1. Total number of solutions of $\sin x = \frac{|x|}{10}$ is equal to

(A) 4 (B) 6 (C) 7 (D) None of these

2. Let $f : R \to R$ be a differentiable function and $f(1) = 4$. Then the value of $\lim_{x \to 1} \int_4^{f(x)} \frac{2t}{x-1} dt$ is

(A) $8f'(1)$ (B) $4f'(1)$ (C) $2f'(1)$ (D) $f'(1)$

3. If $\Delta = \begin{vmatrix} 1 & 3\cos\theta & 1 \\ \sin\theta & 1 & 3\cos\theta \\ 1 & \sin\theta & 1 \end{vmatrix}$, then maximum value of Δ is

(A) 1 (B) 9 (C) 16 (D) None of these

4. Let R be the relation over the set of integers such that mRn if and only if m is a multiple of n. Then R is

(A) Reflexive and transitive (B) Symmetric
(C) Only transitive (D) An equivalence relation

5. The points $\hat{i} - \hat{j} + 3\hat{k}$ and $3\hat{i} + 3\hat{j} + 3\hat{k}$ are equidistant from the plane $\vec{r} \cdot (5\hat{i} + 2\hat{j} - 7\hat{k}) + 9 = 0$, then they are

(A) On the same sides of the plane (B) Parallel to the plane
(C) On the opposite sides of the plane (D) None of these

6. If $\vec{a}, \vec{b}, \vec{c}$ are three non-coplanar vectors, then $(\vec{a} + \vec{b} + \vec{c}) \cdot [(\vec{a} + \vec{b}) \times (\vec{a} + \vec{c})]$ is

(A) 0 (B) $2[\vec{a}\ \vec{b}\ \vec{c}]$ (C) $-[\vec{a}\ \vec{b}\ \vec{c}]$ (D) $[\vec{a}\ \vec{b}\ \vec{c}]$

7. If R be relation '<' from $A = \{1, 2, 3, 4\}$ to $B = \{1, 3, 5\}$ *i.e.*, $(a, b) \in R$ iff $a < b$, then RoR^{-1} is

(A) $\{(1, 3), (1, 5), (2, 3), (2, 5), (3, 5), (4, 5)\}$

(B) $\{(3, 1), (5, 1), (3, 2), (5, 2), (5, 3), (5, 4)\}$

(C) $\{(3, 3), (3, 5), (5, 3), (5, 5)\}$

(D) $\{(3, 3), (3, 4), (4, 5)\}$

8. $\int_{8}^{15} \frac{dx}{(x+3)\sqrt{x+1}}$ is equal to

(A) $\sqrt{2}\tan^{-1}\left(\frac{\sqrt{2}}{14}\right)$ (B) $\frac{1}{4}\log\frac{5}{3}$ (C) $\frac{1}{6}\log\frac{3}{5}$ (D) $\frac{1}{\sqrt{2}}\tan^{-1}\left(\frac{1}{\sqrt{2}}\right)$

9. Let f and g be increasing and decreasing functions respectively from $[0, \infty)$. Let $h(x) = f(g(x))$. If $h(0) = 0$, then $h(x)$ is

(A) Always zero (B) Always negative (C) Always positive (D) Strictly increasing

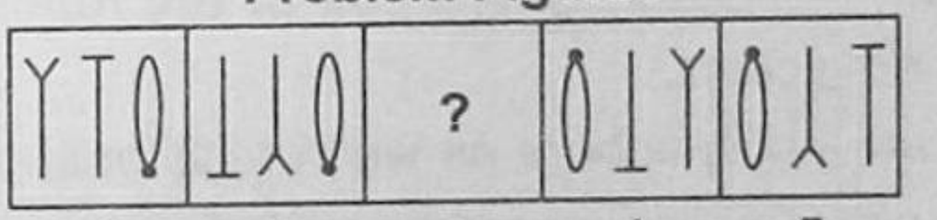
10. The least number of times a fair coin must be tossed so that the probability of getting atleast one head is atleast 0.8, is

(A) 7 (B) 6 (C) 5 (D) 3

LOGICAL AND ANALYTICAL REASONING

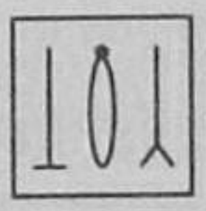
11. Select the figure which would replace the sign of question mark (?), so that the series established by the Problem Figures can be continued.

