Mock Test Paper - Series I: July, 2024

Date of Paper: 2nd August, 2024

Time of Paper: 10.30 A.M. to 12.30 P.M.

FOUNDATION COURSE

PAPER 3: QUANTITATIVE APTITUDE

Time: 2 Hours **Marks: 100**

1. What is the value of $\frac{p+q}{p-q}$ if $\frac{p}{q}=7$

   (a) 2/3

   (b) 4/3

   (c) 2/6

   (d) 7/8

2. If $2^{x+y} = 2^{x-y} = \sqrt{8}$, then the value of x and y are

   (a) 1, ½

   (b) ½, 1

   (c) ½, ½

   (d) none of these

3. The equation $x^3 - 3x^2 - 4x + 12 = 0$ has three real roots, they are:

   (a) -2, 2, 3

   (b) -2, -2, 3

   (c) 2, -2, -3

   (d) -2, 2, -3

4. If α and β are roots of the equation $x^2 - 8x + 12 = 0$ then $1/\alpha + 1/\beta =$ _____

   (a) 2/3

   (b) 2/4

   (c) 3/4

   (d) 4/5

5. The roots of the equation $x^2 - 7x + 10 = 0$ are:

   (a) -2 and -5

   (b) 2 and 5

   (c) 2 and -5

   (d) -2and 5

6. Given that $\log_{10}2 = x$ and $\log_{10}3 = y$, the value of $\log_{10}120$ is expressed as

   (a) $2x - y + 1$

   (b) $2x + y + 1$

   (c) $2x - y - 1$

   (d) none of these

7. If four numbers $\frac{1}{2}, \frac{1}{3}, \frac{1}{5}, \frac{1}{x}$ are proportional then x =

   (a) $\frac{6}{5}$

   (b) $\frac{5}{6}$

   (c) $\frac{15}{2}$

   (d) none

8. If $x = 2 + \sqrt{3}$ and $y = 2 - \sqrt{3}$ then value of $x^2 + y^2$ =

   (a) 14

   (b) 4

   (c) 2

   (d) 6

9. If the ratio of the roots of the Equation $4x^2-6x+p=0$ is 1:2 then the value of p is:

   (a) 1

   (b) 2

   (c) -2

   (d) -1

10. The ratio of number of boys and number of girls in a school is found to be 15: 32. How many boys and equal number of girls should be added to bring the ratio to 2/3?

    (a) 19

    (b) 20

    (c) 23

    (d) 27

11. If $2x+5 > 3x+2$ and $2x-3 \leq 4x-5$, then x takes which of the following value ?

    (a) 4

    (b) -4

    (c) 2

    (d) -2

12. Solve for x of the Inequalities $2 \leq \frac{3x-2}{5} \leq 4$ where $x \in N$

    (a) {5,6,7}

    (b) {3,4,5,6}

    (c) {4,5,6}

    (d) {4,5,6,7}

13. The amount charged for a defined length of time for uses of principal, generally on year basis is known as

    (a) Balance

    (b) Rate of Interest

    (c) Principal

    (d) EMI

14. The sum required to earn a monthly interest of ` 1200 at 18% p.a. Simple Interest is –

    (a) ` 50,000

    (b) ` 60,000

    (c) ` 80,000

    (d) None of these

15. Sachin deposited ` 1,00,000 in his bank for 2 years at simple interest of 6%. How much interest would be he earns? How much final value of deposit

    (a) ` 6,000, ` 1,06,000

    (b) ` 15,000, ` 1,15,000

    (c) ` 11,600, ` 1,11,600

    (d) ` 12,000, ` 1,12,000

16. The ratio of principal and the compounded interest value for three years (Compounded annually) is 216:127. The rate of interest is:

    (a) 0.1777

    (b) 0.1567

    (c) 0.1666

    (d) 0.1587

17. The Compounded interest `8000 for 6 months at 12% p.a payable quarterly is:

    (a) ` 487.20

    (b) ` 480

    (c) ` 380

    (d) None of these

18. The annual birth and death rates per 1,000 are 39.4 and 19.4 respectively. The number of years in which the population will be doubled assuming there is no immigration or emigration is:

