

# MENTAL ABILITY

1. The value of  $\sin^{-1}[\cos(\cos^{-1}(\cos x) + \sin^{-1}(\sin x))]$ , where  $x \in \left(\frac{\pi}{2}, \pi\right)$ , is
- (A)  $\frac{\pi}{2}$                       (B)  $-\pi$                       (C)  $\pi$                       (D)  $-\frac{\pi}{2}$
2. If  $y = (1 + x^2) \tan^{-1} x - x$ , then  $\frac{dy}{dx}$  is equal to
- (A)  $\tan^{-1} x$                       (B)  $2x \tan^{-1} x$                       (C)  $2x \tan^{-1} x - 1$                       (D)  $\frac{2x}{\tan^{-1} x}$
3. If  $f(x) = |x|$ , then  $f(x)$  is
- (A) Continuous for all  $x$   
 (B) Differentiable at  $x = 0$   
 (C) Neither continuous nor differentiable at  $x = 0$   
 (D) None of these
4.  $f(x) = x^3 + ax^2 + bx + 5 \sin^2 x$  for all  $x \in R$  is a monotonically increasing function, if  $a$  and  $b$  satisfy the condition
- (A)  $a^2 + 3b - 15 > 0$                       (B)  $a^2 + 3b + 15 > 0$   
 (C)  $a^2 + 3b + 15 < 0$                       (D) None of these
5. If  $f(x) = \begin{vmatrix} x^2 - 4x + 6 & 2x^2 + 4x + 10 & 3x^2 - 2x + 16 \\ x - 2 & 2x + 2 & 3x - 1 \\ 1 & 2 & 3 \end{vmatrix}$ , then the value of  $\int_{-3}^3 \frac{x^2 \sin x}{1 + x^6} \cdot f(x) dx$  is
- (A) 6                      (B) 3                      (C) 0                      (D)  $\frac{\pi}{2}$

6. The range of the function  $f(x) = \frac{x-2}{2-x}$  when  $x \neq 2$  is  
 (A)  $R$  (B)  $R - \{1\}$  (C)  $\{-1\}$  (D)  $R - \{-1\}$
7. A bag contains  $n + 1$  coins. It is known that one of these coins shows heads on both sides, whereas the other coins are fair. One coin is selected at random and tossed. If the probability that toss results in heads is  $\frac{7}{12}$ , then the value of  $n$  is  
 (A) 3 (B) 4 (C) 5 (D) 2
8.  $\int \frac{e^x(1 + \sin x)}{1 + \cos x} dx$  is equal to  
 (A)  $e^x \tan\left(\frac{x}{2}\right) + C$  (B)  $e^x \tan x + C$   
 (C)  $e^x \tan\left(\frac{1 + \sin x}{1 - \cos x}\right) + C$  (D)  $C - e^x \cot\left(\frac{x}{2}\right)$
9. The area of the region  $R = \{(x, y) : |x| \leq |y| \text{ and } x^2 + y^2 \leq 1\}$  is  
 (A)  $\frac{3\pi}{8}$  sq. units (B)  $\frac{5\pi}{8}$  sq. units (C)  $\frac{\pi}{2}$  sq. units (D)  $\frac{\pi}{8}$  sq. units
10. If the distance from the point  $(3, 4, 5)$  to the point where the line  $\frac{x-3}{1} = \frac{y-4}{2} = \frac{z-5}{2}$  meets the plane  $x + y + z = 17$ , is  
 (A) 1 (B) 2 (C) 3 (D) 4

