

501 MCA

- In how many ways a four digit even number can be formed by using the digits 2, 3, 5, 8 exactly once?
 - 24
 - 12
 - 18
 - 6
- There are 30 people in a group. If all shake hands with one another, how many handshakes are possible?
 - 870
 - 435
 - 30!
 - $23! + 1$
- How many ways can the letters in the word COMPUTER be arranged if the letters CO must remain next to each other in order?
 - 5040
 - 40320
 - 5041
 - 403201
- In the following question, there are two equations. Solve the equations and answer accordingly.
$$x^2 - 52x + 667 = 0$$
$$2y^2 + 20y + 50 = 0$$
 - $x > y$
 - $x \leq y$
 - $x \geq y$
 - $x < y$

5. If $f(x) = e^x$ then $f^{-1}(x) = ?$

- (A) e^{-x}
- (B) $-e^x$
- (C) $\ln x$
- (D) $\log x$

6. If $f(x) = |x| + x^2$ then $f^{-1}(-1) =$

- (A) -3
- (B) -1
- (C) 1
- (D) 3

7. If $2i + 5$ is a root of the equation $ax^2 + bx + c = 0$ with real coefficients, then the other root is

- (A) $2i - 5$
- (B) $-2i + 5$
- (C) $5i - 2$
- (D) $-2i - 5$

8. If $y = x^n \log x$, then $(n+1)^{\text{th}}$ derivative of y is

- (A) $\frac{(n-1)!}{x}$
- (B) $\frac{n!}{x}$
- (C) $\frac{n!}{x^n}$
- (D) $-\frac{n!}{x^n}$

9. Let S be a collection of subset of $\{2000, 2001, 2002, \dots, 2020\}$ such that intersection of any two sets in S is nonempty. What is the maximum cardinality of S ?
- (A) 21
(B) 2^{21}
(C) 2^{20}
(D) 2^{19}
10. Let $A = \{1, 2, 3\}$ then total number of relations in $A \times A$ is
- (A) 2^3
(B) 2^6
(C) 2^9
(D) 2^{12}
11. If $f \circ g(x) = (x^2 + 1)^{10}$ then $f(x) = ?$
- (A) x^5
(B) x^{10}
(C) $x^2 + 1$
(D) $(x^2 + 1)^2$
12. If N is the set of all positive integers, then $\{n \in N : |n - 4| \leq 2\}$ is equal to
- (A) $\{3, 4, 5\}$
(B) $\{2, 3, 4, 5, 6\}$
(C) $\{2, 3, 4, 5\}$
(D) $\{3, 4, 5, 6\}$
13. If $f(x) = \frac{4^x}{4^x + 2}$, then the value of $f(x) + f(1-x)$ is
- (A) 0
(B) -1
(C) 1
(D) cannot be determined

14. Choose the set of numbers from the following alternative sets, that is similar to the given set (9, 20, 43)?

- (A) (13, 30, 67)
- (B) (16, 33, 67)
- (C) (4, 9, 20)
- (D) (6, 14, 31)

15. Let $f: \mathbb{R} \rightarrow \mathbb{R}$ and $g: \mathbb{R} \rightarrow \mathbb{R}$ defined by $g(x) = xf(x)$ then

- (A) g is a differentiable function
- (B) g is differentiable at 0 if f is continuous at 0
- (C) g is one to one if f is one to one
- (D) g is many to many if f is one to one

16. A sequence $\left\{ \frac{1}{n^2} \right\}$ is

- (A) convergent
- (B) unbounded
- (C) divergent
- (D) bounded below

17. The area of a sector of a circle of radius 36 cm is 72π cm.
The length of the corresponding arc of the sector is

- (A) π cm
- (B) 2π cm
- (C) 3π cm
- (D) 4π cm

18. The radius of curvature at a point t on the curve $x = at^2$ and $y = 2at$ is

- (A) $2a(1+t^2)^{\frac{3}{2}}$
- (B) $a(1+t^2)^3$
- (C) $2a(1+t^4)^{\frac{3}{2}}$
- (D) $2a^2(1+t^2)^{\frac{3}{2}}$

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19. If $\frac{\sin(x+y)}{\sin(x-y)} = \frac{(a+b)}{(a-b)}$, then the value of $\frac{\tan x}{\tan y}$ is
- (A) $\frac{a}{b}$
- (B) $\frac{b}{a}$
- (C) ab
- (D) $\frac{(a-b)}{(a+b)}$
20. $2 - \cos^2 \theta = 3 \sin \theta \cos \theta$, $\sin \theta \neq \cos \theta$ then $\tan \theta$ is
- (A) $\frac{1}{2}$
- (B) $\frac{2}{3}$
- (C) 0
- (D) $\frac{1}{3}$
21. The function $f(z) = |z|$ is
- (A) analytic
- (B) nowhere analytic
- (C) analytic at $z = 0$
- (D) analytic except at $z = 0$
22. Find the centre and the radius of the circle $x^2 + y^2 + 8x + 10y - 8 = 0$.
- (A) Center $(-3, -5)$ radius 6
- (B) Center $(-3, -4)$ radius 9
- (C) Center $(-4, -5)$ radius 7
- (D) Center $(-3, -5)$ radius 8