    (a) 35 years

    (b) 30 years

    (c) 25 years

    (d) none of these

19. The simple interest on sum of money at 6% p.a. for 7 years is equal to twice of simple interest on another sum for 9 years at 5 p.a. The ratio will be:

    (a) 2:15

    (b) 7:15

    (c) 15. 7

    (d) 1:7

20. Nominal rate of Interest is 9.9 % p.a. If interest is compounded monthly, what will be effective rate of Interest.

    (a) 10.35%

    (b) 9.36%

    (c) 11.36%

    (d) 9.9%

21. The population of a town increases by 2% of the population at the beginning of the year. The number of years by which the total increases in population would be 40% is:

    (a) 7 years

    (b) 10 years

    (c) 17 years

    (d) 19 years

22. A stock pays annually an amount of ` 10 from 6^{th} year onwards. What is the present value of perpetuity, if the rate of return is 20%

    (a) 20.1

    (b) 19.1

    (c) 21.1

    (d) 22.1

23. A sum of money invested in compounded interest doubles itself in four years. In how many years it becomes 32 times of itself as the same rate of compound interest?

    (a) 12 years

    (b) 16 years

(c) 20 years

(d) 24 years

24. Sinking fund factor is the reciprocal of _____

(a) Present value of interest factor of a single cash flow

(b) Present value interest factor of annuity

(c) Future value of Interest factor of annuity

(d) Future value of Interest factor of a single cash flow

25. If the nominal rate of growth is 17% and inflation is 9% for the five years. Let P be the Gross domestic Product (GDP) amount at the present year then the projected real GDP after 6 years is:

(a) 1.587 P

(b) 1.921P

(c) 1.403P

(d) 2.51 P

26. If the interest rate on a loan as 1% per month, the effective annual rate of interest is:

(a) 12%

(b) 12.36%

(c) 12.68%

(d) 12.84%

27. A user wants to create a password using 4 lowercase letters (a-z) and 3 uppercase letters (A-Z). No letter can be repented in any form. In how many ways can the password be created if the password must start with an uppercase letter?

(a) $26 \times 25 \times 24 \times 23 \times 22 \times 5 \times 21$

(b) $26 \times 25 \times 24 \times 23 \times 22 \times 2 \times 21$

(c) $26 \times 5 \times 25 \times 24 \times 23 \times 2 \times 22 \times 21$

(d) $6 \times 26 \times 25 \times 24 \times 23 \times 22 \times 21$

28. In how many ways can 5 boys and 3 girls sit in a row so that no two girls are together

(a) 14,400

(b) 14,000

(c) 14,425

(d) 12,400

29. In how many ways the letters of the word "STADIUM" be arranged in such a say that the vowels all occur together?

(a) 7!/ 3!

(b) 5! 4!

(c) 5! 3!

(d) 7! 3!

30. How many ways can 5 different trophies can be arranged on a shelf if one particular trophy must always be in the middle?

(a) 24

(b) 120

(c) 48

(d) 144

31. The 3^{rd} term of a G.P is 2/3 and 6^{th} term is 2/81, then the first term is

(a) 6

(b) 1/3

c) 9

(d) 2

32. If the sum of n terms of an A.P. is $(3n^2 – n)$ and its common difference is 6, then its first term is:

(a) 3

(b) 2

(c) 4

(d) 1

33. In a survey of 300 companies, the number of companies using different media- Newspapers (N), Radio (R) and Television (T) are as follows:

$n(N) = 200$, $n(R) = 100$, $n(T) = 40$, $n(N \cap R) = 50$, $n(R \cap T) = 20$, $n(N \cap R) = 25$, and $n(N \cap R \cap T) = 5$,

Find the numbers of companies using none of these media:

(a) 20 companies

(b) 250 companies

(c) 30 companies

(d) 50 companies

34. If $f(x) = x+2$, $g(x) = 7^x$, then g of (x) =

(a) 7x.x+2. 7x

(b) 7x+2

(c) 49(7x)

