BUSINESS MATHEMATICS LOGICAL REASONING AND STATISTICS

For CA –Foundation MAY 2019 &November 2019

DAILY PRACTICE PROBLEMS

By

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Dedicated to

My Mother

Preface

Dear Students,

I am honored to present you the exclusive edition of **B**usiness Mathematics, Logical Reasoning & Statistics for CA-Foundation/sincere effort has been put into making of this exclusive edition.

This edition covers in detail all varieties of practical question which I am sure will enhance the understanding of the students for both their exams and will help in development and understanding of concepts & logic of Quantitative Aptitude.

Valuable suggestions and constructive feedback from students for improvement in content and presentation would be highly appreciated, gratefully acknowledged and suitably incorporated.

All the Best for your great career!!!

Aman Khedia

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DPP-NO-2A

1. If $\log_2 x + \log_4 x = 6$, then the value of x is:
(a)16 (c) 64
(b)32 (d) 128

2. If $\log x\, y = 100$ and $\log_2 x = 10$, then the value of 'y' is:
(a)2^{10} (c) $2^{1,000}$
(b)2^{100} (d) $2^{10,000}$

3. For what value of x, the equation $\left(\log_{\sqrt{x}} 2\right)^2 = \log_x{}^2$ is true?
(a)16 (c) 8
(b)32 (d) 4

4. The value of $\log_4 9 . \log_3 2$ is :
(a)3 (c) 2
(b)9 (d) 1

5. If $x = \log_{24} 12$, $y = \log_{36} 24$ and $z = \log_{48} 36$, then xyz + 1 = _____
(a)2xy (c) 2yz
(b)2xz (d) 2

6. If $\log x = a + b$, $\log y = a - b$ then the value of $\frac{10x}{y^2}$ = _____.
(a)1 – a + 3b (c) a + 3b + 1
(b)a – 1 + 3b (d) 1 – b + 3a

7. If log 2 = 0.3010 and log 3 = 0.4771, then the value of log 24 is:
(a)1.0791 (c) 1.3801
(b)1.7323 (d) 1.8301

8. The value of $\log(1^3 + 2^3 + 3^3 + \ldots\ldots\ldots n^3)$ is equal to:
(a)3 log 1 + 3 log 2 + ….. + 3 log n
(b)2 log n + 2 log (n + 1) – 2 log 2
(c)log n + log (n + 1) + log (2n + 1) – log 6
(d)1

9. The value of $\log_4 9 . \log_3 2$ is:
(a)3 (c) 9
(b)2 (d) 1

10. If $\log_3[\log_4(\log_2 x)] = 0$, then the value of 'x' will be:

(a)4 (c) 16

(b)8 (d) 32

Answers

1.	**a**	**2.**	**c**	**3.**	**a**	**4.**	**d**	**5.**	**c**
6.	**a**	**7.**	**c**	**8.**	**b**	**9.**	**d**	**10.**	**c**

DPP-NO-2B

1. If n = m! where ('m' is a positive integer > 2) then the value of : $\frac{1}{\log_2 n}+\frac{1}{\log_3 n}+\frac{1}{\log_4 n}+\ldots\ldots\ldots+\frac{1}{\log_m n}$

(a)1 (c) -1

(b)0 (d) 2

2. The integral part of a logarithm is called _____ and the decimal part of a logarithm is called_____.

(a)Mantissa, Characteristic

(b)Characteristic, Mantissa

(c)Whole, Decimal

(d)None of these

3. If $\log_4(x^2 + x) - \log_4(x + 1) = 2$, then the value of x is:

(a)2 (c) 16

(b)3 (d) 8

4. The value of $\log_5 3 \times \log_3 4 \times \log_2 5$.

(a)0 (c) 2

(b)1 (d) $\frac{1}{2}$

5. Value of $\frac{1}{log_3^{60}}+\frac{1}{log_4^{60}}+\frac{1}{log_5^{60}}$ is :

(a)0 (c) 5

(b)1 (d) 60

6. If $\log\left(\frac{x-y}{2}\right)=\frac{1}{2}(\log x + \log y)$, then the value of $x^2 + y^2$ = _____.

(a)2xy (c) $2x^2y^2$

(b)4xy (d) 6xy

7. If $x = 1 + \log_p qr$, $y = 1 + \log_q rp$ and $z = 1 + \log_r pq$ then the value of $\frac{1}{x}+\frac{1}{y}+\frac{1}{z}$ = _____

