MCA

PART - 1

Each question carries one mark. $(60 \times 1 = 60)$

1. Select the pair that best expresses a relationship similar to that expressed in the original pair
Petal : Flower
(A) Salt : Pepper
(B) Tyre : Bicycle
(C) Base : Ball
(D) Sandals : Shoes

2. Mark the correct meaning out of the four choices: Cartographer
(A) One who draws cartoons
(B) One who draws maps
(C) One who engraves on stones
(D) One who erects monuments

3. Pick out the best one that completes the incomplete statement:
I was so annoyed that _____
(A) I completely lost my temper
(B) I became very enthusiastic
(C) I completely lost my indifference
(D) I became very energetic

4. Choose the word that is nearly the same in meaning to the word in capital letters:
NARCISSISM
(A) Excessive love of oneself
(B) Excessive hatred of oneself
(C) Love for humankind
(D) Excessive love for animals

5. Consider the following sentences:
I. A cannon is a weapon used to kill enemies
II. A canon is an accepted principle
(A) Only sentence I is correct
(B) Only sentence II is correct
(C) Both I and II are correct
(D) Neither I nor II is correct

6. Value of $b^2 - 4ac$ determines nature of roots, for real and distinct roots, $b^2 - 4ac$ is
(A) less than 0
(B) equal to 0
(C) greater than 0
(D) none of the above

7. If one root of the quadratic equation $2x^2 + kx - 6 = 0$ is 2, the value of k is
(A) 1 (B) -1 (C) 2 (D) -2

8. If $\log_{10}^{5} + \log_{10}(5x + 1) = \log_{10}(x + 5) + 1$, then x is equal to
(A) 1 (B) 3 (C) 5 (D) 10

9. If $(9^4)^2 = 3^x$, then the value of x is
(A) 14 (B) 16 (C) 15 (D) 17

10. The first term of a GP is 1. The sum of the 3^{rd} and 5^{th} terms is 90. Then the common ratio is
(A) 1 (B) 2 (C) 3 (D) 4

C2

11. Let $A = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$, then | 2A | is equal to

(A) 4 cos2θ (B) 1 (C) 2 (D) 4

12. The inverse of the matrix $\begin{bmatrix} -0.5 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ is

(A) $\begin{bmatrix} 0.5 & 0 & 0 \\ 0 & -4 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 0.5 & 0 & 0 \\ 0 & -4 & 0 \\ 0 & 0 & -1 \end{bmatrix}$

(C) $\begin{bmatrix} -2 & 0 & 0 \\ 0 & 0.25 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ (D) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & -0.25 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

13. The number of elements in the power set P(S) of the set S = {1,2,3} is

(A) 4 (B) 8 (C) 2 (D) 10

14. The coefficient of x^3y^4 in $(2x + 3y^2)^5$ is

(A) 360 (B) 720 (C) 240 (D) 1080

15. Everybody in a room shakes hands with everybody else. The total number of handshakes is 45. The total number of persons in the room is

(A) 9 (B) 10 (C) 5 (D) 15

16. If A and B are mutually exclusive events given that P(A) = 3/5 and P(B) = 1/5, then P(A or B) is

(A) 0.8 (B) 0.6 (C) 0.4 (D) 0.2

17. Two lines are said to be parallel if the difference of their slope is

(A) −1 (B) 0 (C) 1 (D) 2

18. The center of the ellipse $\frac{(x+y-2)^2}{9} + \frac{(x-y)^2}{16} = 1$ is

(A) (0, 0) (B) (0, 1) (C) (1, 0) (D) (1, 1)

19. The equation of a hyperbola with foci on the X- axis is

(A) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ (B) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

(C) $x^2 + y^2 = (a^2 + b^2)$ (D) $x^2 - y^2 = (a^2 + b^2)$

20. In Boolean algebra, $(A \cdot \bar{A}) + A =$ _____

(A) A (B) 0 (C) $\bar{A}$ (D) 1

21. Which of the following Boolean algebraic expression is incorrect?
(A) $A + \overline{A}B = A + B$
(B) $A + AB = B$
(C) $(A + B)(A + C) = A + BC$
(D) $(A + \overline{B})(A + B) = A$

