MCA Entrance Paper – P.U. – 2014

1. The factors of x3 − 19x − 30 are:
   (A) (x + 2) (x + 3) (x -5)
   (B) (x + 2) (x − 3) (x + 5)
   (C) (x − 2) (x − 3) (x − 5)
   (D) (x + 2) (x + 3) (x + 5)

2. The expression x + 3 is not a factor of:
   (A) $x^2 - 2x - 15$ (B) $-2x^2 + 18$
   (C) $-3x^2 + 9x$ (D) $x^2 + 8x + 15$

3. What is the degree of the polynomial $x^3y^2z + xy^2z$?
   (A) 4 (B) 6
   (C) 5 (D) 10

4. Which of the following equations are linear?
   (I) y/x = 3x + 10 (II) y = 2x + 3
   (III) $y^2 = 8x$ (IV) x = 7
   (A) I (B) II
   (C) II and IV (D) IV

5. The lines y = 2x and 2y = -x are :
   (A) Parallel (B) Vertical
   (C) Horizontal (D) Perpendicular

6. The price of a car is increased by 7%. If the new price is Rs. 1,07,000, what was the original cost of the car?
   (A) 1,00,000 (B) 99, 510
   (C) 98,777 (D) 96,540

7. $81^{3/4} =$
   (A) 9 (B) 27
   (C) 69 (D) 78

8. $\underset{x \to 0}{Lt} (\sin ax / \sin bx) =$
   (A) 1 (B) b/a
   (C) a/b (D) 0

9. The derivative of $\sin^2 x$ with respect to x is:
   (A) sin x (B) sin 2x
   (C) cos 2x (D) cos x

10. The derivative of log tan x with respect to x is:
    (A) 2/sin 2x (B) 1/sin x
    (C) 1/cos x (D) 2/cos 2x

11. If C denotes a constant, $\int \log x \, dx =$
    (A) x log x + x + C (B) x log x + C
    (C) x log x − x + C (D) x − x log x + C

12. If C denotes a constant, $\int 1/(ax + b) \, dx =$
    (A) a x + b + C
    (B) 1/a [log (a x + b)] + C
    (C) log log (a x + b) + C
    (D) (a + b) log x + C

13. If a set S contains n elements, the power set of S contains _____ elements.
    (A) 2n (B) n^2
    (C) 2^n (D) n!

14. Identify the incorrect statement in the following:

15. (A) A relation is an equivalence relation if it is reflexive, symmetric and transitive
    (B) Every relation is a function but every function need not be a relation
    (C) Every relation that is symmetric and transitive need not be reflexive
    (D) Every relation has an inverse relation but every function need not have

15. The geometric mean of the numbers 5, 10, 40, 80 is:
    (A) 10 (B) 30
    (C) 40 (D) 20

16. Consider the data: 10, 15, 23, 32, 23, 15, 45, 32, 45, 23, 76, 23, 45. The mode is:
    (A) 23 (B) 45
    (C) 76 (D) 10

17. A bag contains 10 red, 25 green and 15 blue colored pens. A pen is taken out at random from the bag. What is the probability that the color of the pen is green or blue?
    (A) 1 (B) 0.15
    (C) 0.2 (D) 0.8

18. Two dice are thrown simultaneously. What is the probability of obtaining a total score of 7?
    (A) 5/6 (B) 1/6
    (C) 1/3 (D) 1/12

19. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?
    (A) 1050 (B) 210
    (C) 25200 (D) 2520

20. Three unbiased coins are tossed. What is the probability of getting at most two heads?
    (A) 7/8 (B) 3/4
    (C) 3/8 (D) 1/4

21. In how many different ways can the letters of the word 'COMPARE' be arranged such that the vowels always come together?
    (A) 256 (B) 720
    (C) 360 (D) 480

22. From a group of 7 boys and 6 girls, five persons are to be selected to form a committee so that at least 3 boys are there in the committee. In how many ways selection is possible?
    (A) 564 (B) 735
    (C) 756 (D) 645

23. In how many ways can the letters of the word 'BEATLE' be arranged?
    (A) 720 (B) 120
    (C) 180 (D) 360

24. In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach the target of 262 runs?
    (A) 6.5 (B) 6.25
    (C) 6.75 (D) 7

25. The average of 20 numbers is zero. Of them, at the most, how many are greater than zero?
    (A) 19   (B) 0
    (C) 10   (D) 1

26. The standard deviation is the best measure of _____.
    (A) Correlation   (B) Frequency
    (C) Regression   (D) Dispersion

