

## Paper - 4 Quantitative Aptitude

### Chapter 1 : Ratio and Proportion Indices and Logarithm

2009 – December

- [1]  $\frac{2^n + 2^{n-1}}{2^{n+1} - 2^n}$
- (a) 1/2  
(b) 3/2  
(c) 2/3  
(d) 1/3
- [2] If  $2^x \times 3^y \times 5^z = 360$  Then what is the value of x, y, z.?
- (a) 3, 2, 1  
(b) 1, 2, 3  
(c) 2, 3, 1  
(d) 1, 3, 2
- [3] Find the value of  $[\log_{10}\sqrt{25} - \log_{10}(2^3) + \log_{10}(4)^2]^x$
- (a) x  
(b) 10  
(c) 1  
(d) None

### Chapter 2 : Equations

2009 – December

- [4] If the length of a rectangle is 5 cm more than the breadth and if the perimeter of the rectangle is 40 cm, then the length & breadth of the rectangle will be :
- (a) 7.5 cm, 2.5 cm  
(b) 10 cm, 5 cm  
(c) 12.5 cm, 7.5 cm  
(d) 15.5 cm, 10.5 cm
- [5] The point of intersection of the lines  $2x - 5y = 6$  and  $x + y = 3$  is
- (a) (0, 3)  
(b) (3, 0)  
(c) (3, 3)  
(d) (0, 0)
- [6] Find the equation of the line passing through the point (1,1) and parallel to the line  $3x + 5y + 17 = 0$
- (a)  $3x + 5y + 8 = 0$   
(b)  $5x + 3y + 8 = 0$   
(c)  $5x + 3y - 8 = 0$   
(d)  $3x + 5y - 8 = 0$
- [7] The graph of straight line  $x = 5$  will be :-
- (a) Intersecting both the axis  
(b) Parallel to y-axis  
(c) Parallel to x-axis  
(d) None of these

- [8] Find the equation of the line joining the point (3,5) with the point of intersection  $2x + 3y - 5 = 0$  and  $3x + 5y - 7 = 0$ .
- (a)  $6x + y + 23 = 0$   
(b)  $6x + y - 23 = 0$   
(c)  $6x + 2y + 14 = 0$   
(d)  $2x + 5y + 5 = 0$

### Chapter 4 : Simple and Compound Interest Including Annuity Applications

2009 – December

- [9] In how many years, a sum of Rs. 1000 compounded annually @ 10%, will amount to Rs. 1331?
- (a) 6 years  
(b) 5 years  
(c) 4 years  
(d) 3 years
- [10] The compound interest for a certain sum @ 5% p.a. for first year is Rs. 25. The SI for the same money @ 5% p.a. for 2 years will be.
- (a) Rs. 40  
(b) Rs. 50  
(c) Rs. 60  
(d) Rs. 70

### Chapter 5 : Basic Concepts of Permutations and Combinations

2009 – December

- [11]  $(n + 1)! = 20(n - 1)!$ , find n
- (a) 6  
(b) 5  
(c) 4  
(d) 10
- [12] Out of 4 gents and 6 ladies, a committee is to be formed. Find the number of ways the committee can be formed such that it comprises of at least 2 gents and at least the number of ladies should be double of gents.
- (a) 94  
(b) 132  
(c) 136  
(d) 104
- [13] In a bag, there were 5 white, 3 red, and 2 black balls. Three balls are drawn at a time. What is the probability that the three balls drawn are white?
- (a) 1/12  
(b) 1/24  
(c) 1/120  
(d) None of these

[14] In how many ways can the letters of 'REGULATION' be arranged so that the vowels come at odd places?

- (a) 1/252  
 (b) 1/144  
 (c) 144/252  
 (d) None of these

### Chapter 6 : Sequence and Series Arithmetic and Geometric Progression

2009 – December

[15] The sum of an A P, whose first term is - 4 and last term is 146 is 7171. Find the value of n.

- (a) 99  
 (b) 100  
 (c) 101  
 (d) 102

[16] Find the sum to infinity of the following series:

$$1 - 1 + 1 - 1 + 1 - 1 + \dots \infty$$

- (a) 1  
 (b)  $\infty$   
 (c)  $\frac{1}{2}$   
 (d) Does not exist

### Chapter 7 : Sets, Functions & Relations

2009 – December

[17]  $X = \{x, y, w, z\}$ ,  $Y = \{1, 2, 3, 4\}$

$$H = \{(x, 1), (y, 2), (y, 3), (z, 4), (x, 4)\}$$

- (a) H is a function from X to Y  
 (b) H is not a function from X to Y  
 (c) H is a relation from Y to X  
 (d) None of the above

[18] Given the function  $f(x) = (2x + 3)$ , then the value of  $f(2x) - 2f(x) + 3$  will be :

