MCA
(FINAL)

1. A 3 × 3 matrix has a characteristic polynomial given by $\lambda^3 - 5\lambda^2 + 8\lambda - 4 = 0$. The sum of its eigen values is

   (A) 3
   (B) 5
   (C) 4
   (D) 2

2. The characteristic equation of a 2×2 matrix $\boldsymbol{A}$ is given by

   (A) $\det(A)$
   (B) $\det(A - \lambda I) = 0$
   (C) $A^2 - \lambda I = 0$
   (D) $\lambda^2 + \text{trace}(A) \cdot \lambda = 0$

3. The quadratic form $3x^2 + 4xy + 2y^2$ can be reduced to canonical form by

   (A) orthogonal transformation
   (B) eigenvector computation
   (C) using rank coefficient
   (D) using the Cayley-Hamilton theorem

4. Two matrices *A* and *B* are multiplied to get *AB* if

   (A) both have same order
   (B) both are rectangular
   (C) no. of columns of *A* is equal to no. of rows of *B*
   (D) no. of rows of *A* is equal to no. of columns of *B*

5. What is the value of the 3 × 3 determinant $\begin{vmatrix} 3 & 5 & 2 \\ 7 & 4 & 5 \\ 1 & 2 & 3 \end{vmatrix}$?

   (A) –56
   (B) –58
   (C) –54

(D) -66

6. If Rank(A)=2 and Rank(B) =3, then Rank(AB) is

(A) 6
(B) 5
(C) 3
(D) Data inadequate

7. If $\boldsymbol{A}$ is areal matrix and $\boldsymbol{\lambda}$ is an eigen value of $\boldsymbol{A}$, then which of the following is true about $\boldsymbol{\lambda}$?

(A) $\boldsymbol{\lambda}$is positive
(B) $\boldsymbol{\lambda}$ is always real
(C) $\boldsymbol{\lambda}$can be real or complex
(D) $\boldsymbol{\lambda}$ is an integer

8. Which of the following is a sufficient condition for diagonalizability?

(A) All eigenvalues are distinct
(B) The matrix is non-singular
(C) All eigenvalues are in-distinct
(D) The matrix is singular

9. The maxima of the function $f(x) = -x^2 + 4x - 3$ occurs at which possibility of x?

(A) $x = 2$
(B) $x = -2$
(C) $x = 1$
(D) $x = 4$

10. If $f(x) = \dfrac{x^2 - 1}{x - 1}$, then $\lim_{x \to 1} f(x)$ is

(A) 1
(B) 0
(C) 2
(D) 3

11. Logarithmic differentiation is particularly useful when $f(x)$ is a

(A) polynomial function
(B) constant
(C) exponential function
(D) product or quotient of functions

12. If $f'(x) > 0$ for all x in an interval, then $f(x)$ is

(A) decreasing in the interval
(B) constant in the interval
(C) increasing in the interval
(D) periodic in the interval

13. The derivative of $y = x^x$ is

(A) $x^x(\ln(x) + 1)$
(B) $x^{x-1}\ln(x)$
(C) $x^x(\ln(x) - 1)$
(D) $x^{x+1}\ln(x)$

14. In Lagrange's method of undetermined multipliers, the constraint equation $g(x,y) = 0$ is used to

(A) eliminate y from the equation
(B) maximize or minimize the function subject to the constraint
(C) find the Jacobian
(D) eliminate x from the equation

15. The Taylor series for $f(x, y) = e^{x+y}$ around (0,0) up to second-order term is

(A) $1 + x + y$
(B) $1 + x + y + \frac{x^2}{2} + \frac{y^2}{2} + xy$
(C) $e^x + e^y$
(D) $x + y + xy$

16. The Jacobian determinant $J(u, v; x, y)$ is used to

(A) find critical points of a function
(B) transform variables in multiple integrals
(C) compute higher-order derivatives
(D) solve partial differential equations

17. The total derivative of $z = x^2y + y^2$ is

(A) $dz = 2x\,dx + 2y\,dy$
(B) $dz = (2xy)\,dx + (x^2 + 2y)dy$
(C) $dz + x^2 + y^2$
(D) $dz + x^2dx + y\,dy$

18. The partial derivative of $f(x,y) = x^2y + y^3$ with respect to x is

(A) $2xy + 3y^2$
(B) $2x + y$
(C) $2xy$
(D) $y^2 + 2x$

19. The gradient vector ∇f is

(A) perpendicular to the level curves of $f(x,y)$
(B) tangential to the level curves of $f(x,y)$
(C) always zero
(D) undefined