23. If m_1 and m_2 are slopes of the two tangents that are drawn from (4, 3) to the parabola $y^2 = 16x$, then the value of $\frac{1}{m_1} + \frac{1}{m_2}$ is

(A) $\frac{3}{4}$

(B) $\frac{4}{3}$

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

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

24. An asymptote to the curve $y^2(a + 2x) = x^2(3a - x)$

(A) $x = 3a$

(B) $x = \frac{-a}{2}$

(C) $x = \frac{a}{2}$

(D) $x = 0$

25. Find the limits $\lim_{x \rightarrow 1} \left| \frac{x^2 + 1}{x + 100} \right|$.

(A) $\frac{101}{4}$

(B) $\frac{4}{101}$

(C) $\frac{2}{101}$

(D) $\frac{101}{2}$

26. $\lim_{x \rightarrow \infty} \left(\sqrt{x + \sqrt{x + \sqrt{x}}} - \sqrt{x} \right)$ is equal to
- (A) 0
(B) $\frac{1}{2}$
(C) $\log 2$
(D) None of the above
27. If $x = u$ is a point of discontinuity of $f(x) = \lim_{n \rightarrow \infty} \cos^{2n} x$, then the value of $\cos u$ is
- (A) 0
(B) $\frac{1}{2}$
(C) $(-1)^n$
(D) 1
28. On the interval $[0, 1]$ the function $f(x) = x^{25}(1-x)^{75}$ takes the maximum value at
- (A) 0
(B) $\frac{1}{3}$
(C) $\frac{1}{2}$
(D) $\frac{1}{4}$
29. The integrating factor of the differential equation $\frac{dy}{dx} - \frac{2y}{x+1} = (x+1)^3$ is
- (A) $\frac{1}{x+1}$
(B) e^{x+1}
(C) $\frac{1}{(x+1)^2}$
(D) $(x+1)^2$

30. The differentiation of $\sin x$ with respect to $\cos x$ is

- (A) $\tan x$
- (B) $-\tan x$
- (C) $\cot x$
- (D) $-\cot x$

31. The value of $\int_{-\frac{\pi}{8}}^{\frac{\pi}{8}} x^{10} \sin^9 x dx$ is equal to

- (A) 1
- (B) 0
- (C) $\frac{\pi}{4}$
- (D) $\frac{\pi}{8}$

32. If $\int_0^{\infty} \frac{dx}{(x^2+4)(x^2+9)} = k\pi$, then the value of k is

- (A) $\frac{1}{60}$
- (B) $\frac{1}{80}$
- (C) $\frac{1}{40}$
- (D) $\frac{1}{20}$

33. The roots of auxiliary equation of $(2D^2 + bD + c)y = 0$ are 2, -3.

Then the solution of differential equation is

- (A) $y = (Ax + B)e^{2x}$
- (B) $y = (Ax + B)e^x$
- (C) $y = Ae^{2x} + Be^{-3x}$
- (D) $y = e^{2x}(A \cos 3x + B \sin 3x)$

34. Particular integral of $(D^2 + 25)y = \sin 3x$ is

- (A) $\frac{\sin 3x}{16}$
- (B) $\frac{-\sin 3x}{5}$
- (C) $\frac{\cos 3x}{16}$
- (D) $\frac{\cos 5x}{3}$

35. The point of inflection of the curve $y = \frac{1}{\sqrt{2\pi}} e^{\frac{-x^2}{2}}$ satisfies the condition

- (A) $x > -1$
- (B) $x = -1$
- (C) $x < -1$
- (D) $x \in (0, -1)$

36. The differential equation with $y^2 = 4a(x + a)$ as solution is

- (A) $y \left(\frac{dy}{dx} \right)^2 - 2x \left(\frac{dy}{dx} \right) - y = 0$
- (B) $y^2 \left(\frac{dy}{dx} \right) - 2x \left(\frac{dy}{dx} \right) + y = 0$
- (C) $y \left(\frac{dy}{dx} \right)^2 + 2x \left(\frac{dy}{dx} \right) - y = 0$
- (D) $y^2 \left(\frac{dy}{dx} \right)^2 + 2x \left(\frac{dy}{dx} \right) - y = 0$