22. If $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, then the value of $A + B$ is
(A) $\pi/6$ (B) π (C) 0 (D) $\pi/4$

23. Standard deviation is defined as
(A) $\sqrt{\frac{\sum f(x-\bar{x})^2}{\sum f}}$ (B) $\sqrt{\frac{\sum f(x-\bar{x})}{\sum f}}$ (C) $\frac{\sum f(x-\bar{x})^2}{\sum f}$ (D) None of the above

24. If the correlation coefficient is 0, the two regression lines are
(A) Parallel
(B) Perpendicular
(C) Coincident
(D) Inclined at 45° to each other

25. _____ indicates peakness of the frequency distribution
(A) Kurtosis
(B) Skewness
(C) Normal distribution
(D) Exponential distribution

26. Which of the following devices provides the communication between the computer and outer world?
(A) Drivers
(B) Storage
(C) CPU
(D) Input-Output

27. Which service allows a user to login to another computer via internet?
(A) FTP
(B) Telnet
(C) e-mail
(D) SMTP

28. Which of the following is not a system software?
(A) Operating system
(B) Assembler
(C) SQL
(D) Compiler

29. URL stands for
(A) Uniform Resource Link
(B) Universal Resource Link
(C) Uniform Resource Locator
(D) Universal Resource Locator

30. RDBMS consists of _____
(A) Collection of Tables
(B) Collection of Keys
(C) Collection of Fields
(D) Collection of Records

31. Will the following script work?
Var st = (function (x) {return x*x;} (10));
(A) Syntax error
(B) Yes, it works
(C) Memory leak
(D) Exception will be thrown

32. The oldest database model is
(A) Network
(B) Physical
(C) Hierarchical
(D) Relational

C2

33. Hexadecimal equivalent of $(255)_{10}$ is _____

(A) FF (B) EF (C) FE (D) FA

34. Find the remainder of the following expression 111101 ÷ 1001

(A) 1010 (B) 0110

(C) 0111 (D) 0101

35. Addition of 28 and 18 using 2's complement method results in _____

(A) 1010101 (B) 0101110

(C) 0100011 (D) 011000

36. In operating systems which of the following is not a CPU scheduling algorithm?

(A) FCFS (B) Round Robin

(C) LRU (D) SJF

37. In a time sharing operating system, when the time slot assigned to a process is completed, the process switches from the current state to _____?

(A) Suspended (B) Ready state

(C) Blocked (D) Terminated

38. The purpose of Banker's algorithm is

(A) Deadlock avoidance and detection

(B) To solve critical section problem

(C) To solve dining philosopher problem

(D) To decrease the number of page faults

39. In real time operating system _____

(A) Kernel is not required

(B) Task must be serviced by its deadline period

(C) All processes have the same priority

(D) Process scheduling can be done only once

40. The core of LINUX operating system is

(A) Terminal (B) I/O

(C) Kernel (D) Command

41. Arrange the given words in meaningful sequence and choose the correct sequence from the given alternatives

1. Atomic age 2. Metallic age 3. Stone age 4. Alloy age

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

42. Which one of the given responses would be a meaningful order of the following words?

1. Important 2. Impart 3. Improvise 4. Improve

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

43. Study the statement given, choose the option which indicates a valid argument containing logically related statements that is, where the third statement is a conclusion drawn from the preceding two statements

(A) Apples are not sweets
(B) Some apples are sweets
(C) All sweets are tasty
(D) Some apples are not tasty
(E) No apple is tasty

(A) EAC (B) CEA (C) BDC (D) CBD

44. Find out the missing number in the following series $\frac{2}{\sqrt{5}}, \frac{3}{5}, \frac{4}{5\sqrt{5}}, \frac{5}{25}, ?$

(A) $\frac{6}{5\sqrt{5}}$ (B) $\frac{6}{25\sqrt{5}}$ (C) $\frac{6}{125}$ (D) $\frac{7}{25}$

45. In a certain code, CAT is written as SATC and DEAR is written as SEARD. How would SING be written in that code?

(A) BGINS (B) SGNIS (C) SINGS (D) GNISS

46. A Person's present age is two-fifth of the age of his mother. After 8 years, he will be one half of the age of his mother. How old is the mother at present?

