MITKARY SIR'S CAPS
DHYEY🎯
THE TEST SERIES

MITKARY SIR'S CAPS ACADEMY
CA Foundation - Test Series – Dec. 2021

Marks: 100   _SUBJECT : BUSINESS MATHEMATICS, LOGICAL REASONING AND STATISTICS_   **Time : 2 hrs.**

INSTRUCTIONS

General:

(i)   Marking: +1 for correct answer & -0.25 for incorrect.
(ii)   Mark only one correct answer out of four alternatives.
(iii)   Use Pencil or Blue/Black Ball Point Pen only for writing particulars for any marking.
(iv)   Darken the circles in the space provided only.
(v)   Use of white fluid or any other material which damages the answer sheet, is not permitted.

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1) If a : b = 2 : 3 , b : c = 4 : 5, c : d = 6 : 7 then a : d is ___.
   (a) 24 : 35   (b) 8 : 15   (c) 16 : 35   (d) 7 : 15

2) The ratio of the number of five rupee coins to number of ten rupee coins is 8 : 15. If the total value   of five rupee coins is 360, then the No. of ten rupee coins is ____:
   (a) 72   (b) 60   (c) 150   (d) 135

3) If $a = \frac{\sqrt{6}+\sqrt{5}}{\sqrt{6}-\sqrt{5}}$, $b = \frac{\sqrt{6}-\sqrt{5}}{\sqrt{6}+\sqrt{5}}$ then the value of $\frac{1}{a^2} + \frac{1}{b^2}$ is
   (a) 486   (b) 484   (c) 482   (d) 500

4) If $u^{5x} = v^{5y} = w^{5z}$ and $u^2 = vw$ then $xy + zx - 2\,yz =$ _____.
   (a) 0   (b) 1   (c) 2   (d) None of these

5) $\log\,(1^3 + 2^3 + 3^3 +.. +n^3)$ = _____
   (a) $2\log n +\ 2\log(n + 1) - 2\log 2$ (b) $\log n + 2\log(n + 1) - 2\log 2$
   (c) $2\log n + \log(\,n + 1) - 2\log 2$ (d) none

6) If $log_3[log_4(log_2 x)] = 0$ then X =
   (a) 4   (b) 8   (c) 16   (d) 32

7) If $\log\left(\frac{x-y}{2}\right) = \frac{1}{2}\,(\log x + \log y)$ then
   $x^2 + y^2 =$ _____
   (a) $6xy$ (b) $2xy$ (c) $3x^2 y^2$ (d) $4x^2 y^2$

8) $\frac{2x+5}{10} + \frac{3x+10}{15} = 5$; x = ?
   (a) 10.58   (b) 9.58   (c) 9.5   (d) None

9) If $\frac{3}{x+y} + \frac{2}{x-y} = -1$ and $\frac{1}{x+y} - \frac{1}{x-y} = \frac{4}{3}$ then (x, y) is
   (a) (2, 1)   (b) (1, 2)   (c) (-1 , 2)   (d) (-2 , 1)

10) The difference between the roots of the equation $x^2 - 7x - 9 = 0$ is _____ :
   (a) 7   (b) $\sqrt{85}$ (c) 9   (d) $2\sqrt{85}$

11) The students of two classes are in the ratio 5 : 7, if 10 students left from each class, the remaining students are in the ratio of 4 : 6, then the number of students in each class was :

   (a) 30, 40   (b) 25, 24   (c) 40, 60   (d) 50, 70

12) The shaped region represented by the inequalities

$4x + 3y \leq 60, y \geq 2x, x \geq 3, x \geq 0, y \geq 0$

(a)

(b)

(c)
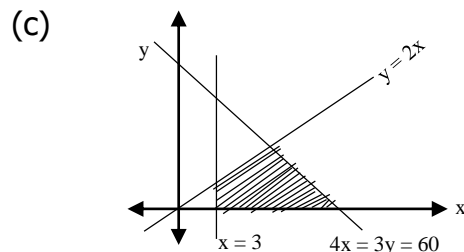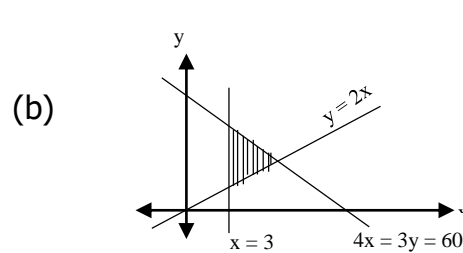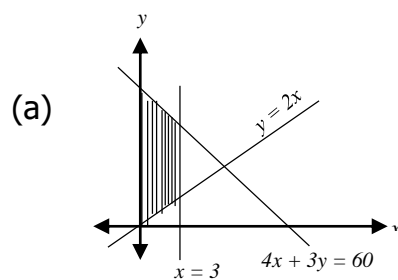
(d) None of these

