MCA Entrance Paper – P.U. – 2013

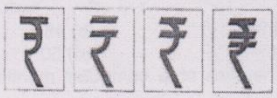
1. The idiom "I will be a monkey's uncle" means :
   (a) To keep a monkey
   (b) That I have been enlightened
   (c) That I have been fooled
   (d) To express disbelief
2. Choose the most appropriate meaning for the following idiom : "To fish in troubled waters" :
   (a) To make the situation worse when others do not want it
   (b) To make profit when others are in Trouble
   (c) To create trouble for others
   (d) To indulge in evil acts
3. Choose the pair of words which exhibits the same relationship between each other as the given pair of words :
   WRITING: PLAGIARISM
   (a) Confidence: Deception
   (b) Money: Misappropriation
   (c) Gold : Theft
   (d) Germ: Disease
4. Choose the pair of words which exhibits the same relationship between each other as the given pair of words:
   INFLAMMABLE: IGNITED
   (a) Fragile : Shattered
   (b) Flexible : Broken
   (c) Famous : Plagiarized
   (d) Somber : Mourned
5. A sentence has been given in active (or passive) voice. Out of the four alternatives select the one which best expresses the same sentence in passive (or active) voice:
   I know him.
   (a) He has been known by me.
   (b) He was known to me.
   (c) He is known by me.
   (d) He is known to me.

Directions for questions 06, 07 and 08: In each of the following questions, choose the most suitable 'one word' for the given expressions.

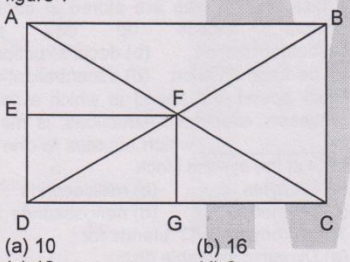
6. A man with prejudiced views against religion:
   (a) Orthodox (b) Bigot
   (c) Fanatic (d) Profane
7. The School or College in which one has been educated:
   (a) Native (b) Alumni
   (c) Alma mater (d) Calvin
8. One who deserts his religion:
   (a) Deserter (b) Turncoat
   (c) Fanatic (d) Apostate

Directions for questions 09 and 10: In each of the following questions, a sentence is given with a blank followed by four alternatives. Choose the word or phrase that most correctly completes the sentences.

9. Nancy did not attend office yesterday. She _____ for a picnic:
   (a) will have gone (b) have gone
   (c) may have gone (d) would go
10. I don't know where Sonia is. She _____ at home.
    (a) would be (b) is
    (c) can be (d) could be
11. M.K Gandhi stands for :
    (a) Mohanbhai Kishorbhia Gandhi
    (b) Mohandas Karamchand Gandhi
    (c) Mohandas Keshubhai Gandhi
    (d) Mohandas Karimchand Gandhi
12. The National Fruit of India is:
    (a) Coconut (b) Apple
    (c) Grape (d) Mango
13. RGB as used in light theory stands for :
    (a) Red, Gold, Black (b) Red, Green, Black
    (c) Red, Green, Blue (d) Red, Green, Brown
14. Identify the rupee symbol approved by the Govt. of India:



    (a) (b) (c) (d)
15. An elevator has a capacity of 12 adults or 20 children. How many adults can board the elevator with 15 children?
    (a) 4 (b) 5
    (c) 3 (d) 6
16. Suppose the sum of the seven positive numbers is 21. What is the minimum possible value of the average of the squares of these numbers?
    (a) 63 (b) 21
    (c) 9 (d) 7
17. How many triangles are there in the given figure ?

