

1. The set of all values of a for which the function $f(x) = \left(\frac{\sqrt{a+4}}{1-a} - 1\right)x^5 - 3x + \log 5$ decreases for all real x is _____.
- (A) $\left(-3, \frac{5-\sqrt{27}}{2}\right) \cup (2, \infty)$ (B) $(-\infty, \infty)$
 (C) $\left[-4, \frac{3-\sqrt{21}}{2}\right] \cup (1, \infty)$ (D) $[1, \infty)$
2. If $2\tan^{-1}x + \sin^{-1}\frac{2x}{1+x^2}$ is independent of x , then _____.
- (A) $x \in [1, \infty)$ (B) $x \in [-1, 1]$ (C) $x \in (-\infty, 1)$ (D) $x \in (-\infty, 1]$
3. Which of the following functions is NOT injective?
- (A) $f: R \rightarrow R, f(x) = 2x + 7$ (B) $f: [0, \pi] \rightarrow [-1, 1], f(x) = \cos x$
 (C) $f: \left[-\frac{\pi}{2}, \frac{\pi}{2}\right] \rightarrow [-1, 1], f(x) = 2\sin x + 3$ (D) $f: R \rightarrow [-1, 1], f(x) = \sin x$
4. At the point $x = 1$, the function $f(x) = \begin{cases} x^3 - 1, & 1 < x < \infty \\ x - 1, & -\infty < x \leq 1 \end{cases}$ is _____.
- (A) Continuous and differentiable (B) Continuous and not differentiable
 (C) Discontinuous and differentiable (D) Discontinuous and not differentiable
5. In a game called 'odd man out' 4 persons toss a coin to decide who will buy refreshments for the entire group. A person who gets an outcome different from that of the rest of the members of the group is called the 'odd man out'. The probability that there is a loser in any game is _____.
- (A) $1/3$ (B) $1/4$ (C) $1/2$ (D) None of these

6. The period of the function $f(x) = [\sin 3x] + |\cos 6x|$ is _____.
- (A) π (B) $2\pi/3$ (C) 2π (D) $\pi/2$
7. If $f(x)$ is a polynomial of degree three such that $f(0) = 1$, $f(1) = 2$ and 0 is a critical point but $f(x)$ does not have extremum at 0, then $\int \frac{f(x)}{\sqrt{x^2+7}} dx$ is _____.
- (A) $\frac{1}{3}(x^2+7)^{3/2} - 7(x^2+7)^{1/2} + \log|x+\sqrt{x^2+7}| + C$
- (B) $\frac{1}{3}(x^2+7)^{3/2} + 7(x^2+7)^{1/2} + \log|x+\sqrt{x^2+7}| + C$
- (C) $(x^2+7)^{3/2} + 7(x^2+7)^{1/2} + \log|x+\sqrt{x^2+7}| + C$
- (D) None of these
8. The function $f(x) = \sin^{-1}(\cos x)$ is _____.
- (A) Continuous at $x = 0$ (B) Discontinuous at $x = 0$
- (C) Differentiable at $x = 0$ (D) None of these.
9. A fair coin is tossed. If the result is a head, a pair of fair dice is rolled and the number obtained by adding the numbers on the two faces is noted. If the result is a tail, a card from a well shuffled pack of 11 cards numbered 2, 3, 4, ..., 12 is picked up and the number on the card is noted. The probability that the noted number is 7 or 8, is _____.
- (A) $\frac{193}{792}$ (B) $\frac{195}{792}$ (C) $\frac{191}{792}$ (D) $\frac{190}{792}$

10. If $\Delta = \begin{vmatrix} \frac{1-a_1^3b_1^3}{1-a_1b_1} & \frac{1-a_1^3b_2^3}{1-a_1b_2} & \frac{1-a_1^3b_3^3}{1-a_1b_3} \\ \frac{1-a_2^3b_1^3}{1-a_2b_1} & \frac{1-a_2^3b_2^3}{1-a_2b_2} & \frac{1-a_2^3b_3^3}{1-a_2b_3} \\ \frac{1-a_3^3b_1^3}{1-a_3b_1} & \frac{1-a_3^3b_2^3}{1-a_3b_2} & \frac{1-a_3^3b_3^3}{1-a_3b_3} \end{vmatrix}$, then

- (A) $\Delta = 0$ (B) Δ depends only on a_1, a_2, a_3
- (C) Δ depends only on b_1, b_2, b_3 (D) Δ depends on $a_1, a_2, a_3, b_1, b_2, b_3$