Problem Figures



(A) 

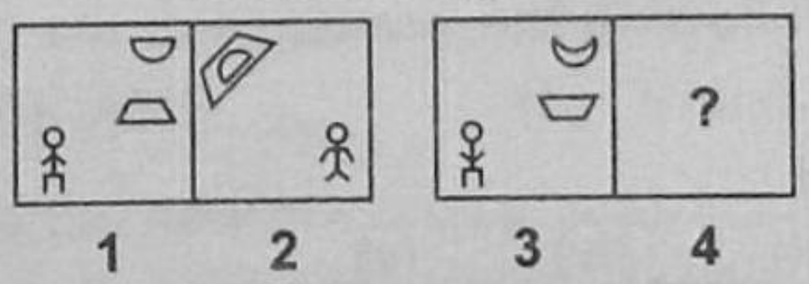
(B) 

(C) 

(D) 

12. 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 (?).

Problem Figures



(A)

(B)

(C)

(D)

13. Choose the figure in which the figure (X) is embedded.

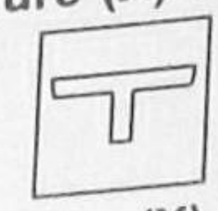
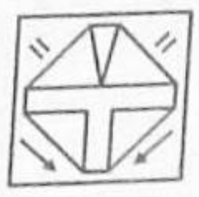
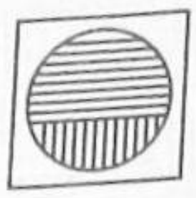
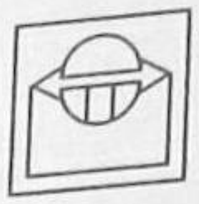


Fig. (X)

(A) 

(B) 

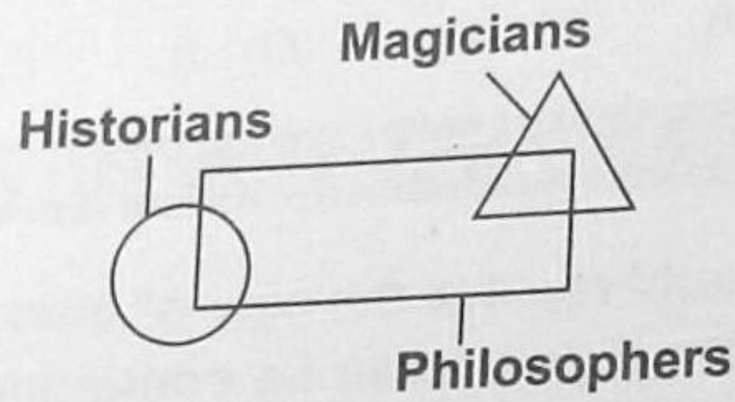
(C) 

(D) 

14. In a certain code language, 'nee muk pic' means 'grave and concern', 'ill dic so' means 'every body else' and 'tur muk so' means 'body and soul'. Which of the following would mean 'every concern'?

(A) dic pic
(B) pic nee
(C) ill nee
(D) Cannot be determined

15. In the given figure, rectangle stands for philosophers, circle stands for historians and triangle stands for magicians.



According to the above diagram, which one of the following statements is true?

(A) All historians are magicians.
(B) Some magicians are philosophers as well as historians.
(C) All historians are either philosophers or magicians.
(D) Some historians are philosophers.

16. How many pairs of letters in the word are as far from each other as they are in the English alphabets in the word 'RELATIONSHIP'?