13) A man invests an amount Rs. 15860 in the names of his three sons A,B and C in such a way that they get the same amount of interest after 2, 3 and 4 years respectively. If the rate of interest is 5% S.I. then ratio of amount invested in the name of A, B and C is
(a) $6:4:3$ (b) $30:12:5$ (c) $3:4:6$ (d) None of the above

14) In compound interest, if the amount is 9 times to its principal in two years then the rate of interest is ?
(a) 300 %   (b) 200 %   (c) 150 %   (d) 100 %

15) How much will Rs. 25,000 amount to in 2 years at compound interest if the rates for the successive years are 4% and 5% per year
(a) Rs. 27,000   (b) Rs. 27,300   (c) Rs. 27,500   (d) Rs. 27,900

16) What sum should be invested at the end of every year so as to accumulate an amount of Rs. 7,96,870 at the end of 10 years at the rate of interest 10% compounded annually, given that A(10,0.1) = 15.9374
(a) 40,000   (b) 4,50,000   (c) 4,80,000   (d) 50,000

17) A person wants to lease out a machine costing ₹ 5,00,000 for a 10 year period. It has fixed a rental of ₹ 51,272 per annum payable annually starting from the end of first year. Suppose rate of interest is 10% per annum compounded annually on which money can be invested. To whom this agreement is favourable?
(a) Favour of Lessee   (b) Favour of Lessor   (c) Not for both   (d) Can't be determine

18) If $^{n}p_r = 720$ and $^{n}C_r = 120$ then r is
(a) 4   (b) 5   (c) 3   (d) 6

19) If $^{11}C_x = {}^{11}C_{2x-4}$ and $x \neq 4$ than the value of $^{7}C_x =$
(a) 20   (b) 21   (c) 22   (d) 23

20) Five persons are sitting in a round table in such way that Tallest person is always on the right – side of the shortest person; the number of such arrangements is
(a) 6   (b) 8   (c) 24   (d) None of these

21) If a, - 3 , b, 5 , c are in A.P. then the value of c is
(a) – 7   (b) 1   (c) 9   (d) 13

22) The sum n terms of the series 1 + (1 + 3) + (1 + 3 + 5) + ...
(a) $\dfrac{n(n+1)(2n+1)}{6}$ (b) $\dfrac{n(n+1)(2n+1)}{3}$ (c) $\dfrac{n(n+1)(n+2)}{6}$ (d) none

23) The sum of first 20 terms of a G.P. is 1025 times the sum of first 10 terms then the common ratio is _
(a) 2   (b) $2\sqrt{2}$ (c) $\dfrac{1}{2}$ (d) $\sqrt{2}$

24) Find the sum of all natural numbers between 100 and 1000 which are divisible by 11 is :

(a) 44,550   (b) 66,770   (c) 55,440   (d) 33,440

25) In a class, 80 students speak Hindi, 60 students speak English and 40 students speak both Hindi and English then the number of students in the class is ____.

(a) 100   (b) 120   (c) 140   (d) 180

26) If $f(x) = \frac{x-1}{x}$ and $g(x) = \frac{1}{1-x}$ then fog (x) =

(a) x – 1   (b) x   (c) 1 – x   (d) – x

27) A is {1,2,3,4} and B is {1,4,9,16,25} if a function f is defined from set A to B where f(x) = X². Then the range of f is :

(a) {1,2,3,4}   (b) {1,4,9,16}   (c) {1,4,9,16,25}   (d) None of these

28) If A={1,2}, and B={3,4}. Determine the number of relations from A and B :

(a) 3   (b) 16   (c) 5   (d) 6

29) If $y = \log x^x$ then $\frac{dy}{dx} =$ _____ :

(a) log(ex)   (b) log (e/x)   (c) log (x/e)   (d) 1

30) Let $x = at^3$, $y = \frac{a}{t^2}$ then $\frac{dy}{dx} = ?$

(a) $\frac{-3a}{t^6}$ (b) $\frac{-1}{t^6}$ (c) $\frac{1}{3at^2}$ (d) None of the above

31) xy = 1 then $y^2 + \frac{dy}{dx} = ?$

(a) 1   (b) 0   (c) 2   (d) None of the above

32) $\int_0^5 \frac{x^2}{x^2 + (5-x)^2} dx$ is equal to:

(a) 0   (b) 5/2   (c) 1   (d) -1

33) $\int x(x^2+4)^5 dx$ is equal to

(a) $\frac{1}{12}(x+4)^6 + c$ (b) $(x+4)^6 + c$ (c) $\frac{1}{6}(x+4)^6 + c$ (d) None of the above

34) $\int_{-1}^3 (1+3x-x^3) dx$ is equal to

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

35) If $x:y:z = 7:4:11$ then $\frac{x+y+z}{z}$ is

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

36) If $x^{1/p} = y^{1/q} = z^{1/r}$ and xyz = 1, then the value of p + q + r is

(a) 1   (b) 0   (c) 1/2   (d) none of these

37) $\log_{0.01} 10,000 = ?$

(a) 2   (b) -2   (c) 4   (d) -4

38) The forth part of a number exceeds the sixth part by 4. The number is

(a) 84   (b) 44   (c) 48   (d) None of these

39) If $2^{n+4} - 2^{n+2} = 3$, then n is equal to :

(a) 0   (b) 2   (c) – 1   (d) – 2

40) What will be the population after 3 years when present population is 25,000 and population increases at the rate of 3% in I year, at 4% in II year and at 5% at in III year?

(a) 28,119   (b) 29,118   (c) 27,000   (d) 30,000

41) Find the missing number 15, 70, 23, 62, ?, 54

(a) 23   (b) 31   (c) 41   (d) 44

42) Find the wrong number 1, 10, 9, 16, 25, 26, 49

(a) 1   (b) 16   (c) 26   (d) 9

43) Find the wrong term CBD, ONP, UTV, IJH

(a) CBD   (b) XYZ   (c) ONP   (d) IJH

44) If LOVE is coded as 5782 and JOCKEY is coded as 371429, KEYLOCK will be coded as

(a) 4295714   (b) 4259714   (c) 4297514   (d) None

45) If LOVE is coded as ELOV, then YEAR will be coded as:

(a) AERY   (b) AREY   (c) RYEA   (d) None of these.

46) Choose out the odd one : 263, 482, 551, 362, 285

(a) 285   (b) 362   (c) 551   (d) None of these.

47) Ram starts from his house and walks 3 km towards West, turns towards his right and walks 2 km, turns left and walks 3 km and finally turns left again and walks 2 km. What is the direction now he is facing?

(a) North   (b) South   (c) East   (d) West

48) If Ganesh stands on his head with his face towards South. In which direction will his right hand point?

(a) North   (b) South   (c) East   (d) West

49) I stand with my right hand extended side-ways towards North. Towards which direction will my back be?

(a) North   (b) South   (c) East   (d) West

50) Four Children are sitting in arrow. A is occupying seat next to B but not next to C. If C is not sitting next to D, Who is occupying seat next to adjacent to D.

(a) B   (b) B and A   (c) Impossible to tell   (d) A

51) Six persons *M*, *N*, *O*, *P*, *Q* and *R* are sitting in two row with three persons in each row. Both the row are in front of each other. *Q* is not at the end of any row. *P* is second the left of *R*. *O* is the neighbor of *Q* and diagonally opposite to *P*. *N* is the neighbor of *R*. Who is/are adjacent to *Q*?

(a) M and O   (b) M only   (c) O only   (d) None of these

52) Four ladies A, B, C and D and Four men E, F, G and H are sitting in a circle around a table facing each other.

I.   No two ladies or men are sitting side by side.
II.   C, who is sitting between G and E, is facing D.
III.   F is between D and A and facing G.
IV.   H is to the left of B.
Who is immediate neighbor of B?

(a) G and H   (b) E and F   (c) E and H   (d) F and H

53) In a march past. Seven persons are standing in a row. Q is standing left to R but right to P. O is standing right to N and left to P. Similarly S is standing right to R and left to T. Find out who is standing in middle?

(a) P   (b) Q   (c) R   (d) O

Direction (Q.54-57) : Read the following information and answer the following Questions : C is D's brother. X is Q's grand daughter. Y is only nephew of C. D is P's grand daughter and mother of only son Y.