20. If $u = x^2 + y^2$ and $v = xy$, then $\frac{\partial(u,v)}{\partial(x,y)}$ is

(A) $2x + 2y$
(B) $2xy - x^2$
(C) $2\,x \cdot y - 2y \cdot x$
(D) $2\,x \cdot y - 2x^2$

21. The integral of $\int e^x \sin(x)\,dx$ is evaluated using

(A) integration by parts twice
(B) trigonometric substitution
(C) partial fractions
(D) substitution $u = e^x$

22. What is the integral of $\int \frac{1}{x^2+2x+5}\,dx$?

(A) $\frac{1}{2}\tan^{-1}\left(\frac{x+1}{2}\right)+C$

(B) $\tan^{-1}\left(\frac{x+2}{3}\right)+C$

(C) $\frac{1}{2}\tan^{-1}\left(\frac{x+2}{2}\right)+C$

(D) $\ln\left(x^2+2x+5\right)+C$

23. The improper integral $\int_1^{\infty}\frac{1}{x^2}\,dx$ converges to

(A) 0
(B) 1
(C) ∞
(D) $\frac{1}{2}$

24. What does the double integral $\int_0^1\int_y^1 (x+y)\,dy\,dx$ evaluate to?

(A) 5
(B) $\frac{1}{2}$
(C) 7
(D) 6

25. The integral $\int_0^{\frac{\pi}{2}}\int_0^{\sin\theta} r\,dr\,d\theta$ is represented by

(A) a quarter of a circle in polar coordinates
(B) a semicircular area
(C) a sector of a unit circle
(D) a parabola

26. What is the Laplace Transform of the function $f(t) = e^{(at)}$?

(A) $\frac{1}{s-a}$

(B) $\frac{1}{s+a}$

(C) $\frac{s}{s-a}$

(D) $\frac{s}{s+a}$

27. Which of the following is NOT a valid logical equivalence?

(A) $p \rightarrow q \equiv \sim p \vee q$
(B) $p \wedge q \equiv \sim(\sim p \vee \sim q)$
(C) $p \vee q \equiv \sim(\sim p \wedge \sim q)$
(D) $p \rightarrow q \equiv \sim p \rightarrow \sim q$

28. What is the inverse of the function $f(x) = 2x + 1$?

(A) $f^{-1}(x) = 2x - 1$

(B) $f^{-1}(x) = \frac{x-1}{2}$

(C) $f^{-1}(x) = 1 - 2x$

(D) $f^{-1}(x) = \frac{1-x}{2}$

29. If $\cos(\theta) = \frac{1}{\sqrt{2}}$ then θ is equal to

(A) 30°
(B) 45°
(C) 60°
(D) 90°

30. Period of $\tan(\theta)$ is equal to

(A) $\frac{\pi}{3}$

(B) $\frac{\pi}{2}$

(C) $\frac{2\pi}{3}$

(D) π

31. Range of $y = \sin(x)$ is

(A) $[-1, 1]$
(B) $[-1, 0]$
(C) $[-2,2]$
(D) None of the above

32. Domain of $\tan(x)$ is

(A) $[-1, 1]$
(B) R
(C) $\mathrm{R} \setminus \left\{ x \mid x = \frac{(2n+1)\pi}{2}, n \in Z \right\}$
(D) $\mathrm{R} \setminus \{ x \mid x = n\pi, n \in Z \}$

33. Quadratic function is considered as

(A) third degree polynomial function
(B) fourth degree polynomial function
(C) first degree polynomial function
(D) second degree polynomial function

34. If $\tan\theta > 0$, $\sin\theta < 0$, then terminal arm of angle lies in quadrant

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

35. If $\sin x = \frac{3}{4}$ then, $\cos x = ?$

(A) $\frac{2}{3}$
(B) $\frac{\sqrt{3}}{2}$

(C) $\frac{\sqrt{7}}{4}$

(D) $\frac{1}{2}$

36. If $(G, .)$ is a group such that $a^2 = e$, $\forall a \in G$, then G is

(A) semi group
(B) abelian group
(C) non-abelian group
(D) None of the above

37. The number of functions from an m-element set to an n-element set is

(A) $m + n$
(B) m^n
(C) n^m
(D) $m * n$

38. If $U = \{1,2,3,4,5\}$ and $A = \{2,4\}$ then A' should be

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

39. The power set of the set $S = [3,\{1,4\},5]$ is

(A) $\{S,3,1,4,\{1,3,5\},\{1,4,5\}\{3,4\},\phi\}$
(B) $\{S,3,\{1,4\},5\}$
(C) $\{S,\{3\},\{3,\{1,4\}\},\{3,5\},\phi\}$
(D) None of the above