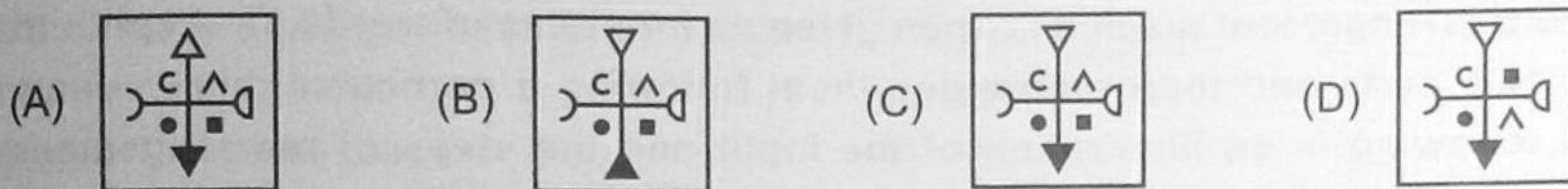
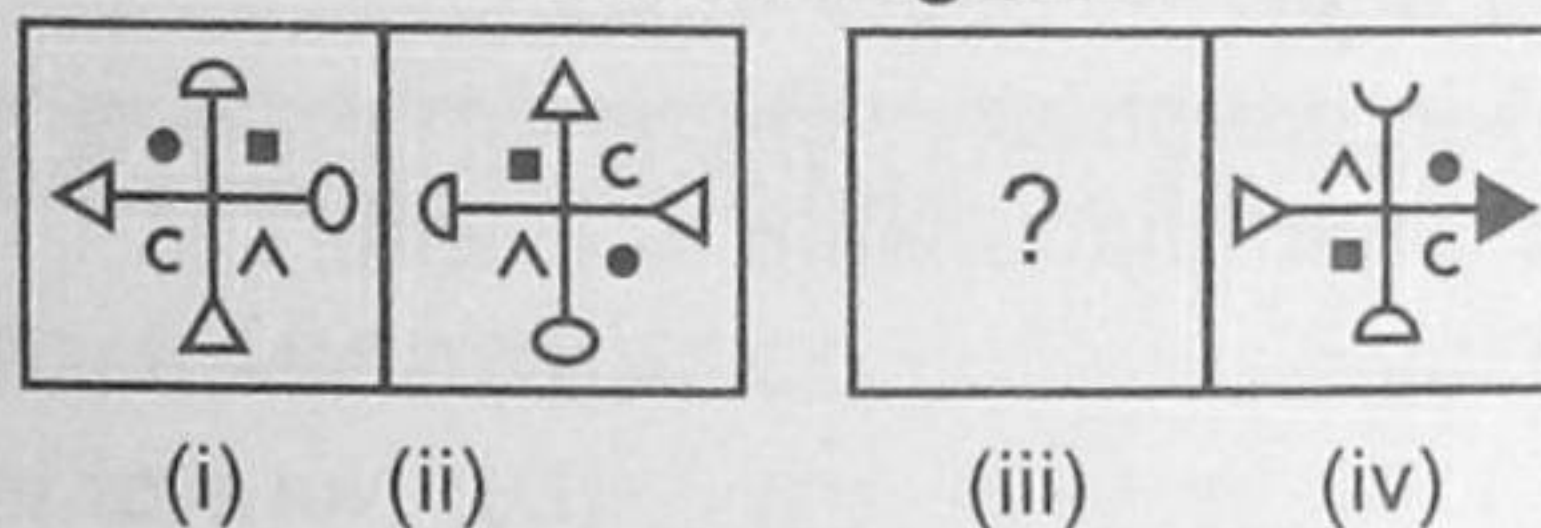
LOGICAL AND ANALYTICAL REASONING

11. 'baw haw daw kaw' means 'Poachers killed some tigers', 'vaw gaw jaw haw' means 'Tigers are brave creatures', 'kaw law maw vaw' means 'some watchman were brave' and 'maw jaw naw baw' means 'watchman are searching poachers'. Then what does 'kaw baw' means ?
- (A) some watchman (B) brave tigers
- (C) brave creatures (D) some poachers

12. *A, B, C, D* and *E* play a game of cards. *A* says to *B*, "If you give me 3 cards, you will have as many as I have at this moment while if *D* takes 5 cards from you, he will have as many as *E* has". *A* and *C* together have twice as many cards as *E* has *B* and *D* together also have the same number of cards as *A* and *C* have taken together. If all together they have 150 cards, how many cards has *C* got?
- (A) 28 (B) 29 (C) 31 (D) 35

13. Figures (i) and (ii) bear a certain relationship. Similarly figure (iii) bears the same relationship to the figure (iv). Select the figure from the options which would fit in the question mark (?) in figure (iii).