37. Degree of the differential equation $\left[1 + \left(\frac{dy}{dx} \right)^2 \right]^{\frac{2}{3}} = \frac{d^2y}{dx^2}$ is

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

38. If $u = y^3 \sin^{-1}\left(\frac{x^2 - y^2}{x^2 + y^2}\right)$ then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ is equal to

- (A) $2u$
- (B) $3u$
- (C) $4u$
- (D) $5u$

39. If $u = x^2 + y^2$, then $\frac{\partial^2 u}{\partial x \partial y}$ is equal to

- (A) 0
- (B) 2
- (C) -2
- (D) $2x + 2y$

40. The solution of $\frac{d^3 y}{dx^3} - 3 \frac{d^2 y}{dx^2} + 4y = 0$ is

- (A) $c_1 e^x + (c_2 + c_3 x) e^{2x}$
- (B) $c_1 e^{-x} + (c_2 + c_3 x) e^{2x}$
- (C) $c_1 e^x + c_2 e^{2x} + c_3 e^{3x}$
- (D) None of the above

41. If the vectors $\vec{i} - \vec{j} + \vec{k}$, \vec{k} , $\vec{i} + m\vec{j} - 3\vec{k}$ and $3\vec{i} - 4\vec{j} + 5m\vec{k}$ are coplanar, then the values of m are

- (A) $\frac{(4 \pm \sqrt{21})}{5}$
- (B) $\frac{(4 \pm \sqrt{141})}{5}$
- (C) $\frac{7}{5}, -1$
- (D) $-\frac{7}{5}, 1$

42. If $(\vec{a} \times \vec{b}) \times \vec{c} = \vec{a} \times (\vec{b} \times \vec{c})$ and \vec{b}, \vec{c} are perpendicular then

- (A) \vec{a}, \vec{b} are parallel, or $\vec{c} = \vec{0}$
- (B) \vec{a}, \vec{b} are perpendicular, or $\vec{c} = \vec{0}$
- (C) \vec{a}, \vec{b} are perpendicular and $\vec{c} = \vec{0}$
- (D) $\vec{a} = \vec{0}$

43. The value of $\text{div}(\vec{A})$ is equal to

- (A) 1
- (B) ∞
- (C) -1
- (D) 0

44. The angle between the lines $\vec{r} = (2-t)\vec{i} + (1+2t)\vec{j} + (2t-4)\vec{k}$ and $\vec{r} = (1+3s)\vec{i} + (-2+s)\vec{j} + (s-1)\vec{k}$ is

- (A) $\cos^{-1}\left(\frac{\sqrt{11}}{33}\right)$
- (B) $\cos^{-1}\left(\frac{2\sqrt{14}}{21}\right)$
- (C) $\cos^{-1}\left(\frac{3\sqrt{231}}{231}\right)$
- (D) $\cos^{-1}\left(\frac{7\sqrt{11}}{33}\right)$

45. If vectors \vec{a} and \vec{b} are not perpendicular to each other and $\vec{r} \times \vec{a} = \vec{b} \times \vec{a}$ and $\vec{r} \cdot \vec{c} = 0$ then \vec{r} is

- (A) $\vec{a} \times \vec{c}$
- (B) $\vec{b} - \left(\frac{\vec{b} \cdot \vec{c}}{\vec{a} \cdot \vec{c}}\right)\vec{a}$
- (C) $\vec{b} + x\vec{a}$ (x being a scalar)
- (D) $\vec{c} + k\vec{b}$ (k being a scalar)

46. The roots of the equation $(b-c)x^2 + 2(c-a)x + (a-b) = 0$ are always
- (A) real and distinct
 - (B) real and equal
 - (C) real
 - (D) imaginary
47. The dimension of the real vector space of all 3×3 real symmetric matrices is
- (A) 9
 - (B) 6
 - (C) 3
 - (D) 4
48. The coordinates of the point of intersection of the line $\frac{x+1}{1} = \frac{y+3}{3} = \frac{z+2}{-2}$ with the plane $3x + 4y + 5z = 5$ is
- (A) (5, 15, -14)
 - (B) (3, 4, 5)
 - (C) (1, 3, -2)
 - (D) (3, 12, -10)
49. The length of the side of a square is represented by $x + 2$. The length of the side of an equilateral triangle is $2x$. If the square and the equilateral triangle have equal perimeter, then the value of x is
- (A) 5
 - (B) 14
 - (C) 17
 - (D) 4
50. The percentage error in computing the area of an ellipse when an error of 1% is made in measuring the major and minor axes is
- (A) 0.2%
 - (B) 2%
 - (C) 0.02%
 - (D) 1%