40. Number of subsets of a set of order three is

(A) 3
(B) 6
(C) 8
(D) 9

41. Some group $(G, 0)$ is known to be abelian. Then which one of the following is TRUE for G?

(A) $g = g^{-1}$ for every $g \in G$
(B) $g = g^2$ for every $g \in G$
(C) $(g \circ h)^2 = g^2 \circ h^2$ for every $g, h \in G$
(D) G is of finite order

42. If every element of a group G is its own inverse, then G is

(A) infinite
(B) abelian
(C) finite
(D) cyclic

43. Assume R and S are (non-empty) relations in a set A. Which of the following given relations is FALSE?

(A) If R and S are transitive, then $R \cap S$ is transitive
(B) If R and S are symmetric, then $R \cup S$ is symmetric
(C) If R and S are reflexive, then $R \cup S$ is reflexive
(D) If R and S are transitive, then $R \cup S$ is transitive

44. If $x^2 + 2xy = y^2$, then $\frac{dy}{dx}$ is

(A) $\frac{x+y}{y-x}$
(B) $2x + 2y$
(C) $\frac{x+1}{y}$
(D) $-x$

45. $\int \cos\sqrt{x}\, dx$ is

(A) $\sqrt{x}\sin\sqrt{x}$
(B) $2\sqrt{x}\sin\sqrt{x} + 2\cos(\sqrt{x}) + C$
(C) $\frac{1}{\sqrt{x}}\sin\sqrt{x}$

(D) $\frac{1}{2\sqrt{x}}\sin\sqrt{x}$

46. If $f(a) = f(b) = 0$, and $f(x)$ is continuous on $[a, b]$ and $f(x)$ is differentiable on (a, b), then,

(A) $f(x)$ must be identically 0
(B) There exists at least one number c, $a<c<b$ such that $f'(c) = 0$
(C) $f'(x)$ must be different from 0 for all x on $[a, b]$
(D) $f'(x)$ must exist for every x on (a , b)

47. If f is continuous on [5, 2] and if F is an antiderivativeof f on [5, 2], where $F(2) = \frac{3}{2}$ and $F(5) = \frac{-4}{3}$, then $\int_2^5 f(x)dx = ?$

(A) $\frac{2}{3}$
(B) $\frac{5}{7}$
(C) $-\frac{17}{6}$
(D) $-\frac{13}{6}$

48. If $y = x^x$, then $y' = ?$

(A) $x^x \ln x$
(B) $x^x(1+\ln x)$
(C) $\frac{x^x}{\ln x}$
(D) $\frac{x^x}{1+\ln x}$

49. If $f(x) = \int e^x (x-1)(x-2)\,dx$, then f decreases in the interval

(A) $(-\infty,-2)$
(B) $(-2, -1)$
(C) $(1, 2)$
(D) $(2, +\infty)$

50. If $a^3 - b^3 = 56$ and $a - b = 2$, then the value of $(a^2 + b^2)$ is :

(A) -10
(B) -12
(C) 20
(D) 18

51. A bag contains 3 white, 2 blue and 5 red balls. One ball is drawn at random from the bag. What is the probability that the ball drawn is not red?

(A) $\frac{3}{10}$
(B) $\frac{1}{5}$
(C) $\frac{1}{2}$
(D) $\frac{4}{5}$

52. Let A be the square matrix of order 3, then $[kA]$, where k is a scalar, is equal to

(A) $3k[A]$
(B) $k^3[A]$
(C) $k[A]$
(D) $[A]$

53. Find the value of sin (1920°)

(A) $\frac{1}{2}$
(B) $\frac{1}{\sqrt{2}}$
(C) $\frac{\sqrt{3}}{2}$
(D) $\frac{1}{3}$

54. If we add two irrational numbers the resulting number is

(A) always an rational number
(B) always an irrational number
(C) may be a rational or an irrational number
(D) always an integer

55. 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

56. Which of the following sets are null sets?

(A) {0}
(B) Φ
(C) { }
(D) Both (B) and (C)

57. How many distinguishable permutations of the letters in the word BANANA are there?

(A) 720
(B) 120
(C) 60
(D) 360

58. Simplified form of the Boolean expression $(X+Y+XY)(X+Z)$ is

(A) $X+Y+Z$
(B) $X+YZ$
(C) $XY+YZ$
(D) $XZ+Y$

59. The number of distinct simple graphs with up to three nodes is

(A) 15
(B) 10
(C) 9
(D) 8

60. The region of feasible solution of a linear programming problem has a ..... property in geometry, provided the feasible solution of the problem exists

