megaleap
Comprehensive MCA Entrance Coaching

SANMACS INDIA

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M.C.A. ENTRANCE **MTPO – III** **MAXIMUM TIME: 165 MINUTES**
TOTAL QUESTIONS: 100

1. Two dice are thrown. What is the probability that the number shown up on one of the dice is greater than the other?
(a) 5/6 (b) 2/3 (c) 1/2 (d) 7/9

2. The area enclosed by the curve $|x|+|y|=1$ is (in Sq. units)
(a) 1.5 (b) $\sqrt{2}$ (c) 1 (d) 2

3. A number lock has three rings and each ring is numbered 0 to 9. The lock will unlock if the sum of the digits is 6 and one digit is 2. How many possible trials are there to unlock the lock?
(a) 5 (b) 15 (c) 30 (d) 45

4. The sum of the slopes of the tangents drawn from (- 4, 5) to the parabola $y^2=16x$ is
(a) $5/4$ (b) $-5/4$ (c) $-4/5$ (d) -1

5. There are 5 different video films to be seen during a month of 30 days. In how many ways the films could be seen by seeing a film a day and seeing them on successive days.
(a) 26! (b) 120 (c) 3000 (d) 3120

6. The minimum value of $\tan^2 A + \tan^2 B + \tan^2 C$, given $\tan A + \tan B + \tan C = 4$ is
(a) $4/3$ (b) $16/3$ (c) Zero (d) Insufficient data

7. Mr. X has bundles of 5 Rs. and 10 Rs. Notes. In how many ways can he give away Rs. 500 in either 5 Rs. or 10 Rs. or both?
(a) 51 (b) 60 (c) 100 (d) 101

8. The number of complex numbers Z satisfying $|Z|=5$ and $|Z-10|=|Z-8|$ simultaneously is
(a) Zero (b) 1 (c) 2 (d) 4

Directions (9 – 12): Eight tennis players G,H,J,K,L,M,N,O are to be honored at a special ceremony . Three of these players H, M, O are also football players. Two of them K, N are also basketball players. In arranging the seats it was decided that an athlete in two sports should not be seated next to another two sports athlete.

9. Which of the following cannot sit next to M?
(a) A (b) J (c) K (d) L

10. Which of the following ordered arrangements is proper?
(a) HKJL (b) JKMN (c) HGKJ (d) JHLK

11. To have a proper seating arrangement as planned, K should sit between?
(a) J and L (b) J and N (c) J and M (d) L and N

12. Before all the athletes are seated, there are two vacant seats on either side of N. Which two athletes may occupy these seats?
(a) G and K (b) G and L (c) J and H (d) L and O

13. Identify the odd man out?
(a) MS DOS (b) LOTUS (c) UNIX (d) CPIM

14. The angle between the hour hand and the minute hand after 2 p.m. is 90° at an instant What is the time at the instant?
(a) 22 minute after 2 p.m. (b) 27 $\frac{3}{11}$ minutes after 2 p.m.
(c) 27 minutes after 2 p.m. (d) 30 minutes after 2 p.m.

15. Given $f(x)=2x+3$ and the range of $f(x)$ is $[1, 17]$ Therefore the domain of $f(x)$ is
(a) [3, 8] (b) [5, 7] (c) [–1, 7] (d) [–1, 5]

16. In what internal is the infinite series
$1+2(x-3)+3(x-3)^2+4(x-3)^3+....$ convergent
(a) $-1 < x < 1$ (b) $-1 \le x < 1$ (c) $2 < x < 4$ (d) $2 \le x < 4$

Directions Q (17 – 18): are analogies.

17. Ellipse: Curve : : ------- : --------
(a)Triangle : Base (b) Revolution : Distance
(c) Circumference : Ball (d) Square : Polygon

18. Request : Order : : ------- : -------
(a) Suggest : Dictate (b) Regard : Reject
(c) Reply: Respond (d) Wish: crave

19. Given $0<a<b<c$ then (identify the correct statement)
(a) $ab<bc<ca$ (b) $ab<ac<bc$ (c) $bc<ab<ca$ (d) $bc<ca<ab$

20. $\int_1^2 \frac{1}{x}dx = \int_2^K \frac{1}{x}dx$ if the value of k is
(a) 3 (b) 3.5 (c) 4 (d) 6

21. The system of equations. $x\cos\theta - y\sin\theta = 0$ and $x\sin\theta + y\cos\theta = 0$ has
(a) No solution except (0, 0) (b) Many solutions
(c) Unique solution (d) No. of solutions depending on θ