51. The absolute value of angle between the two curves
 $r = \sin \theta + \cos \theta$ and $r = 2 \sin \theta$ is

(A) $\frac{3\pi}{4}$

(B) $\frac{5\pi}{4}$

(C) $\frac{\pi}{4}$

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

52. If S and S' are the foci of the hyperbola $9x^2 - 16y^2 - 18x - 64y - 199 = 0$,
then the area of square with SS' as one side is (in square units)

(A) 4

(B) 20

(C) 100

(D) 116

53. The sum of the distances of any point on the ellipse
 $x^2 + 2y^2 = 6$ from $(\sqrt{3}, 0)$ and $(-\sqrt{3}, 0)$ is

(A) $3\sqrt{2}$

(B) $2\sqrt{3}$

(C) $2\sqrt{6}$

(D) $6\sqrt{2}$

54. A plane region is enclosed by the line $x + y - 2 = 0$, X-axis and Y-axis. The volume generated by this region when it is revolved about X-axis is

(A) $\frac{\pi}{3}$ cu.units

(B) $\frac{2\pi}{3}$ cu.units

(C) $\frac{4\pi}{3}$ cu.units

(D) $\frac{8\pi}{3}$ cu.units

55. The angle between the planes $2x + y - z = 9$ and $x + 2y + z = 7$ is

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

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

(C) $\frac{\pi}{4}$

(D) $\frac{\pi}{6}$

56. If the cube roots of unity are $1, \omega, \omega^2$, then the roots of the equation $(x - 2)^3 + 27 = 0$ are

(A) $-1, -1, -1$

(B) $-1, 2 + 3\omega, 2 + 3\omega^2$

(C) $-1, -\omega, -\omega^2$

(D) $-1, 2 - 3\omega, 2 - 3\omega^2$

57. If a random variable X follows Poisson distribution such that $E(X^2) = 30$, then the variance of the distribution is

(A) 6

(B) 5

(C) 30

(D) 25

58. If in a Poisson distribution $P(X = 1) = P(X = 2)$ then variance is
- (A) 4
 - (B) 2
 - (C) $\sqrt{2}$
 - (D) -2
59. The mean of a Binomial distribution is 5 and its standard deviation is 2. Then the values of 'n' and 'p' are respectively
- (A) $\frac{4}{5}, 25$
 - (B) $25, \frac{4}{5}$
 - (C) $\frac{1}{5}, 25$
 - (D) $25, \frac{1}{5}$
60. If the mean is λ and the variance is σ^2 in a Poisson distribution, then
- (A) $\lambda = \frac{1}{2}\sigma^2$
 - (B) $\sigma^2 = \frac{1}{2}\lambda$
 - (C) $\lambda = \sigma^2$
 - (D) $\sigma^2 = \frac{1}{2}\lambda^2$
61. If $f(x) = K(x-3)^2$, $1 \leq x \leq 3$ is the probability density function, then the value of K is
- (A) 4
 - (B) $\frac{1}{4}$
 - (C) $\frac{1}{3}$
 - (D) $\frac{11}{2}$

62. In a certain game, you perform three tasks. You flip a coin and success would be head. You roll a single dice and success would be a six. You pick a card from a full playing-card deck, and success would be picking a spade card. If any of these task are successful, then you win the game. What is the probability of winning?
- (A) $\frac{1}{48}$
- (B) $\frac{5}{16}$
- (C) $\frac{11}{16}$
- (D) $\frac{23}{48}$
63. The probability that a bullet fired from a point will strike the target is $\frac{3}{4}$. Five such bullets are fired simultaneously towards the target from that very point. What is the probability that the target will be strike?
- (A) $\frac{255}{256}$
- (B) $\frac{235}{256}$
- (C) $\frac{245}{256}$
- (D) $\frac{225}{256}$
64. The integers k , l and m are consecutive even integers between 23 and 33. Which of the following could be the average (arithmetic mean) of k , l and m ?
- (A) 24
- (B) 25
- (C) 25.5
- (D) 28