(A) concavity
(B) convexity
(C) quadratic
(D) polyhedron

61. The first and second derivatives of a quadratic polynomial at $x = 1$ are 1 and 2 respectively. Then the value of $f(1) - f(0)$ is given by

(A) $\frac{3}{2}$
(B) $\frac{1}{2}$
(C) 1
(D) 0

62. The Mean Value Theorem was stated and proved by

(A) Parameshvara
(B) Govindasvami
(C) Michel Rolle
(D) Augustin Louis Cauchy

63. The Newton-Raphson method is used to solve

(A) ordinary differential equations
(B) algebraic and transcendental equations
(C) partial differential equations
(D) matrix equations

64. The eigenvectors of a matrix correspond to

(A) the null space of the matrix
(B) the solutions to the characteristic equation
(C) the orthogonal components of the matrix
(D) the determinant of the matrix

65. Find the minimum value of the function $f(x, y) = x^2 + y^2 + 199$ over the real domain

(A) 12
(B) 13
(C) 0
(D) 199

66. Consider a random variable with exponential distribution with $\lambda=1$. Compute the probability for $P(X > 3)$.

(A) e^{-3}
(B) e^{-1}
(C) e^{-2}
(D) e^{-4}

67. Find the number of different 8-letter arrangements that can be made from the letters of the word **EDUCATION** so that all vowels do not occur together

(A) 40320
(B) 1440
(C) 2880
(D) 37440

68. Which of the following statement is correct?

(A) Equal and Equivalent sets are actually the same
(B) Equivalent sets have a different number of elements
(C) Equal sets have the same elements
(D) Two null sets are not equal

69. A rectangular lot is to have an area of 1600 sq. m. Find the least amount of fence that could be used to enclose the area

(A) 160 m
(B) 200 m
(C) 100 m

(D) 300 m

70. If $\cos x = 0$ then $x =$ ……...

(A) $n\pi$

(B) $(2n+1)\frac{\pi}{2}$

(C) $(n+1)\pi$

(D) $\frac{n\pi}{2}$

71. What is eccentricity for $\left(\frac{x}{25}\right)^2 + \left(\frac{y}{16}\right)^2 = 1$?

(A) $\frac{2}{5}$

(B) $\frac{3}{5}$

(C) 15

(D) $\frac{5}{3}$

72. $\sin 75° + \sin 15°$ = …….

(A) $\frac{\sqrt{3}}{\sqrt{2}}$

(B) $\frac{\sqrt{2}}{\sqrt{3}}$

(C) $\frac{\sqrt{3}}{2}$

(D) $\frac{1}{\sqrt{2}}$

73. The n^{th} roots of any number are in

(A) arithmetic progression
(B) geometric progression
(C) harmonic progression
(D) no specific pattern

74. Consider the equation $f(x, y) = x^2 + y^2 - a$. For what values of 'a' do we have critical points for the function

(A) independent of a
(B) for any real number except zero
(C) $a \in (0, +\infty)$
(D) $a \in (-1, 1)$

75. What is the conjugate of the given complex number?

$Z = 3i + 7$

(A) $\bar{z} = 3 + 7i$
(B) $\bar{z} = -3i + 7$
(C) $\bar{z} = 3i - 7$
(D) $\bar{z} = -3i - 7$

76. If A = 1, B = 2, C = 3,… what is the sum of the word "CODE"?

(A) 27
(B) 30
(C) 32
(D) 33

77. Which number does not belong in the series?

1, 4, 9, 16, 23, 36

(A) 4
(B) 16
(C) 23
(D) 36

78. John is twice as old as Mary. If sum of their age is 36, how old is Mary?

(A) 12
(B) 18
(C) 24
(D) 15

79. If a train travels 60 km in 45 minutes, how far will it travel in 2 hours?

(A) 180
(B) 260
(C) 160
(D) 240

80. A box contains 3 red balls, 5 green balls and 2 blue balls. What is the probability of picking a green ball?

(A) $\frac{1}{2}$
(B) $\frac{5}{8}$
(C) $\frac{5}{7}$
(D) $\frac{1}{3}$

81. A clock strikes 5 times at 5 o'clock. How many times will it strike in a day?

(A) 78
(B) 90
(C) 132
(D) 156

82. A clock shows 3:45. What is the reflex angle between the hour and minute hands?

(A) 97.5°
(B) 202.5°
(C) 287.5°
(D) 192.5°

83. If *P* is *Q*'s mother and *Q* is *R*'s brother, how is *P* related to *R*?

(A) Aunt
(B) Mother
(C) Sister
(D) Grandmother

84. **Statement:** "The government has decided to increase the tax on luxury items to reduce inequality".

