

PAPER 3 : QUANTITATIVE APTITUDE

- Ramesh wants to retire and receive Rs. 4,000 a month. He wants to pass this monthly payment to future generations after his death. He can earn an interest of 8% compounded annually. How much will he need to set aside to achieve his perpetuity goal?
 - Rs. 6,00,000
 - Rs. 6,50,000
 - Rs. 6,25,000
 - Rs. 6,80,000
- If a, b, c are in A.P. and x, y, z are in G.P. then the value of $x^{(b-c)} \cdot y^{(c-a)} \cdot z^{(a-b)}$ is:
 - 1
 - 0
 - $b(c - a)$
 - None
- After qualifying out of 400 professionals, 112 joined service, 120 started practice and 160 joined assistantship. There were 32, who were in both practice and service, 40 in both practice and assistantship and 20 in both service and assistantship. There were 12 who did all the three. Find how many could not get any of these.
 - 88
 - 244
 - 122
 - None
- If a relation $R = \{(1,1), (2,2), (1,2), (2,1)\}$ is symmetric on $A = \{1,2,3\}$ then R is
 - Reflexive but not Transitive
 - Transitive but not Reflexive
 - Reflexive and Transitive
 - Neither Reflexive nor Transitive
- If $x^p y^q = (x + y)^{p+q}$, then $\frac{dy}{dx}$ is equal to _____
 - $\frac{q}{p}$
 - $\frac{x}{y}$
 - $\frac{y}{x}$
 - $\frac{p}{q}$

6. Five boys A, B, C, D and E are standing in a row. D is on the right of E, B is on the left of E but on the right of A. D is one the left of C, who is standing on the extreme right. Who is standing in the middle ?
- (a) B
 - (b) C
 - (c) D
 - (d) E
7. Eight friends A, B, C, D, E, F, G and H are sitting in a circle facing centre, not necessarily in the same order. D sits third to the left of A. E sits to the immediate right of A. B is third to left of D. G is second to the right of B. C is neighbour of B. C is third to left of H. Who amongst the following is sitting exactly between F and D ?
- (a) C
 - (b) E
 - (c) H
 - (d) A
8. Preeti has a son, named Arun. Ram is Preeti's brother. Neeta too has a daughter named Reema. Neeta is Ram's sister. What is Arun's relationship to Reema?
- (a) Brother
 - (b) Nephew
 - (c) Cousin
 - (d) Uncle
9. Given that:
A is the mother of B.
C is the son of A.
D is the brother of E.
E is the daughter of B.
Who is grandmother of D ?
- (a) E
 - (b) B
 - (c) C
 - (d) A
10. If MEKLF is coded as 91782 and LLLJK as 88867, how can IHJED is coded as ?
- (a) 97854
 - (b) 64512
 - (c) 54610
 - (d) 75632
11. If the inflexion points of a Normal Distribution are 6 and 14. Find its standard Deviation?
- (a) 4
 - (b) 6
 - (c) 10
 - (d) 12

12. A sample of 100 dry battery cells tested to find the length of life produced the following results: $\bar{x} = 12$ hours, $\sigma = 3$ hours. What percentage of battery cells are expected to have life less than 6 hours?
[Area under the normal curve from $z = 0$ to $z = 2$ is 0.4772]
- (a) 2.28%
 - (b) 2.56%
 - (c) 4.56%
 - (d) 1.93%
13. Which of the following is false in case of normal distribution.
- (a) it is multi model
 - (b) mean = median = mode
 - (c) it is symmetric
 - (d) Total area is 1
14. The wages of workers of factory follows:
- (a) Binomial distribution
 - (b) Poisson distribution
 - (c) Normal distribution
 - (d) Chi-square distribution
15. The sum required to earn a monthly interest of Rs 1,200 at 18% per annum SI is
- (a) Rs. 50,000
 - (b) Rs. 60,000
 - (c) Rs. 80,000
 - (d) None of these
16. Sachin deposited Rs. 1,00,000 in his bank for 2 years at simple interest rate of 6%. How much would be the final value of deposit?
- (a) 102000
 - (b) 112000
 - (c) 120000
 - (d) 100200
17. Drinking habit of a person is
- (a) An attribute
 - (b) A variable
 - (c) A discrete variable
 - (d) A continuous variable
18. Age of a person is
- (a) An attribute
 - (b) A discrete variable
 - (c) A continuous variable
 - (d) A variable
19. The quickest method to collect primary data is
- (a) Personal interview
 - (b) Indirect interview
 - (c) Telephone interview
 - (d) By observation