65. If l, m, n are direction cosines of a straight line then,
- (A) $l + m + n = 1$
 - (B) $l^2 + m^2 + n^2 = 1$
 - (C) $l = m = n$
 - (D) $\frac{l}{m} = \frac{m}{n} = \frac{n}{l}$
66. The necessary condition for $f(x, y) = 0$ to have extremum value are
- (A) $f_{xy} = 0, f_{yx} = 0$
 - (B) $f_{xx} = 0, f_{yy} = 0$
 - (C) $f_x = 0, f_y = 0$
 - (D) $f_x = 0, f_y = 0$ and $f_{xx} = 0, f_{yy} = 0$
67. Let $*$ be a binary operation on \mathbb{R} such that $a * b = a + b + ab$. Then the solution of the equation $(3 * 4) * x = -1$ is
- (A) 1
 - (B) 0
 - (C) -1
 - (D) 3
68. If A and B are square matrices of size $n \times n$, then which of the following statement is **NOT** true?
- (A) $\det(AB) = \det A \det B$
 - (B) $\det(kA) = k^n \det A$ for every scalar k
 - (C) $\det(A + B) = \det A + \det B$
 - (D) $\det(A^t) = \det A$, where A^t is the transpose of A
69. The solution of the equation $3x \equiv 1 \pmod{7}$ is
- (A) not exist
 - (B) $x \equiv 5 \pmod{7}$
 - (C) $x \equiv 3 \pmod{7}$
 - (D) $x \equiv 4 \pmod{7}$

70. The sum of infinite series $S = 1 + \frac{2}{3} + \frac{6}{3^2} + \frac{10}{3^3} + \dots$ is
- (A) 4
 - (B) 6
 - (C) 2
 - (D) 3
71. We define $f(N) =$ sum of digits of N , expressed in decimal number. For example, $f(125) = 1 + 2 + 5 = 8$. Then the value of $f(2^5 3^4 4^2 5^6)$ is
- (A) 60
 - (B) 17
 - (C) 14
 - (D) 18
72. Let $p(x)$ be a polynomial of degree 3 with real coefficients. Which of the following is possible?
- (A) $p(x)$ has no real roots
 - (B) $p(x)$ has exactly two real roots
 - (C) $p(1) = 0$, $p(-1) = 3$, $p(2) = 10$ and $p(-2) = 20$
 - (D) None of the above
73. Find the solution of $\sin(x) = -\frac{\sqrt{3}}{2}$.
- (A) $x = n + (-1)^n \frac{4}{3}$
 - (B) $x = n\pi + (-1)^n \frac{4\pi}{3}$
 - (C) $x = n + (1)^n \frac{4}{3}$
 - (D) $x = n\pi + (1)^n \frac{4\pi}{3}$

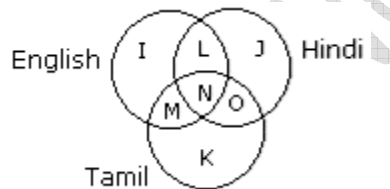
74. The curve $f(x) = x^3 - 6x^2 + 9x - 8$ is concave upward when

- (A) $x \in (2, \infty)$
- (B) $x \in (-\infty, 2)$
- (C) $x \in (0, \infty)$
- (D) $x \in (-\infty, 0)$

75. If $(2m - 5) + i(3n + 4)$ is the complex conjugate of $(3n + 4) - i(4m - 7)$ then (n, m) are

- (A) $\left(\frac{7}{3}, 1\right)$
- (B) $\left(1, \frac{-7}{3}\right)$
- (C) $\left(-1, \frac{-7}{3}\right)$
- (D) $\left(\frac{-7}{3}, 1\right)$

76. In the given diagram, identify the people who can speak only one language.



- (A) L, M, O
- (B) K, J, I
- (C) K
- (D) I

77. Select the correct pattern for question mark from the below answers.



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

78. Select the correct pattern for question mark from the below answers.



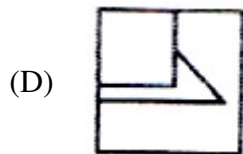
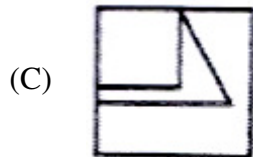
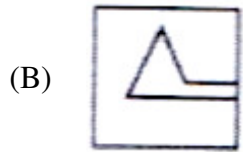
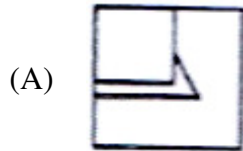
- (A)
- (B)
- (C)
- (D)

79. Select the correct pattern for question mark from the below answers.

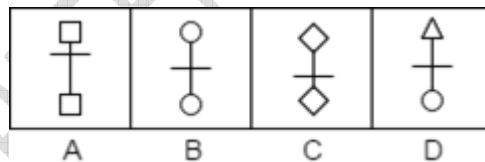


- (A)
- (B)
- (C)
- (D)

80. Which answer figure will complete the pattern in the question figure?



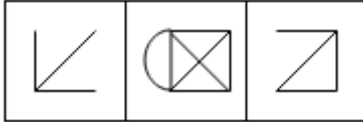
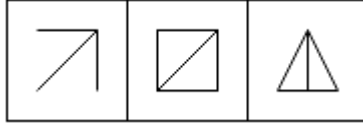
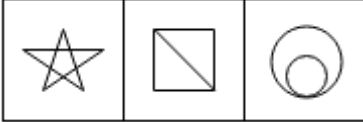

81. Which of the following figures is different from others?



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

82. Which of the following series of figures follows the given rule?

Rule: A single unbroken line can trace any figure in the series without retracting.