(d) None of these

35. The relation R = {(1,1), (2,2), (3,3), (1,2), (2,3), (1,3)} on the set A = {1,2,3} is:

(a) reflexive but not symmetric

(b) reflexive but not transitive

(c) symmetric and transitive

(d) neither symmetric nor transitive

36. If $f(x) = (x + 1)^{x+1}$ then find f'(0)

(a) 0

(b) 1

(c) -1

(d) 2

37. if $f(x) = x(x^2-2)$ then $\frac{dy}{dx}$

(a) $3x^2-2$

(b) $3x^2+2$

(c) x^2-3

(d) x^2

38. The equation of the curve which passes through the point (1,2) and has the slope 3x-4 and the point of (x, y) is

(a) $2y = 3x^2-8x+9$

(b) $y = 6x^2-8x+9$

(c) $y=x^2-8x+9$

(d) $2y= 3x^2-8x+c$

39. The slope of the tangent to the curve $y=x^2-x$ at the point where the line y=2 cuts the curve in the first quadrant is

(a) 2

(b) 3

(c) -3

(d) none of these

40. $\int 2^{3x}.3^{2x}.5^{x}\,dx =$

(a) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(720)} + c$

(b) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(360)} + c$

(c) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(180)}+c$

(d) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(90)}+c$

41. Find the missing value in the series: 51, 52, 60, 87, 151, _____, 492.

(a) 195

(b) 276

(c) 317

(d) 420

42. Find missing term of the series ABD, DGK, HMS, MTB, SBL, ?

(a) XKW

(b) ZAB

(c) ZKU

(d) ZKW

43. In a certain code TEACHER is written as VGCEJGT, how is CHILDREN written in that code.

(a) EJKNEGTP

(b) EGKNFITP

(c) EJKNFGTO

(d) EJKNFTGP

44. In a certain code INACTIVE is written as VITCANIE, how is COMPUTER written in the same code

(a) PMOCRETU

(b) ETUPMOCR

(c) UTEPMOOR

(d) MOCPETUR

45. Choose the odd numerical pair group

(a) 34-43

(b) 55-62

(c) 62-71

(d) 83-92

46. Gopal started from the house towards West. After walking a distance of 30 metres, he turned towards right and walked 20 metres. He then turned left and moving a distance of 10 metres, turned to his left again and walked 40 metres.

He now turned to the left and walked 5 metres. Finally, he turned to his left. In which direction was he walking now?

(a) North

(b) South

(c) East

(d) South-West

47. Namita walks 40 metres towards west Namita walks 14 metres towards west, then turns to her right and walks 14 metres and then turns to her left and walks 10 metres. Again turning to her left she walks 14 metres. What is the shortest distance (in metres) between her starting point and the present position?

(a) 38

(b) 28

(c) 10

(d) 24

48. The door of Aditya's house faces the East. From the back side of his house, he walks straight 50 m, then turns to the right and walks 50 m again. Finally, he turns towards left and stops after walking 25 m. Now, Aditya is in which direction form the starting point?

(a) South-East

(b) North-East

(c) South-West

(d) North -East

49. Maya starts at point T, walks straight to point U which is 4 ft. away. She turns left, at 90◦ and walks to W which is 4 ft. away. turns 90◦ right and goes 3 ft. to P. turns 90° right and walks 1 ft. to Q, turns left at 90◦ and goes to V, which is 1 ft. away and once again turns 90° right and goes to R. 3 ft. away. What is the distance between T and R?

(a) 4 feet

(b) 5 feet

(c) 7 feet

(d) 8 feet

50. There are four towns P, Q, R and T.Q is to the South-west of P, R is to the east of Q and South-east of P and T is to the north of R in line with QP. In which direction of P is T located?

(a) East

(b) South-east

(c) North

(d) North-east

51. All the six members of a family A, B, C, D, E and F are travelling together. B is the son of C but C is not the mother of B. A and C are a married couple. E is the brother of C. D is the daughter of A. F is the brother of B. How many male members are there in the family?

(a) 1

(b) 2

(c) 3

(d) 4

52. T, S and R are three brothers. T's son Q is married to K and they have one child Rahul blessed to them. M the son of S is married to H and this couple is blessed with a daughter Madhvi. R has daughter N who is married to P. This couple has one daughter Karuna born to them. How is Madhvi related to S?

(a) Daughter

(b) Niece

(c) Granddaughter

(d) None of these

53. Six persons M, N, O, P, Q and R are sitting in two rows 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 neighbour of Q and diagonally opposite to P. N is the neighbour of R. Who is in front N?