## LOGICAL AND ANALYTICAL REASONING

11. In a group of six women there are four table tennis players, four post-graduates in Economics, one post-graduate in Commerce and three bank employees. Beena and Priya are among the bank employees while Megha and Garima are unemployed. Priya and Latika are among the table tennis players. Megha, Priya, Garima and Latika are post-graduates in Economics of whom two are bank employees. If Zoya is a post-graduate in Commerce, who among the following is both a table tennis player and a bank employee?  
 (A) Latika (B) Zoya (C) Megha (D) Garima
12. If '+' means 'subtraction', '-' means 'addition', '^' means 'less than', '>' means 'greater than', 'x' means 'equal to', '<' means 'multiplication', and '>' means 'division', then which of the following statements is true?  
 (A)  $9 \wedge 5 + 2 \div 4 > 12$  (B)  $(9 + 5) \wedge (2 < 4) > 2$   
 (C)  $9 + 5 + (2 < 4) \times 12$  (D)  $9 < 5 - 2 \div (4 < 12)$

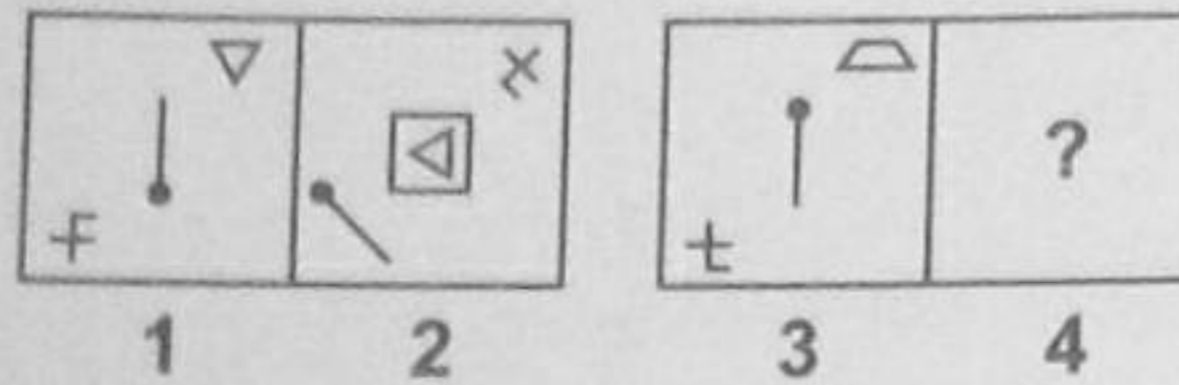
13. If the following words are arranged as found in the dictionary, then what will be the fourth letter from the left in the last word ?

INTIMATION, INFORMATION, INTEREST, INTERROGATION, INSTIGATION

- (A) R (B) O (C) T (D) I

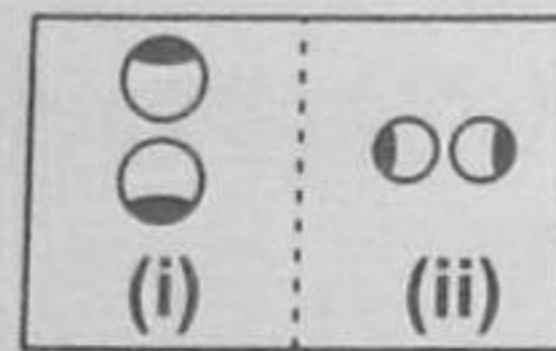
14. Figures (1) and (2) bear a certain relationship. Similarly, figure (4) bears the same relationship to figure(3). Select the figure from the options which would replace the sign of question mark (?) in Fig. (4).

Problem Figures



- (A) (B) (C) (D)

15. A related pair of figures is given, followed by four answer pairs marked as (A), (B), (C) and (D). Select that pair which does not have similar relationship as in the given pair.