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

83. Select the correct pattern for question mark from the below answers.

⇨⇨ | ⇩⇩ | ⇨⇨ | ⇩⇩ | ?

- (A) ⇩⇩
- (B) ⇨⇨
- (C) ⇩⇩
- (D) ⇨⇨

84. According to a military code, if SYSTEM is SYSMET and NEARER is AENRER, what is the code for FRACTION?

- (A) FRACNOIT
- (B) CARFTION
- (C) ARFCNOIT
- (D) CARFNOIT

85. In alphabet series, some alphabets are missing which are given in that order as one of the alternatives below it. Choose the correct alternative.

adb _ ac _ da _ cddcb _ dbc _ cbda

- (A) bccba
- (B) cbbaa
- (C) ccbba
- (D) bbcad

86. If A = Z, B = Y, C = X and so on, then what will be the code of BLACK?

- (A) OYZXP
- (B) YOZXP
- (C) YOZPX
- (D) YOXZP

87. If code for ADHI = 1489, then the code for GIEC is

- (A) 7953
- (B) 7935
- (C) 7593
- (D) 7945

88. There are two pairs, the first pair follows some relationship. Use the same relationship to find the second analogy of the second pair.

IE : RV :: KC : ?

- (A) PU
- (B) PX
- (C) XP
- (D) RW

89. Choose the correct alternative.

RACK : 33 :: BOTTLE : ?

- (A) 74
- (B) 75
- (C) 73
- (D) 72

90. If code for 'TEACHING' is 'CHEATING', then what will be the code for 'GRADIENT'?
- (A) DIRAGENT
 - (B) DIAGRENT
 - (C) DIERATNG
 - (D) RATIGEND
91. If 'pink' means 'blue', 'blue' means 'white', 'white' means 'black', 'black' means 'red', 'red' means 'green', then what is the colour of 'blood'?
- (A) red
 - (B) green
 - (C) blue
 - (D) black
92. There are two pairs, the first pair follows some relationship. Use the same relationship to find the second analogy of the second pair.
- AGJ : DKO :: STD : ?
- (A) VXI
 - (B) XVW
 - (C) XWV
 - (D) WXI
93. Select one alternative out of given four alternatives, which is analogous to the first two?
- TZW : 28 :: QYS : ?
- (A) 35
 - (B) 160
 - (C) 38
 - (D) 158
94. Three of the following four are alike in a certain way and so form a group. Which is the one that does **NOT** belong to the group?
- (A) Tin
 - (B) Gold
 - (C) Brass
 - (D) Copper

95. If 'ELTM' is coded as 50, then find the code for 'YZNP'.
- (A) 100
 - (B) 89
 - (C) 191
 - (D) 81
96. Find the missing term in the series.
- RQP, ONM,, IHG, FED.
- (A) CDE
 - (B) LKI
 - (C) LKJ
 - (D) BAC
97. In a certain code, ARMY is written as ASOB. How is JUDGE written in that code?
- (A) KVEHF
 - (B) JVFJI
 - (C) ITCFD
 - (D) JWGKJ
98. In a certain code, 'REACTION' is written as 'RAETCOIN'. How is 'BEAUTY' written in that code?
- (A) BAETUY
 - (B) BTUAEY
 - (C) BTAUEY
 - (D) None of the above

Direction: Study the following information carefully and answer the questions given below.

There are seven friends A, B, C, D, E, F and G in a seven-floor building. The ground floor is no. 1, the floor above it is no. 2 and so on. E does not live on an even numbered floor. G does not live on the topmost floor. Only one person lives between E and G. A does not live on even numbered floor and does not live below F. D does not live immediately above or immediately below G. There are two floors between D and E. Both B and C live on even-numbered floor. G and C live in between the two floors. F lives on floor number 5.

99. In the given options find the person who lives in 3rd floor?

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

100. Who is the immediate neighbour of G?

- (A) B
- (B) D
- (C) E
- (D) F

101. How many persons live between E and G?

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

102. How many floors are between A and F?

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

103. In which floor D lives?

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

Direction: Study the following information carefully and answer the questions given below.