54) How is Y related to P?
(a) Great Grand Son   (b) Grand Son   (c) Cousin   (d) Maternal Uncle

55) How is Y related to Q?
(a) Great Grand Son   (b) Grand Son   (c) Cousin   (d) Maternal Uncle

56) How is Y related to X?
(a) Great Grand Son   (b) Grand Son   (c) Cousin   (d) Maternal Uncle

57) How is C related to Y?
(a) Great Grand Son   (b) Grand Son   (c) Cousin   (d) Maternal Uncle

58) 4832, 5840, 6848, 7856 ?
(a) 8864   (b) 8815   (c) 8846   (d) 8887

59) Deepa starts walking north towards and after a while she turns to her right. After walking some distance, she turns to her left and walks a distance of 1 km. She then turns to her left again. In which direction she moving now?
(a) North   (b) West   (c) East   (d) South

60) P, Q, R, S, T, U are 6 members of a family in which there are two married couples. T, a teacher is married to a doctor who is mother of R and U. Q the lawyer is married to P.. P has one son and one grandson. Of the two married ladies one is a housewife. There is also one student and one male engineer in the family. Which of the following is true about the grand-daughter of the family?
(a) She is a lawyer   (b) She is an engineer
(c) She is a student   (d) She is a doctor

61) If there is an increase in a series at constant rate, the graph will be a :
(a) convex curve   (b) concave curve
(c) a straight line from left top to right bottom   (d) a straight line from left bottom to right top

62) Which of the following graph is suitable for cumulative frequency distribution?
(a) Ogives   (b) Histogram   (c) G.M   (d) A.M

63) Histogram is used for finding
(a) Mode   (b) Mean   (c) First Quartile   (d) None

64) Ogive graph is used for finding
(a) Mean   (b) Mode   (c) Median   (d) None

65) Histogram can be shown as
(a) Ellipse   (b) Rectangle   (c) Hyperbola   (d) Circle

66) The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is
(a) 11   (b) 6   (c) 5   (d) 9

67) In a moderately skewed distribution the values of mean & median are 12 & 18 respectively. The value of mode is
(a) 6   (b) 12   (c) 15   (d) 30

68) Which of the following is positional average?
(a) Median   (b) GM   (c) HM   (d) AM

69) For the distribution

X	1	2	3	4	5	6
F	6	9	10	14	12	8

The value of median is
(a) 3.5   (b) 3   (c) 4   (d) 5

70) For a symmetric distribution
(a) Mean = Median = Mode   (b) Mode = 3 Median −2 Mean
(c) Mode = $\frac{1}{3}$ Median = ½   (d) None

71) If A and B are two events which have no point in common, the events A and B are :
(a) complementary to each other   (b) independent
(c) mutually exclusive   (d) dependent

72) Given that

X	-3	-3/2	0	3/2	3
Y	9	9/4	0	9/4	9

The Karl Pearson's coefficient of correlation is
(a) Positive   (b) Zero   (c) Negative   (d) None

73) If $\sigma^2 = 100$ and coefficient of variation = 20% then $\bar{x} =$
(a) 60   (b) 70   (c) 80   (d) 50

74) Coefficient of quartile deviation is ¼ then Q_3/Q_1 is
(a) 5/3   (b) 4/3   (c) ¾   (d) 3/5

75) Standard deviation is _____ times of $\sqrt{MD \times QD}$

(a) 2/3   (b) 4/5   (c) $\sqrt{\dfrac{15}{8}}$ (d) $\sqrt{\dfrac{8}{15}}$

76) SD of first five consecutive natural numbers is
(a) $\sqrt{10}$ (b) $\sqrt{8}$ (c) $\sqrt{3}$ (d) $\sqrt{2}$

77) The Q.D. of 6 numbers 15, 8, 36,40,38,41 is equal to
(a) 12.5   (b) 25   (c) 13.5   (d) 37

78) Given the following series:

X	10	13	12	15	8	15
Y	12	16	18	16	7	18

The rank correlation coefficient r =

(a) $1 - \dfrac{6\sum d^3 + \sum_{i=d}^{2}\frac{m_2\left(m_2^3-1\right)}{12}}{m(n^2-1)}$ (b) $1 - \dfrac{6\left[\sum d^3 + \sum_{i=1}^{3}\frac{m_i\left(m_{li}^2-1\right)}{12}\right]}{n(n^2-1)}$

(c) $1 - 6\sum d^2 + \dfrac{\sum_{i=1}^{2}\frac{m_1\left(m_1^2-1\right)}{12}}{n(n^2-1)}$ (d) $1 - \dfrac{6\left[\sum d^2 + \sum_{i=1}^{3}\frac{m_i\left(m_i^2-1\right)}{12}\right]}{n(n^2-1)}$

79) Find the probable error if r = $\dfrac{2}{\sqrt{10}}$ and n = 36.
(a) 0.6745   (b) 0.06745   (c) 0.5287   (d) None

80) If the regression line of y on x is given by Y = x + 2 and Karlpearson's coefficient of correlation is 0.5 then

$\dfrac{\sigma_y^2}{\sigma_x^2} =$ _____

(a) 3   (b) 2   (c) 4   (d) None

81) G.M. of regression coefficients is
(a) Equal to r   (b) Greater then or equal to r
(c) Half of r   (d) None of these