(A) 40 years (B) 48 years (C) 32 years (D) 36 years

47. Kamal is facing south. He turns 135° in the anti-clockwise direction and then 180° in the clockwise direction. What direction is he facing now?

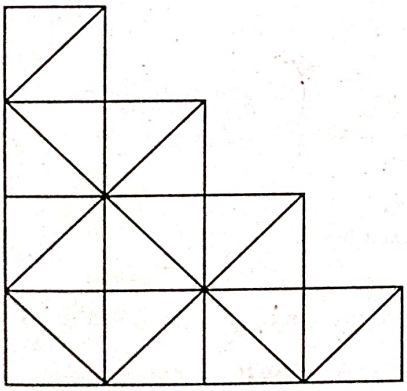
(A) North (B) South - West (C) East (D) North - West

48. Find out the missing number from the given options

28	20	7
84	35	12
45	?	9

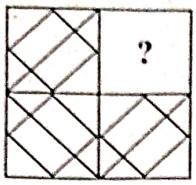
(A) 15 (B) 18 (C) 20 (D) 25

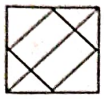
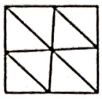
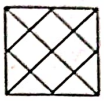
49. How many squares are there in the following figure?



(A) 14 (B) 16 (C) 22 (D) 12

50. Select the answer figure from the given options to complete the sketch



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

51. Depreciation is loss in value of _____
(A) Final goods (B) Machinery
(C) Capital stock (D) Stock of inventory

52. In which of the following organ, carbohydrate is stored as glycogen?
(A) Intestine (B) Stomach (C) Liver (D) Pancreas

53. India's first navigation satellite RNSS-A was launched from _____
(A) Sriharikota (B) Ahmedabad
(C) Thiruvananthapuram (D) Bengaluru

54. Kalpakkam is famous for _____
(A) Atomic Power Station (B) Defence Laboratory
(C) Rocket Launching Centre (D) Space Centre

55. Which of the following Indian Missile is surface to surface missile?
(A) Nag (B) Trishul (C) Aakash (D) Prithvi

56. Where is the oldest music college of Madhya Pradesh 'Madhav Sangeet College' located?
(A) Raipur (B) Indore (C) Bhopal (D) Gwalior

57. The Reserve Bank of India was established in the year
(A) 1930 (B) 1935 (C) 1947 (D) 1951

58. In India non-agricultural Income Tax is
(A) Levied by the Centre and fully distributed among the States
(B) Levied by the States
(C) Levied and appropriated by the Centre
(D) Levied by the Centre and shared with the States

59. Which one of the following states is industrially the most advanced state in India?
(A) Punjab (B) Tamil Nadu (C) Gujarat (D) Maharashtra

60. Golden Quadrilateral project of India joins _____
(A) Delhi – Mumbai – Chennai – Kolkata (B) Delhi – Jhansi – Bengaluru – Kanyakumari
(C) Srinagar – Delhi – Kanpur – Kolkata (D) Porbandar – Bengaluru – Kolkata – Kanpur

PART - 2

Each question carries two marks. (20 × 2 = 40)

61. Select the correct answer by using the codes given below:

List I (Institutions)	List II (Locations)
P ISRO	1. Thiruvananthapuram
Q IUCAA	2. Pune
R IUAC	3. Bengaluru
S VSSC	4. New Delhi

P Q R S

(A) 3 2 4 1

(B) 1 2 3 4

(C) 2 4 1 3

(D) 3 1 2 4

62. Arrange the parts so as to form a complete and meaningful sentence by choosing the correct combination:

P. and the mediocore students

Q. Opt for science

R. It is believed that only the intelligent

S. Settle for humanities

(A) Q P S R (B) P Q R S (C) S P Q R (D) R Q P S

63. If $\begin{vmatrix} 4 & -4 & 0 \\ a & b+4 & c \\ a & b & c+4 \end{vmatrix} = 0$, then a + b + c is equal to

(A) 41

(B) 116

(C) 628

(D) −4

64. Three circles touch each other externally. The distance between their centres is 5 cm, 6 cm and 7 cm. Find the radii of the circles