Five girls are sitting on a bench to be photographed. Seema is to the left of Rani and to the right of Bindu. Mary is to the right of Rani. Reeta is between Rani and Mary

104. Who is second from the left in photograph?
- (A) Reeta
 - (B) Seema
 - (C) Bindu
 - (D) Mary
105. How many people are seated between Bindu and Seema?
- (A) 0
 - (B) 1
 - (C) 2
 - (D) 3
106. Who sits in the corner?
- (A) Reeta or Mary
 - (B) Bindu or Mary
 - (C) Rani or Mary
 - (D) Rani or Bindu
107. Who is second from the right in photograph?
- (A) Reeta
 - (B) Mary
 - (C) Bindu
 - (D) Seema
108. A series is given with missing terms. Choose the correct alternative from the given ones that will complete the series.
- 4E, 8I, 13N, 19T, ?
- (A) 26U
 - (B) 26A
 - (C) 25Y
 - (D) 25A
109. Choose the term out of the given alternatives which will replace the question mark.
- ATTRIBUTION, TTRIBUTIO, RIBUTIO, IBUTI, ?
- (A) BUT
 - (B) UTI
 - (C) IBU
 - (D) BTI

110. If * stands for 'addition', / stands for 'subtraction', + stands for 'multiplication', and – stands for 'division', then $20 * 8 / 8 - 4 + 3 = ?$

- (A) 22
- (B) 21
- (C) 23
- (D) 34

111. Find the missing term in the given series.

3, 7, 16, 35, ?, 153

- (A) 74
- (B) 84
- (C) 78
- (D) 70

112. What number should come next in the given series?

201, 202, 204, 207,

- (A) 211
- (B) 215
- (C) 205
- (D) 208

113. Choose the term out of the given alternatives which will replace the question mark.

1 : 1 :: 25 : ?

- (A) 250
- (B) 125
- (C) 240
- (D) 625

114. How many of the following numbers are divisible by 3 but not by 9?

2133, 2343, 3474, 4131, 5286, 5340, 6336, 7347, 8115, 9276

- (A) 5
- (B) 6
- (C) 7
- (D) 9

115. If the animals which can walk are called swimmers, animals who crawl are called flying, those living in water are called snakes and those which fly in the sky are called hunters, then what will a lizard be called?
- (A) Swimmers
 - (B) Flying
 - (C) Snakes
 - (D) Hunters
116. The product of two numbers is 45 and the sum of their squares is 106. The numbers are
- (A) 3 and 5
 - (B) 5 and 9
 - (C) 5 and 19
 - (D) 45 and 1
117. Choose the odd pair of words.
- (A) Atom : Electron
 - (B) Train : Engine
 - (C) House : Room
 - (D) Curd : Milk
118. Three numbers are in the ratio 4 : 5 : 6 and their average is 25. The largest number is
- (A) 30
 - (B) 32
 - (C) 36
 - (D) 42
119. Hitesh is 40 years old and Ronnie is 60 years old. How many years ago was the ratio of their ages 3 : 5?
- (A) 5 years
 - (B) 10 years
 - (C) 20 years
 - (D) 37 years
120. A sum of money doubles itself in 8 years. What is the rate of interest?
- (A) 25%
 - (B) 13.50%
 - (C) 12.50%
 - (D) 15%

121. If $a : b = 2 : 7$ and $b : c = 7 : 8$ then find $a : b : c$.

- (A) 2 : 8 : 7
- (B) 2 : 7 : 7
- (C) 2 : 9 : 8
- (D) 2 : 7 : 8

122. Find the next term in the series.

4, 9, 25, 49, 121, 169,

- (A) 324
- (B) 289
- (C) 225
- (D) 196

123. Find the wrong term in the series.

56, 58, 62, 70, 84, 118, 182

- (A) 58
- (B) 62
- (C) 84
- (D) 118

124. Find the missing term in the series.

48, 24, 72, 36, 108,

- (A) 115
- (B) 216
- (C) 121
- (D) 54

125. Complete the series by replacing the question mark.

ABC, 6, EFG, 210, IJK, ?

- (A) 1000
- (B) 190
- (C) 990
- (D) 999

126. If 617 is divided by 49, the sum of the tens digits and the tenth digit of the resulting number is

- (A) 1
- (B) 5
- (C) 6
- (D) 9

127. The sum of the numbers in the grid below is

-2	-1	1	2	3	4
-4	-2	2	4	6	8
-6	-3	3	6	9	12
-8	-4	4	8	12	16
-10	-5	5	10	15	20
-12	-6	6	12	18	24

- (A) 273
- (B) 147
- (C) 210
- (D) 163

128. How many 1 inch square tiles would it take to cover the floor of a closet that has dimensions 5 feet by 4 feet? (1 foot = 12 inches)

- (A) 240
- (B) 1,440
- (C) 2,160
- (D) 2,880

129. Faced with job market, many young people are returning to graduate school rather than attempting to compete for the few available jobs.

