# JMI – 2020

01. If A stands for ADD, B for SUBTRACT, C for MULTIPLY AND D for DIVIDE then which of the following stand for 2A3B4D2?

(a) 3   (b) 2   (c) 4   (d) 5

2. 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 the … of Deepak?

(a) Aunt   (b) Mother   (c) Sister-in-law   (d) Mother-in-law

3. When two coins are tossed simultaneously, what are the are chances of getting at least one tail?

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

4. 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 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 Baxter?

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

5. Handsome : Beautiful : : Husband : ?

(a) women   (b) wife   (c) Girl   (d) she

6. Decode the functional arithmetic operators hidden between digits, given the 5611= 9, 3713= 6, and 4212 = 3. Evaluate, what will be the value of 8777?

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

7. What is the total number of squares in the given figure below
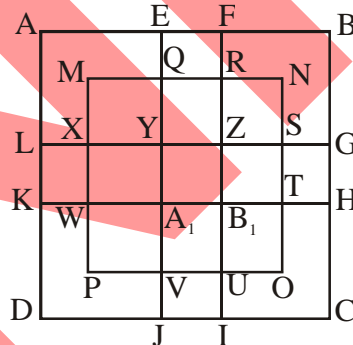
(a) 18   (b) 19   (c) 25   (d) 27

8. 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 be neither plays Tennis not Chess. Who plays Hockey here

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

9. If L is the brother of K and K is the friend of M then the in Ference 'L is the friend of M' is …

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

10. 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

11. 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

12. Examine the following statement: {I watch TV only if I am bored. I am never bored when I have my brother's company. Whenever I go the theatre, I take my brother along.} which of the following conclusion is valid in the context of the above statement?

(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.

13. 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

14. In a family, each daughter has the same number of brothers as she has sister 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

15. Look at this series: 8, 22, 8, 28, 8, … what number should come next?

(a) 9   (b) 29   (c) 32   (d) 34

16. Which word does NOT belong with the other?

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

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

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

18. If + means $\div$, × means −, − means × & $\div$ means +, then $38 + 19 − 16 \times 17 + 3 = ?$

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

19. Which of the following represent Indians and historians but not politicians based on the Venn diagram here?
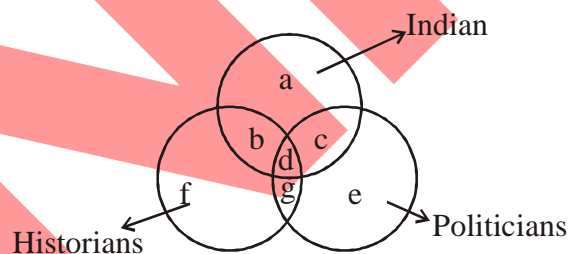
(a) b   (b) f   (c) b and f   (d) b and g

20. 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

21. The musicians delivered a rousing performance … they had rehearsed often

(a) though   (b) As   (c) Once   (d) Last

22. 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

23. 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

24. The new law will …. The entire community, and everyone will be affected

(a) impact   (b) impede   (c) impress   (d) none

25. He died … a severe head injury.
(a) on   (b) of   (c) from   (d) with

26. 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?

27. The words that show that m any people believe meetings are important are
(a) widely held   (b) collective ability   (c) number of people   (d) solving problem

28. We are …. A powerful enemy.
(a) up against   (b) save for   (c) on behalf of   (d) in against

29. Which of the following is the synonym of ABBREVIATE?
(a) shorten   (b) enlarge   (c) decrease   (d) change

30. Which of the following is the antonym of ANONYMOUS?
(a) desperate   (b) Expert   (c) known   (d) written

31. 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 number and integers are equinumerous.
(d) An irreflexive relation is neither symmetric non transitive relation.

32. In how many ways can the letters of the world 'LOADING' be arranged in such a way that the vowels always come together?
(a) 360   (b) 480   (c) 720   (d) 524

33. What will the value off $(x) = (\sin 3x + \sin x) \sin x + (\cos 3x - \cos x) \cos x$?
(a) 0   (b) 1   (c) –1   (d) 2

34. 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

35. Which of the following indicates the first of mathematical induction for the Mathematical statement $n + 1 > n$?
(a) $2 > 1$ (b) $2 > 0$ (c) $1 < 2$ (d) $0 < 0$

36. What will be the next permutation in lexicographic order after 362541?
(a) 364125   (b) 412563   (c) 361425   (d) 361420

37. 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

38. In how many ways can the letters of the word 'LEADER' be arranged?
(a) 72   (b) 144   (c) 360   (d) 720

39. Objective of linear programming for an objective function is to……..
(a) Maximize or minimize   (b) Subset or proper set modeling
(c) Row or column modeling   (d) Adjacent modeling

40. The differential equation $2\dfrac{dy}{dx} + x^2 y = 2x + 3, y(0) = 5$ will be……………
(a) Linear   (b) nonlinear   (c) Linear with fixed constants   (d) Undeterminable to be linear nonlinear

