d. Item is the last element in the array or is not there at all

**26. The Average case occur in linear search algorithm**
a. When Item is somewhere in the middle of the array b. When Item is not in the array at all c. When Item is the last element in the array
d. When Item is the last element in the array or is not there at all

**27. The complexity of the average case of an algorithm is**
a. Much more complicated to analyze than that of worst case b. Much more simpler to analyze than that of worst case
c. Sometimes more complicated and some other times simpler than that of worst case d. None or above

**28. The complexity of linear search algorithm is**
a. O(n) b. O(log n) c. O(n2) d. O(n log n)

**29. The complexity of Binary search algorithm is**
a. O(n) b. O(log ) c. O(n2) d. O(n log n)

**30. The complexity of Bubble sort algorithm is**
a. O(n) b. O(log n) c. O(n2) d. O(n log n)

**31. The complexity of merge sort algorithm is**
a. O(n) b. O(log n) c. O(n2) d. O(n log n)

**32. The indirect change of the values of a variable in one module by another module is called**
a. internal change b. inter-module change c. side effect d. side-module update

**33. Which of the following data structure is not linear data structure?**
a. Arrays b. Linked lists c. Both of above d. None of above

**34. Which of the following data structure is linear data structure?**
a. Trees b. Graphs c. Arrays d. None of above

**35. The operation of processing each element in the list is known as**
a. Sorting b. Merging c. Inserting d. Traversal

**36. Finding the location of the element with a given value is:**
a. Traversal b. Search c. Sort d. None of above

**37. Arrays are best data structures**
a. for relatively permanent collections of data b. for the size of the structure and the data in the structure are constantly changing
c. for both of above situation d. for none of above situation

**38. Linked lists are best suited**
a. for relatively permanent collections of data b. for the size of the structure and the data in the structure are constantly changing
c. for both of above situation d. for none of above situation

**39. Each array declaration need not give, implicitly or explicitly, the information about**
a. the name of array b. the data type of array c. the first data from the set to be stored
d. the index set of the array

**40. The elements of an array are stored successively in memory cells because**
a. by this way computer can keep track only the address of the first element and the addresses of other elements can be calculated
b. the architecture of computer memory does not allow arrays to store other than serially
c. both of above d. none of above

**41 What will be the output of the following arithmetic expression ?**
5+3*2%10-8*6
a) -37 b) -42 c) -32 d) -28

**42. What will be the output of the following statement ?**
int a=10; printf("%d &i",a,10);
a) error b) 10 c) 10 10 d) none of these

**43. What will be the output of the following statement ?**
printf("%X%x%ci%x",11,10,'s',12);
a) error b) basc c) Bas94c d) none of these

**44. What will be the output of the following statements ?**
int a = 4, b = 7,c; c = a = = b; printf("%i",c);
a) 0 b) error c) 1 d) garbage value

**45. What will be the output of the following statements ?**
int a = 5, b = 2, c = 10, i = a>b
void main()
{ printf("hello"); main(); }
a) 1 b) 2 c) infinite number of times d) none of these

**46. What will be the output of the following statements ?**
int x[4] = {1,2,3}; printf("%d %d %D",x[3],x[2],x[1]);
a) 03%D b) 000 c) 032 d) 321

**47. What will be the output of the following statement ?**
printf( 3 + "goodbye");
a) goodbye b) odbye c) bye d) dbye

**48. What will be the output of the following statements ?**
long int a = scanf("%ld%ld",&a,&a); printf("%ld",a);

a) error b) garbage value c) 0 d) 2

**49. What will be the output of the following program ?**

```
#include
void main()
{ int a = 2;
switch(a)
{ case 1:
printf("goodbye"); break;
case 2:
continue;
case 3:
printf("bye");
}
}
```

a) error b) goodbye c) bye d) byegoodbye

**50. What will be the output of the following statements ?**

```
int i = 1,j; j=i--- -2; printf("%d",j);
```

a) error b) 2 c) 3 d) -3

**51**. What is the output of this program?

```
#include <iostream>
#include <functional>
#include <numeric>
using namespace std;
int myop (int x, int y)
{
  return x + y;
}
int main ()
{
  int val[] = {1, 2, 3, 5};
  int result[7];
  adjacent_difference (val, val + 7, result);
  for (int i = 0; i < 4; i++)
    cout << result[i] <<' ';
  return 0;
}
```

a) 1 1 1 2 b) 1 2 3 1 c) 1 2 3 5 d) None of the mentioned

**52**. What is the output of this C code?

```
#include <stdio.h>
int main()
{
  float a = 2.455555555555;
  printf("%f", a);
}
```

a. 2.455555 b. 2.455556 c. 2.456 d. 2.46

**53**. What is the output of this C code?

```
#include <stdio.h>
void main()
{
  struct student
  {
    int no;
    char name[20];
  };
  struct student s;
```

```
    no = 8;
    printf("%d", no);
}
```

a) Nothing b) Compile time error c) Junk d) 8

**54**. What is the output of this C code?

```
#include <stdio.h>
void main()
{
    char *p = calloc(100, 1);
    p = "welcome";
    printf("%s\n", p);
}
```

a) Segmentation fault b) Garbage c) Error d) welcome

**55**. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int a[4] = {1, 2, 3, 4};
    int *p = &a[1];
    int *ptr = &a[2];
    ptr = ptr * 1;
    printf("%d\n", *ptr);
}
```

a) 2 b) 1 c) Compile time error d) Undefined behaviour