20. The amount of non-responses is maximum in
 (a) Mailed questionnaire method
 (b) Interview method
 (c) Observation method
 (d) All these
21. When a firm registers both profits and losses, which of the following measure of central tendency cannot be considered?
 (a) AM
 (b) GM
 (c) Median
 (d) Mode
22. What is the GM for the numbers 8, 24 and 40?
 (a) 24
 (b) 12
 (c) $8\sqrt[3]{15}$
 (d) 10
23. If there are two groups containing 30 and 20 observations and having 50 and 60 as arithmetic means, then the combined arithmetic mean is
 (a) 55
 (b) 56
 (c) 54
 (d) 52
24. Following are the two normal equations obtained for deriving the regression line of y and x:
 $5a + 10b = 40$
 $10a + 25b = 95$
 The regression line of y on x is given by
 (a) $2x + 3y = 5$
 (b) $2y + 3x = 5$
 (c) $y = 2 + 3x$
 (d) $y = 3 + 5x$
25. Given the regression equations as $3x+y=13$ and $2x+5y=20$, which one is the regression equation of y on x?
 (a) 1st equation
 (b) 2nd equation
 (c) both (a) and (b)
 (d) none of these
26. Find the probable error if $r = \frac{2}{\sqrt{10}}$ and $n = 36$.
 (a) 0.6745
 (b) 0.06745
 (c) 0.5287
 (d) None

27. If the regression line of y on x is given by $Y = x + 2$ and Karlpearson's coefficient of correlation is 0.5 then $\frac{\sigma_y^2}{\sigma_x^2} = \underline{\hspace{2cm}}$
- (a) 3
(b) 2
(c) 4
(d) None
28. A certain sum of money amounts to Rs. 6,300 in two years and Rs. 7,875 in three years nine months at simple interest find the rate of interest per annum :
- (a) 20%
(b) 18%
(c) 15%
(d) 10%
29. In how many ways can the letters of words "ACCOUNTANT" be arranged if vowels always occur together?
- (a) 7560
(b) 7650
(c) 7660
(d) 7550
30. A company establishes a sinking fund to provide for the payment of Rs. 2,00,000 debt maturing in 20 years. Contributions to the fund are to be made at the end of every year. Find the amount of each annual deposit if interest is 5% per annum :
- (a) Rs. 6,142
(b) Rs. 6,049
(c) Rs. 6,052
(d) Rs. 6,159
31. A.M. of regression coefficients is
- (a) Equal to r
(b) Greater than or equal to r
(c) Half of r
(d) None of these
32. If a coin is Tossed 5 times then the probability of getting Tail and Head occurs alternatively is
- (a) $\frac{1}{8}$
(b) $\frac{1}{16}$
(c) $\frac{1}{32}$
(d) $\frac{1}{64}$

33. 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
34. If Rs. 1,000 be invested at interest rate of 5% and the interest be added to the principal every 10 years then the number of years in which it will amount to Rs. 2,250 is:
 (a) $16\frac{2}{3}$ years
 (b) 20 years
 (c) 16 years
 (d) $6\frac{2}{3}$ years
35. In how many ways 5 gents and 5 ladies sit at a round table; if no two ladies are to sit together.
 (a) 720
 (b) 120
 (c) 2,880
 (d) 34,600
36. Standard deviation is _____ times of $\sqrt{MD \times QD}$
 (a) $\frac{2}{3}$
 (b) $\frac{4}{5}$
 (c) $\sqrt{\frac{15}{8}}$
 (d) $\sqrt{\frac{8}{15}}$
37. Geometric Mean of P, p^2, P^3, \dots, P^n will be:
 (a) P^{n+1}
 (b) $P^{\frac{n+1}{2}}$
 (c) $P^{\frac{n(n+1)}{2}}$
 (d) None of the above
38. The sum of all natural numbers between 100 and 1000 which are multiple of 5 is:
 (a) 98,450
 (b) 96,450
 (c) 97,450
 (d) 95,450