41. The order of the differential equation corresponding to the family of curves $y = c(x - c)^2, c$ constant is………….

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

42. Area bounded by the curve $y = \sin x$ and the x-axis between $x = 0$ to $x = 2\pi$ is …………. sq units.

(a) 2   (b) 0   (c) 3   (d) 4

43. The area of the region bounded by the curve $y = \dfrac{1}{x}$, the x-axis between $x = 1$ to $x = 6$ is ……. sq. units

(a) $\log_e 5$ (b) 0   (c) $\log_e 6$ (d) $\log_e 7$

44. $\int \dfrac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx, \dfrac{3\pi}{4} < x < \dfrac{7\pi}{4}$ is equal to

(a) $\log |\sin x + \cos x|$ (b) x   (c) $\log |x|$ (d) –x

45. 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) $x - y = 0$

46. The curves $y = ae^{-x}$ and $y = be^x$ are orthogonal if ….

(a) $a = b$ (b) $a = -b$ (c) $ab = -1$ (d) $ab = 1$

47. If $|\vec{a}| = 4$ and $-3 \le \lambda \le 2$ then the range of $|\lambda \vec{a}|$ is

(a) [0, 8]   (b) [–12, 8]   (c) [0, 12]   (d) [8, 12]

48. The distance of point $(2, 5, 7)$ from the x-axis is

(a) 2   (b) $\sqrt{74}$ (c) $\sqrt{29}$ (d) $\sqrt{53}$

49. 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

50. The 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

51. What will be the mean and variance for the first n natural numbers?

(a) $\dfrac{(n+1)}{2}$ and $\dfrac{(n^2 - 1)}{12}$ (b) $\dfrac{n(n+1)}{2}$ and $\dfrac{(n^2 + 1)}{12}$

(c) $\dfrac{(n+1)}{2}$ and $\dfrac{(n^2 - 1)}{12}$ (d) $\dfrac{n(n+1)}{2}$ and $\dfrac{(n^2 - 1)}{12}$

52. 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 variability respectively?

(a) Mathematics, Physics   (b) Chemistry, Mathematics

(c) Mathematics, Chemistry   (d) Chemistry, Physics

53. What will the following evaluate to $\lim\limits_{x \to 4}\left(\dfrac{4x+3}{x-2}\right)$

(a) 19/2   (b) 13/2   (c) 11/3   (d) 7/5

54. What will be the limiting value of the $f(x) = |x| - 5$ when $x \to 5$?

(a) 0   (b) 1   (c) –1   (d) –2

55. 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

56. 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

57. For which value of k, the line 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

58. What will the value of $(102)^5$?
(a) 11040808032   (b) 11040806032   (c) 11040606032   (d) 11040606034

59. What will be an 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

60. What is the number of non-zero integral solution of the equation $f(1-i)^x = 2^x$?
(a) 1   (b) –1   (c) 0   (d) 2

61. If six out ten points in a plane are collinear, then the number of triangles formed by joining these points will be … 100
(a) <   (b) $\geq$ (c) $\leq$ (d) =

62. The coefficient of the middle term in the binomial expansion in powers of x of $(1 + ax)^4$ and of $(1 - ax)^6$ is the same, if a is equal to
(a) –5/3   (b) 3/5   (c) –3/10   (d) 1/4

63. 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
(a) 5/9   (b) 1/9   (c) 8/9   (d) 2/9

64. The statement $p \to (q \to p)$ is equivalent to …
(a) $p \to (p \to q)$ (b) $p \to (\sim p \vee q)$ (c) F   (d) T

65. For $y = \sin x + \cos x - 5a$, what is the value of $\dfrac{dy}{dx}$?

(a) $\cos x - \sin x$ (b) $\cos x - \sin x - 5$ (c) $\sin x - \sec x$ (d) $\sin x + \cos x + 5$

66. Which of the following functions show that the statement, 'if a function is continuous at $x = 0$ then it is differentiable $x = 0$' is false?

(a) $f(x) = x^{\frac{4}{3}}$ (b) $f(x) = x^{\frac{1}{3}}$ (c) $f(x) = x^{-\frac{1}{3}}$ (d) $f(x) = x^3$

67. The equation of the circle with centre 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) $x^2 + y^2 - 4y = 0$

68. 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) $\{ ,…, -11, -7, 0, 7, 11, …\}$ (b) $\{2, 4, 9, 11, 15,…\}$ (c) $\{-17, 17\}$ (d) $\{2, 25, 125,…\}$

69. The set 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

70. Let the sequence be $(1 \times 2, 3 \times 2^2, 5 \times 2^3, 7 \times 2^4, 9 \times 2^5)$....... then this sequence is …

(a) An arithmetic sequence   (b) A geometric progression
(c) Arithmetico-geometric progression   (d) harmonic progression

71. How many ways can 8 prizes by given away to 7 students, if each student is eligible for all the prize?
(a) 40325   (b) 40320   (c) 40520   (d) 40720

