MODEL TEST PAPER 2

FOUNDATION COURSE

PAPER 3: QUANTITATIVE APTITUDE

This paper is a objective type Question Paper, it carries 100 objective type questions and all are compulsory. Each MCQ carry one mark .

Negative marking is applicable, deducting one-fourth of a mark for each incorrect answer.

Time: 2 Hours **Marks: 100**

1. if α and β are the roots of the equation $x^2+7x+12 =0$, then the equuqtion, whose roots are $(\alpha+\beta)^2$ and $(\alpha-\beta)^2$ will be

   (a) $x^2-14x+49 = 0$

   (b) $x^2-24x+144 = 0$

   (c) $x^2-50x+49 = 0$

   (d) $x^{2-}19x+144 = 0$

2. x, y and z are together starts business. If x investes 3 times as much as y invests and y invests two third of what z invests, then the raio of capitals of x, y and z is:

   (a) 3:9:2

   (b) 6:3:2

   (c) 3:6:2

   (d) 6:2:3

3. $\log_a \sqrt{3} = \frac{1}{6}$, find the value of a

   (a) 9

   (b) 81

   (c) 27

   (d) 3

4. $\log\frac{p^2}{qr} + \log\frac{q^2}{pr} + \log\frac{r^2}{pq} =$

   (a) pqr

   (b) $\frac{1}{pqr}$

   (c) 1

   (d) 0

5. Simplification $\frac{1}{1+z^{a-b}+z^{a-c}} + \frac{1}{1+z^{b-c}+z^{b-a}} + \frac{1}{1+z^{c-a}+z^{c-b}}$ would reduces to

   (a) $\frac{1}{z^{2(a+b+c)}}$

   (b) $\frac{1}{z^{(a+b+c)}}$

   (c) 1

   (d) 0

6. A bag conatind 25 paise, 10 paise and 5 paise are in the ratio 3:2:1. The total value of ₹ 40, the number of 5 paise coins is

   (a) 45

   (b) 48

   (c) 40

   (d) 20

7. If one root is $5z^2+13z+y = 0$ be receiprocal of the other then the value of y is

   (a) $\frac{1}{5}$

   (b) $-\frac{1}{5}$

   (c) 5

   (d) -5

8. If $2^X \times 3^y \times 5^z = 720$ then the value of x, y, z ?

   (a) 4, 2, 1

   (b) 1, 2, 4

   (c) 2, 4, 1

   (d) 1, 4, 2

9. A man wants to cut three lengths from a single piece of boaard of length 91 cm. The Second length is to be 3 cm longer than the shortest and third length is to be twice as the shortest. What is the possible length for the shortest piece?

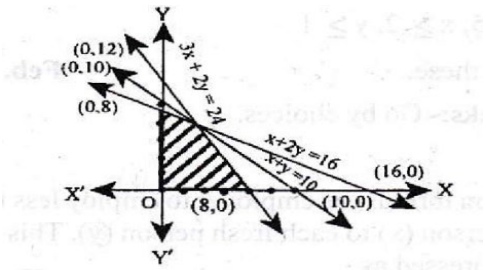
   (a) 22

   (b) 20

   (c) 15

   (d) 18

10. The shaded region represents:



(a) $3x + 2y \leq 24, x + 2y \geq 16, x + y \leq 10 x, x \geq 0, y \geq 0$

(b) $3x+2y \leq 24, x+2y \leq 16, x+y > 10, x \geq 0, y \geq 0$

(c) $3x+2y \leq 24, x+2y \leq 16, x+y < 10, x>0, y>0$

(d) None of these.

11. The time required to produce a unit of product A is 3 hours and that for product B is 5 hours. The total available time is 220 hours. If x and y are the number of units of A and B that are produced then

(a) $3x+2y =220$

(b) $3x+5y \geq 220, x \geq 0, y \geq 0$

(c) $3x+5y \leq 220, x \geq 0, y \geq 0$

(d) $5x+2y \geq 220, x \geq 0, y \geq 0$

12. What must be added to each term of the ratio 49:68. So that it becomes 3:4 ?

(a) 3

(b) 5

(c) 8

(d) 9

13. Find future value of annuity of ₹ 1000 made annualy for seven yeras at interest rate 16% compounded annaualy. [Given that $(1.16)^7 = 2.8262$]

(a) ₹ 11413.75

(b) ₹ 11000.35

(c) ₹ 8756

(d) ₹ 9892.34

14. Assuming that the discount rate is 7% is p.a. How much would you pay to receive ₹ 500. Growing at 5% annually forever?