39. If $\sigma^2 = 100$ and coefficient of variation = 20% then $\bar{x} =$
- 60
 - 70
 - 80
 - 50

40. Given that

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

The Karlpearson's coefficient of correlation is

- Positive
 - Zero
 - Negative
 - None
41. The first, second and third month salaries of a person are in the ratio 2:4:5. The difference between the product of the salaries of first 2 months & last 2 months is 4,80,00,000. Find the salary of the first month.
- Rs. 4,000
 - Rs. 6,000
 - Rs. 12,000
 - Rs. 8,000
42. On what sum will the compound interest at 5% per annum for two years compounded annually be Rs. 1640?
- Rs. 18000
 - Rs. 20000
 - Rs. 16000
 - None
43. In how many ways the word "arrange" be arranged such that the 2 'r' do not come together?
- 1000
 - 900
 - 800
 - None
44. Which of the following is positional average?
- Median
 - GM
 - HM
 - AM
45. In a moderately skewed distribution the values of mean & median are 12 & 18 respectively. The value of mode is
- 6
 - 12
 - 15
 - None of these

46. The missing number in the series : 104, 109, 99, 114, 94, ?
 (a) 69
 (b) 78
 (c) 120
 (d) None of these
47. Which of the following is odd one :-
 835, 734, 642, 751, 853, 981, 532
 (a) 751
 (b) 853
 (c) 981
 (d) 532
48. A man starts from a point, walks 4 miles North, turns to his right and walks 2 miles, again turns to his right and walks 2 miles, again turns to his right and walks 2 miles. In which direction would he be now from his starting point?
 (a) North
 (b) South
 (c) East
 (d) West
49. $\int (\log x)^2 dx$
 (a) $x (\log x)^2 - 2x \log x + 2x + k$
 (b) $x (\log x)^2 - 2x + k$
 (c) $2x \log x - 2x + k$
 (d) None of these
50. Given $A = \{2, 3\}$, $B = \{4, 5\}$, $C = \{5, 6\}$ then $A \times (B \cap C)$ is :
 (a) $\{(2, 5), (3, 5)\}$
 (b) $\{(5, 2), (5, 3)\}$
 (c) $\{(2, 3), (5, 5)\}$
 (d) None of these
51. Mohan starts from point A and walks 1 km towards south, turns left and walks 1 km. Then he turns left again and walks 1 km. Now he is facing
 (a) East
 (b) West
 (c) North
 (d) South-west
52. Suresh starts from a point, walks 2 miles towards south, turns right and walks $1\frac{1}{2}$ miles, turns left and walks $\frac{1}{2}$ miles and then he turns back. What is the direction he is facing now?
 (a) East
 (b) West
 (c) South
 (d) North

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53. Five boys A, B, C, D and E are sitting in a row. A is to the right of B and E is to the left of B but to the right of C. A is to the left of D. Who is second from the left end?
- D
 - A
 - E
 - B
54. A is B's brother. C is A's mother. D is C's father, E is B's son. How is D related to A?
- Son
 - Grandson
 - Grandfather
 - Great Grandfather
55. A is B's brother. C is A's father. D is C's sister and E is D's mother. How is B related to E?
- Grand-daughter
 - Great Grand daughter
 - Daughter
 - Son
56. A is B's Sister. C is B's Mother. D is C's Father. E is D's Mother. Then how is A related to D?
- Grandmother
 - Grandfather
 - Daughter
 - Grand-daughter
57. The mean income of a group of workers is \bar{x} and that of another group is \bar{y} . If the number of workers in the second group is 10 times the number of workers in the first group, then the mean income of the combined group is
- $(\bar{x} + 10\bar{y})/5$
 - $(\bar{x} + 10\bar{y})/11$
 - $(10\bar{x} + \bar{y})/11$
 - $(\bar{x} + 10\bar{y})/9$
58. Suresh introduces a man as "He is the son of the woman who is the mother of the husband of my mother". How is Suresh related to the man?
- Uncle
 - Son
 - Cousin
 - Grandson
59. Choose the missing term out of the given alternatives.
 PG, NJ, LM, JP ?
- RG
 - GR
 - HS
 - SH