22. The minimum value of y, given $y = |x-2|+|x-3|$ is

(a) 0 (b) 1 / 2 (c) 1 (d) 3

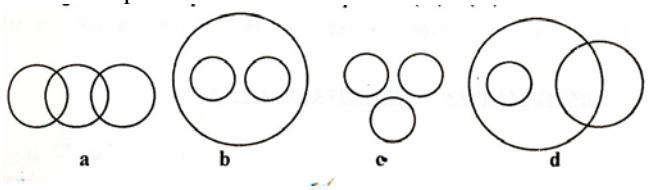
23. X is a binomial variant. Given $n = 6$ and $8P(X=2)+3P(X=3)$, then the value of P is

(a) 1 / 2 (b) 2 / 3 (c) 1 / 3 (d) 1 / 4

24. A $\cos^3\theta + b\cos^2\theta + c\cos\theta = a\sin^3\theta + b\sin^2\theta + c\sin\theta$ will be true if θ is equal to

(a) 0 (b) $\pi/2$ (c) $\pi/3$ (d) $\pi/4$

Directions Q (25 – 26): Find the diagram that best depicts the classes in questions 25 to 26



25. Vegetables, Grains, Eatables

26. Fans, Radios, Tables

27. The differential equation got by eliminating 'A' given y = $\sin(A+x)$ is

(a) $\frac{dy}{dx} = \cos(A+x)$ (b) $\frac{dy}{dx} = y$

(c) $\frac{dy}{dx} = 1 - x^2$ (d) $\left(\frac{dy}{dx}\right)^2 = 1 - y^2$

28. The number of permutation of n persons when two of them were together is 5 times the number of permutations of n persons when three of them were together, what will be the value of n?

(a) 16 (b) 18 (c) 20 (d) 17

29. The sum of the coefficients of terms containing powers of x in the expansion of $\left(x^2+3\right)^{10}$ is

(a) 3^{10} (b) 4^{10} (c) $4^{10} - 3^{10}$ (d) 7^{10}

30. Given $x^2 + y^2 - 4x - 4y - 17 = 0$ then the maximum value of $x + y$ is

(a) $4 + 5\sqrt{2}$ (b) $4 - 5\sqrt{2}$ (c) $5\sqrt{2}$ (d) $6\sqrt{2}$

31. ABCD is a rectangle. Given $\overrightarrow{AB} = 3\vec{i} + \vec{j}$ and $\overrightarrow{BC} = \overrightarrow{3k}$, the angle θ between the diagonals is given by

(a) $2\cos\theta = 1$ (b) $11\cos\theta = 9$ (c) $5\cos\theta = 4$ (d) $10\cos\theta = 1$

32. The vectors $\vec{i} + \vec{j}$, $\vec{j} + \vec{k}$, $\vec{k} + \vec{i}$

(a) will form an equilateral triangle

(b) will form a triangle (c) will form a right–angled triangle

(d) will not form a triangle

33. Find the range of $\frac{e^x - 1}{e^x + 1}$, given x is a positive real number,

(a) $(1, \infty)$ (b) (∞, ∞) (c) $(-\infty, \infty)$ (d) $(-1, \infty)$

34. Given $y = 1 + \cos 3x$, then the value of y_5 at $x = \pi/6$ is

(a) –1 (b) 35 (c) Zero (d) $3^5(-1)$

35. The Eigen values of $\begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix}$ are

(a) $\cos\theta, \sin\theta$ (b) $\cos\theta, -\sin\theta$

(c) $\cos\theta - i\sin\theta, \cos\theta + i\sin\theta$ (d) $\cos 2\theta, \sin 2\theta$

36. Given α, β, γ, are positive and unequal, the value of $\frac{\alpha}{\beta} + \frac{\beta}{\gamma} + \frac{\gamma}{\alpha}$

(a) exceeds 2 (b) exceeds3 (c) exceeds 4 (d) exceeds 6

37. The value of $\sqrt{n+1} - \sqrt{n}$, $n > 0$

(a) same for all n (b) increases as n increases

(c) decreases as n increases

(d) may increases or decreases as n increases

38. The numbers p, q, r are +ve and $p^2 = q^2 + r^2$. Then

(a) $p > q + r$ (b) $p^2 + q^2 < r^2$ (c) $p = q + r$ (d) $p + q > r$

39. Find the greatest integer x for which – 6x – 1 > 27 is true

(a) –5 (b) – 4 (c) – 3 (d) – 2

40. Find the odd man out

(a) Ask (b) Direct (c) Appeal (d) Plead

41. Evaluate $\underset{n\to\infty}{Lt} \frac{1.3.5.\dots.(2n-1)}{2.4.6.\dots.(2n)}\left(\frac{1}{3}\right)^n$

(a) 1 / 3 (b) 1 (c) 2 / 3 (d) Zero

42. In the computation below x, y, z represent different digits. What does x equal?

xy [xy is multiplied by $7z$]