- (A) (B) (C) (D)

16. Select the figure from the options which will complete the pattern in fig. (X)?

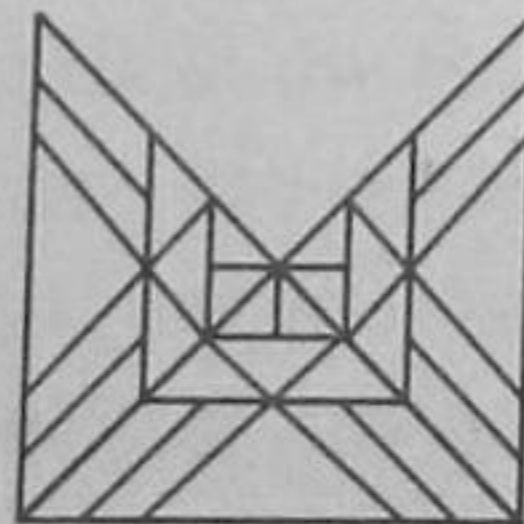


Fig. (X)

- (A) (B) (C) (D)

17. If Nishant is the brother of Brijesh; Mitali is the sister of Nishant; Jai is the brother of Purnima; Purnima is the daughter of Brijesh. Who is the uncle of Jai ?

- (A) Brijesh (B) Mitali (C) Nishant (D) Purnima

18. In the International games, flags of 6 nations were hoisted in the following way. The flag of America was to the left of Indian Tricolour and to the right of the flag of France. The flag of Australia was on the right of the Indian flag but to the left of the flag of Japan, which was to the left of the flag of China. Find the two flags which are in the centre.

- (A) America and India (B) Japan and Australia  
 (C) America and Australia (D) India and Australia

