

Appendix
2009 - June
Paper - 4 : Quantitative Aptitude

Chapter 1 : Ratio and Proportion Indices and Logarithm

- [1] If $\frac{p}{q} = -\frac{2}{3}$ then the value of $\frac{2p+q}{2p-q}$ is :
- (a) 1
(b) -1/7
(c) 1/7
(d) 7
- [2] Fourth proportional to x, 2x, (x+1) is :
- (a) (x+2)
(b) (x-2)
(c) (2x+2)
(d) (2x-2)
- [3] If $x = 3^{1/3} + 3^{-1/3}$ then find value of $3x^3 - 9x$
- (a) 3
(b) 9
(c) 12
(d) 10
- [4] Find the value of :
 $[1 - \{1 - (1 - x^2)^{-1}\}]^{-1/2}$
- (a) 1/x
(b) x
(c) 1
(d) None of these
- [5] $\log(m+n) = \log m + \log n$, m can be expressed as:
- (a) $m = \frac{n}{n-1}$
(b) $m = \frac{n}{n+1}$
(c) $m = \frac{n+1}{n}$

(d) $m = \frac{n+1}{n-1}$

[6] $\log_4 (x^2 + x) - \log_4 (x+1) = 2$. Find x

- (a) 16
- (b) 0
- (c) - 1
- (d) None of these

Chapter 2 : Equations

[7] A straight line passes through the point (3,2). Find the equation of the straight line.

- (a) $x + y = 1$
- (b) $x + y = 3$

- (c) $x + y = 5$
- (d) $x + y = 2$

[8] One root of the equation :

$$x^2 - 2(5+m)x + 3(7+m) = 0$$

is reciprocal of the other.

Find the value of M.

- (a) - 7
- (b) 7
- (c) 1/7
- (d) - 1/7

[9] A straight line of $x = 15$ is :

- (a) Parallel to Y axis
- (b) Parallel to X axis
- (c) A diagonal line.
- (d) Passes through origin.

Chapter 4 : Simple and Compound Interest Including Annuity Applications

[10] In how many years, a sum will become double at 5% p.a. compound interest.

- (a) 14.0 years
 (b) 14.1 years
 (c) 14.2 years
 (d) 14.3 years
- [11] The time by which a sum of money is 8 times of itself if it doubles itself in 15 years.
 (a) 42 years
 (b) 43 years
 (c) 45 years
 (d) 46 years
- [12] What is the rate of simple interest if a sum of money amounts to Rs. 2,784 in 4 years and Rs. 2,688 in 3 years ?
 (a) 1% p.a.
 (b) 4% p.a.
 (c) 5% p.a.
 (d) 8% p.a.
- [13] A sum amount to Rs. 1,331 at a principal of Rs. 1,000 at 10 % compounded annually. Find the time.
 (a) 3.31 years
 (b) 4 years
 (c) 3 years
 (d) 2 years
- [14] Paul borrows Rs. 20,000 on condition to repay it with compound interest at 5% p.a. in annual instalment of Rs. 2,000 each. Find the number of years in which the debt would be paid off.
 (a) 10 years
 (b) 12 years
 (c) 14 years
 (d) 15 years

Chapter 5 : Basic Concepts of Permutations and Combinations

- [15] Number of ways of painting a face of a cube by 6 colours is _____
 (a) 36
 (b) 6
 (c) 24
 (d) 1
- [16] If _____ ${}^{18}C_r = {}^{18}C_{r+2}$ find the value of ${}^r C_5$.
 (a) 55
 (b) 50
 (c) 56

- (d) None of these
- [17] 7 books are to be arranged in such a way so that two particular books are always at first and last place. Find the number of arrangements.
- (a) 60
 (b) 120
 (c) 240
 (d) 480
- [18] Find the number of arrangements in which the letters of the word 'MONDAY' be arranged so that the words thus formed begin with 'M' and do not end with 'N'.
- (a) 720
 (b) 120
 (c) 96
 (d) None.
- [19] In how many ways can 17 billiard balls be arranged if 7 of them are black, 6 red and 4 white ?
- (a) 4084080
 (b) 1
 (c) 8048040
 (d) None of these

<p>Chapter 6 : Sequence and Series Arithmetic and Geometric Progression</p>
--

- [20] $\sum n^2$ defines :
- (a) $\frac{n(n+1)(2n+1)}{6}$
 (b) $\frac{n(n+1)}{2}$
 (c) $\left[\frac{n(n+1)}{2} \right]^2$
 (d) None of these
- [21] The sum of terms of an infinite GP is 15. And the sum of the squares of the term is 45. Find the common ratio.
- (a) $3/2$
 (b) 1
 (c) $-2/3$
 (d) $2/3$

[22] If in an A.P., T_n represents n th term.

If $t_7 : t_{10} = 5:7$ then $t_8 : t_{11} =$ _____

- (a) 13 : 16
- (b) 17 : 23
- (c) 14 : 17
- (d) 15 : 19

Chapter 8 : Limits and Continuity Intuitive Approach

[23] $\lim_{x \rightarrow 3} \frac{x^n - 3^n}{x - 3} = 108$. Find n

- (a) 4
- (b) - 4
- (c) 1
- (d) None of these

[24] $\lim_{x \rightarrow c} \frac{(x+2)^{3/2} - (c+2)^{3/2}}{x - c} =$

- (a) C
- (b) $1/c$
- (c) O
- (d) None of the above.

