



ASPIRE STUDY

MCA ENTRANCE CLASSES By *Shivam Gupta*

JAMIA MILLIA ISLAMIA

MCA 2020 Question Paper

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- Which one of the following statement is false?
(a) ϕ is a relation
(b) The cardinality of $\{\phi, \{\phi\}\}$ is 2
(c) The set of Natural numbers and Integers are equinumerous.
(d) An irreflexive relation is neither symmetric nor transitive relation.
- In how many ways can the letters of the word 'LOADING' be arranged in such a way that the vowels always come together?
(a) 360 (b) 480 (c) 720 (d) 524
- What will be value of $f(x) = (\sin 3x + \sin x) \sin x + (\cos 3x - \cos x) \cos x$?
(a) 0 (b) 1 (c) -1 (d) 2
- The relation represented by $R = \{(1,1), (2,2), (3,3), (1,3), (3,2), (1,2)\}$ on the set $A = \{1,2,3\}$ is Relation.
(a) A reflexive and symmetric but not transitive
(b) A reflexive and transitive but not symmetric
(c) A symmetric and transitive but not reflexive
(d) An equivalence
- Which of the following indicates the first step of mathematical induction for the mathematical statement $n + 1 > n$?
(a) $2 > 1$ (b) $2 > 0$ (c) $1 < 2$ (d) $0 < 2$
- What will be the next permutation is lexicographic order after 362541 ?
(a) 364125 (b) 412563 (c) 364125 (d) 361420
- Which of the following expresses the given complex number $(1 - i)^4$ in the form $(a + ib)$?
(a) $1 - 4i$ (b) $-4i$ (c) -4 (d) 1
- In how many ways can the letters of the word 'LEADER' be arranged?
(a) 72 (b) 144 (c) 360 (d) 720

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9. Objective of linear programming for an objective function is to ...
(a) maximize or minimize (b) subset or proper set model
(c) row or Column modeling (d) adjacent modeling
10. The differential equation $2 \frac{dy}{dx} + x^2 y = 2x + 3$, $y(0) = 5$ will be ...
(a) linear (b) nonlinear
(c) linear with fixed constant (d) undetermined to be linear or nonlinear
11. The order of the differential equation corresponding to the family of curves $y = c(x - c)^2$, c is constant is ...
(a) 1 (b) 2 (c) 3 (d) 4
12. Area bounded by the curve $y = \sin x$ and the x -axis between $x = 0$ and $x = 2\pi$ is sq units.
(a) 2 (b) 0 (c) 3 (d) 4
13. The area of the region bounded by the curve $y = 1/x$, the axis and between $x = 1$ to $x = 6$ issq units.
(a) $\log_e 5$ (b) 0 (c) $\log_e 6$ (d) $\log_e 7$
14. $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx$, $\frac{3\pi}{4} < x < \frac{7\pi}{4}$ is equal to
(a) $\log|\sin x + \cos x|$ (b) x
(c) $\log|x|$ (d) $-x$
15. The equation of the normal to the curve $y = \sin x$ at $(0,0)$ is
(a) $x = 0$ (b) $y = 0$ (c) $x + y = 0$ (d) $x - y = 0$
16. The curves $y = ae^{-x}$ and $y = be^x$ are orthogonal if ...
(a) $a = b$ (b) $a = -b$ (c) $ab = -1$ (d) $ab = 1$
17. If $|\vec{a}| = 4$ and $-3 \leq \lambda \leq 2$ then the range of $|\lambda\vec{a}|$ is ...
(a) $[0,8]$ (b) $[-12, 8]$ (c) $[0,12]$ (d) $[8,12]$

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18. The distance of the point (2,5,7) from the x – axis is
(a) 2 (b) $\sqrt{74}$ (c) $\sqrt{29}$ (d) $\sqrt{53}$
19. Three balls are drawn from a bag containing 2 red and 5 black balls, if the random variable X represents the number of red balls drawn, then X can take values ...
(a) 0, 1, 2 (b) 0, 1, 2, 3 (c) 0 (d) 1, 2
20. A black and a red die are rolled together. What is the conditional probability of obtaining the sum 8, given that the red die resulted in a number less than 4?
(a) $1/3$ (b) $1/4$ (c) $1/9$ (d) $1/2$
21. What will be the mean and variance of the first n natural numbers?
(a) $\frac{n+1}{2}$ and $\frac{n^2-1}{12}$ (b) $\frac{n(n+1)}{2}$ and $\frac{n^2+1}{12}$
(c) $\frac{n+1}{2}$ and $\frac{n^2-1}{12}$ (d) $\frac{n(n+1)}{2}$ and $\frac{n^2-1}{12}$
22. The mean and standard deviation of marks obtained by 50 students of a class in three subjects physics, mathematics and chemistry are as follows :