(a) ₹ 2,500

(b) ₹ 5,000

(c) ₹ 7,500

(d) ₹ 25,000

15. Rajesh deposits ₹ 3,000 at the start of each quarter in his savings account. If the accaount earns interest 5.75% per annuam compounded quarterly, how much money (in ₹) while he have at the end of 4 years? [Given that $(1.014375)^{16} = 1.25654$]

    (a) ₹ 54,308.6

    (b) ₹ 58,553.6

    (c) ₹ 68,353.6

    (d) ₹ 63,624.4

16. The annual rate of simple interest is 12.5%. In how many years does principal doubles?

    (a) 11 years

    (b) 9 years

    (c) 8 years

    (d) 7 years

17. ₹ 5000 is paid every year for 10 years to pay off a loan. What is the loan amount of interest rate be 14% p.a compounded annualy?

    (a) ₹ 26,000.90

    (b) ₹ 26080.55

    (c) ₹ 15000.21

    (d) ₹ 16,345.11

18. ₹ 800 is invested at the end of each month in account paying interest 6% per year compounded monthly. What is the future value of annuity after 10^{th} payment ? [Given that $(1.005)^{10} = 1.0511$]

    (a) ₹ 4444

    (b) ₹ 8766

    (c) ₹ 3491

    (d) ₹ 8176

19. Certain sum of money borrowed at simple interest to ₹ 2688 in three years and to ₹ 2784 in four years at the rate per annum equal to

    (a) 4%

    (b) 6%

    (c) 5%

    (d) 7%

20. Ravi made of an investment of ₹ 15,000 in a scheme and at the time of maturity the time of maturity the amount was ₹ 25,000. If Compound Annual Growth Rate (CAGR) for this investment is 8.88%. Calculate the approximate number of years for which he has invested the amount.

(a) 6

(b) 7.7

(c) 5.5

(d) 7

21. The present value of an annuity which pays ₹200 at the end of each 3 months for 10 years, assuming money to be worth 5% converted quarterly

(a) ₹ 3473.86

(b) ₹ 3108.60

(c) ₹114180.44

(d) none of these

22. Rajesh invests ₹ 20,000 per year in a stock index fund, with earns 9% per year, for the next ten years.What would be closest value of accumulated investment upon payment of the last installment? [Given: $(1.09)^{10} = 2.36736$]

(a) ₹ 3,88,764.968

(b) ₹ 3,03,858.564

(c) ₹ 2,68,728.484

(d) ₹ 4,08,718.364

23. An investment is earning compounded interest ₹ 100 invested in the year 2 accumulated to ₹ 105 by year 4. If ₹ 500 invested in the year 5, will become ₹ _____by year 10.

(a) ₹ 364.80

(b) ₹ 564.80

(c) ₹ 464.80

(d) ₹ 664.80

24. An investor is saving to pay off an obligation of ₹ 15,250 which will due in seven years, if the investor is earning 7.5% simple interest rate per annum, he must deposit ₹ _____ to meet the obligation.

(a) ₹ 8,000

(b) ₹ 9,000

(c) ₹ 10,000

(d) ₹ 11,000

25. The value of scooter is ₹ 1,00,000 find its depreciation is 10% p.a. Calculte total depreciation value at the end of seven years.

(a) ₹ 47829.70

(b) ₹ 47000.90

(c) ₹ 42709

(d) ₹ 42,000

26. Effective rate of interest does not depend upon

(a) Amount of Principal

(b) Amount of Interest

(c) Number of conversion periods

(d) none of these

27. The number of traingles that can be formed by choosing the vertices from a set of 12 ponts, Seven of which lie on the same lie on the same straight line is:

(a) 185

(b) 175

(c) 115

(d) 105

28. Five bulbs of which three are defective are to be tired in two light-points in a dark-room. In how many trails the room shall be lightened ?

(a) 10

(b) 7

(c) 3

(d) none of these

29. In how many ways can a party of 4 men and 4 women be seated at a circular table, so that no two women are adjacent ?

(a) 164

(b) 174

(c) 144

(d) 154

30. How many words can be formed with the letters of the word ‘ORIENTAL’. So that A and E always oocupy odd places:

(a) 540

(b) 8460

(c) 8640

(d) 8450

31. The number of ways of painting the faces of a cube by 6 different colours is

(a) 30

(b) 36

(c) 24

(d) 1

32. The sum of an AP, whose first is -4 and last term is 146 is 7171. Find the value of n

(a) 99

(b) 100

(c) 101

(d) 102

33. In a geometric progression , the second term is 12 and sixth term is 192. Find 11^{th} term.

(a) 3,072

(b) 1,536

(c) 12,288

(d) 6,144

34. The first and last terms of an arithmetic progression are 5 and 905. Sum of the terms is 45,955. The number of terms is