(A) 1 (B) 2 (C) 3 (D) None of these

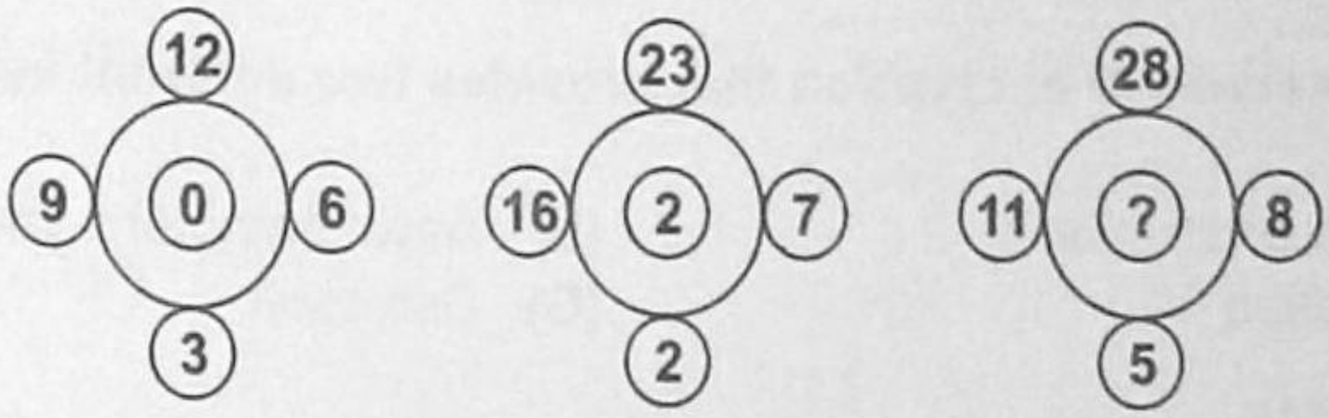
17. There is a number series given. After the series, below it in the next line, a number is given followed by (i), (ii), (iii), (iv) and (v). You have to complete the series starting with the given number following the sequence of the given series. Then, answer the question given below it.

288, 140, 66, 29
488 (i) (ii) (iii) (iv) (v)

Which number will come in place of (v)?

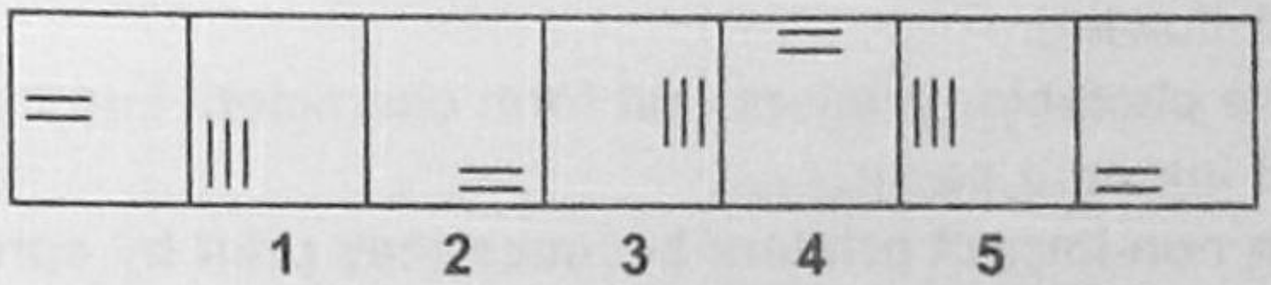
(A) 106 (B) 13.25 (C) 202.5 (D) None of these

18. **Find the missing number in the pattern given below.**



(A) 15 (B) 14 (C) 20 (D) 12

19. **There is a series with two unmarked figures, one each on the extreme left and extreme right. One and only one of the five marked figures does not fit into the series. You have to find out the figure which does not fit into the series.**



(A) 1 (B) 2 (C) 4 (D) 5

20. **Select a figure from the options which will complete the pattern in figure (X).**

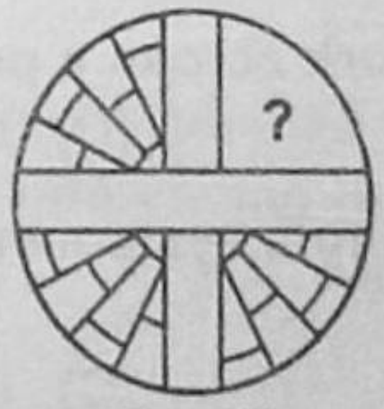


Fig. (X)

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

COMPUTERS AND INFORMATION TECHNOLOGY

21. **_____ gave the design for Lifebook 2013.**

(A) Steve Jobs (B) Prashant Chandra

(C) Ben Gurley (D) Bill Gates

22. **An advanced technique has been developed for searching pictures over internet. Name of the technology is _____.**

(A) ALIPR (B) AMD (C) Midori (D) Domo

23. **_____ layer acts like the network dialog controller and establishes, maintains and synchronizes the interaction among communicating systems.**