- (A) an educated
- (B) an anemic
- (C) a myopic
- (D) a booming

130. If $7^9 + 7^9 + 7^9 + 7^9 + 7^9 + 7^9 + 7^9 = 7^x$, what is the value of x ?

- (A) 9
- (B) 10
- (C) 63
- (D) 9^7

131. If $S^2 > T^2$, which of the following must be true?

- (A) $S > T$
- (B) $ST > 0$
- (C) $|S| > |T|$
- (D) $ST < 0$

132. While many people think of the lottery as a harmless way to have fun and possibly win some money, buying lottery tickets is a form of gambling. Therefore, public officials shouldn't buy lottery tickets.

The argument above relies upon which of the following assumptions?

- (A) Individuals who play the lottery are less likely to win a big payout than they are to be killed in a car crash
- (B) Some public officials are guilty of much more serious offenses than gambling
- (C) Public official shouldn't gamble
- (D) many public officials are easily tempted to violate rules governing their positions

133. If $4(-3x-8) = 8(-x+9)$, what is the value of x^2 ?

- (A) 26
- (B) 104
- (C) 676
- (D) 32

134. If $3t^3 - 7 = 74$, what is the value of $t^2 - t$?

- (A) -3
- (B) 6
- (C) 3
- (D) 18

135. a is directly proportional to b . If $a = 8$ and $b = 2$, what is a when $b = 4$?
- (A) 64
(B) 32
(C) 16
(D) 10
136. Two identical pies were cut into a total of 16 equal pieces. If one of the resulting pieces was then split equally among three people, what fraction of a pie did each person receive?
- (A) $\frac{1}{48}$
(B) $\frac{1}{24}$
(C) $\frac{1}{16}$
(D) $\frac{3}{16}$
137. Two parking lots can hold a total of 115 cars. The Green lot can hold 35 fewer cars than the Red lot. How many cars can the Red lot hold?
- (A) 35
(B) 40
(C) 70
(D) 75
138. Mr. Choudury's fourth-grade class contains of 20 students. 12 boys and 8 girls. If the boys weigh an average of 80 pounds each and the girls weigh an average of 70 pounds each, what is the average weight, in pounds, of all 20 students?
- (A) 71
(B) 74
(C) 75
(D) 76
139. The perimeter of a rectangular patch is 268 feet and its length is 168% of its width. What is the area of the patch in square feet?
- (A) 4,000
(B) 4,200
(C) 4,320
(D) 4,600

140. One robot, working independently at a constant rate, can assemble a doghouse in 12 minutes. What is the maximum number of complete doghouses that can be assembled by 10 such identical robots, each working on separate doghouses at the same rate for 2 and $\frac{1}{2}$ hours?
- (A) 20
(B) 25
(C) 120
(D) 125
141. A certain automotive dealer sells only cars and trucks, and the ratio of cars to trucks on the lot is 1 to 3. If there are currently 51 trucks for sale, how many cars does the dealer have for sale?
- (A) 17
(B) 34
(C) 68
(D) 153

Direction: Study the following information carefully and answer the questions given below.

A, B, C, D, E, and F are sitting around a circular table facing the centre. D is between C and F; B is to the left of A; B is diagonally opposite to D; and E is between C and B.

142. Who is seated between D and A?
- (A) C
(B) E
(C) F
(D) B
143. How many people seated between C and B if counted clockwise?
- (A) 3
(B) 1
(C) 4
(D) 2

144. Who sits diagonally opposite to C?

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

145. How many people seated between E and B if counted anticlockwise?

- (A) 2
- (B) 4
- (C) 0
- (D) 3

146. How many people seated between E and A if counted anticlockwise?

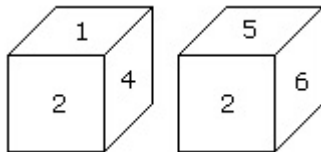
- (A) 2
- (B) 1
- (C) 4
- (D) 3

147. Arrange the given words in a meaningful sequence.

1. Leaves 2. Branch 3. Flower 4. Tree 5. Fruit

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

148. When the digit 5 is on the bottom of the cube, which number will be on its upper surface?



- (A) 1
- (B) 3
- (C) 4
- (D) 6

149. Find the missing term in the following.

BDF, CFI, DHL, ?

- (A) EJO
- (B) EML
- (C) CJM
- (D) EMI

150. Choose one word which **CANNOT** be formed from the letters of the word.

‘INTELLIGENCE’

- (A) CANCEL
- (B) INCITE
- (C) GENTLE
- (D) NEGLECT

FOR REFERENCE ONLY-CUSAT

FINAL ANSWER KEY

Subject Name: 501 MCA

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