(a) 99

(b) 100

(c) 101

(d) 102

35. The sum of first eight terms of geometric progression is five times the sum of the first four terms. The common ratio is

(a) $\sqrt{3}$

(b) $\sqrt{2}$

(c) 4

(d) 2

36. If the sum of n terms of an AP is $(3n^2-n)$ and its common difference is 6, then its term is

(a) 3

(b) 2

(c) 4

(d) 1

37. Two finite sets have m and n elements .The total number of sub sets of first set is 56 more than the total number of subsets of the second set. The value of m and n are

(a) 6,3

(b) 7,6

(c) 5,1

(d) 8,7

38. If $f(p) = \frac{1}{1-p}$, then f^{-1} is

(a) 1-p

(b) $\frac{p-1}{p}$

(c) $\frac{p}{p-1}$

(d) $\frac{1}{p}$

39. Determine f(x) , given that $f'(x) = 12x^2-4x$ and $f(-3) = 17$

(a) $f(x) = 4x^3-2x^2+143$

(b) $f(x) = 6x^3-x^4+137$

(c) $f(x) = 3x^4-x^3-137$

(d) $f(x) = 4x^3-2x^2-143$

40. $\int_0^1 x.e^x dx$

(a) -1

(b) 1

(c) e^1

(d) 1/e

41. Find the missing term in each of the following series : 6, 13, 25, 51, 101?

(a) 201

(b) 202

(c) 203

(d) 205

42. Find the missing term in each of the following series : 28, 33,31,36, 34,39, ?

(a) 48

(b) 37

(c) 54

(d) 62

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

(a) EJKNEGTP

(b) EGKNEITP

(c) EJKNFGTO

(d) EJKNFTGP

44. In a certain code language, '253' means 'books are old'; '546' means 'man is old' and ‘378’ means 'buy good books'. What stands for 'are' in that code?

(a) 2

(b) 4

(c) 5

(d) 6

45. If SUMMER is coded as RUNNER, the code for WINTER will be

(a) SUITER

(b) VIOUER

(c) WALKER

(d) SUFFER

46. From home Neha goes towards North for her college and then she turns left and then turns right, and finally she turns left and reaches college. In which direction her college is situated with respect to her home ?

(a) South-West

(b) North-East

(c) North-West

(d) South-East

47. Y is to the East of X, which is to the North of Z. If P is to the South of Z, then P is in which direction with respect to Y.

(a) North

(b) South

(c) Soth-East

(d) South-West

48. Five villages P, Q, R, S, and T are situated close to each other. P is to the west of Q, R is to the south of P. T is to the north of Q and S is to the east of T. Then, R is in which direction with respect to S?

(a) North-West

(b) South-East

(c) South-West

(d) Data inadequate

49. If South-West becomes North, then what will North-East be?

(a) North

(b) South-East

(c) South

(d) East

50. In a clock at 12 : 30, hour needle is in North direction while minute needle is in South direction. In which direction would be minute needle at 12:45?

(a) North-West

(b) South-East

(c) West

(d) East

51. Five students are standing in a circle. Abhinav is between Alok and Ankur. Apurva is on the left of Abhishek. Alok is on the left of Apurva. Who is sitting next to Abhinav on his right?

(a) Apurva

(b) Ankur

(c) Abhishek

(d) Alok

52. Six persons M, N, O, P, Q and R are sitting in two rows with three persons in each row. Both the rows 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 fronts of N ?

(a) M

(b) R

(c) Q

(d) P

53. A, P, R, X, S and Z are sitting in a row. S and Z are in the centre. A and P are at the ends.R is sitting to the left of A. Who is to the right of P ?

(a) A

(b) X

(c) S

(d) Z

54. Five friends A, B, C, D and E are standing in a row facing South but not necessarily in the same order. Only B is between A and E, C is immediate right to E and D is immediate left to A, On the basis of above information, which of the following statements is definitely true ?

(a) B is to the left of A.

(b) D is third to the left of E.

(c) B is to the right of E.

(d) A is second to the left of C.

55. There are four children P ,Q, R, S sitting in a row. P occupies seat next to Q but not next to R. If R is not sitting next to S ? Who is occupying seat next to adjacent to S.

(a) Q

(b) P

(c) P and Q

(d) None

56. B is the brother of A whose only sister is mother of C, D is maternal grandmother of C How is A related to D?

(a) Aunt

(b) Daughter-in-law

(c) Daughter

(d) Nephew

57. If X+Y maens X is the mother of Y; X-Y means X is the brother of Y; X%Y means X is the father of Y and X×Y means X is the sister of Y, Which of the following shows that A is the materanal uncle of B?