(a)0 (c) -1

(b)1 (d) 3

8. If $\log x = m + n$ and $\log y = m - n$, then $\log(10x/y^2)$ =

(a)3n – m + 1 (c) 3n + n + 1

(b)3m – n + 1 (d) 3m + n + 1

9. The value of $(\log_y x. \log_z y. \log_x z)^3$ is

(a)0 (c) 1

(b)3 (d)2

10. If $x^2 + y^2 = 7xy$, then $\log \frac{1}{3}(x + y) =$ _____.

(a)(log x + log y) (c) $\frac{1}{3}$(log x/ log y)

(b)$\frac{1}{2}$(log x + log y) (d) $\frac{1}{3}$(log x + log y)

Answers

1.	**a**	**2.**	**b**	**3.**	**c**	**4.**	**c**	**5.**	**b**
6.	**d**	**7.**	**b**	**8.**	**a**	**9.**	**c**	**10.**	**b**

DPP-NO-3A

1. If the ratio of (5x – 3y) and (5y – 3x) is 3 : 4, then the value of x : y is:

(a)27 : 29 (c) 3 : 4

(b)29 : 27 (d) 4 : 3

2. If roots of equation $x^2 + x + r = 0$ are '$\propto$' and 'β' and $\propto^3 + \beta^3 = -6$. Find the value of 'r'?

(a)$\frac{-5}{3}$ (c) $\frac{-4}{3}$

(b)$\frac{7}{3}$ (d) 1

3. If one root of the equation $px^2 + qx + r = 0$ is r then other root of the equation will be:

(a)1/q (c) 1/p

(b)1/r (d) $\frac{1}{p+q}$

4. 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 (c) -2

(b)2 (d) -1

5. The minimum value of the function $x^2 – 6x + 10$ is _____.

(a)1 (c) 3

(b)2 (d) 10

6. If p & q are the roots of the equation $x^2 – bx + C = 0$, then what is the equation whose roots are (pq + p + q) and (pq – p –q)?

(a)$x^2 – 2cx + c^2 – b^2 = 0$ (c) $8cx^2 – 2(b+c)x + c^2$

(b)$x^2 – 2bx + C^2 + b^2 = 0$ (d) $x^2 + 2bx – (C^2 – b^2) = 0$

7. If arithmetic mean between roots of a quadratic equation is 8 and the geometric mean between them is 5, the equation is _____.

(a)$x^2 – 16x – 25 = 0$ (c) $x^2 – 16x + 5 = 0$

(b)$x^2 – 16x + 25 = 0$ (d) none of these

8. The equation of the straight line passing through the intersection of 4x – 3y – 1 = 0 and 2x – 5y + 3 = 0 and parallel to 4x + 5y = 6 is:

(a)4x + 5y – 12 = 0 (c) 4x + 5y – 9 = 0

(b)4x + 5y – 16 = 0 (d) 4x + 5y – 4 = 0

9. If $|x - 2| + |x - 3| = 7$ then, 'x' will be equal to

(a)6 (c) 6 and -1

(b)-1 (d) none of the above

10. Roots of equation $2x^2 + 3x + 7 = 0$ are α and β. The value of $\alpha\beta^{-1} + \beta\alpha^{-1}$ is

(a)2 (c) 7/2

(b)3/7 (d) -19/14

Answers

1.	**a**	**2.**	**a**	**3.**	**c**	**4.**	**b**	**5.**	**a**
6.	**a**	**7.**	**b**	**8.**	**c**	**9.**	**c**	**10.**	**d**