19. Choose the answer which shows the correct water image of the given word.

5 0 J A 3 2 D E O 6

- (A) 2 0 1 V 3 5 D E O 9 (B) 2 0 1 V 3 5 D E O 0  
 (C) 2 0 1 V 3 2 D E O 0 (D) 2 0 1 V 3 5 D E O 0

20. How many 6's are there in the series each of which is immediately preceded by 5 but not immediately followed by 9?

5 6 8 6 7 6 5 6 5 6 8 5 9 6 5 6 9 6 8 6 5 5 6 8 6 5 9 5 6 9 5 6 8

- (A) 4 (B) 6 (C) 7 (D) 5

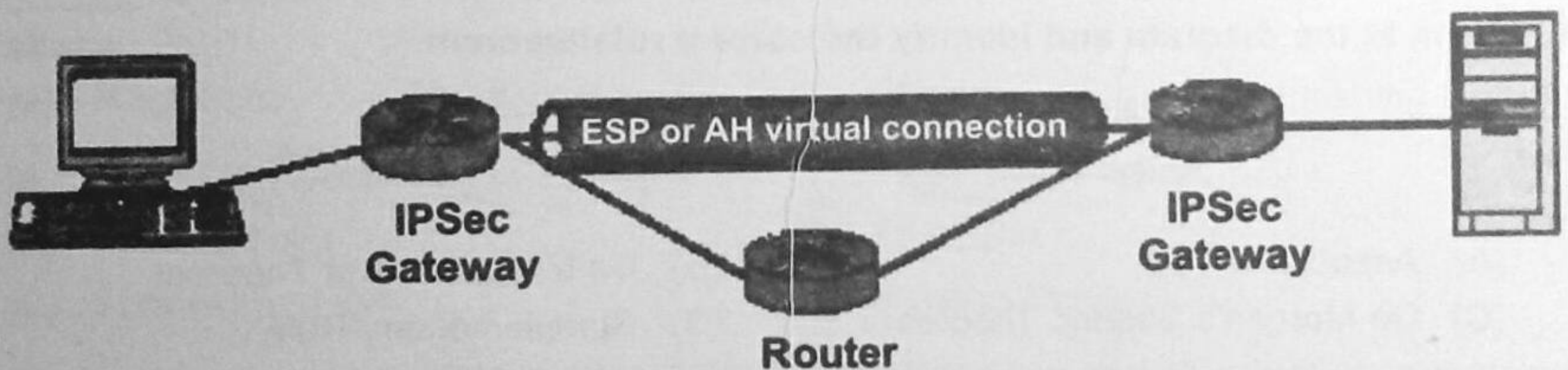
**COMPUTERS AND INFORMATION TECHNOLOGY**

21. Which of the following options is correct when you convert the given infix expression into the postfix form?

$-A+B*BC^{(D*E)}/F$

- (A) A-BCDE^\*F\*/+ (B) A-BCDE\*\*F\*/+  
 (C) A-BCDE\*\*\*/F+ (D) A-BCDE\*\*/F/^+

22. Identify the IPSec mode shown below.



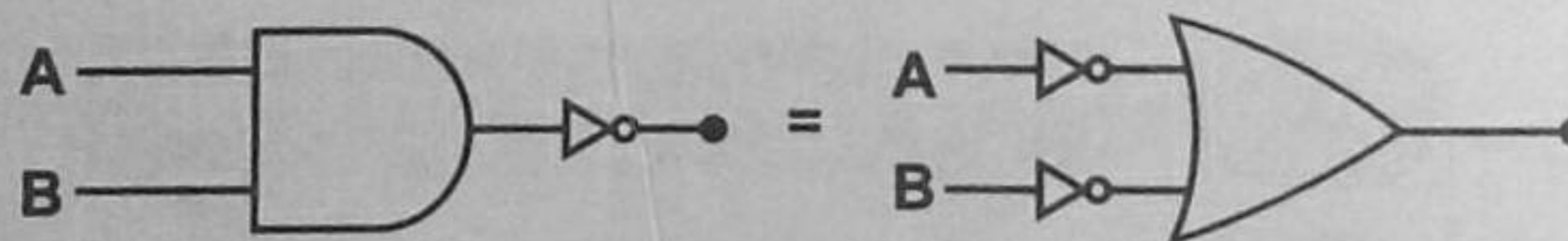
- (A) Transport mode (B) Tunnel mode  
 (C) Authentication header (D) Both (A) and (C)

23. In DBMS, \_\_\_\_\_ key provides sole tuple-level addressing mechanism within the relational model.

- (A) Candidate (B) Primary (C) Foreign (D) Unique

24. Which of the following SQL code is correct if you want to show the average salary for all the departments with more than 2 people for a job from the table emp.
- (A) Select AVG(sal) from emp GROUP BY deptno HAVING COUNT (empno)>2;  
 (B) Select AVG(sal) from emp where COUNT>2;  
 (C) Select AVG(sal) from emp GROUP BY (empno) where COUNT > 2;  
 (D) Select AVG(sal) from emp GROUP BY (empno) AND COUNT>2;
25. Which of the following statements is INCORRECT in contrast to EPIC technology?
- (A) It allows software to communicate explicitly to the processor when operations can be done parallel.  
 (B) It uses tight coupling between compiler and processor.  
 (C) It predicts and executes one of the paths of a branch.  
 (D) It is more powerful than RISC and CISC processors.
26. In \_\_\_\_\_ transmission, several bits of data are transmitted concurrently through separate communication lines.
- (A) Full Duplex      (B) Half Duplex      (C) Serial      (D) Parallel
27. In relational database, if the elements of a domain are considered to be indivisible units then the domain is called as \_\_\_\_\_.
- (A) Cardinal      (B) Dynamic      (C) Atomic      (D) Virtual
28. In Ms- Excel, what happens if you press the "Up arrow" key while the scroll lock is on?
- (A) Moves the active cell up one row  
 (B) Moves the active cell up one screen  
 (C) Scrolls the screen up one row without changing the active cell  
 (D) None of these

29. Look at the diagram and identify the correct rule/theorem.



- (A) Associative rule      (B) De Morgan's First Theorem  
 (C) De Morgan's Second Theorem      (D) Complementary Rule
30. Identify the minimized form of the following function.
- $$F = \bar{x}.\bar{y}.z + \bar{x}.y.z + x.\bar{y}$$
- (A)  $x.y + \bar{x}.z$       (B)  $\bar{x}.z + x.\bar{y}$       (C)  $(x + y).(\bar{x} + z)$       (D)  $x.y + z$
31. The encryption and decryption algorithms are referred as \_\_\_\_\_.
- (A) Blowfish      (B) Ciphers      (C) Private key      (D) Ciphertext