Subject	Mathematics	Physics	Chemistry
Mean	42	32	40.9
Standard Deviation	12	15	20

Which of the subjects show the highest and lowest variabilities respectively?

- (a) Mathematics, Physics (b) chemistry, Mathematics
(c) Mathematics, Chemistry (d) Chemistry, Physics
23. What will be the following evaluate to?
 $\lim_{x \rightarrow 4} \left(\frac{4x+3}{x-2} \right)$
(a) $19/2$ (b) $13/2$ (c) $11/3$ (d) $7/5$
24. What will be the limiting value of the $f(x) = |x| - 5$ when $x \rightarrow 5$?
(a) 0 (b) 1 (c) -1 (d) -2



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25. The distance between $P(x_1, y_1)$ and $Q(x_2, y_2)$ is given by $|x_2 - x_1|$ when PQ is ...
(a) parallel to the y-axis (b) parallel to the x - axis
(c) perpendicular to x-axis (d) perpendicular to y-axis
26. What is the value of x for which the point $(x, -1)$, $(2,1)$ and $(4,5)$ are collinear?
(a) 1 (b) 2 (c) - 1 (d) 0
27. For which value of k , the given by $(k - 3)x - (4 - k^2)y + k^2 - 7k + 6 = 0$ will be parallel to the x - axis?
(a) 2 (b) 3 (c) - 3 (d) 0
28. What will the value of $(102)^5$?
(a) 11040808032 (b) 11040806032
(c) 11040606032 (d) 11040606034
29. What will be the approximation of $(0.99)^5$ using the first three terms of its expansion?
(a) 0.954 (b) 0.952 (c) 0.951 (d) 0.953
30. What is the number of non - zero integral solutions of the equations $|1 - i|^x = 2^x$?
(a) 1 (b) - 1 (c) 0 (d) 2
31. If six out of ten points in a plane are collinear, then the number of triangle formed by joining these points will be ... 100.
(a) < (b) \geq (c) \leq (d) =
32. The coefficient of the middle term in the binomial expansion in power of x of $(1 + ax)^4$ and $(1 - ax)^6$ is the same, if a is equal to ...
(a) $-5/3$ (b) $3/5$ (c) $-3/10$ (d) $1/4$
33. Three houses are available in a locality. Three persons apply for the houses. Each applies for one house without consulting others. The probability that all the three apply for the same house is ...

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- (a) $5/9$ (b) $1/9$ (c) $8/9$ (d) $2/9$

34. The statement $p \rightarrow (q \rightarrow p)$ is equal vent to ...
(a) $p \rightarrow (p \rightarrow q)$ (b) $p \rightarrow (\sim p \vee q)$
(c) F (d) T
35. For $y = \sin x + \cos x - 5a$, what is the value of dy/dx ?
(a) $\cos x - \sin x$ (b) $\cos x + \sin x - 5$
(c) $\sin x - \sec x$ (d) $\sin x + \cos x + 5$
36. Which of the following functions show that the statement, 'if a function is continuous at $x = 0$ the it is differentiable at $x = 0$ ' is false?
(a) $f(x) = x^{4/3}$ (b) $f(x) = x^{1/3}$
(c) $f(x) = x^{-1/3}$ (d) $f(x) = x^3$
37. The equation of the circle with center $(0, 2)$ and radius 2 is ...
(a) $x^2 + y^2 - 2y = 0$ (b) $x^2 + y^2 + 4y = 0$
(c) $x^2 + y^2 - 3y = 0$ (d) $x^2 + y^2 - 4y = 0$
38. For $a, b \in R$ define $a = b$ to mean that $|x| = |y|$. If $[x]$ is an equivalence relation in R then the equivalence relation for $[17]$ is
(a) $\{ \dots, -11, -7, 0, 7, 11, \dots \}$ (b) $\{2,4,9,11,15, \dots \}$
(c) $\{-17, 17\}$ (d) $\{5, 25, 125, \dots \}$
39. The sets A and B have same cardinality if and only if there is ... correspondence from A to B.
(a) One – to – one (b) One – to – many
(c) Many – to – many (d) Many – to – one
40. Let the sequence be $1 \times 2, 3 \times 2^2, 5 \times 2^3, 7 \times 2^4, 9 \times 2^5, \dots$ then this sequence is
(a) Arithmetic sequence (b) A geometric sequence
(c) Arithmetico –geometric progression (d) Harmonic progression