(a) R

(b) Q

(c) P

(d) M

54. The length and breadth of a room are 8 metre and 6 metre respectively. A cat runs along all four walls and finally along diagonal order to catch a rat. How much total distance covered by the cat?

(a) 10

(b) 14

(c) 38

(d) 48

55. Ravi left home and cycled 10 km towards South, then turned right and cycled 5 km and then again turned right and cycled 10 km. After this he turned left and cycled 10 km. How many kilometers will he have to cycle to reach his home straight?

(a) 10Km

(b) 15km

(c) 12 km

(d) 17 km

56. If A+B means B is the brother of A; A×B means B is the husband of A;

A−B means A is the mother of B and A% B means A is the father of B, which of the following relations shows that Q is the grandmother of T?

(a) Q−P+R % T

(b) P×Q % R−T

(c) P×Q % R+T

(d) P+Q % R−T

57. Read the following instructions:

P $ Q means P is the brother of Q;

P # Q means P is the mother of Q;

P * Q means P is the daughter of Q

If the code of family is A # B $ C * D, who is the father in them?

(a) D

(b) B

(c) C

(d) A

(58-59.) There are seven members A, C, D, E, F, G and H in a family. There are two fathers, one mother two sisters and four brothers. E is the sister-in-law of D. G is a daughter of C. F is the brother of E. A is a grandfather of G. E is a mother of H?

58. How is H related to A?

(a) Grandson

(b) Granddaughter

(c) Son

(d) Cannot be determined

59. How many male members in the family?

(a) 4

(b) 5

(c) 3

(d) Data Inadequate

60. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then how A is related to D.

(a) Grandfather

(b) Grandmother

(c) Daughter

(d) Granddaughter

61. The following set of data cannot be presented in a table

(a) The heights of students described in centimetres

(b) The weights of candidates expressed in kilograms

(c) The amount of rainfall opined as “medium”, “average”, “heavy", etc.

(d) The number of bills per day cleared by an auditor in a month

62. According to the empirical rule, if the data form a "bell-shaped “distribution, then the maximum and minimum frequencies occur at _____ and _____respectively.

(a) Middle, left end

(b) Middle, right end

(c) End, middle

(d) Middle, ends

63. The Mean of a set of 20 observations on 18.3. The mean is reduced by 0.6 when a new observation is added to the set. The new observation is:

(a) 17.6

(b) 18.0

(c) 5.7

(d) 24.6

64. In a graphical representation of data, the largest numerical value is 4 the smallest numerical value is 25. If classes desired are 4 then which class interval is

(a) 45

(b) 5

(c) 20

(d) 7.5

65. Histogram is used for finding

(a) Mode

(b) Mean

(c) First Quartile

(d) None

66. The median following numbers, which are given in ascending order is 25. Find the value of x

11, 13, 15, 19, (x+2), (x+4), 30, 35, 39, 46

(a) 22

(b) 20

(c) 15

(d) 30

67. The mean salary of a group of 50 persons is ` 5850. Later on it is discovered that the salary of one has been wrongly taken as `8000 instead of RS. 7800. The corrected mean salary is

(a) ` 5854

(b) ` 5846

(c) ` 5640

(d) None

68. If the mode of a data is 18 and mean is 24, then median is

(a) 18

(b) 24

(c) 22

(d) 21

69. If the first Quartile is 142 and semi-inter quartile range is 18, then the value of median is:

(a) 151

(b) 160

(c) 178

(d) none of these

70. Orgin is shifted by 5, what will happen

(a) SD will increase by 5

(b) QD will increase by 5

(c) MD will increase by 5

(d) There will be no change in SD

71. The third decile for the numbers 15, 10, ,25, 18, 111, 9 and 12 is

(a) 13

(b) 10.70

(c) 11

(d) 11.50

72. The Harmonic mean H of two numbers is 4 and their arithmetic means A and the geometric mean G satisfy the equation $2A+G^2 = =27$, the numbers are:

(a) (1,3)

(b) (9,5)

(c) (6,3)

(d) (12,7)

73. If mean and coefficient of variation of the marks of 10 students is 20 and 80 respectively. What will be the variance of them?