32. A process in which the multicast packet is encapsulated in a unicast packet and then sent through the network is called \_\_\_\_\_.
- (A) Unipolar encoding (B) Symmetric encryption  
(C) Tunneling (D) Switching
33. In Windows Movie Maker, a file on your computer that contains an image, a clip, a soundtrack or all the footage from your video digital camera, is \_\_\_\_\_.
- (A) Project (B) Storyboard (C) Source file (D) Master
34. Which layer/sub-layer in OSI model defines that who can use the network when multiple computers are trying to access it simultaneously?
- (A) Application (B) Transport (C) LLC (D) MAC
35. In Ms-PowerPoint, which of the following is NOT a category of SmartArt Graphics?
- (A) List (B) Relationship (C) Matrix (D) Level
36. Which of the following statements is INCORRECT with context to XML?
- (A) It was designed to transport and store data.  
(B) It is not a replacement of HTML.  
(C) The XML documents do not form a tree structure.  
(D) A user can create his/her own tags in it.
37. Protocol Data Unit (PDU) of Data Link layer is \_\_\_\_\_.
- (A) Bits (B) Frames (C) Packets (D) Segments
38. In Ms-Word, \_\_\_\_\_ wrapping style creates a hole in the text as per the outline of the same shape where the graphic is.
- (A) Square (B) Tight (C) Behind Text (D) Through
39. \_\_\_\_\_ is sending e-mails that contain less information and much vitriol and abuse.
- (A) Plagiarism (B) Spam (C) Flaming (D) Phishing
40. In \_\_\_\_\_ connection type, three or more devices share a link.
- (A) Point-to-Point (B) Multipoint  
(C) Both (A) and (B) (D) None of these
41. A layer that is responsible for establishing, maintaining and terminating a dialogue between two end users is \_\_\_\_\_ layer.
- (A) Transport (B) Session (C) Data Link (D) Physical
42. \_\_\_\_\_ is a new development by Google to provide internet access at more cheap rates.
- (A) Modem (B) Google Hub  
(C) Google Balloon (D) Google Net Earth

43. What is this given C++ program used for?

```
#include<iostream.h
#include<conio.h>
int main( )
{
int n, i, x, y, z;
cout <<" Enter the number";
cin >>n;
x = 0;
y = 1;
cout <<"\n"<<x<<" "<<y;
for (i = 2; i <=n; i++)
{
z = x+y;
cout <<" "<<z;
x = y;
y = z;
}
return 0;
}
```

- (A) Prints the first n terms of the fibonacci series.
- (B) Prints the factorial of the number.
- (C) Prints the number of digits in a number entered by the user.
- (D) To check for Armstrong number.

44. \_\_\_\_\_ viruses are designed to gain administrative control over a system without being detected.

- (A) Heuristics
- (B) Rootkit
- (C) Real Time
- (D) Both (A) and (C)

45. DNS servers translate web addresses or host names to \_\_\_\_\_.

- (A) Hexadecimal
- (B) IP address
- (C) Binary
- (D) MAC address

46. \_\_\_\_\_ viruses have characteristics of both Boot sector virus and file infector virus.

- (A) Resident
- (B) Non-Resident
- (C) Multipartite
- (D) Real Time

47. A software which is available free of cost and which allows copying and distribution but not modification is called as \_\_\_\_\_.

- (A) Shareware
- (B) Freeware
- (C) Open Source
- (D) None of these

48. When an individual gains unauthorized access to a computer and temper with files, this is known as \_\_\_\_\_.

- (A) Software security holes
- (B) Physical security holes
- (C) Inconsistent security holes
- (D) None of these

49. Aero shake feature of Windows 7 requires \_\_\_\_\_ shakes only in order to perform the task.

(A) 3

(B) 2

(C) 10

(D) 7

50. RIM is the original/initial name of \_\_\_\_\_.

(A) Google

(B) Windows

(C) Blackberry

(D) Apple