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41. How many ways can 8 prizes be given away to 7 students, if each student is eligible for all the prizes?
(a) 40325 (b) 40320 (c) 40520 (d) 40720
42. Which amount of postage can be formed using just 4-cent and 11-cent stamps?
(a) 2 (b) 5 (c) 30 (d) 10
43. How many bytes are required to encode 2000 bits of data?
(a) 1 (b) 2 (c) 3 (d) 8
44. The value of $\begin{bmatrix} 1 \\ 2 \end{bmatrix} \begin{bmatrix} 5 \\ 2 \end{bmatrix}$ is
(a) 1 (b) 2 (c) 3 (d) 0.5
45. How many five-digits numbers can be made from the digits 1 to 7 if repetition is allowed?
(a) 16807 (b) 54629 (c) 23467 (d) 32354
46. What is the base case for the inequality $7^n > n^3$, where $n = 3$?
(a) $652 > 189$ (b) $42 < 132$ (c) $343 > 27$ (d) $42 \geq 431$
47. The product of complex numbers $(4,3)$ and $(5, -6)$ is
(a) $(18,3)$ (b) $(18, -3)$ (c) $(38,9)$ (d) $(38, -9)$
48. An object moved in a circular path of radius 21 meter such that it made an angle of 30° . What is the distance covered by the object?
(a) 11 (b) 21 (c) 31 (d) 41
49. If A and B are matrices, then which from the following is true?
(a) $A + B \neq B + A$ (b) $(A')' \neq A$
(c) $AB \neq BA$ (d) $A - B = B - A$

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50. Under what conditions can an attribute of a binary relationship type be migrated to become an attribute of one of the participating entity types?
- (a) When the relationship type is 1:1 or 1:N
(b) When the relationship type is N:1 or 1:N
(c) When the relationship type is 1:1 or N:1
(d) When the relationship type is N:1 or N:N
51. Which primitive operations are directly performed by computer hardware?
- (a) Testing and Zeroing (b) Testing & Flipping
(c) Testing, Flipping & Zeroing (d) Arithmetic Operations
52. Which of the following is not a computer brand?
- (a) IBM (b) COMPAQ
(c) HP (d) BSNL
53. Typical speed of current fastest super computer is measured in
- (a) Petaflops (b) GigaHertz
(c) MIPS (d) Megahertz
54. Which of the following is not an Operating system?
- (a) UNIX (b) DOS
(c) LINUX (d) HP
55. Which of the following refers to the foremost operation, initiated while starting a computer system?
- (a) Booting (b) POST (c) Padding (d) BIOS
56. The pair byte and nibble comprises of Bit(s) respectively.
- (a) 8 and 4 (b) 4 and 6 (c) 8 and 6 (d) 4 and 8
57. In which number system, can the binary number 1011011111000101 be the most easily converted to?
- (a) Decimal (b) Hexadecimal (c) Octal (d) Roman

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58. Which of the following is true for $(p \wedge q) \rightarrow (p \vee q)$?
- (a) Tautology (b) Contingency
(c) Contradiction (d) Negation
59. One of the most distinguishing features of computer system is
- (a) speed (b) Virtual Expandability
(c) Storage (d) Precision
60. What is the name of the data metric used to refer to the size 10^{24} ?
- (a) Yotta (b) Zetta (c) Exa (d) Giga
61. Which of the following is not a phase during the communication via circuit switching?
- (a) Data Transfer (b) Circuit Disconnect
(c) Tunneling (d) Booting
62. Suppose you find some technical problem with the mail account user@example.com. Who should try to contact in order to solve them?
- (a) postmaster@example.com (b) Rfc822@example.com
(c) Dns822@example.com (d) Cybercrime Cell
63. Parallel Virtual Machine (PVM) refers to a ...
- (a) Software tool (b) Workstation
(c) Super Computer (d) Loader
64. Which, type of the following languages, is directly understood by the computer without translation program?
- (a) Middle Level Language (b) High Level Language
(c) Assembly Language (d) Machine Language
65. Which of the following is not related to internet?
- (a) Bridge (b) Router (c) DNS (d) Printer
66. Which of the following is true about operating systems?