Assumption:

(i) Luxury items are mainly consumed by wealthy individuals

(ii) Increasing tax on luxury items will reduce inequality

(A) Only assumption (i) is implicit
(B) Only assumption (ii) is implicit
(C) Both assumptions are implicit
(D) Neither assumption is implicit

85. **Problem:** There is a problem of water scarcity in the region.
Which of the following is the best course of action to deal with this issue?

(i) Implement water conservation campaigns
(ii) Build more dams to store water
(iii) Increase the price of water to discourage wastage

(A) Only course 1
(B) Course 1 and 2 together
(C) Course 2 and 3 together
(D) Course 1 and 3 together

86. Identify the odd one out among the following shapes.

(A) Triangle
(B) Square
(C) Pentagon
(D) Oval

87. If "PAPER" is coded as "QBQFS", then how is "BOOK" coded?

(A) CPPL
(B) CPPQ
(C) CPPR
(D) CPPS

88. If the n^{th} triangular number is 21, what is the value of n?

(A) 5
(B) 6
(C) 7
(D) 8

89. What is the next number in the sequence?

2, 6, 18, 54, ...

(A) 108
(B) 162
(C) 216
(D) 243

90. What is the next number in the sequence?

3, 6, 9, 12, 15, ……

(A) 17
(B) 19
(C) 18
(D) 20

91. What is the next number in the sequence?

1, 3, 6, 10, 15, ...

(A) 20
(B) 21
(C) 22
(D) 23

92. What is a set in set theory?

(A) A collection of well-defined objects
(B) A list of numbers
(C) A mathematical equation
(D) A type of diagram

93. What is the cardinality of the set $A = \{a, b, c\}$?

(A) 0
(B) 1

(C) 2
(D) 3

Direction: Read the given passage and answer the questions (94-96):

In a certain code language, ‘dumb monkeys are actors’ is coded as ‘la pa zi ta’, ‘joker monkeys are dumb’ is coded as ‘hi pa zi la’, ‘flower are red fool’ is coded as ‘nazigasi’, ‘dumb pins and flower’ is coded as ‘la mi jona’.

94. What does ‘pa’ stands for?

(A) monkeys
(B) dumb
(C) are
(D) actors

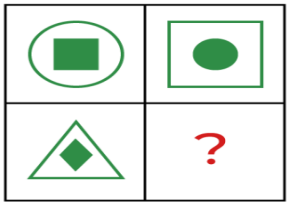
95. What does ‘na’ stands for?

(A) monkeys
(B) flower
(C) are
(D) red

96. What will be coded as ‘ga pa ta’ in the given language?

(A) flower red monkeys
(B) red monkeys actors
(C) flower red actors
(D) flower red joker

97. Predict the next pattern



(A) 

(B) 

(C) 

(D) 

98. Which of the following words cannot be formed using the word, INTELLIGENCE?

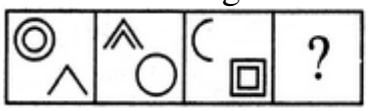
(A) TILLAGE
(B) IGNITE
(C) GENTLE
(D) NEGLECT

99. If in a certain language, POPULAR is coded as QPQVMBS, which word would be coded as GBNPVT?

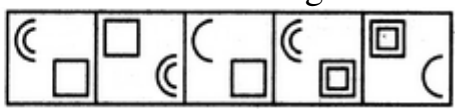
(A) FARMER
(B) FAMOUS
(C) FRAMES
(D) FARMES

100. **Direction**: Select the suitable figure from the Answer Figures that would replace the question mark (?) in the Problem Figures.

Problem Figures:



Answer Figures:

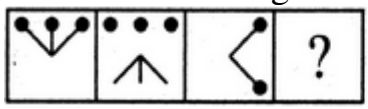


(A)(B)(C)(D)(1) (2) (3) (4) (5)

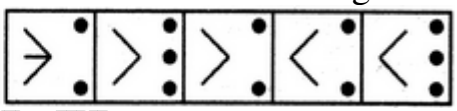
(A) 1
(B) 2
(C) 4
(D) 5

101. **Direction**: Select the suitable figure from the Answer Figures that would replace the question mark (?) in the Problem Figures.