$7z$

315

315

3465

(a) 3 (b) 4 (c) 5 (d) 6

43. The roots of the quadratic $x^2 - 5x + p = 0$ all α and β. Given $\alpha - \beta = 3$, the value of p is

(a) 2 (b) 4 (c) 6 (d) 7

44. The address part of the instruction is used as data in

(a) Immediate mode (b) Indexed mode

(c) Indirect mode (d) Direct mode

45. If GRID is coded as 17.5, then the code for FUND is

(a) 11.25 (b) 16.25 (c) 15.75 (d) 15.50

46. Given $\log_e\left(e^{2x} - 2\right) = x$, the value of x is

(a) 1 (b) $\log_e 3$ (c) $-\log_e 2$ (d) $\log_e 2$

47. The functions e, a, b are defined as follows for $x \geq$, 2: $e(x) = x$, $a(x) = \frac{1}{1-x}$, $b(x) = \frac{x-1}{x}$ and $fo(g(x)) = f(g(x))$ is the rule of composition of functions, Identify the false statement

(a) $ao(b(x)) = e(x)$ (b) $bo(b(x)) = a(x)$

(c) $ao(a(x)) = b(x)$ (d) $ao(e(x)) = e(x)$

48. The area bounded by $y = e^x$, y - axis, the lines $y = 1$ and $y = 2$ is

(a) $\log 4$ (b) $\log 4 - 1$ (c) $e^2 - e$ (d) $\log 8$

49. The series 1+ (0.2) a + (0.04) a^2 + (0.008) a^3 + ... (a>0) converges to a finite seem if a is

(a) <5 (b) >5 (c) <6 (d) >1

50. $f(x)$ is a linear function in x and $f(x+1)=f(x-1)$ then $f(x)$ is
(a) $x-1$ (b) $x+1$ (c) $3x+2$ (d) a constant

51. Given $1+\cos\alpha+\cos^2\alpha+---+\infty=2$ then the value of $1+\sin^2\alpha+\sin^4\alpha+---\infty$ is
(a) 2 (b) 4 (c) 6 (d) 8

52. A and B are two events such that P (A) = 1/3, P (B) = 2/5 and P $\left(B\left|\overline{A}\right.\right)=11/20$
S: A and B are mutually exclusive
T: A and B are independent events
(a) S and T are false (b) S is false, T is true
(c) S and T are true (d) S is true, T is false

53. Given $\vec{a}=\vec{b}+\vec{c}$ then $\vec{a}\times\vec{c}+\vec{a}\times\vec{b}$ is
(a) 2 $\vec{a}$ (b) $\vec{b}$ (c) $\vec{b}$ (d) Zero

54. The arithmetic mean of eight numbers is 30. If each number is multiplied by 2 and 5 is added to half of the numbers then the arithmetic mean will be
(a) 35 (b) 65 (c) 62.5 (d) 67

55. The A.M of 1, 2, 3, ---, n is 4 Their G.M. is
(a) <4 (b)>6 (c) <3 (d) >4

56. The number of arrangements of n sarees which are all different is the same as the number of arrangements of (n+1) sarees of which three are alike. Therefore the value of n is
(a) 4 (b) 5 (c) 6 (d) 7

57. Given w is a cube root of unity then $\frac{1+2w+3w^2}{w+2w^2+3}=$
(a) –1 (b) 1 (c) w (d) w^2

58. Find the value of a given $f(x)=\frac{x^3+x^2-4x-4}{x-2}$, x is not equal to 2 and $f(2)=a$ is continuous at $x=2$
(a) 2 (b) 4 (c) 12 (d) 6

59. PRICE is coded as * ! = j > and BANG is coded as ? < + 3, Then RING is coded as _____
(a) : ! + 3 (b) ! = + 3 (c) , ! < 3 (d) ! = <3

60. MINISTER : PULPIT : : _____ : _____
(a) DOCTOR : PATIENT (b) STUDENT : TEACHER
(c) JUDGE : BENCH (d) PROGRAMMER : LOGIC

Directions (61 – 62): Choose the word which is opposite in meaning to the word given

61. REFRAIN
(a) Proceed (b) Stanza (c) Attack (d) Welcome

62. DISTRESS
(a) Uniformity (b) Union (c) Bliss (d) Perfection

63. CONFRONT
(a) Tackle (b) Escape (c) Solve (d) Convince

Directions (64 – 66): Choose the word which is nearly the same in meaning to the word given.