(a) B+D×C-A

(b) B-D%A

(c) A-C+D×B

(d) A+C×D-B

Directions(Questions 58-60) Read the following information and answer the questions given below.

Anita is the niece of Prateek's mother. Anita's mother is Prateek's aunt. Rohan is Anita's mother's brother. Rohan's mother is Anita's grandmother. From this information. deduce the relationship between.

58. Rohan's mother is _____to Anita's mother.

(a) Aunt

(b) Mother

(c) No relation

(d) Sister

59. Prateek's and Anita's mother are _____

(a) Cousin sister

(b) Sister-in-law

(c) Friends

(d) Sisters

60. Rohan is Prateek's _____
    (a) Brother
    (b) Brother-in-law
    (c) Uncle
    (d) Cousin brothers
61. The distribution of profits of a company follows:
    (a) J-shaped frequency curve
    (b) U-shaped frequency curve
    (c) Bell-shaped frequency curve
    (d) Any of these
62. Median of a distribution can be obtained from:
    (a) Historgarm
    (b) Frequency Polygon
    (c) Less than type ogives
    (d) none of these
63. Frequency density corresponding to a class interval is the ratio of
    (a) Class Frequency to the Total Frequency
    (b) Class Frequency to the class Length
    (c) Class frequency to the class Frequency
    (d) Class Frequency to the Cumulative Frequency.
64. Standard Error can be described as
    (a) The error committed in ksampling
    (b) The error committed in sample survey
    (c) The error committed in estimating parameter
    (d) Standrad deviation of Statistic
65. In a group of persons, average weight is 60 kg. If the average of males and females taken separately is 80 kg and 50 kg respectively, find the ratio of the number of males to that of females.
    (a) 2:3
    (b) 3:2
    (c) 2:1
    (d) 1:2
66. A train covered the first 5 km of its journey at a speed of 30km/hr and next 15 km at a speed of 45 km/hr. The average speed of the train was :
    (a) 38 km/hr

(b) 40 km/hr

(c) 36 km/hr

(d) 42 km/hr

67. If 2x + 3y + 4 = 0 and v(x) = 6 then v (y) is:

(a) 8/3

(b) 9

(c) -9

(d) 6

68. If the standard deviation of 1, 2, 3, 4, ... 10 is σ, then the standard deviation of 11, 12, 13, 14, ..., 20 is:

(a) 10σ

(b) $10+\sigma$

(c) σ

(d) None of these

69. What is the standard deviation of the following series :

Measurements	0-10	10-20	20-30	30-40
Frequency :	1	3	4	2

(a) 81

(b) 7.6

(c) 9

(d) 2.26

70. If the difference between Mean and Mode is 69, then the difference between Mean and Median will be _____:

(a) 63

(b) 31.5

(c) 23

(d) None of these

71. If all observations in a distribution are increased by 6, then the variance of the series will be _____

(a) Increased

(b) Decreased

(c) Unchanged

(d) None of these.

72. Which measure of dispersion is base on the absolute deviation only?

(a) Range

(b) Standard Deviation

(c) Mean Devaition

(d) Quartile Devation

73. Calculaue the value of 3rd quartile from the following data 40, 35, 51, 21, 25, 16, 29, 27, 32

(a) 36.25

(b) 30.25

(c) 25

(d) 35

74. The mean of 100 students was 45 . Later on, it was discovered that the marks of two students were misread as 85 and 54 instead of 58 and 45. Find correct mean.

(a) 68

(b) 36

(c) 44.64

(d) 52

75. The arithmetic maen and coefficienct of variation of data set x are respectively, 10 and 30. The variance of 30-2x is

(a) 28

(b) 32

(c) 34

(d) 36

76. The approximate ratio of SD, MD, QD is

(a) 2:3:4

(b) 3:4:5

(c) 15:12:10

(d) 5:6:7

77. The geometric mean of three numbers 40, 50 and x is 10, the value of x is

(a) 5

(b) 4

(c) 2

(d) ½

78. Diffrence between upper limit and lower limit of classs is known as

(a) Range

(b) Class Mark

(c) Class Size

(d) Class Boundary

79. Let P be a probability function on S = {X_1, X_2, X_3) if P(X_1)=1/4 and P(X_3) = 1/3 then P(X_2) is equal to:

(a) 5/12

(b) 7/12

(c) 3/4

(d) none of these

80. A speaks truth in 60% of the cases and B in 90% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact:

(a) 36%

(b) 42%

(c) 54%

(d) none of these.