Problem Figures:



Answer Figures:

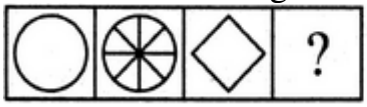


(A) (B) (C) (D) (1) (2) (3) (4) (5)

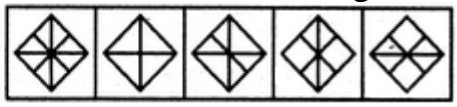
(A) 1
(B) 2
(C) 3
(D) 4

102. **Direction**: Select the suitable figure from the Answer Figures that would replace the question mark (?) in the Problem Figures.

Problem Figures:



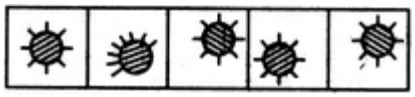
Answer Figures:



(A) (B) (C) (D) (1) (2) (3) (4) (5)

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

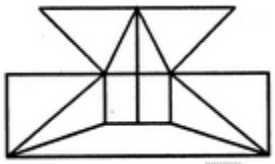
103. **Direction**: Choose the figure which is different from the rest.



(1) (2) (3) (4) (5)

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

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



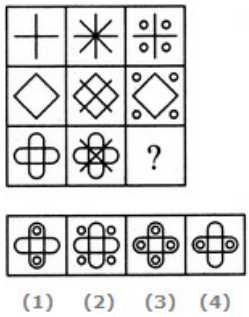
(A) 16
(B) 17
(C) 18
(D) 19

105. Identify the figure that completes the pattern.

(X) (1) (2) (3) (4)

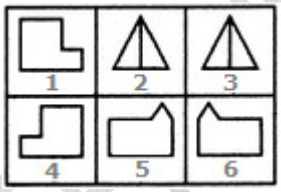
(A) 4
(B) 3
(C) 2
(D) 1

106. **Direction**: Select a suitable figure from the four alternatives that would complete the figure matrix.



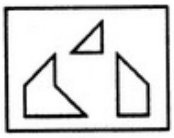
(A) 1
(B) 2
(C) 3
(D) 4

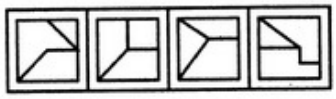
107. **Direction**: Group the given figures into three classes using each figure only once.



(A) 1,4 ; 2,3 ; 5,6
(B) 1,5 ; 2,6 ; 4,3
(C) 1,6 ; 2,3 ; 4,5
(D) 1,2 ; 3,6 ; 4,5

108. **Direction**: Find out which of the figures (1), (2), (3) and (4) can be formed from the pieces given in figure (X).





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

109. If in a certain code, COVET is written as FRYHW, which word would be written as SHDUO?

(A) QUAKE
(B) REPAY
(C) STINK
(D) PEARL

110. If PALE is coded as 2134, EARTH is coded as 41590, how is PEARL coded in that code?

(A) 29530
(B) 24153
(C) 25413
(D) 25430

111. Which pair of numbers comes next?

32, 31, 32, 29, 32, 27, 32, ……, ……

(A) 25, 32
(B) 31, 32
(C) 29, 32
(D) 25, 30

112. Which is the next number in the series?

4, 16, 26, 34, 40, …….

(A) 45
(B) 46
(C) 43
(D) 44

113. The least number which when divided by 16, 18, 20 and 25 leaves 4 as remainder in each case but when divided by 7 leaves no remainder is?

(A) 17004
(B) 18000
(C) 18004
(D) 18002

114. Look at this series:

70, 71, 76, …., 81, 86, 70, 91.

What number should fill the blank?

(A) 70
(B) 71
(C) 80
(D) 96

115. Look at this series:

664, 332, 340, 170, …., 89.

What number should fill the blank?

(A) 85
(B) 97
(C) 109
(D) 178

116. Divide 45 into two parts such that one part is twice the other

(A) 15, 30
(B) 20, 30
(C) 25, 25
(D) 10, 40

117. How many times do the minute and hour hands form a 90° angle in a 12-hour period?

(A) 12
(B) 22
(C) 36
(D) 48

118. In a certain code language, ‘ENTRY’ is coded as 12345 and ‘STEADY’ is coded as 931785, how is ‘ENDEAR’ coded in that language?

(A) 128983
(B) 137864
(C) 128174
(D) 125683

119. The sum of the series 5 + 9 + 13+ …. +49 is

(A) 351
(B) 535
(C) 324
(D) 435

120. Aarav's mother was 3 times as old as Aarav 5 years ago. After 5 years she will be twice as old as Aarav. How old is Aarav today?