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60. If $K = 11$ and $STEP = 15$, how will you code 'SISTRUM' ?
 (a) 16
 (b) 17
 (c) 19
 (d) 48
61. Identify the odd one out.
 (a) Teacher
 (b) Trainer
 (c) Professor
 (d) Student
62. If the difference between mean and Mode is 63, then the difference between mean and Median will be _____.
 (a) 63
 (b) 31.5
 (c) 21
 (d) None of the above
63. A random variable X takes three values - 1, 2, 3 with the respective probabilities $P(-1) = 1/3$, $P(2) = 1/3$, $P(3) = 1/3$, then $E(|x|)$ is
 (a) $3/2$
 (b) $-5/2$
 (c) 2
 (d) $9/2$
64. The variance of random variable x is-
 (a) $E(x - \mu)^2$
 (b) $E[x - E(x)]^2$
 (c) $E(x^2 - \mu)$
 (d) (a) or (b)
65. The Sum of all natural numbers between 120 to 480, which are exactly divisible by 4 and 6 ?
 (a) 8820
 (b) 9300
 (c) 8700
 (d) 8600
66. A fertilizer company produces two types of fertilizers called Grade I and Grade II. Each of these types is processed through two critical chemical plant units. Plant A has maximum 120 hrs available in a week and Plant B has maximum of 180 hrs available in a week. Manufacturing one bag of Grade-I fertilizer required 6 hours in Plant A and 4 hours in Plant B. Manufacturing one bag of Grade-II fertilizer required 3 hrs in Plant A and 10 hours in Plant B. Express this situation using linear inequalities.
 (a) $6x + 3y \leq 120$, $4x + 10y \geq 180$
 (b) $6x + 3y \geq 120$, $4x + 10y \geq 180$
 (c) $6x + 3y \leq 120$, $4x + 10y \leq 180$
 (d) $6x + 3y \geq 120$, $4x + 10y \leq 180$

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67. If $A = \{2, 3\}$, $B = \{4, 5\}$, $C = \{5, 6\}$ then $(A \times B) \cup (B \times C)$ is :-
 (a) $\{(2, 4), (2, 5), (2, 6), (3, 4), (3, 5), (3, 6)\}$
 (b) $\{(2, 5), (3, 5)\}$
 (c) $\{(2, 4), (2, 5), (3, 4), (4, 5), (3, 5), (4, 6), (5, 5), (5, 6)\}$
 (d) None
68. In how many ways 6 men can sit at a round table so that all shall not have the same neighbour in any two occasions?
 (a) $5!$
 (b) $5! \div 2$
 (c) $(7!)^2$
 (d) $7!$
69. Let R is the set of real numbers, such that the function $f : R \rightarrow R$ and $g : R \rightarrow R$ are defined by $f(x) = x^2 + 3x + 1$ and $g(x) = 2x - 3$ find $f \circ g(-1)$:-
 (a) 10
 (b) 12
 (c) -11
 (d) None
70. X is a binomial variable such that $2P(X=2) = P(X=3)$ and mean of X is known to be $10/3$. What would be the probability that X assumes at most the value 2?
 (a) $16/81$
 (b) $17/81$
 (c) $47/2473$
 (d) $46/243$
71. $\log(1+2+3)$ is equal to :-
 (a) $\log 1 + \log 2 + \log 3$
 (b) $\log(1 \times 2 \times 3)$
 (c) Both the above
 (d) None
72. If $x + \frac{1}{x} = \sqrt{2}$ then $x^2 + \frac{1}{x^2}$ is equal to
 (a) 1
 (b) 2
 (c) 0
 (d) 4
73. Find the two numbers such that the mean proportional between them is 18 and third proportional between them is 144.
 (a) 9, 36
 (b) 8, 32
 (c) 7, 28
 (d) 6, 24
74. If $3^x = 2$, $5^y = 3$ and $2^z = 5$, find the value of multiply of $x \cdot y \cdot z$
 (a) 0
 (b) 1
 (c) 2
 (d) None of these

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75. SD of first five consecutive natural numbers is
- $\sqrt{10}$
 - $\sqrt{8}$
 - $\sqrt{3}$
 - $\sqrt{2}$
76. If the sum of n terms is $2n^2+5n$ then its n th term is
- $4n - 3$
 - $3n - 4$
 - $4n + 3$
 - $3n + 4$
77. If the difference of S.I and C.I is Rs. 72 at 12 % for 2 years. Calculate the amount.
- 8,000
 - 6,000
 - 5,000
 - 7,750
78. The solution of the inequality $8x+6<12x+14$ is
- $(-2, 2)$
 - $(0, -2)$
 - $(2, \infty)$
 - $(-2, \infty)$
79. The AM of 15 observations is 9 and the AM of first 9 observations is 11 and then AM of remaining observations is
- 11
 - 6
 - 5
 - 9
80. Histogram can be shown as
- Ellipse
 - Rectangle
 - Hyperbola
 - Circle
81. If $\log_2 x + \log_8 x + \log_{32} x = \frac{23}{15}$ then the value of x is
- 8
 - 5
 - 2
 - None of these
82. A sum of money invested of compound interest doubles itself in four years. It becomes 32 times of itself at the same rate of compound interest in
- 12 years
 - 16 years
 - 20 years
 - 24 years