27. There are 10 lamps in a hall and each one of them can be switched on independently. The number of ways in which the hall can be illuminated is:
    (A) 2020   (B) 1010
    (C) 1023   (D) 23456

28. If the mode of a data is 18 and the mean is 24, then median is:
    (A) 18   (B) 22
    (C) 24   (D) 36

29. The least perfect square, which is divisible by each of 21, 36 and 66 is:
    (A) 213444   (B) 214344
    (C) 214434   (D) 231444

30. 66 cubic centimeters of silver is drawn into a wire one mm in diameter. The length of the wire in meters will be:
    (A) 90   (B) 168
    (C) 84   (D) 180

31. Consider three vectors : $X = [1, 0, 0]$, $Y = [0, 1, 0]$ and $Z = [0, 0, 1]$. The rank of the matrix with rows X, Y and Z is:
    (A) 0   (B) 3
    (C) 1   (D) 2

32. If the three rows of a singular matrix M are $[1, 0, 2]$, $[0\ a\ 1]$ and $[2\ 3\ 3]$ respectively, then the value of 'a' is :
    (A) -3   (B) 3
    (C) 2   (D) 6

33. If log 27 = 1.431, then the value of log 9 is:
    (A) 0.934   (B) 0.945
    (C) 0.954   (D) 0.958

34. The value of $a^{\log a^N} =$
    (A) 1   (B) a
    (C) a^N (D) N

35. If absolute value of $x < 1$, the sum of the infinite series $1 + X + X^2 + X^3 + X^4 + \dots$ is:
    (A) 1   (B) $1 + x$
    (C) $1/(1 - x)$ (D) $1/(1 + x)$

36. The value of log 75 + log 28 – log 21 =
    (A) 0   (B) 2
    (C) 3   (D) 1

37. The equation of the circle passing through the point (4, 5) and with centre at (2, 2) is:
    (A) $x^2 + y^2 + 4x + 4y - 5 = 0$
    (B) $x^2 + y^2 + 4x - 4y - 5 = 0$
    (C) $x^2 + y^2 - 4x - 4y - 5 = 0$
    (D) None of the above

38. The equation of y-axis is :

    (A) z = 0   (B) x = 0
    (C) y = 0, z = 0   (D) x = 0, z = 0

39. The locus of $x^2 + y^2 + z^2 = 0$ is :
    (A) (0, 0, 0)   (B) a sphere
    (C) a circle   (D) a plane

40. If n is a positive integer, then $n^3 + 2n$ is divisible by:
    (A) 2   (B) 3
    (C) 5   (D) 6

41. _____contained in the mobile devices and digital cameras provide the control program for the devices.
    (A) Software   (B) Hardware
    (C) Firmware   (D) Freeware

42. The world's first computer programmer is:
    (A) Charles Babbage (B) Jon Von Neumann
    (C) Alan Turing   (D) Ada Lovelace

43. The world's first single chip microprocessor is:
    (A) Intel 4004   (B) Intel 8085
    (C) Motorola 68060 (D) Pentium 8086

44. In computer networks, bandwidth is measured in_____.
    (A) Bytes per second (B) Bits per second
    (C) Kilo Bytes   (D) Bits

45. The time taken for the hard disk controller to locate a specific piece of stored data is called:
    (A) Access time   (B) Rotational Delay
    (C) Transfer time (D) Seek-time

46. A program counter is a processor register that contains :
    (A) Address of the current instruction being executed
    (B) Error value
    (C) Results of computations
    (D) Instruction currently being executed

47. The Relational Model for database management is a database model based on:
    (A) Table
    (B) Queries
    (C) First-order Predicate Logic
    (D) Normalization

48. _____is a field (or collection of fields) in one table that uniquely identifies a row of another table is relational databases.
    (A) Primary key   (B) Candidate key
    (C) Alternate key (D) Foreign key

49. The 2's complement of 1100 is :
    (A) 0011   (B) 0100
    (C) 0101   (D) 1001

50. The decimal equivalent of the Hexadecimal number 2E is:
    (A) 46   (B) 17
    (C) 20   (D) 18

51. Which of the following data types cannot be returned by functions?

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(A) Integer   (B) Float
(C) Array   (D) Pointer to array

52. For which of the following Boolean operators the output is false when both the inputs are true or both the inputs are false?
(A) XNOR   (B) XOR
(C) AND   (D) NOR

53. Which of the following statements is false?
(A) Recursion is implemented using stack data structure.
(B) Every tree can be converted into a binary tree
(C) Every node in a binary tree can have at most two children
(D) Every graph is a tree but every tree need not be a graph