- (a) 3  
 (b) 2  
 (c) 1  
 (d) 0

[19] If  $f(x) = 2x + h$  then find  $f(x + h) - 2f(x)$

- (a)  $h - 2x$   
 (b)  $2x - h$   
 (c)  $2x + h$   
 (d) None of these

### Chapter 8 : Limits and Continuity Intuitive Approach

2009 – December

[20]

$$f(x) = \begin{cases} 5 - \frac{x^2}{5}, & 0 < x < 5 \\ 0 & x = 5 \\ 5 - \frac{5^3}{x^2} & x > 5 \end{cases}$$

Then  $f(x)$  is :

- (a) Continuous at  $x = 5$   
 (b) Discontinuous at  $x = 5$   
 (c) Undefined at  $x = 5$   
 (d) None of the above

[21]  $\lim_{x \rightarrow -1/3} \frac{9x^2 - 1}{3x + 1}$

- (a)  $\infty$   
 (b) 1  
 (c) 2  
 (d) -2

[22]  $\lim_{x \rightarrow 0} \frac{6x + 8xe^x}{\log(1+2x)}$

- (a) 7  
 (b) 14  
 (c) 4  
 (d) None

### Chapter 9 : Basic Concepts of Differential and Integral Calculus

2009 – December

[23]  $\int \left( \sqrt{x} + \frac{1}{\sqrt{x}} \right) dx$

- (a)  $2x^{1/2} \left( \frac{1}{3}x - 1 \right)$   
 (b)  $2x^{1/2} \left( \frac{1}{3}x + 1 \right)$   
 (c)  $2 \left( \frac{1}{3}x + x^{1/2} \right)$   
 (d) None of these.

[24]  $\int_0^1 \left( \frac{1-x}{1+x} \right) dx$

- (a)  $2 \log 2 - 1$   
 (b)  $4 \log 2 - 1$   
 (c)  $2 \log 2$   
 (d) None of these

[25]  $x = 2t + 5$  and  $y = t^2 - 5$ , then  $\frac{dy}{dx} = ?$

- (a) t  
 (b)  $-1/t$   
 (c)  $1/t$   
 (d) 0

[26]  $x = at^2$ ,  $y = 2$  at,  $\frac{dy}{dx} = ?$

- (a)  $1/t$   
 (b)  $-1/t$   
 (c) t  
 (d) None of the above

[27] Find the second derivative of  $y = \sqrt{x+1}$

- (a)  $1/2 (x+1)^{-1/2}$   
 (b)  $-1/4 (x+1)^{-3/2}$

- (c)  $1/4 (x+1)^{-1/2}$   
 (d) None of these.

### Chapter 10 : Statistical Description of Data

#### 2009 – December

- [28] Arrange the dimensions of Bar diagram, Cube diagram, Pie diagram in sequence.  
 (a) 1, 2, 3  
 (b) 2, 1, 3  
 (c) 2, 3, 1  
 (d) 3, 2, 1
- [29] Histogram is used to find \_\_\_\_\_.  
 (a) Mean  
 (b) Median  
 (c) Mode  
 (d) None of these
- [30] Nationality of a person is :  
 (a) Discrete variable  
 (b) An attribute  
 (c) Continuous variable  
 (d) None
- [31] If we plot less than and more than type frequency distribution, then the graph plotted is \_\_\_\_\_.  
 (a) Histogram  
 (b) Frequency Curve  
 (c) Ogive  
 (d) None of these

### Chapter 11 : Measures of Central Tendency and Dispersion

#### 2009 – December

- [32] When mean is 3.57 and mode is 2.13 then the value of median is \_\_\_\_\_.  
 (a) 3.09  
 (b) 5.01  
 (c) 4.01  
 (d) None of these
- [33] If  $L_1$  = highest observation and  $L_2$  = smallest observation, then Coefficient of Range =  
 (a)  $\frac{L_1 \times L_2}{L_1 / L_2} \times 100$   
 (b)  $\frac{L_1 - L_2}{L_1 + L_2} \times 100$   
 (c)  $\frac{L_1 + L_2}{L_1 - L_2} \times 100$   
 (d)  $\frac{L_1 / L_2}{L_1 \times L_2} \times 100$
- [34] The equation of a line is  $5x + 2y = 17$ . Mean deviation of  $y$  about mean is 5. Calculate mean deviation of  $x$  about mean.  
 (a) -2  
 (b) 2

- (c) -4  
 (d) None

- [35] If variance of  $x$  is 5, then find the variance of  $(2 - 3x)$   
 (a) 10  
 (b) 15  
 (c) 5  
 (d) -13