(A) 2 cm, 3 cm, 4 cm

(B) 3 cm, 4 cm, 1 cm

(C) 2.5 cm, 3 cm, 3.5 cm

(D) 1 cm, 2 cm, 4 cm

65. If $\sin^{-1}x + \sin^{-1}y = \pi/2$ then the value of $\cos^{-1}x + \cos^{-1}y$ is

(A) $\pi/2$ (B) π (C) 0 (D) $2\pi/3$

66. If the point (x, y) is equidistant from the points (2a, 0) and (0, 3a) where a > 0 then which of the following is correct?

(A) 2x − 3y = 0

(B) 3x − 2y = 0

(C) 4x − 6y + 5a = 0

(D) 4x − 6y − 5a = 0

67. 6 men and 4 women are to be seated in a row so that no two women sit together. The number of ways they can be seated is

(A) 604800

(B) 17280

(C) 120960

(D) 518400

C2

68. A buys a lottery ticket in which the chance of winning is 1/10; B has a ticket in which his chance of winning is 1/20. The chance that at least one of them wins is

(A) 1/200 (B) 29/200

(C) 30/200 (D) 170/200

69. Average scores of three batsmen A, B,C are 40, 45 and 55 respectively and their standard deviations are 9, 11, 16 respectively. Which batsman is more consistent?

(A) A (B) B (C) C (D) A, B and C

70. The result of the following addition of two BCD numbers 1001 + 0100 = ?

(A) 0010 1011 (B) 0001 0011 (C) 1010 1111 (D) 0101 0001

71. The excess - 3 code for 9 is _____

(A) 1100 (B) 1011 (C) 1110 (D) 1111

72. Network operating system runs on

(A) Server (B) Every system on the network

(C) Both server and systems (D) None of the above

73. At a particular time the value of counting semaphore is 10. It will become 7 after :

(A) 5V operations and 2P operations (B) 3P operations

(C) 13P operations and 10V operations (D) 3V operations

74. The operating system maintains a _____ table that keeps track of frames

(A) Frame (B) Page (C) Mapping (D) Memory

75. If A 5 B means 'A is the husband of B'
If A 4 B means 'A is the sister of B' and
A 3 B means 'A is the son of B', then which of the following shows that A is the daughter of B?

(A) A 4 C 3 B (B) C 3 B 4 A (C) B 5 C 3 A (D) C 3 B 5 C 4 A

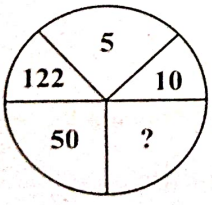
76. In a group of 15 people, 7 read French, 8 read English while 3 of them read none of these two. How many of them read French and English both?

(A) 0 (B) 3 (C) 4 (D) 5

77. If $(a * b)$ stands for $(a + b)^2$ and $(a \oplus b)$ stands for $(a - b)^2$ then the value of $(a * b) + (a \oplus b)$ is

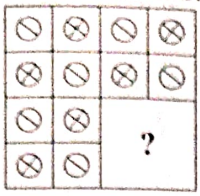
(A) $2a^2 + b^2$ (B) $a^2 + 2b^2$ (C) $2(a^2 + b^2)$ (D) $2a^2 + 3b^2$

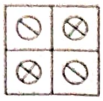
78. Select the missing number from the given options

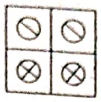


(A) 25 (B) 27 (C) 23 (D) 26

79. Select a suitable choice from the answer figures which completes the problem figure



(A) 

(B) 

(C) 

(D) 

80. Interest payment is an item of

(A) Revenue Expenditure
(B) Capital Expenditure
(C) Plan Expenditure
(D) None of the above