Problem Figures



14. Read the information given below to answer the question that follows :
- There is a group of five girls.
 - Kamini is second in height but younger than Rupa.
 - Pooja is taller than Monika but younger in age.
 - Rupa and Monika are of the same age but Rupa is tallest between them.
 - Neelam is taller than Pooja and elder to Rupa.
- To answer the question "Who is youngest person in the group", which of the following statement is superfluous?

- (A) Only (i) (B) Only (v) (C) Only (ii) (D) Data inadequate

15. Amit starts from a point *A* and walks 5 m towards North-East direction and reaches point *B*. From here he travels 8 m in East direction and reaches point *C*. From *C* he travels towards South-West direction and reaches point *D* after travelling a distance equal to *AB*. At last, he turns towards West direction and reaches point *A*. How much distance has been covered by Amit and which geometrical figure has been formed by the path travelled by him?

- (A) 26 m, Square (B) 26 m, Parallelogram
(C) 26 m, Trapezium (D) 16 m, Parallelogram

16. Find the missing number from amongst the options at the place of sign of interrogation (?).

- (A) 3
- (B) 42
- (C) 44
- (D) 45

4	5	3	2	0
7	3	4	4	21
6	4	4	5	22
9	6	5	5	?

17. Study the following information carefully to answer the question given below.

- (i) 'A\$B' means 'A is mother of B'.
- (ii) 'A#B' means 'A is the father of B'.
- (iii) 'A@B' means 'A is the husband of B'.
- (iv) 'A%B' means 'A is daughter of B'.

P@Q\$M#T indicates what relationship of P with T ?

- (A) Maternal Grandfather
- (B) Paternal Grandfather
- (C) Grandson
- (D) None of these

18. A word arrangement machine, when given an input line of words, first splits the line into two parts and then rearranges them following a particular rule in each step. The following is an illustration of the input and the steps of rearrangements.

Input : a better bird in hand is bush than two stuck in the

Step I : a better bird in hand is bush than two stuck in the

Step II : a better bird hand in is bush in than two stuck the

Step III : a better bird hand in is bush in stuck than two the

Step IV : a better bird hand in is bush in stuck than the two

(Step IV is the last step for this input)