(A) 15 years
(B) 25 years
(C) 20 years
(D) 10 years

121. A man sold an article for Rs. 2400 thus making a profit of 20%. Find the cost price of the article

(A) 2000 rupees
(B) 1600 rupees
(C) 1700 rupees
(D) 1800 rupees

122. Among five rods P, Q, R, S and T, S is lengthier than T. R is shorter than P. Q is lengthier than S. P is lengthier than only one rod. Which rod is second lengthiest among all the rods ?

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

123. Select the option that is related to the third term in the same way as the second term is related to the first term. FLOWER : UOLDVI : : JASMINE : …….. ?

(A) QZHNRMV
(B) QAHNRMV
(C) QZHMRNV
(D) QZGNRMV

124. The sum of current ages of Neelima and Keerthyis 50 years. 10 years ago, Keerthywas twice as old as Neelima. What is Keerthy's current age?

(A) 15 years
(B) 25 years
(C) 30 yeas
(D) 10 years

125. Mathew's father has a brother, Paul, whose daughter, Rachel is Kayla's mother. Sonu is Rachel's only brother. How is Sonu related to Mathew?

(A) Brother
(B) Cousin
(C) Nephew
(D) Son

126. If SUMMER is coded as RUNNER, the code for WINTER is

(A) SUITER
(B) VIOUER
(C) WALKER
(D) SUFFER

127. In a certain code "CH4IR" is written as "GL8MV". How is "1N5T4GR4M" is written in that code?

(A) 4HFID8E8N
(B) 5R9X8KV8Q
(C) 4P8W7JU8O
(D) 5KF2E4GR4

128. Look at this series:

22, 21, 23, 22, 24, 23, ...

What number should come next?

(A) 25
(B) 24
(C) 22
(D) 26

129. Shyam walks 5 km towards east and then turns left and walks 6 km. Again he turns right and walks 9 km. Finally, he turns to his right and walks 6 km. How far is he from the starting point?

(A) 26 km
(B) 21 km
(C) 14 km
(D) 9 km

130. The symmetric difference of A = {2, 4, 6} and B = {4, 5, 7} is

(A) {2, 6, 5, 7}
(B) {2, 5}
(C) {4, 6, 7}
(D) {4, 5, 6, 7}

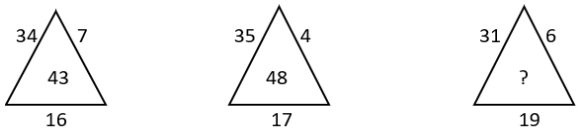
131. How many words can be formed by rearranging the letters of the word "ASCENT" so that A and T occupy the first and the last positions respectively?

(A) 20
(B) 24
(C) 26
(D) 18

132. If $A + B$ means A is the mother of B; $A - B$ means A is the brother B; $A \% B$ means A is the father of B and $A \times B$ means A is the sister of B, which of the following shows that P is the maternal uncle of Q?

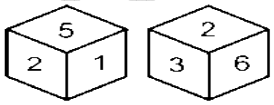
(A) $Q - N + M \times P$
(B) $P + S \times N - Q$
(C) $P - M + N \times Q$
(D) $Q - S \,\%\, P$

133. Find the correct alternative which will replace the question mark?



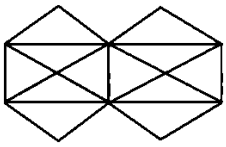
(A) 49
(B) 33
(C) 27
(D) 44

134. Two different positions of the same dice are shown below, select the number that will be on the face opposite to the one having 2 as per the options



(A) 5
(B) 6
(C) 4
(D) 3

135. How many triangles are present in the following figure?



(A) 24
(B) 20
(C) 22
(D) 16

136. Water flows at a rate of 10 meters per minute from a cylindrical pipe of 5 mm in diameter. How long will it take to fill a conical tank with a base diameter of 40 cm and a height of 24 cm?

(A) 40 minutes 10 seconds
(B) 51 minutes 12 seconds
(C) 50 minutes 30 seconds
(D) 55 minutes 40 seconds

137. What should come in place of the question mark (?) in the following number series?

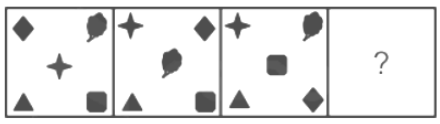
5,8,20,34,76,142, ?