(A) Transport (B) Session

(C) Presentation (D) Data Link

24. **In which unit, the data at the physical layer is measured?**
(A) Segments (B) Bits (C) Packets (D) Frames

25. **_____ is a method of encryption that provides two different keys, a secret key and a public key.**
(A) Symmetric encryption (B) Asymmetric encryption
(C) Authentication (D) Detection

26. **XAML stands for _____.**
(A) Extensible Adequate Metrics Language
(B) Extensible Automated Marker Language
(C) Extensible Access on Multiple Levels
(D) Extensible Application Markup Language

27. **Identify the following.**
- **These are character printers that form characters and images by spraying small drops of ink on a paper.**
- **They are non-impact printers because they print by spraying ink on paper.**
- **They are both monochrome and colour.**

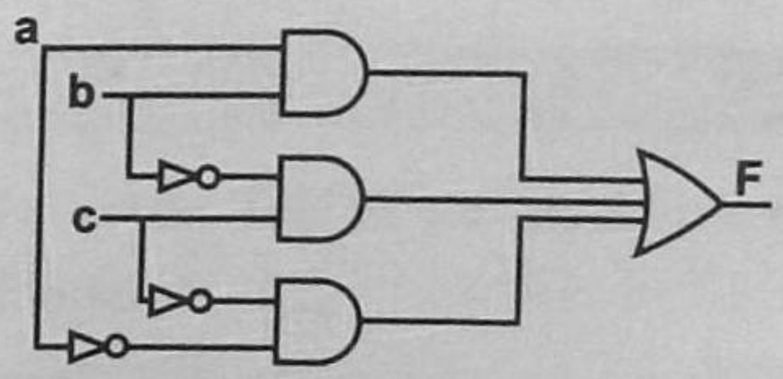
(A) Dot Matrix Printers (B) Inkjet Printers
(C) Chain Printers (D) Laser Printers

28. **_____ extends a private network across a public network such as internet.**
(A) VPN (B) ISP (C) IPS (D) EPS

29. **There are two addresses related to a system in networking. They are IP address and _____ address.**
(A) ISP (B) MAC (C) UDP (D) DNS

30. **Which of the following protocol(s) is/are used to transmit news on the internet?**
(A) SMTP (B) HTTP (C) NNTP (D) FTP

31. **Study the following diagram and select the correct function.**



(A) $F = \bar{a}b + b\bar{c} + ca$ (B) $F = ab + \bar{b}c + \bar{c}\bar{a}$ (C) $F = a\bar{b} + b\bar{c} + \bar{c}a$ (D) $F = ab + \bar{b}\bar{c} + c\bar{a}$

32. **_____ uses an external circuitry to periodically regenerate or refresh storage charge to retain the store data.**
(A) SRAM (B) DRAM (C) ERAM (D) UVRAM

33. **_____ is a binary operation that requires two relations as its operands and generates a third relation that contain tuples from both the operand relations.**
(A) Set Difference operation (B) Project operation
(C) Union operation (D) Select operation

34. Which of the following function finds the correct length of a string?

(A)
```
int Xstrlen(char *S)
{
    int length = 0;
while (*S! = '\0')
{
length++; S++;}
return(length);
}
```

(B)
```
int Xstrlen(char S)
{
    int length = 0;
while (*S! = '\0')
{
length++; S++;}
return(length);
}
```

(C)
```
int Xstrlen(char *S)
{
    int length = 0;
while (*S! = '\0')
{
length++;}
return(length);
}
```

(D)
```
int Xstrlen(char *S)
{
    int length = 0;
while (*S! = '\0')
{
S++;}
return(length);
}
```

35. _____ is a situation where so many orphaned memory blocks are lying which are still allocated but no pointers are referencing to them.

(A) Heap (B) Stack (C) Memory Leak (D) Queue

36. Other name of Karnaugh map is _____.

(A) Venn Diagram (B) Veitch Diagram
(C) Canonical expression (D) Veltch Diagram

37. _____ and _____ are the types of Bubble chart available in Ms-PowerPoint.