DPP-NO-3B

1. The present age of a man is 8 years more than thrice the sum of the ages of his two grandsons who are twins. After 8 years, his age will be 10 years more than twice the sum of the ages of his grandsons. The age of a man when his grandsons were born was:

(a) 86 years (c) 68 years

(b) 73 years (d) 63 years

2. The roots of the cubic equation $x^3 - 7x + 6 = 0$ are:

(a) 1, 2 and 3 (c) 1, 2 and -3

(b) 1, -2 and 3 (d) 1, -2 and -3

3. If the roots of the equation $4x^2 - 12x + k = 0$ are equal, then the value of k is:

(a) -3 (c) -9

(b) 3 (d) 9

4. If $3x - y = 2$, $5x + ay = 3$ and $2x + y = 3$ are concurrent lines, then the value of 'a' is:

(a)-1 (c) 2

(b)-2 (d) 3

5. The equation of line passing through the point of intersection of the lines $y = 3$ and $x + y = 0$ and parallel to the $2x - y = 4$ is:

(a) $2x - y + 9 = 0$ (c) $x - 2y + 9 = 0$

(b) $2x - y - 9 = 0$ (d) $x + 2y - 9 = 0$

6. If $\alpha + \beta = -2$ and $\alpha\ \beta = -3$, then α, β are the roots of the equation, which is:

(a) $x^2 - 2x - 3 = 0$ (c) $x^2 + 2x + 3 = 0$

(b) $x^2 + 2x - 3 = 0$ (d) $x^2 - 2x + 3 = 0$

7. If α, β are the roots of the equation $x^2 + x + 5 = 0$ then $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$ is equal to

(a) $\frac{16}{5}$ (c) 3

(b) 2 (d) $\frac{14}{5}$

8. If $\frac{3}{x+y} + \frac{2}{x-y} = -1 and\ \frac{1}{x+y} - \frac{1}{x-y} = \frac{4}{3}$ then (x, y) is:

(a) (2, 1) (c) (-1, 2)

(b) (1, 2) (d) (-2, 1)

9. The roots of the cubic equation $x^3 + 7x^2 - 21x - 27 = 0$ are

(a)-1, 3, 9 (c) -1, 3, -9

(b)1, -3, 9 (d) -1, -3, 9

10. The difference between the roots of the equation $x^2 - 7x - 9 = 0$ is:

(a)7 (c) 9

(b)$\sqrt{85}$ (d) $2\sqrt{85}$

Answers

1.	**b**	**2.**	**c**	**3.**	**d**	**4.**	**b**	**5.**	**a**
6.	**b**	**7.**	**d**	**8.**	**b**	**9.**	**c**	**10.**	**b**

DPP-NO-3C

1. The value of k for which the points (k, 1), (5, 5) and (10, 7) may be collinear is:

(a)K – 5 (c) K = 9

(b)K = 7 (d) k = 1

2. If the sides of an equilateral triangle are shortened by 3 units, 4 units and 5 units respectively and a right triangle is formed, then the side of an equilateral triangle is:

(a)6 units (c) 8 units

(b)7 units (d) 10 units

3. If α, β are the roots of the equation $x^2 + x + 5 = 0$ then $\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}$ is equal to