82) If a coin is Tossed 5 times then the probability of getting Tail and Head occurs alternatively is
(a) $\dfrac{1}{8}$ (b) $\dfrac{1}{16}$ (c) $\dfrac{1}{32}$ (d) $\dfrac{1}{64}$

83) A distributions in which mean is equal to variance is :
(a) Poisson distribution   (b) gamma distribution
(c) normal distribution   (d) binomial distribution

84) If mean and variance are 5 and 3 respectively then relation between p & q is
(a) p > q   (b) p < q   (c) p = q   (d) p is symmetric

85) Out of numbers 1 to 120, one is selected at random, what is the probability that it is divisible by 8 or 10 ?
(a) 0.9   (b) 0.2   (c) 0.6   (d) 0.7.

86) If Z – M = 4 and Z + M = 60, then M is

(a) 26　　　　　　　　(b) 25　　　　　　　　(c) 28　　　　　　　　(d) 32

87) If Y ≥ x then mathematical expectation is

(a) $E(X) > E(Y)$　　　　(b) $E(X) \le E(Y)$　　　　(c) $E(x) = E(Y)$　　　　(d) $E(X) . E(Y) = 1$

88) The prices and quantities of 3 commodities in base and current years are as follows:

P_0	P_1	q_0	q_1
12	14	10	20
10	8	20	30
8	10	30	10

The Laspayer price index is

(a) 118.13　　　　　　(b) 107.14　　　　　　(c) 120.10　　　　　　(d) None

89) The cost of living index numbers in years 2015 and 2018 were 97.5 and 115 respectively. The salary of a worker in 2015 was Rs. 19500. How much additional salary was required for him in 2018 to maintain the same statement of living as in 2015?

(a) Rs. 3000　　　　　(b) 4,000　　　　　　(c) 3,500　　　　　　(d) 4,500

90) Which is called an ideal index number?

(a) Laspayer's index number　　　　　　(b) Pasche's index number

(c) Fisher's index number　　　　　　　(d) Marshall Edgeworth index number

91) The means of x and y are 16 and 20 respectively. The standard deviations are 6 and 8 respectively. The correlation co-efficient between them is 0.6. The equation of regression line of y on x is

(a) $y = 7.2 + 0.8x$　　　　　　　(b) $y = -7.2 + 0.8x$

(c) $y = 7.2 - 0.8x$　　　　　　　(d) $y = -7.2 - 0.8x$

92) The quartiles of a normal distribution are respectively 8.64 and 14.32, the mean deviation of the distribution is

(a) 11.48　　　　　　(b) 4.26　　　　　　　(c) 3.41　　　　　　(d) None of them

93) The mean and variance of a binomial distribution are 8 and 4, respectively. Then, P (X = 1) is equal to :

(a) $1/2^{10}$　　　　　(b) $1/2^{12}$　　　　　(c) $1/2^{16}$　　　　　(d) $1/2^{6}$

94) If each observation of a raw data, whose variance is σ^2 is multiplied by λ, then the variance of the new set is:

(a) σ^2　　　　　　(b) $\lambda^2 \sigma^2$　　　　　　(c) $\lambda \sigma^2$　　　　　　(d) $\lambda^2 + \sigma^2$

95) Which set of function define a probability space on S { A, B, C }?

(a) P (A) = P (B) = 0, P (C) = 1　　　　(b) P (A) = 1/3, P (B) = 0, P (C) = 2/3

(c) Both (a) & (b)　　　　　　　　　(d) Neither (a) nor (b)

96) The property $b_{YX} > 1$ implies that $b_{xy} < 1$ is known as:

(a) Fundamental property　　　　　　(b) Signature property

(c) Magnitude property　　　　　　　(d) None of the above

97) The product of regression coefficient lies between

(a) 0 and 1　　　　　　(b) -1 and +1　　　　　(c) -1 and 0　　　　　(d) None of the above

98) If X and Y are independent variables, then Cov (X,Y) equals:

(a) 1　　　　　　　　(b) -1　　　　　　　　(c) 0　　　　　　　　(d) None of these

99) If A, B and C are three independent events, the probability of their joint occurrence is equal to

(a) P (A) P (B) P (C)　　　　　　(b) 1/[P (A) P (B) P (C)]

(c) P(A) + P(B) + P(C)　　　　　(d) P(AB)+ P(AC)+P(BC)

100) The limiting relative frequency approach of probability is known as :

(a) statistical probability　　　　　　(b) classical probability

(c) mathematical probability　　　　　(d) all the above