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- (a) An operating system is not an algorithm.
(b) An operating system is an application software.
(c) An operating system is hardware component.
(d) An operating system is a typical firmware.
67. Which of the following is the fastest among the computer storages?
(a) Registers (b) RAM (c) CD (d) Flash Disk
68. Ctrl, Shift and Alt Keyboard keys are called keys.
(a) Modifier (b) Adjustment (c) Function (d) Compiler
69. Which of the following terms is used to describe a hardware or software based device that protects networks from outside threats?
(a) NIC (b) Gateway (c) Firewall (d) VDU
70. Which is not among the frontier technologies of computer system?
(a) IOT (b) Data Mining
(c) Cloud computing (d) COBOL
71. If A stands for ADD, B for subtract, C for Multiply and D for Divide then which of the following stands for 2A3V4D2
(a) 3 (b) 2 (c) 4 (d) 5
72. Bantu is the brother of Chetna, who has another brother Arun. Deepak is the husband of Chetna, Arun is the son of Rita. Thus Rita is theof Deepak?
(a) Aunt (b) Mother
(c) Sister – in – law (d) Mother – in – law
73. When two coins are tossed simultaneously, what are the chances of getting at least on tails?
(a) $3/4$ (b) $1/5$ (c) $4/5$ (d) $1/4$
74. Ms. Forest likes to let her students choose who their partners will be; however, no pair of students may work together more than seven class periods in a row. Adam and

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Baxter have studied together seven class periods in a row. Carter and Dennis have worked together three class periods in a row. Carter does not want to work with Adam. Who should be assigned to work with Baxer?

- (a) Forest (b) Baxter (c) Carter (d) Adam

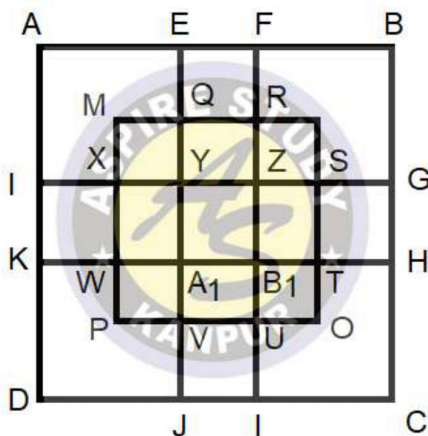
75. Handsome : Beautiful :: Husband : ?

- (a) Women (b) Wife (c) Girl (d) She

76. Decode the functional arithmetic operators hidden. between $5611 = 9$, $3713 =$ and $4212 = 3$. Evaluate, what will .be the value of 8777 ?

- (a) 1 (b) 3 (c) 4 (d) 5

77. What is the total number of squares in the given figure below?



- (a) 18 (b) 15 (c) 25 (d) 27

78. In a group of five person A, B, C, D and E one plays Tennis, one plays Chess and one Hockey. A and D are unmarried women and play no game. There is a couple among them where E is husband of C. No women plays either Chess or Hockey. B is the brother of C and he neither plays Tennis nor Chess. Who plays Hockey here?

- (a) A (b) B (c) C (d) E

79. If L is the brother of K and K is the friend of M then their Frence 'L is the friend of M' is ...

- (a) true (b) false



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(c) probably false or true (d) not possible