54. Which of the following computer languages is used for artificial intelligence?
(A) FORTRAN   (B) PASCAL
(C) PROLOG   (D) COBOL

55. The worst case complexity of quicksort algorithm to sort n elements is:
(A) n^2 (B) n log n
(C) log n   (D) n^3

56. The synonym for the word "MELANCHOLY" is:
(A) Happy   (B) Depressed
(C) Brave   (D) Tough

57. Find the odd man out from the following :
(A) Strong   (B) Energetic
(C) Robust   (D) Attractive

58. The antonym of the word HAPHAZARD is :
(A) Disciplined   (B) Careless
(C) Organized   (D) Strict

59. Consider the sentence "When she left Agra her friends _____ her good-bye."
(A) bid   (B) bade
(C) bidded   (D) bids

60. Consider the sentence "When did you hear _____ him last?" The correct word to be filled in the blank is :
(A) from   (B) to
(C) by   (D) for

61. Consider the sentence "The bus came after we_____for more than an hour." The correct verb to be filled in the blank is :
(A) waited   (B) have waited
(C) waiting   (D) had waited

62. Consider the sentence "The medical shop is _____ to sell medicines." The correct word to be filled in the blank is:
(A) licence   (B) licenced
(C) licensed   (D) licensing

63. The word with wrong spelling is:
(A) Algebra   (B) Mathemetics
(C) Geometry   (D) Arithmetic

64. Choose the correct word for the blank in the sentence "You are _____ no compulsion to come."
(A) under   (B) in
(C) with   (D) by

65. The plural form of the word mouse is :
(A) Mouse   (B) Meese
(C) Mouses   (D) Mice

66. Pointing to a photograph of a girl Ramesh said, "She is the daughter of the only son of my mother." How is Ramesh related to that girl?
(A) Brother   (B) Uncle
(C) Father   (D) Cousin

67. The total of the ages of Karan, Kusum and Kiran is 84 years. What was the total of their ages (in years) three years ago?
(A) 81   (B) 75
(C) 71   (D) 74

68. Arrange the words given below in a meaningful sequence :
1. Family
2. Community
3. Member
4. Locality
5. Country
(A) 3, 1, 2, 4, 5   (B) 3, 1, 4, 2, 5
(C) 1, 3, 2, 4, 5   (D) 1, 3, 4, 2, 5

69. Choose the pair of words that represents a similar relationship as the pair given below:
Waitress : Restaurant
(A) doctor : diagnosis   (B) actor : role
(C) driver : truck   (D) teacher : school

70. What number should come next in the series : 80, 10, 70, 15, 60, ...?
(A) 25   (B) 65
(C) 20   (D) 40

71. If 6 is obtained from {12, 18, 30}, 8 is obtained from {16, 24, 40} and x is obtained from {45, 18, 27}. The value of x is :
(A) 12   (B) 9
(C) 18   (D) 6

72. Suppose at 6 P.M. the hour hand in a timepiece points to North. In which direction the minute hand will point at 9.15 P.M. ?
(A) West   (B) North
(C) South   (D) East

73. Suppose A can do a work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is :
(A) 1/10   (B) 1/4
(C) 7/15   (D) 8/15

74. Three ships are kept next to each other. A blue ship is to the right of a red ship and to the left of a green ship. If the blue ship and the green ship change places, then :

(A) The red ship and the blue ship are next to each other
(B) The red ship is immediately to the left of the blue ship
(C) The green ship is between the red and the blue ships
(D) The red ship is in the middle

75. If CUP is coded as ASN, then ROW is coded as :
(A) PUM   (B) PMU
(C) SUM   (D) PMV

ANSWER KEY

1. A	2. C	3. B	4. C
5. D	6. A	7. B	8. C
9. B	10. A	11. C	12. B
13. C	14. B	15. D	16. A
17. D	18. B	19. C	20. A
21. B	22. C	23. D	24. X
25. A	26. D	27. C	28. B
29. A	30. C	31. B	32. A
33. C	34. X	35. C	36. B
37. C	38. D	39. A	40. B
41. C	42. D	43. A	44. B
45. D	46. A	47. C	48. D
49. B	50. A	51. C	52. B
53. D	54. C	55. A	56. B
57. D	58. C	59. B	60. A
61. D	62. C	63. B	64. A
65. D	66. C	67. B	68. A
69. D	70. C	71. B	72. A
73. D	74. C	75. B	

Note: An 'X' in the key indicates that either the question is ambiguous or it has printing mistake.