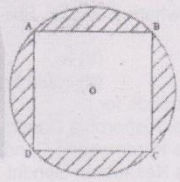


    (a) 10 (b) 16
    (c) 12 (d) 8
18. In climbing a round pole of 80 meters height, a monkey climbs 5 meters in a minute and slips 2 meters in the alternate minute. To get to the

Phone: 9876311001 e–mail: mathsmim@gmail.com Website: www.onlinemim.com

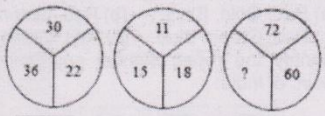
top of the pole, the monkey would take:
(a) 51 minutes (b) 54 minutes
(c) 58 minutes (d) 61 minutes

19. A circle is circumscribed around a square (shown in figure). The area of one of the four shaded portion is equal to 4/7. The radius of the circle is:



(a) 3 (b) 2
(c) $\sqrt{2}$ (d) $\frac{1}{\sqrt{2}}$

20. The missing number in the given figure is :



(a) 44 (b) 48
(c) 40 (d) 50

21. The size of a computer monitor is measure _____
(a) vertically, from top to bottom
(b) horizontally, from side to side
(c) diagonally, from corner to corner
(d) regionally, multiplying length by width

22. What does TCP/IP stand for?
(a) Transmission Control Protocol/ Internet Protocol
(b) Transport Capture Protocol/ Inside Packet
(c) Transmission Control Protocol/ Internet Packet
(d) Telecommunications Connection Protocol/ Internet Partitions

23. The process of _____- that is, organizing a disk so that files are stored in contiguous sectors- speeds up disk access.
(a) destabilization (b) deconstruction
(c) de-fragmentation (d) decentralization

24. Clock speed, the speed at which a computer processor executes instructions, is measured in _____, which equates to one million ticks of the system clock.
(a) kilobytes (b) milliseconds
(c) gigahertz (d) nanoseconds

25. The acronym "DVD" stands for :
(a) Dynamic viewable disc
(b) Decompressed video disk
(c) Digital versatile disc
(d) Digital video drive

26. Viruses, Worms and Trojan Horses are examples of:
(a) Hardware (b) Malware
(c) Firmware (d) Freeware

27. The IC Chip used in computer is made of :
(a) Copper (b) Silicon
(c) Steel (d) Plastic

28. In CRT displays, increasing the refresh rate:
(a) Decreases flickering
(b) Increases flickering
(c) Decreases the size of image
(d) Increases the size of image

29. Match languages to domains : Write the letter corresponding with the application domain each programming language was designed to support in the space provided. Each letter should be used exactly once.

Programming Language	Application Domain
(i) C	(a) Artificial Intelligence
(ii) COBOL	(b) System Programming
(iii) FORTAN	(c) Internet Programming
(iv) LISP	(d) Scientific Applications
(v) JAVA	(e) Business Applications

(a) i – a ii – e iii – d iv – b v – c
(b) i – b ii – d iii – e iv – a v – c
(c) i – b ii – e iii – d iv – c v – a
(d) i – b ii – e iii – d iv – a v - c

30. Which of the following is not a reason you might want to use CSS and HTML rather than only HTML when building a website?
(a) CSS and HTML help reduce duplications / clutter in your pages given that one style sheet can be applied to many WebPages
(b) CSS and HTML allow you to separate content from presentation
(c) CSS and HTML allow you to open a connection to a database and dynamically alter the content of a website
(d) CSS and HTML can assist in unifying the theme and appearance of a website easily.

31. In the context of Open Source technologies, what is the meaning of OSI and FSF acronyms / abbreviations?
(a) Open System Interconnection and Flight Safety Foundation
(b) Open System Interchange and Flight Safety Foundation
(c) Open Source Initiative and Free Software Foundation
(d) Open Source Instrument and Financial Stability Forum

32. The act of deliberately accessing computer systems and networks without authorization is generally known as:
(a) Computer intrusions (b) Hacking
(c) Cracking (d) Probing

33. Who is original developer of Linux, the free UNIX clone on the PC?

Phone: 9876311001 e–mail: mathsmim@gmail.com Website: www.onlinemim.com

(a) Bill Gates (b) Linus Torvalds
(c) Dennis Ritchie (d) Richard Stallman

34. Software interoperability is :
(a) The ability of a software system to work on different hardware platforms.
(b) The ability of a software system to work under different operating systems.
(c) The ability of a software system to exchange information with other software systems and to use the exchanged information.
(d) The ability to replace a software system with another software system that has similar functionality.