(a) 256

(b) 16

(c) 25

(d) none of these

74. If the same amount is added or subtracted from all the of an individual series then the standard deviation and variance both shall be _____

(a) Changed

(b) Unchanged

(c) Same

(d) none of these

75. The algebraic sum of the deviations of set of values from their arithmetic mean is:

(a) >0

(b) <0

(c) 0

(d) None of these

76. 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

77. Which of the following is not a type of sampling?

(a) Probability

(b) Non- Probability

(c) Stand-alone

(d) Mixed

78. In connection with random experiment, it is found that P(A) =2/3, P(B) = 3/5 and P(AUB)=5/6

Find P(A'/B)

(a) 13/18

(b) ½

(c) 13/20

(d) 5/18

79. If a card is drawn at random from a pack of 52 cards, what is the chance of getting spade or an ace?

(a) 4/13

(b) 5/13

(c) 0.25

(d) 0.20

80. The chance of getting a sum of 10 in a simple single throw is

(a) 10/36

(b) 1/12

(c) 1/36

(d) none of these

81. A random variable has the following probability distribution:

X	2	3	5
P	K	2K	2K

Find K

(a) 1/3

(b) 2/5

(c) 1/5

(d) 2/3

82. A number is selected at random from the set {1, 2,…..,99}. The probability that it is divisible by 9 or 11 is _____

(a) 19/100

(b) 19/99

(c) 10/100

(d) 10/99

83. A random variable X follows Binomial Distribution With E(X) = 2 and V(x) =1.2, then the value of n is

(a) 8

(b) 2

(c) 5

(d) none of these

84. The mean of Poisson distribution is 4. The probability of two-successes in

(a) $8/e^4$

(b) $4/e^4$

(c) $16/e^4$

(d) $8/e^2$

85. The mean deviation abut median of standard normal variate is

(a) 0.675

(b) 0.675

(c) 0.80

(d) 0.80

86. If the Quartile Deviation of a normal distribution with mean 10 and SD 4 is

(a) 0.675

(b) 67.50

(c) 2.70

(d) 3.20

87. If the two Quartiles $N(\mu,\sigma^2)$ are 14.6 and 25.4 respectively. What is the standard deviation of the distribution?

(a) 9

(b) 6

(c) 10

(d) 8

88. When 'p' is large than 0.5, the Binomial Distribution is:

(a) Asymmetrical

(b) Symmetrical

(c) Both

(d) None

89. A die is thrown 100 times if getting an even number is considered a success then the variance number of success.

(a) 50

(b) 25

(c) 10

(d) 100

90. Two regression lines are perpendicular each other of r =

(a) 0

(b) +1

(c) -1

(d) none of these

91. if r = 0.6, then the coefficient of non -determination is:

(a) 0.4

(b) -0.6

(c) 0.36

(d) 0.64

92. The sum of the squares of differences in ranks of marks obtained in Physics and Chemistry by 10 students in a test is 150, then the coefficient of rank correlation by:

(a) 0.849

(b) 0.091

(c) 0.909

(d) None of these

93. If one regression coefficient is _____unity, the other must be _____Unity

(a) more than, more than

(b) less than, less than

(c) more than, less than

(d) Positive, Negative

94. For lines of regression 4x-2y=3 and 2x-3y=5, find bxy

(a) 1/8

(b) 1/2

(c) 1/12

(d) none of these

95. if the coefficient of correlation between x and y is 0.5, the covariance is 16 and if the standard deviation of x is 4 then Standard deviation of y is:

(a) 4

(b) 8

(c) 16

(d) 64

96. Fisher index number is _____of Laspyres and Paasches Index Number

(a) A.M

(b) G.M

(c) H.M

(d) None of these

97. Circular test is satisfied by which of the following index?

(a) Laspeyres index

(b) Paasche's index

(c) Fisher's index

(d) Simple geometric mean of price relatives

98. $\sum P_0Q_0=1360$, $.\sum P_nQ_0 = 2000$, then the Laspyres Index number is:

(a) 71

(b) 147.50

(c) 175

(d) none of these

99. If Laspyres Index number is 250 and Paasches Index number is 160, then Fishers Index number is:

(a) 200

(b) 400

(c) 250

(d) 196

100. If the prices of all commodities in the base year are twice the values of the respective commodities in the current year, then the Fisher's ideal index number is equal to:

(a) 200

(b) 50

(c) 400

(d) 25