83. How many numbers greater than 2000 can be formed with the digits 1,2,3,4,5 with each digit distinct?
(a) 216
(b) 120
(c) 24
(d) 240
84. P, T, V, R, M, D, K and W are sitting around a circular table facing the centre. V is second to the left of T. T is fourth to the right of M. D and P are not immediate neighbours of T. D is third to the right of P. W is not an immediate neighbour of P. P is to the immediate left of K.
What is R's position with respect to V ?
(a) Third to the right
(b) Fifth to the right
(c) Third to the left
(d) Second to the left
85. Ogive graph is used for finding
(a) Mean
(b) Mode
(c) Median
(d) None
86. $\alpha\beta$ are the roots of the $2x^2+3x+7=0$. Then the value of $\alpha\beta^{-1}+\alpha^{-1}\beta$ is
(a) 2
(b) $\frac{3}{7}$
(c) $\frac{7}{2}$
(d) $-\frac{19}{14}$
87. A person deposited Rs. 5,000 in a bank. The deposit was left to accumulate at 6% compounded quarterly for the first five years and at 8% compounded semi-annually for the next eight years. The compound interest amount at the end of 13 years is :
(a) Rs. 12621.50
(b) Rs. 7613
(c) Rs. 12613.10
(d) Rs. 7316
88. If ${}^{13}C_6+2{}^{13}C_5+{}^{13}C_4 = {}^{15}C_x$, then $x =$ _____
(a) 6
(b) 7
(c) 8
(d) 9
89. If $F : R \rightarrow R, f(x) = x+1,$
 $G : R \rightarrow R, g(x) = x^2+1$
then $f \circ g(-2)$ equals to
(a) 6
(b) 5
(c) -2
(d) None

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90. Roy walks 2 km to East, then turns North-West and walks 3 km. Then he turns south and walks 5 km. Then again he turns West and walks 2 km. Finally he turns North and walks 6 km. In which direction, is he from the starting point ?
- South-West
 - South-East
 - North -West
 - North-East
91. If variance of a random variable x is 23, then what is the variance of $2x+10$?
- 56
 - 33
 - 46
 - 92
92. If a random variable x assumes the values 0, 1 and 2 with probabilities 0.30, 0.50 and 0.20, then its expected value is
- 1.50
 - 3
 - 0.90
 - 1
93. $E(13x+9)=$
- $13x$
 - $13E(x)$
 - $13E(x) + 9$
 - 9
94. The maximum value of the variance of a binomial distribution with parameters n and p is
- $n/2$
 - $n/4$
 - $np(1 - p)$
 - $2n$
95. The binomial distribution with mean 3 and variance 2 is.
- $\left(\frac{2}{3} + \frac{1}{3}\right)^9$
 - $\left(\frac{2}{6} + \frac{1}{6}\right)^9$
 - $\left(\frac{2}{3} + \frac{1}{3}\right)^6$
 - $\left(\frac{2}{5} + \frac{1}{5}\right)^9$
96. If 1.5 per cent of items produced by a manufacturing units are known to be defective, what is the probability that a sample of 200 items would contain no defective item?
- 0.05
 - 0.15
 - 0.20
 - 0.22

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97. The standard deviation of a Poisson variety is 1.732. What is the probability that the variety lies between -2.3 to 3.68?
- (a) 0.65
 - (b) 0.11
 - (c) 0.35
 - (d) None of these
98. The quartile deviation of a normal distribution with mean 10 and SD 4 is
- (a) 0.675
 - (b) 6.75
 - (c) 2.70
 - (d) 3.20
99. S borrows Rs. 5,00,000 to buy a house. If he pays equal instalments for 20 years and 10% interest on outstanding balance what will be the equal annual instalment?
- (a) Rs. 48792.72
 - (b) Rs. 58729.84
 - (c) Rs. 57829.61
 - (d) None of these
100. The future value of an annuity of Rs. 1,000 made annually for 5 years at the interest of 14% compounded annually is: [Given that $(1.14)^5 = 1.92541$]
- (a) Rs. 5,610
 - (b) Rs. 6,610
 - (c) Rs. 6,160
 - (d) Rs. 5,160

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