35. 1 Terabyte is :
(a) 100 Gigabytes (b) 1000 Gigabytes
(c) 10000 Petabytes (d) 1000 Petabytes

36. Let $X=\frac{1^{13}+2^{13}+3^{13}+....+100^{13}}{100}$,

$Y=\frac{1^{13}+3^{13}+5^{13}+....+}{50}$

Which of the following is true?
(a) Y < Z < X (b) X < Y < Z
(c) Y < X < Z (d) Z < X < Y

37. How many squares n^2, n > 20 are less than 10,000 and end with digit 1?
(a) 8 (b) 16
(c) 26 (d) 36

38. The value of $\frac{1+\tan^2 15°}{1-\tan^2 15°}$ is:
(a) $\frac{2}{\sqrt{3}}$ (b) $\frac{\sqrt{3}}{2}$
(c) 1 (d) 2

39. If A and B are two square matrices such that $B = -A^{-1}BA$, then $(A + B)^2$ =
(a) 0 (Zero matrix) (b) $A^2 + B^2$
(c) A + B (d) $A^2 + 2AB + B^2$

40. The value of θ satisfying $\cos(\theta)+\sqrt{3}\sin(\theta)=2$ is:
(a) $\frac{5\pi}{3}$ (b)
(c) (d)

41. If the equation $x^2-2x+4y^2+24y+33=0$ describes an ellipse, then the centre of this ellipse is:
(a) (1, -3) (b) (2, -5)
(c) (1, 3) (d) (2, 5)

42. If (4, -3) is the midpoint of the line segment connecting $\left(6,\frac{-9}{2}\right)$ and (x, y) then the length of this line segment is :
(a) 3 (b) 4
(c) 5 (d) 6

43. The value of the definite integral is:
(a) 2 (b) 4
(c) 8 (d) 16

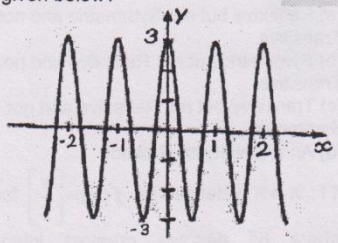
44. Suppose $f(x) = 2x^3 - 6x + 1$ is defined on all real numbers. The interval where f(x) is decreasing is given by:
(a) -2 < x < 2 (b) -1 < x < 1
(c) -0.5 < x < 0.5 (d) 1 < x < 2

45. It is known that a real root of a function f(x) is a real number x_0 for which $f(x_0) = 0$. The function $f(x) = x^3 + 9x - 4$ has:
(a) Exactly 1 real root (b) Exactly 2 real roots
(c) Exactly 3 real roots (d) No real roots

46. If f(x) is a polynomial satisfying
$f(x)f\left(\frac{1}{x}\right)=f(x)+f\left(\frac{1}{x}\right)$ and $f(3)=28.$
Then $f(4)$ is given by:
(a) 63 (b) 65
(c) 67 (d) 68

47. Consider the circles $x^2+(y-1)^2=9$ and $(x-1)^2+y^2=25$. These two circles are such that :
(a) These touch each other
(b) one of these lies entirely inside the other
(c) Each of these lies outside the other
(d) These intersect in two points

48. Which of the following equations has the graph given below?



(a) $y=-3\sin\left(2\pi x+\frac{\pi}{2}\right)$
(b) $y=3\sin\left(\pi x+\frac{\pi}{4}\right)$
(c) $y=-3\sin(2\pi x-\pi)$
(d) $y=3\sin\left(2\pi x+\frac{\pi}{2}\right)$

49. If $f(x)=x^2$ and $g(x)=2^x$ then the solution set of $fog(x)=gof(x)$ is
(a) R, the set to real numbers (b) {0}
(c) {0, 2} (d) {1, 2}