64. TACIT
(a) Due (b) Silent (c) Loud (d) Thunderous

65. STANCE
(a) Observance (b) Role (c) Participation (d) Stand point

66. PERIL
(a) Tension (b) Problem (c) Danger (d) Tragedy

Directions (67 – 69): In each of the following sentences there are two blank spaces. Below each sentence there are four pair of words. Find out which pair of words can be filled up in the blanks to make the sentence meaningfully complete.

67. Newspapers cannot hope to ___ with the TV in the area of _____ but it can be close to the people and their lives.
(a) Run, Journalism (b) Challenge, Education
(c) Accelerate, View (d) Compete, Entertainment

68. Corruption has become a fast circulating ___ that affects the ____ of all those who are eager to make a quick luck.
(a) cult, psyche (b) venom ,brain
(c) idea, response (d) fire, sentiment

69. The car driver was arrested for____ driving and his license was_____ by the police.
(a) negligent, torn (b) rash, impounded
(c) speedy, banned (d) harsh, penalized

Directions (70 – 72): Read each sentence to find out whether their in any error in it. The error, if any, will be in one part of the sentence, the number of that part is the answer. If no error, the answer is (d).

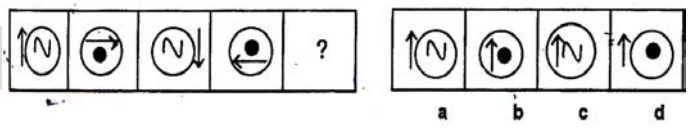
70. (a) We should be able to / (b) Submit the report /
(c) to the officer at least in time / (d) no error

71. (a) Humanity is crossing / (b)one political boundary after another / (c) in the hope for survival / (d) No error

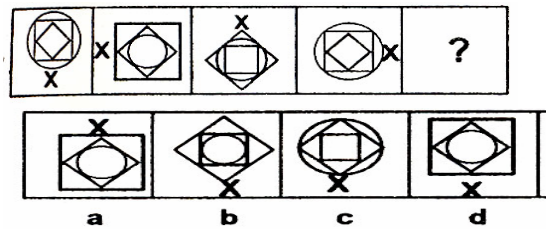
72. (a) Hardly he finished / (b) his breakfast when /
(c) the telephone started ringing / (d)No error

Directions (73 – 75): Complete the series

73.



74.



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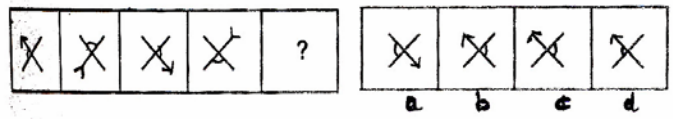


Directions (76 – 77): In each question below, there are three statements followed by four conclusions. Take the given statements to be true even if they seem to be at variance with commonly known facts and then decide which of the given conclusions logically follow from the given statements.

76. Statements:
(A) Same parents are ancestors (B) All mothers are fathers
(C) No ancestors are mothers.
Conclusions: I. Some parents are not mothers.
II. Some ancestors are not fathers.

III. Some parents are not fathers.
IV. Some fathers are not ancestors.
(a) I and IV follow (b) II and IV follows
(c) I and III follow (d) II and III follow

77. Statements:
(A) All plays are sports (B) No sport is fun
(C) Some funs are games
Conclusions:
I. Some games are funs. II. Some plays are funs
III. No play is fun IV. Some games are not plays.
(a) III and IV follow (b) I, III and IV follow
(c) I and III follow (d) I, IV and either II or III follow

78. Complete the series L I G D B _____
(a) A (b) Z (c) Y (d) X

79. Two numbers among 2, 3, 4, ---, 9 (repetition not allowed) are chosen and the products are formed. How many of such products end with zero?
(a) 3 (b) 4 (c) 8 (d) 9