72. Which amount of postage can be formed using just 4-cent and 11 cent stamps?
(a) 2   (b) 5   (c) 30   (d) 10

73. How many bytes are required to encode 2000 bit of data?
(a) 1   (b) 2   (c) 3   (d) 8

74. The value of $\left[\dfrac{1}{2}\right]\left[\dfrac{5}{2}\right]$ is ….

(a) 1   (b) 2   (c) 3   (d) 0.5

75. How many five – digit number can be made from the digits 1 to 7 if repetition is allowed ?
(a) 16807   (b) 54629   (c) 23467   (d) 32354

76. What is the base case in the inequality $7^n > n^3$, where $n = 3$?
(a) $652 > 189$ (b) $42 < 132$ (c) $343 > 27$ (d) $42 \geq 431$

77. The product of complex numbers (4, 3) and (5, –6) is
(a) (18, 3)   (b) (18, –3)   (c) (38, 9)   (d) (38, –9)

78. An object moved in a circular path of radius 21 meter such that it made an angle of 30° what is the distance convered by the object ?
(a) 11   (b) 21   (c) 31   (d) 41

79. 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) $A - B = B - A$

80. 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 1 : N 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

81. Which primitive operations are directly performed by computer hardware?
(a) Testing & zeroing   (b) Testing & Flipping   (c) Testing, flipping & zeroing   (d) Arithmetic operations

82. Which of the following is not a computer brand?
(a) IBM   (b) COMPAQ   (c) HP   (d) BSNL

83. Typical speed of current fastest super computers is measuring in
(a) petaflops   (b) GigaHertz   (c) MIPS   (d) Megahertz

84. Which of the following is not an operating system ?
(a) UNIX   (b) DOS   (c) LINUX   (d) HP

85. Which of the following refers to the foremost operation, initiated while starting the computer system?
(a) Booting   (b) POST   (c) padding   (d) BIOS

86. The pair byte and nibble comprise of … bit (s) respective
(a) 8 and 4   (b) 4 and 6   (c) 8 and 6   (d) 4 and 8

87. In which number system, can the binary number 1011011111000101 be the most easily converted to?
(a) Decimal   (b) Hexadecimal   (c) Octal   (d) Roman

88. Which of the following is true for $(p \wedge q) \to (p \vee q)$?
(a) Tautology   (b) contingency   (c) contradiction   (d) negation

89. One of the most distinguishing features of computer system is?
(a) Speed   (b) virtual Expandability   (c) Storage   (d) Precision

90. What is the name of the data matric used to refer to the size 10^{24}?
(a) Yotta   (b) Zetta   (c) Exa   (d) Giga

91. Which of the following is not a phase during the communication via circuit switching
(a) data transfer   (b) Circuit disconnect   (c) Tunneling   (d) booting

92. Suppose you find some teacnical problems with the mail account user@example.com. Who should you try to contact in order to solve them ?
(a) postmaster@example.com   (b) Rfc822@example.com
(c) Dns822@example.com   (d) Cybercrime cell

93. Parallel virtual machine (PYM) reter to a
(a) software tool   (b) work station   (c) super computer   (d) loader

94. 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

95. Which of the following is not related to internet?
(a) bridge   (b) Router   (c) DNS   (d) printer

96. Which of the following is true about operating system?
(a) An operating system is not an algorithms   (b) An operating system is an application software
(c) An operating system is hardware component   (d) An operating system is a typical firmware

97. Which of the following is the fastest among the computer storages?
(a) Registers   (b) RAM   (c) CD   (d) Flash disk

98. Ctrl, Shift and Alt keyboard keys are called ….. Keys.
(a) Modifies   (b) Adjustment   (c) Function   (d) compiler

99. 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

100. Which is not among the frontier technologies of computer system?
(a) IOT   (b) data mining   (c) Cloud computing   (d) COBOL

Answer Kye

01. (a) 02. (d) 03. (a) 04. (c) 05. (b) 06. (a) 07. (*) 08. (b) 09. (c) 10. (c) 11. (c) 12. (d) 13. (a) 14. (b)

15. (d) 16. (b) 17. (a) 18. (c) 19. (*) 20. (d) 21. (b) 22. (a) 23. (b) 24. (a) 25. (b) 26. (b) 27. (a) 28. (a)

29. (a) 30. (c) 31. (d) 32. (c) 33. (a) 34. (b) 35. (a) 36. (a) 37. (c) 38. (c) 39. (a) 40. (a) 41. (a) 42. (d)

43. (c) 44. (d) 45. (c) 46. (d) 47. (c) 48. (b) 49. (a) 50. (c) 51. (a) 52. (b) 53. (a) 54. (a) 55. (b) 56. (a)

57. (b) 58. (a) 59. (a) 60. (c) 61. (d) 62. (c) 63. (b) 64. (d) 65. (a) 66. (b) 67. (d) 68. (c) 69. (a) 70. (c)

71. (b) 72. (c) 73. (b) 74. (*) 75. (a) 76. (c) 77. (d) 78. (a) 79. (c) 80. (a) 81. (c) 82. (d) 83. (a) 84. (d)

85. (b) 86. (a) 87. (b) 88. (a) 89. (b) 90. (a) 91. (c) 92. (a) 93. (a) 94. (d) 95. (d) 96. (a) 97. (a) 98. (c)

99. (c) 100. (d)