(A) Bubble, Bubble with a 3-D Effect (B) Bubble, Bubble with Markers
(C) Bubble, Filled Bubble (D) Bubble, Striped Bubble

38. In database, a table that contains data not derived from that in any other table is called _____.

(A) Pivot table (B) Base table (C) Truth table (D) Both (A) and (B)

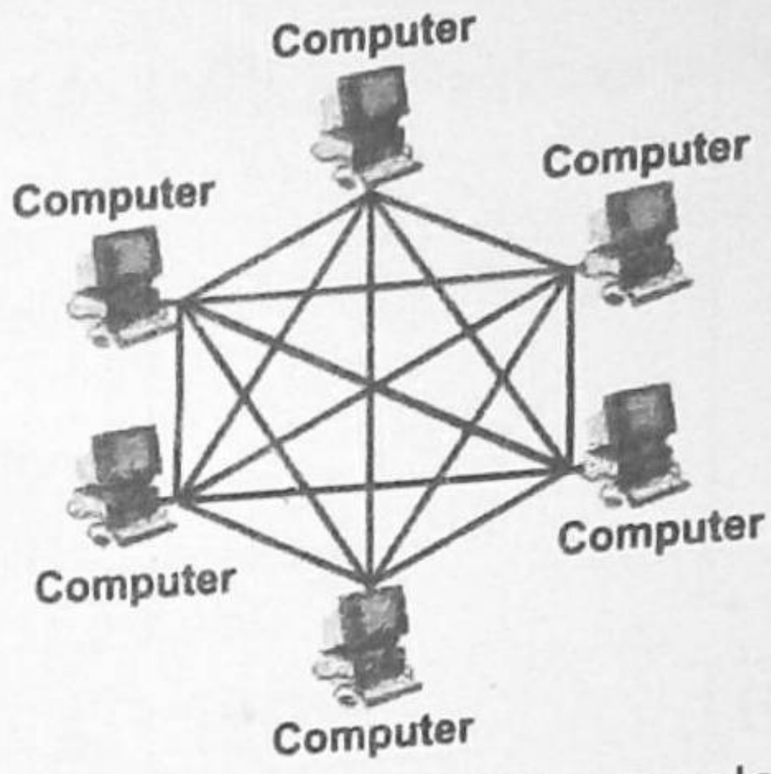
39. If you open a workbook containing sparklines in a previous version of Ms-Excel before 2010 then _____.

(A) Cells containing sparklines will show everything without any error
(B) Cells containing sparklines will show some special characters
(C) Cells containing sparklines will be empty
(D) Both (A) and (B)

40. Select the odd one out (In contrast to SQL).

(A) CREATE (B) ALTER (C) LOCK TABLE (D) TRUNCATE

41. **Identify the given image.**



(A) Mesh topology (B) Star topology (C) Ring topology (D) Bus topology

42. **_____ are used to create sessions, carry session descriptions that allow participants to agree on a set of compatible media types.**

(A) SEP (B) SIP (C) IPS (D) DTD

43. **Which of the following RFCs are related to WWW?**

(A) 1614 (B) 1630 (C) 2547 (D) Both (A) and (B)

44. **Which of the following options is correct for given the statement?**
Shareware is different from FOSS because

(A) The source code is not available.
(B) Modifications to the software are not allowed.
(C) Objective of the software is to make it available to everyone free of cost for lifetime.
(D) Both (A) and (B)

45. **Select the INCORRECT line number of the XML code.**

1. **<?xml version = "1.0" ?>**
2. **<main>**
3. **<item> pencil <\item>**
4. **<price> 20 <price>**
5. **<\main>**

(A) 2 (B) 1 (C) 4 (D) 3

46. **Cascade and Sunday are examples of _____ virus.**

(A) Boot Sector (B) Program files (C) Macro (D) Both (A) and (B)

47. **In Ms-Excel, _____ tab is invisible by default. It contains commands that are useful for programmers.**

(A) Format (B) Design (C) Tools (D) Developer

48. **In Windows, _____ generates an HTML slideshow of user's actions with description of what took place.**

(A) Snipping tool (B) Problem Steps Recorder
(C) Bit Locker (D) Movie Maker

49. **The HAVING clause does which of the following?**

(A) Acts exactly like a WHERE clause.

(B) Acts like a WHERE clause but is used for groups rather than rows.

(C) Acts like a WHERE clause but is used for rows rather than columns.

(D) Acts like a WHERE clause but is used for columns rather than rows.

50. **_____ is NOT a phase in network security.**

(A) Inspection (B) Detection (C) Protection (D) Formulation