80. $\sin 4x$ is a periodic function of period.
(a) $\pi/2$ (b) π (c) 2π (d) 4π

81. Given A, B and I are matrices satisfying AB+A=I. Therefore the inverse of A is
(a) B (b) B+A (c) B+I (d) A

82. Find odd man out
(a) Printer (b) Floppy disc (c) Magnetic Tape (d) Loader

83. ABC is a right angled triangle in which $\angle B = 45°$ and $\angle A = 90°$. PQRS is a square inscribed in it. Its area is 40cm^2. What is the area of Δ ABC?
(a) 90 cm^2 (b) 60cm^2 (c) 100cm^2 (d) 64cm^2

84 Given $= |Z| = 5$ and Re $(Z) = 4$ the amplitude of Z may be
(a) $\tan^{-1} 4/3$ (b) $\tan^{-1} 3/4$ (c) $\tan^{-1} 4/5$ (d) $\pi/2$

85. A solution of $4^x + 4(6)^x = 5(9)^x$ is
(a) –1 (b) 1 (c) 2 (d) Zero

86. Find the volume of the solid got by revolving the area bounded by $x^2 + y^2 - 4x - 5 = 0$ about the x - axis (Answer in cubic units)
(a) 9π (b) 36π (c) 40π (d) 81π

87. The time required to paint a cube of volume V is t hours. Therefore, the time required to paint a cube of volume 8V is
(a) 8t hours (b) 6t hours (c) 4t hours (d) 3t hours

88. In a basket of 100 mangoes 10 are found rotten. What must be the ratio of the cost price of a mango to the sale price, in order that the vendor may get 20% on selling the remaining mangoes?
(a) 3:5 (b)5:6 (c)5:8 (d) 3:4

89. The points A, B, C divide XY=12cms into 4 equal parts and the points P, Q divide XY into 3 equal parts. Therefore PB+AQ is equal to
(a) 7 cms (b) 8 cms (c) 9 cms (d) 10 cms

Directions (90 – 93): are based on the following
Arun, Badri, Chandru and Dharma are married to Rekha, Shobha, Thaniya and Uma not necessarily in the order. Chandru's wife is older than Shobha. Dharma's wife is older than Uma who is Arun's Sister. Rekha is the youngest of the four women. Chandru was not present at Uma's wedding.

90. Which of the following is true?
(a) Chandru's wife is younger then Thaniya.
(b) Chandru' wife is younger then Uma
(c) Arun is wife is younger than Shobha
(d) Dharma's wife is older than Thaniya.

91. If Badri and his wife have a son named Prem, then
(a) Rekha is Perm's aunt (b) Thaniya is Perm's aunt
(c) Arunis Perm's cousin (d) Shobha is Perm's mother

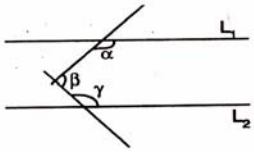
92. If each of the men is exactly two years older than his wife, which of the following must necessarily be false?
(a) Chandru is older than Shobha
(b) Rekha is younger than all others
(c) Arun is younger than Dharma
(d) Badri is younger than Arun

93. If the women were 28,30,32 and 34 years old and Arun, Badri, Chandru and Dharma were respectively 27,29,31 and 33 years old which of the following must be false?
(a) Rekha is older than her husband
(b) Shobha is younger than Thaniya's husband
(c) Thaniya is older than her husband
(d) Rekha is younger than Uma's husband

94. The relation "**is a friend of**" among the human being is
(a) Transitive (b) Symmetric (c) Reflexive (d) Equivalence

95. VLSI refers to
(a) Very Large Scope Integrators
(b) Very Large Scale Instruction
(c) Very Large Scale Integration
(d) Very Large Size Integration

96. In the diagram L_1 and L_2 are parallel. The sum of the angles α, β, γ marks in the diagram is



(a) 180° (b) 270° (c) <270 ° (d) 360°

97. 10 men can finish a job in10 days by working 10 hours a day. If 2 men work for 5 days at 8 hours a day, the percentage of the work complete will be
(a) 4% (b) 8% (c) 9% (d) 12%

98. In a hostel, the number of students not interested in either playing tennis or football is equal to the number of students interested in playing both. If there are 20 persons interested in playing football alone, then the strength of the hostel may be
(a) 40 (b) 37 (c) 42 (d) 50

99. The internal angle of a regular polygon is four times its external angle. The number of side of the polygon is
(a) 8 (b) 9 (c) 10 (d) 12

100. The direction ratios of align parallel to the planes $x + 2y + z = 4$ and $2x + y + 2z = 6$ are
(a) (1, 1, –3) (b) (1, – 4, 1) (c) (1, 0, –1) (d) (1, 1, 1)