As per the rules followed in the above steps

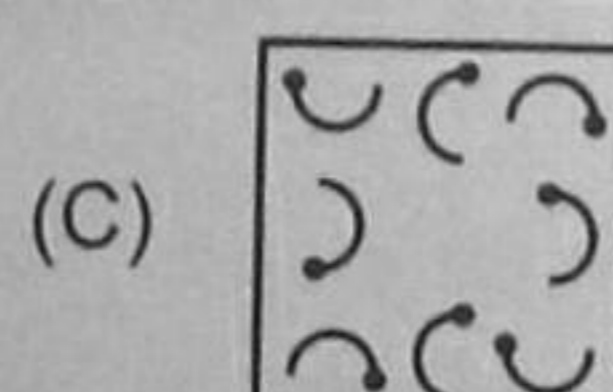
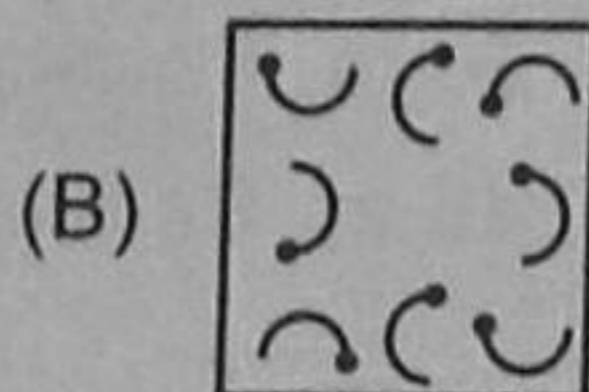
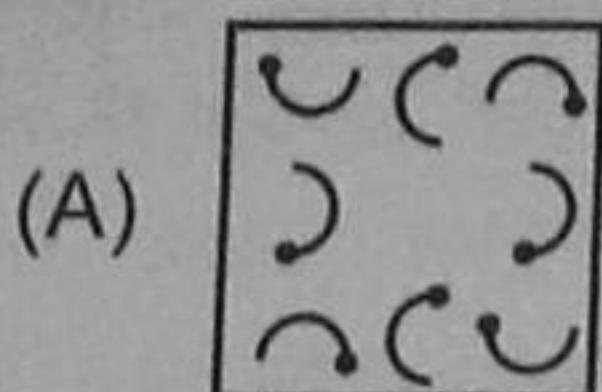
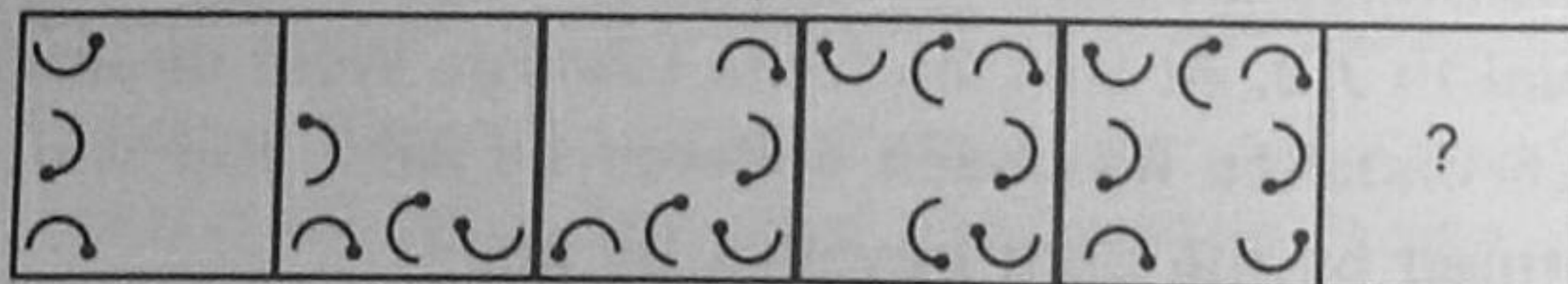
What will be the step I of the given below input?

Input : 'always look around before you leap'

- (A) always look around before leap you
- (B) always around look before you leap
- (C) always around look before leap you
- (D) always around before look you leap

19. In the series given below which one of the four option figures should come at place of '?' if sequence is continued?

Problem Figures



(D) None of these

20. Read the information given below and then answer the following questions.
Six persons are sitting in two rows in such a way that three persons sitting in each row are facing the persons of the other row.
- (i) Mahima is not sitting in the beginning of any row.
 - (ii) Jiya is second to the left of Arun.
 - (iii) Mohit, who is the neighbour of Mahima is sitting diagonally opposite to Arun.
 - (iv) Ashish is a neighbour of Jiya.
 - (v) Vishal is sitting to the immediate left of Mahima.
- Who among the following are sitting diagonally opposite to each other?
- (A) Arun, Vishal (B) Arun, Mahima (C) Mohit, Ashish (D) Jiya, Vishal

COMPUTERS AND INFORMATION TECHNOLOGY

21. Simplify $AB'CD' + AB'CD + ABCD' + ABCD$.
- (A) $B'D'$ (B) AC (C) $A'BC'D$ (D) $ABCD$
22. The binary equivalent for the number $(7DF1)_{10} = \underline{\hspace{2cm}}$.
- (A) 101010101110001 (B) 101010101111101
(C) 0111110111110001 (D) 101100111110001
23. This cache is external to the CPU and resides on the motherboard. Its typical cache memory sizes are 64/128 KB in 386DX systems, 128/256 KB in 486 systems and 256/512 KB in Pentium systems.
- (A) Level 1 (L1) (B) Level 2 (L2) (C) Level 4 (L4) (D) Level 8 (L8)
24. Which of the following is correct about class and structure?
- (A) Class can have member functions while structure cannot.
 - (B) Class data members are public by default while that of structure are private.
 - (C) Pointer to structure or classes cannot be declared.
 - (D) Class data members are private by default while that of structure are public by default.
25. Which of the following C++ concept allows a compiler to insert arguments in a function call if they are not specified?
- (A) Call by value (B) Default arguments
(C) Call by reference (D) Call by pointer
26. A virus that changes its virus signature everytime it replicates and infects a new file making it more difficult to be detected by an ordinary antivirus program.
- (A) Parasitic virus (B) Macro virus
(C) Polymorphic virus (D) Multipartite virus

27. Given the following set of identifiers:

long longvar;

int intvar;

char charvar;

Find the datatype of the following C++ expression:

longvar * intvar - charvar

(A) float

(B) double

(C) long

(D) int

28. A C++ destructor has the same name as the constructor and it is preceded by

(A) !