50. If $x=2+5\sqrt{-1}$ then the value of

Phone: 9876311001 e–mail: mathsmim@gmail.com Website: www.onlinemim.com

$f(x)=x^3-5x^2+33x-19$ is equal to:
(a) -5 (b) -7
(c) 7 (d) 10

51. Let A and B be events with P (A) = 3/ 8, P (B) = 1/2, and P ((A ∪ B)^c) = 3/ 8. What is P(A ∩ B) ?
(a) $\frac{1}{3}$ (b) $\frac{1}{4}$
(c) $\frac{1}{5}$ (d) $\frac{1}{6}$

52. How many license plates can be made using either 2 letters followed by 3 digits or 3 letters followed by 2 digits?
(a) 2433600 (b) 676000
(c) 1757600 (d) 1489600

53. The term of the expansion $(4x^3+3y^2)^9$ that has y-degree 12, is given by :
(a) 9289728 (b) 10450944
(c) 7838208 (d) 3919104

54. Let A = {2, 3, {7}, {9, {3}}}, and B = {6,5, {6,5}} be two sets. How many elements does P(A×B), the power set of A × B, have ?
(a) 4096 (b) 2048
(c) 1024 (d) 512

55. The relation R in the set of natural numbers N is defined by: $x\,R\,y \Leftrightarrow x^2-4xy+3y^2=0$, where $x, y \in N$. Then R is:
(a) Reflexive but not Symmetric and not Transitive
(b) Symmetric but not Reflexive and not Transitive
(c) Transitive but not Reflexive and not Symmetric
(d) An Equivalence Relation

56. If f : $\Re \to \Re$ is defined by $f(x)=\left[\frac{x}{5}\right]$ for $x \in \Re$, where [y] denotes greatest integer not exceeding y, then $\{f(x):|x|<71\}=$
(a) {-14, -13,....., 0, ..., 13, 14}
(b) {-14, -13,....., 0, ..., 14, 15}
(c) {-15, -14,....., 0, ..., 14, 15}
(d) {-15, -14,....., 0, ..., 13, 14}

57. If ${}^{(n-1)}C_3+{}^{(n-1)}C_4>{}^nC_3$ then the minimum value of n is:
(a) 5 (b) 6
(c) 7 (d) 8

58. In how many ways can 3 boys and 3 girls sit in a row if all the boys sit together, and all the girls sit together?
(a) 18 (b) 36
(c) 72 (d) 90

59. If a > 0 and $b^2 - 4ac = 0$, then the curve $y = ax^2 + bx + c$
(a) Cuts the x-axis
(b) Touches the x-axis and lies below it
(c) Lies entirely above the x-axis
(d) Touches the x-axis and lies above it

60. If $i=\sqrt{-1}$, then $\frac{(1+i)^{2011}}{(1-i)^{2009}}=$
(a) -1 (b) 1
(c) 2 (d) -2

61. $\lim_{x\to 0}\frac{a^x-b^x}{x}$ is equal to:
(a) $\log\left(\frac{b}{a}\right)$ (b) $\log\left(\frac{a}{b}\right)$
(c) log (a) (c) log (b)

62. If $y=2^{2x}$, then $\frac{dy}{dx}$ is equal to :
(a) $y(\log_{10}2)^2$ (b) $y(\log_e 2)^2$
(c) $y(\log_e 2^2)$ (d) $y(\log_e 2)$

63. The perimeter of the triangle with vertices at (1, 0, 0), (0, 1, 0) and (0, 0, 1) is:
(a) 3 (b) 2
(c) $2\sqrt{2}$ (d) $3\sqrt{2}$

64. The point collinear with (1, -2, -3) and (2, 0, 0) among the following is:
(a) (0, 4, 6) (b) (0, -4, -5)
(c) (0, -4, -6) (d) (0, -4, 6)

65. If $(1+x)^{15}=a_0+a_1x+.....+a_{15}x^{15}$, then $\sum_{p=1}^{15}P\frac{a_p}{a_{p-1}}=$
(a) 110 (b) 115
(c) 120 (d) 135