Chapter 9 : Basic Concepts of Differential and Integral Calculus

[25] Find the value of $\int_{-3}^3 x \sqrt{8-x^2} dx$

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

[26] If $x^3 y^2 = (x-y)^5$. Find $\frac{dy}{dx}$ at (1,2).

- (a) - 7/9
- (b) 7/9
- (c) 9/7
- (d) - 9/7

[27] Evaluate $\int x \cdot c^x dx$

- (a) $e^x (x+1) + c$
- (b) $e^x (x-1) + c$

- (c) $e^x + c$
- (d) $x - e^x + c$

[28] Find $\int \frac{x^3}{(x^2 + 1)^3} dx$

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

Chapter 10 : Statistical Description of Data

- [29] Mid values are also called _____
- (a) Lower limit
 - (b) Upper limit
 - (c) Class mark
 - (d) None.
- [30] Which of the following is not a two-dimensional figure ?
- (a) Line Diagram
 - (b) Pie Diagram
 - (c) Square Diagram
 - (d) Rectangle Diagram.
- [31] Less than type and more than type gives meet at a point known as :
- (a) Mean
 - (b) Median
 - (c) Mode
 - (d) None

Chapter 11 : Measures of Central Tendency and Dispersion

- [32] The median of $x, \frac{x}{2}, \frac{x}{3}, \frac{x}{5}$ is 10.
Find x where $x > 0$
- (a) 24
 - (b) 32
 - (c) 8
 - (d) 16
- [33] The average salary of 50 men was Rs. 80 but it was found that salary of 2 of them were Rs. 46 and Rs. 28 which was wrongly taken as Rs. 64 and Rs. 82. The revised average salary is :

- (a) Rs. 80
 (b) Rs. 78.56
 (c) Rs. 85.26
 (d) Rs. 82.92
- [34] Inter Quartile Range is _____ of Quartile Deviation.
 (a) Half
 (b) Double
 (c) Triple
 (d) Equal
- [35] The sum of squares of deviation from mean of 10 observations is 250. Mean of the data is 10. Find the co-efficient of variation.
 (a) 10 %
 (b) 25 %
 (c) 50 %
 (d) 0 %
- [36] If A be the A.M. of two positive unequal quantities X and Y and G be their G.M., then ;
 (a) $A < G$
 (b) $A > G$
 (c) $A \leq G$
 (d) $A \geq G$

Chapter 12 : Correlation and Regression

- [37] The two regression equations are :
 $2x + 3y + 18 = 0$
 $x + 2y - 25 = 0$
 find the value of y if x = 9
 (a) - 8
 (b) 8
 (c) - 12
 (d) 0
- [38] The correlation coefficient between x and y is $-\frac{1}{2}$. The value of b_{xy} = $-\frac{1}{8}$. Find by x.
 (a) - 2
 (b) - 4
 (c) 0
 (d) 2

- [39] Ranks of two_____characteristics by two judges are in reverse order then find the value of Spearman rank correlation co-efficient.
- (a) - 1
 - (b) 0
 - (c) 1
 - (d) 0.75

Chapter 13 : Probability and Expected Value by Mathematical Expectation
--

- [40] If A and B are two independent events and $P(A \cup B) = 2/5$; $P(B) = 1/3$. Find $P(A)$.
- (a) $2/9$
 - (b) $-1/3$
 - (c) $2/10$
 - (d) $1/10$
- [41] A bag contains 12 balls of which 3 are red 5 balls are drawn at random. Find the probability that in 5 balls 3 are red.
- (a) $3/132$
 - (b) $5/396$
 - (c) $1/36$
 - (d) $1/22$
- [42] A random variable X has the following probability distribution.
- | | | | | |
|------|---|----|----|---|
| X | 0 | 1 | 2 | 3 |
| P(x) | 0 | 2K | 3K | K |
- Then, $P(x < 3)$ would be :
- (a) $1/6$
 - (b) $1/3$
 - (c) $2/3$
 - (d) $5/6$

Chapter 14 : Theoretical Distribution
--

- [43] In a poisson distribution $P(x = 0) = P(X = 2)$. Find $E(x)$.
- (a) $\sqrt{2}$
 - (b) 2
 - (c) - 1
 - (d) 0

Chapter 15 : Sampling Theory

- [44] In sampling, standard deviations are known as :
- Expectation
 - Sampling Errors
 - Standard Error
 - All of the above
- [45] When every member in population has an equal chance of being selection, then that sampling is called _____
- Restrictive
 - Purposive
 - Subjective
 - Non-restrictive
- [46] Except sampling error, other errors in sampling are :
- Non sampling errors
 - Standard errors
 - Sampling fluctuations
 - All of these

Chapter 16 : Index Numbers

- [47] Fisher's Index is based on :-
- Arithmetic Mean of Laspeyre and Paasche
 - Geometric Mean of Laspeyre and Paasche
 - Harmonic Mean of Laspeyre and Paasche
 - Median of Laspeyre and Paasche.
- [48] In Passche's index, weights are based on :
- Current year quantities
 - Base year quantities
 - Weighted average prices
 - None of these
- [49] Fisher's Ideal Index does not satisfy :
- Time Reversal Test
 - Factor Reversal Test
 - Unit Test
 - Circular test
- [50] _____ $P_{01}Q_{01} = \frac{\sum P_1Q_1}{\sum P_0Q_0}$ which of following test satisfies the above?

- (a) Time Reversal Test
- (b) Factor Reversal Test
- (c) Circular Test
- (d) None of these.

Answer

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