(B) ?

(C) ~

(D) \$

29. SD is a non-volatile memory card format for use in portable devices. SD stands for ____.

(A) Standard Definition

(B) Self Digital

(C) Single Data

(D) Secure Digital

30. Which of the following is a disadvantage of a database system?

(A) Reduced data redundancy

(B) Shared, Secured and Integrated data

(C) Substantial hardware and software start up costs

(D) Improved data security

31. A _____ is a computer program that secretly gathers information about the user and relays it to advertisers and other interested parties.

(A) Spyware

(B) Spam

(C) Worm

(D) Antivirus

32. Which of the following is NOT a data-backup method?

(A) Incremental

(B) Differential

(C) Mirror

(D) Exact copy backup

33. _____ is similar to an online address book.

(A) Inbox

(B) Contacts manager

(C) Contact group

(D) None of these

34. Thunderbold (interface) was brought to the market by Intel with technical collaboration from ____.

(A) Microsoft

(B) Apple

(C) Toshiba

(D) Acer

35. Which of the following is NOT a social networking site?

(A) Ning

(B) Tagged

(C) hi5

(D) MyYear

36. The chinese company, who sued Facebook claiming, "Timeline as their feature" is _____.
- (A) Cubic Network (B) Cuboidal Network
(C) Square Network (D) Central Network

37. It is an Unix operating system developed by Sun Microsystems in 1992 as the successor of SunOS. It is _____.
- (A) Linux (B) Solaris (C) Boss (D) SunSparc

38. What is the output of the following program?

```
#include<iostream.h>
int main()
{
int a,*b,**c,***d;
a=12;
b=&a;
c=&b;
d=&c;
cout<<a<<"\n"<<a*b<<"\n";
cout<<**c+***d;
return 0;
}
```

- (A) 24 (B) 12 (C) 12 (D) 12
12 24 12 12
24 24 24 12

39. Here is some information given below :

- It is a social networking service owned by Specific Media LLC and popstar Justin Timberlake.
- Its founders are Chris DeWolfe and Tom Anderson.
- It created a gaming platform that launched the successes of Zynga and RockYou. Identify it.

- (A) Twitter (B) Orkut (C) MySpace (D) Facebook

40. BCI (Brain-Computer Interface) is often called _____.

- (A) MMP (B) NCF (C) MMI (D) UCLA

41. What will be the output of the following program?

```
#include<iostream.h>
void main( )
{
    int i = 15;
    const int &j = i;
    cout << i << endl << j << endl;
    i = 9;
    cout << j << endl << j;
}
```

- (A) 15
9
9
15
- (B) 15
9
9
9
- (C) 15
15
9
9
- (D) 151599

42. Point out the errors, if any, in the following program :

```
const int a = 124;
void main( )
{
    const int *sample( );
    int *p;
    p = sample( );
}
const int *sample( )
{
    return (& a);
}
```

- (A) Error in statement return(& a);
- (B) Error in statement p = sample ();
- (C) Error in statement int *p;
- (D) Error in statement const int *sample();

43. In Windows Movie Maker, you can use _____ to look at the sequence or order of clips in your project and easily rearrange them.

- (A) Timeline (B) Monitor (C) Storyboard (D) None of these

44. _____ is a variable that holds memory address in C++.

- (A) Array (B) Function (C) Pointer (D) Reference

45. _____ header file declares basic C++ streams I/O routines.

- (A) iostream.h (B) conio.h (C) math.h (D) stdlib.h

46. _____ is a memory location shared by two or more different variables.
(A) Union (B) Structure (C) Enumeration (D) Array
47. In Windows Movie Maker, when you import a video file 1.mpg it will be shown in _____.
(A) Timeline (B) Collection pane
(C) Storyboard (D) Movie Tasks pane
48. Which of the following is NOT a video format?
(A) mpeg-4 (B) flv (C) 3gp (D) wma
49. _____ is an alternative name for an object in C++.
(A) Reference (B) Function (C) Pointer (D) Array
50. _____ header file defines types and macros needed for the standard I/O package.
(A) stdio.h (B) stdlib.h (C) conio.h (D) string.h