(A) 296
(B) 284
(C) 272
(D) 302

138. Out of 100 students in a certain class, 70 students like Mathematics, 40 students like Science and 15 students like both Mathematics and Science. A student is selected at random. Find the probability that the student likes Mathematics or Science

(A) 0.95
(B) 0.8
(C) 0.5
(D) 0.4

139. Select the figure that will come next in the following series



(A) 

(B) 

(C) 

(D) 

121. In a certain language, TRIANGLE is coded as SQHZMFKD, which word would be coded as DWZLOKD?

(A) EXAMPLE
(B) FIGMENT
(C) DISMISS
(D) DISJOIN

141. A triangle with at least two sides are of the same length is

(A) obtuse triangle
(B) right triangle
(C) isosceles triangle
(D) scalene triangle

142. Six people are sitting in a row. *Y* is sitting between *X* and *R*. *X* is sitting next to *Z*. *Z* is sitting next to *P*, who is sitting on the extreme left and *Q* is sitting next to *R*. Who are sitting adjacent to *X*?

(A) *Z* and *Y*
(B) *P* and *X*
(C) *Y* and *R*
(D) *Q* and *Y*

143. If the numerator of a fraction is increased by 150% and the denominator is increased by 300%, the resultant fraction is $\frac{5}{16}$. What is the original fraction?

(A) $\frac{1}{2}$
(B) $\frac{1}{4}$
(C) $\frac{3}{4}$
(D) $\frac{1}{5}$

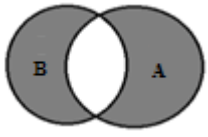
144. If U is the universal set with 100 elements, A and B are two sets such that $n(A)=50$, $n(B)=60$, $n(A \cap B) = 20$, then $n(A' \cap B') =$

(A) 40
(B) 20
(C) 90
(D) 10

145. What is the Cardinality of the Power set of the set {0, 1, 2}?

(A) 8
(B) 6
(C) 7
(D) 9

146. The shaded area of figure is best described by?



(A) A′ (Complement of A)
(B) A U B – (A ∩ B)
(C) A – B
(D) B

147. If A and B are symmetric matrices and $AB=BA$, then $A^{-1}B$ is a

(A) Symmetric matrix
(B) Skew-symmetric matrix
(C) Identity matrix
(D) None of the above

148. If + means ' ÷ ', – means '+', × means '– ' and ÷ means ' × ', then what will be the value of the following expression.

$18 \div 6 - 27 + 3 \times 12 = ?$

(A) 92
(B) 105
(C) 95
(D) 107

149. Find the sum of two numbers, whose product is 200 and difference is minimum

(A) 30
(B) 27
(C) 35
(D) 33

150. Which two signs should be interchanged in the following equation to make it correct.

$18 + 6 - 6 \div 3 \times 3 = 6?$

(A) + and –
(B) + and ÷
(C) – and ÷
(D) + and ×

ANSWER KEY									
Subject Name:		**MCA**							
Sl No.	**Key**	**Sl No.**	**Key**	**Sl No.**	**Key**	**Sl No.**	**Key**	**Sl No.**	**Key**
1	B	31	A	61	D	91	B	121	A
2	B	32	C	62	D	92	A	122	A
3	A	33	D	63	B	93	D	123	A
4	C	34	C	64	B	94	A	124	C
5	C	35	C	65	D	95	B	125	B
6	D	36	B	66	A	96	B	126	B
7	C	37	C	67	D	97	D	127	B
8	A	38	D	68	C	98	A	128	A
9	A	39	D	69	A	99	B	129	C
10	C	40	C	70	B	100	B	130	A
11	D	41	B	71	B	101	C	131	B
12	C	42	B	72	A	102	A	132	C
13	A	43	D	73	B	103	B	133	D
14	B	44	A	74	A	104	B	134	C
15	B	45	B	75	B	105	A	135	C
16	B	46	B	76	A	106	B	136	B
17	B	47	C	77	C	107	A	137	A
18	C	48	B	78	A	108	A	138	A
19	A	49	C	79	C	109	D	139	B
20	C	50	C	80	A	110	B	140	B
21	A	51	C	81	D	111	A	141	C
22	A	52	B	82	B	112	D	142	A
23	B	53	C	83	B	113	C	143	A
24	B	54	C	84	C	114	A	144	D
25	A	55	A	85	D	115	D	145	A
26	A	56	D	86	D	116	A	146	B
27	D	57	C	87	A	117	B	147	A
28	B	58	B	88	B	118	C	148	B
29	B	59	D	89	B	119	C	149	A
30	D	60	B	90	C	120	A	150	B