### Chapter 12 : Correlation And Regression

#### 2009 – December

- [36] Which of the following regression equations represent regression line of  $Y$  on  $X$  :  
 $7x + 2y + 15 = 0$ ,  $2x + 5y + 10 = 0$   
 (a)  $7x + 2y + 15 = 0$   
 (b)  $2x + 5y + 10 = 0$   
 (c) Both (a) and (b)  
 (d) None of these
- [37] If the rank correlation co-efficient between marks in Management and Mathematics for a group of students is 0.6 and the sum of the squares of the difference in ranks is 66, Then what is the number of students in the group?  
 (a) 9  
 (b) 10  
 (c) 11  
 (d) 12
- [38] Correlation coefficient between  $X$  and  $Y$  will be negative when:-  
 (a)  $X$  and  $Y$  are decreasing  
 (b)  $X$  is increasing,  $Y$  is decreasing  
 (c)  $X$  and  $Y$  are increasing  
 (d) None of these
- [39] The two regression lines are  $7x - 3y - 18 = 0$  and  $4x - y - 11 = 0$ . Find the values of  $b_{yx}$  and  $b_{xy}$ .  
 (a)  $7/3, 1/4$   
 (b)  $-7/3, -1/4$   
 (c)  $-3/7, -1/4$   
 (d) None of these.

### Chapter 13 : Probability and Expected Value By Mathematical Expectation

#### 2009 – December

- [40]  $P(A) = 2/3$ ;  $P(B) = 3/5$ ;  $P(A \cup B) = 5/6$ . Find  $P(B/A)$   
 (a)  $11/20$   
 (b)  $13/20$   
 (c)  $13/18$   
 (d) None
- [41] If  $P(A \cap B) = P(A) \times P(B)$ , then the events are:  
 (a) Independent events  
 (b) Mutually exclusive events  
 (c) Exhaustive events  
 (d) Mutually inclusive events

[42]  $E(XY)$  is also known as:

- (a)  $E(X) + E(Y)$
- (b)  $E(X)E(Y)$
- (c)  $E(X) - E(Y)$
- (d)  $E(X) \div E(Y)$

### Chapter 14 : Theoretical Distributions

#### 2009 – December

[43] Shape of Normal Distribution Curve:

- (a) Depends on its parameters
- (b) Does not depend on its parameters
- (c) Either (a) or (b)
- (d) Neither (a) nor (b)

[44] For binomial distribution  $E(x) = 2$ ,  $V(x) = 4/3$ .

Find the value of  $n$ .

- (a) 3
- (b) 4
- (c) 5
- (d) 6

[45] What are the parameters of binomial distribution?

- (a)  $n$
- (b)  $p$
- (c) Both  $n$  and  $p$
- (d) None of these

### Chapter 15 : Sampling Theory

#### 2009 – December

[46] Distribution formed of all possible value of statistics is called \_\_\_\_\_.

- (a) Sampling Distribution
- (b) Classification
- (c) Tabulation
- (d) None

[47] In sampling, standard error is :

- (a) Standard deviation
- (b) Quartile deviation
- (c) Mean deviation
- (d) Coefficient of variation

[48] If every 9<sup>th</sup> unit is selected from universal set, then this type of sampling is known as:

- (a) Quota Sampling
- (b) Systematic Sampling
- (c) Stratified Sampling
- (d) None of these

### Chapter 16 : Index Numbers

#### 2009 – December

[49] Time reversal & factor reversal are :

- (a) Quantity Index
- (b) Ideal Index
- (c) Price Index
- (d) Test of Consistency

[50] In Laspeyeres Index Number \_\_\_\_\_ are used as weights?

- (a) Base year price
- (b) Current year price
- (c) Base year quantities
- (d) Current year quantities

#### Answer

- |         |         |         |         |
|---------|---------|---------|---------|
| 1. (b)  | 2. (a)  | 3. (c)  | 4. (c)  |
| 5. (b)  | 6. (d)  | 7. (b)  | 8. (b)  |
| 9. (d)  | 10. (b) | 11. (c) | 12. (b) |
| 13. (a) | 14. (a) | 15. (c) | 16. (c) |
| 17. (b) | 18. (d) | 19. (a) | 20. (a) |
| 21. (d) | 22. (a) | 23. (b) | 24. (a) |
| 25. (a) | 26. (a) | 27. (b) | 28. (c) |
| 29. (c) | 30. (b) | 31. (c) | 32. (a) |
| 33. (b) | 34. (b) | 35. (b) | 36. (b) |
| 37. (b) | 38. (b) | 39. (a) | 40. (b) |
| 41. (a) | 42. (b) | 43. (a) | 44. (d) |
| 45. (c) | 46. (a) | 47. (a) | 48. (b) |
| 49. (d) | 50. (c) |         |         |