66. If α_1, α_2, α_3, respectively denote the modulus of the complex numbers $-i, \frac{1}{3}(1+i)$ and -1+i, where $i=\sqrt{-1}$, then their increasing order is:
(a) $\alpha_1, \alpha_2, \alpha_3$ (b) $\alpha_3, \alpha_2, \alpha_1$
(c) $\alpha_3, \alpha_1, \alpha_2$ (d) $\alpha_2, \alpha_1, \alpha_3$

67. The solution of the inequality $x^3+x^2<2x$ is given by:
(a) (-∞, -3) ∪ (0, 1) (b) (-∞, -2) ∪ (1, 2)
(c) (-3, -2) ∪ (0, 2) (d) (-∞,-2) ∪ (0, 1)

68. Let $f(x)=\frac{2}{x^3}+1$. Find $f^{-1}(x)$.
(a) $\sqrt{\frac{2}{x-1}}$ (b) $\sqrt[3]{\frac{2}{x-1}}$
(c) $\sqrt[3]{\frac{2}{x-2}}$ (d) $\sqrt[3]{\frac{1}{x-1}}$

69. The x–intercept, y–intercept, Domain, and

Phone: 9876311001 e–mail: mathsmim@gmail.com Website: www.onlinemim.com

Range of the function $f(x)=\sqrt{5-x}$ are given by:

(a) x– intercept = (0, 5); y– intercept = $(\sqrt{5},0)$; Domain = (-∞, ∞); Range = [0, ∞)

(b) x – intercept = (0, 5); y – intercept = $(0,\sqrt{5})$; Domain = (-5, -∞); Range = [0, ∞)

(c) x – intercept = (5, 0); y– intercept = $(\sqrt{5},0)$; Domain = (-∞, 5]; Range = [-5, ∞)

(d) x – intercept = (5,0); y – intercept = $(0,\sqrt{5})$; Domain = (-∞, 5]; Range = [0, ∞)

70. Which of the following is FALSE?

(a) The function $f(x)=x^2-1$, for x ≥ 0, is one-to-one

(b) $\frac{d}{dx}|2x-1|=2$ for x > 0.

(c) If $f(x)=g(x^3)$ and $g'(x)=\frac{1}{x^2}$ then $f'(x)=\frac{3}{x^4}$

(d) $\sin^{-1}\left(-\frac{1}{2}\right)$ is most simply written as $-\frac{\pi}{6}$.

71. Let $A=\begin{bmatrix}2 & 3\\ -1 & 1\end{bmatrix}$ and $B=\begin{bmatrix}1 & 9\\ -3 & k\end{bmatrix}$. The value of k that will make AB = BA is given by:

(a) -1 (b) 1
(c) -2 (d) 2

72. If $A=\begin{bmatrix}1 & 3\\ 2 & 1\end{bmatrix}$ then the determinant of $A^2 - 2A$ is:

(a) 5 (b) 25
(c) -5 (d) -25

73. In a Series of 2n observations, half of these equal p and remaining equal –p. If the standard deviation of these 2n observations is 2, then $|p|$ equals:

(a) $\frac{1}{n}$ (b) $\sqrt{2}$

(c) 2 (d) $\frac{\sqrt{2}}{n}$

74. If the vectors $3\hat{i}+\lambda\hat{j}+\hat{k}$ and $2\hat{i}-\hat{j}+8\hat{k}$ are perpendicular then λ is:

(a) -14 (b) 7
(c) 14 (d) 1/7

75. If the function $f(x)=\begin{cases}(\cos x)^{\frac{1}{x}} & x\neq 0\\ k, & x=0\end{cases}$ is continuous at x = 0, then the value of k is:

(a) -1 (b) 1
(c) 0 (d) e

ANSWER KEY

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

Note: An 'X' in the key indicates that either the question is ambiguous or it has printing mistake. All candidates will be given credit for this question.

Phone: 9876311001 e–mail: mathsmim@gmail.com Website: www.onlinemim.com