80. If education is given by the government free of charge then
(i) it will help in universalization of education in the country, and
(ii) there will be budgetary deficit creating some new problems.
(a) Argument (i) is strong (b) only argument (ii) is strong
(c) both the arguments are strong (d) neither (i) nor (ii) is strong
81. In a row A is in the 11th position from the left and B is in the 10th position from the right. If A and B interchange, then A becomes 18th from the left. How many persons are there in the row other than A and B?
(a) 27 (b) 26 (c) 25 (d) 24
82. Examine the following statements: {I watch TV only if I am bored. I am never bored when I have my brother's company. Whenever I go to the theatre, I take my brother along.}. Which of the following conclusion is valid in the context of the above statements?
(a) If I am bored, I watch TV.
(b) If I am bored, I seek my brother's company.
(c) If I am not with my brother, then I watch TV.
(d) If I am not bored, I do not watch TV.
83. The total of the ages of Amar Akbar and Anthony is 80 years. What was the total of their ages three years ago?
(a) 71 years (b) 72 years (c) 74 years (d) 77 years
84. In a family, each daughter has the same number of brothers as she has sisters and each son has twice as many sisters as he has brothers. How many sons are there in the family?
(a) 2 (b) 3 (c) 4 (d) 5
85. Look at this series: 8, 22, 8, 28, 8, ... What number should come next?
(a) 9 (b) 29 (c) 32 (d) 34
86. Which word does NOT belong with the others?

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- (a) inch (b) ounce (c) centimeter (d) yard

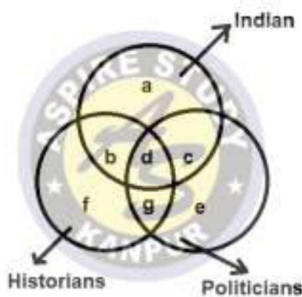
87. If in a code language COME is coded as XLNV, then the code for CAT will be...

- (a) XZG (b) CMW (c) YMN (d) XWG

88. If + means \div , \times means $-$, $-$ means \times and \div means $+$, then $38 + 19 - 16 \times 17 + 3 = ?$

- (a) 16 (b) 19 (c) 18 (d) 12

89. Which of the following represents 'Indians and historians but not politicians based on the Venn diagram here?



- (a) b (b) f (c) b and f (d) b and g

90. Which of the following is correct expression by English Grammar?

- (a) He is sleeping for two hours.
(b) We had gone to the movies last night.
(c) I have seen him yesterday.
(d) Neither of the boys has returned.

91. The musicians delivered a rousing performance ... they had rehearsed often.

- (a) Thought (b) As (c) Once (d) Lest

92. Grain is malted by first soaking it in water, then allowing it to sprout, and finally drying it ... stop the sprouting.

- (a) in order to (b) to order to
(c) into order to (d) with order to

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93. Mount Everest, the highest elevation in the world, ... in 1953 by members of an expedition including Sir Edmund Hillary and Tenzing Norgay.
(a) Scaled (b) First scaled (c) Climbed (d) Won
94. The new law will ... the entire community, and everyone will be affected.
(a) Impact (b) Impede (c) Impress (d) None of these
95. He died ... a severe head injury.
(a) on (b) of (c) from (d) with
96. Which of the following correctly represents the passive voice of 'who taught you grammar'?
(a) By whom you were taught grammar?
(b) By whom were you taught grammar?
(c) By whom was grammar you taught?
(d) By whom were grammar taught to you?
97. The words that show that many people believe meetings are important are ...
(a) Widely held (b) Collective ability
(c) Number of people (d) Solving problems
98. We are a powerful enemy.
(a) up against (b) save for
(c) on behalf of (d) in against
99. Which of the following is the synonym of ABBREVIATE?
(a) Shorten (b) Enlarge
(c) Decrease (d) Change
100. Which of the following is the antonym of ANONYMOUS?
(a) Desperate (b) Expert
(c) Known (d) Written

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Answer Key

1. D	11. A	21. A	31. D	41. B	51. C	61. C	71. A	81. C	91. B
2. C	12. D	22. B	32. C	42. C	52. D	62. A	72. D	82. D	92. A
3. A	13. C	23. A	33. B	43. B	53. A	63. A	73. A	83. A	93. B
4. B	14. D	24. A	34. D	44. A	54. D	64. D	74. C	84. B	94. A
5. A	15. C	25. B	35. A	45. A	55. B	65. D	75. B	85. D	95. B
6. A	16. D	26. A	36. B	46. C	56. A	66. A	76. A	86. B	96. B
7. C	17. C	27. B	37. D	47. D	57. B	67. A	77. D	87. A	97. A
8. C	18. B	28. A	38. C	48. A	58. A	68. C	78. B	88. C	98. A
9. A	19. A	29. A	39. A	49. C	59. B	69. C	79. C	89. A	99. A
10. A	20. C	30. C	40. C	50. A	60. A	70. D	80. C	90. D	100. C

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