81. A candidate is selected for interview for 3 posts. For the first there are 3 candidates, for the second there are 4 and for the third there are 2. What are the chances of his getting at least one post?

(a) 3/4

(b) 2/3

(c) 1/10

(d) 1

82. A card is drawn from a pack of playing cards and then another card is drawn without the first being replaced. What is the probability of getting two kings:

(a) 7/52

(b) 1/221

(c) 3/221

(d) none of these.

83. The probability of a man hitting the target is 1/4. If he fires 7 times, the probability of hitting the target at least twice is :

(a) $1-\left(\frac{5}{2}\right)\left(\frac{3}{4}\right)^6$

(b) $1-\frac{15}{2}\left(\frac{3}{4}\right)^6$

(c) $1-\frac{5}{6},3^5$

(d) $1-\left(\frac{3}{4}\right)^6$

84. If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs, 5 bulbs will be defective. [Given : $e^{-5} = 0.007$]

(a) 0.1823

(b) 0.1723

(c) 0.1623

(d) 0.1923

85. In a non- leap year, the probability of getting 53 Sundays or 53 Tuesdays or 53 Thursdays is:

(a) $\frac{4}{7}$

(b) $\frac{2}{7}$

(c) $\frac{3}{7}$

(d) $\frac{1}{7}$

86. Examine the validity of the following : Mean and standard deviation of a binomial distribution are 10 and 4 respective:

(a) Not valid

(b) Valid

(c) Both [a] and [b]

(d) Neither [a] nor [b]

87. For a Poisson variate X, P(x=1) =P(x=2), what is the mean of x ?

(a) 1

(b) 3/2

(c) 2

(d) 5/2

88. Thity balls are serially numbered and placed in bag. Find chance that the first ball drawn is a multiple of 3 or 5

(a) 8/15

(b) 2/15

(c) 1/2

(d) 7/15

89. For a normal distribution, the first and third quartile are given to be 37 and 49, the mode of the distribution is.

(a) 37

(b) 49

(c) 43

(d) 45

90. The odds in favour of event A in a trail is 3:1. In a three independent trails, the proabibility of non occurrence of the event A is

(a) 1/64

(b) 1/32

(c) 1/27

(d) 1/8

91. If 4y - 5x = 15 is the regression line of y on x and the coefficient of correlation between x and y is 0.75, what is the value of the regression coefficient of x on y ?

(a) 0.45

(b) 0.9375

(c) 0.6

(d) none of these

92. If the regression line of y on x and of x on y are given by 2x+ 3y = -1 and 5x + 6y = -1 then the arithmetic means of x and y are given by.

(a) (1,-1)

(b) (-1,1)

(c) (-1, -1)

(d) (2,3)

93. If correlation co-efficient between x and y is 0.5 then byx=0.5 then bxy=?

(a) 1

(b) 0.5

(c) -0.5

(d) 0

94. For a positive and perfectly correlated random varaiables , one of the regression coefficeint is 1.4 and the standard devation of X is 2, the variance of Y is

(a) 2.38

(b) 6.76

(c) 6.56

(d) 3.16

95. For n pairs of of observations , the coefficient of concurrent devation is calculated as $\frac{1}{\sqrt{3}}$. If there are six concurrent deviations, n=

(a) 11

(b) 10

(c) 9

(d) 8

96. Consumer Price Index Number goes up from 100 to 200 and salary of a worker is also raised from 300 to 500, then Real Wage is

(a) 300

(b) 250

(c) 600

(d) 350

97. The Circular Test is known as:

(a) $P_{01} \times P_{12} \times P_{20} = 1$

(b) $P_{12} \times P_{01} \times P_{20} = 1$

(c) $P_{20} \times P_{12} \times P_{01} = 1$

(d) $P_{02} \times P_{21} \times P_{12} = 1$

98. In the data group Bowley's and Laspyre's index number is as follows. Bowley's index number =150, Laspyre's index number = 180 then Paasche's index number is

(a) 120

(b) 30

(c) 165

(d) None of these

99. Laspyres índex number is aweighted aggregate method by taking _____ as weights.

(a) Quanatity consumed in the base year

(b) Quanatity consumed in the current year

(c) Value of items consumed in base year

(d) Vlaue of items consumed in the current year

100. Find the Paasche's Index number for prices from the following

Commodity	Base year		Current year	
	Price	Commodity	Price	Commodity
A	5	25	6	30
B	3	8	4	10
C	2	10	3	8
D	10	4	3	45

(a) 151.21

(b) 165.28

(c) 157.26

(d) 160.21