(a)$\frac{16}{5}$ (c) 3

(b)2 (d) $\frac{14}{5}$

4. If |A| = 0, then A is:

(a)0 (c) singular matrix

(b)Uro matrix (d) non-singular matrix

5. If A and B are matrices then which from the following is true?

(a)A +B ≠ B + A (c) AB ≠ BA

(b)$(At)^t \neq A$ (d) all are true

6. Transpose of a rectangular matrix is a

(a)Rectangular matrix (c) square matrix

(b)Diagonal matrix (d) scalar matrix

7. If α + β = -2 and αβ = -3, then α, β are the roots of the equation, which is:

(a)$x^2 - 2x - 3 = 0$ (c) $x^2 + 2x + 3 = 0$

(b)$x^2 + 2x - 3 = 0$ (d) $x^2 - 2x + 3 = 0$

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

(a)1, $\frac{1}{2}$ (c) $\frac{1}{2}, \frac{1}{2}$

(b)$\frac{1}{2}$, 1 (d) none of these

9. The triangle formed by lines x + 2y = 3, 2x – y = 1 and y = 0 is

(a)Right angled (c) isosceles

(c)Equilateral (d) none of these

10. If the sum of two numbers is 13 and the sum of their squares is 85, then the numbers will be:

(a)3, 10 (c) 4, 9

(b)5, 8 (d) 6, 7

Answers

1.	**a**	**2.**	**c**	**3.**	**d**	**4.**	**c**	**5.**	**c**
6.	**a**	**7.**	**b**	**8.**	**a**	**9.**	**a**	**10.**	**d**

DPP-NO-6A

1. If sum (S_n) of 'n' terms of an arithmetic progression is ($2n^2 + n$). What is the difference of its 10^{th} and 1^{st} term?

(a)207 (c) 90

(b)36 (d) 63

2. Find the product of: (243), $(243)^{1/6}$, $(243)^{1/36}$, ……. ∞

(a)1,024 (c) 729

(b)27 (d) 246

3. Insert two Arithmetic means between 68 and 260

(a)132, 196 (c) 70, 258

(b)130, 194 (d) none of the above

4. Geometric mean of P, P^2, P^3, ……. P^n will be

(a)P^{n+1} (c) $P^{\frac{n(n+1)}{2}}$

(b)$P^{\frac{1+n}{2}}$ (d) none of the above

5. If 8^{th} term of an A.P is 15, then sum of its 15 terms is

(a)15 (c) 225

(b)0 (d) 225/2

6. The 4^{th} term of an A.P is three times the first and the 7^{th} term exceeds twice the third term by 1. Find the first term 'a' and common difference 'd'.

(a)a = 3, d = 2 (c) a = 5, d = 4

(b)a = 4, d = 3 (d) a = 6, d = 5

7. In an A.P., if common difference is 2, sum of n terms is 49, 7^{th} term is 13 then n = _____

(a)0 (c) 7

(b)5 (d) 13

8. The first term of a G.P. where second term is 2 and sum of infinite term is 8 will be:

(a)6 (c) 4

(b)3 (d) 1

9. In a G.P the sixth term is 729 and the common difference is 3, then the first term of G.P is:

(a)2 (c) 4

(b)3 (d) 7

10. The sum to m terms of the series1 + 11 + 111 + ,,,,,, upto m terms, is equal to:

(a)$\frac{1}{81}(10^{m+1} - 9m - 10)$ (c) 10^{m+1} – 9m – 10

(b)$\frac{1}{27}(10^{m+1} - 9m - 10)$ (d) none of these

Answers

1.	**b**	**2.**	**c**	**3.**	**a**	**4.**	**b**	**5.**	**c**
6.	**a**	**7.**	**c**	**8.**	**c**	**9.**	**b**	**10.**	**a**

DPP-NO-6B

1. The sum of the infinite G.P $1+\frac{1}{3}+\frac{1}{9}+\frac{1}{27}+$..... is equal to:

(a) 1.95 (c) 1.75

(b) 1.5 (d) none of these

2. The value of $1^3 + 2^3 + 3^3 + 4^3 +$.....$+m^3$ is equal to:

(a) $\left[\frac{m(m+1)}{2}\right]^3$ (c) $\left[\frac{m(m+1)}{2}\right]^2$

(b) $\frac{m(m+1)(2m+1)}{6}$ (d) none of these

3. If x, y, z are the terms in G.P then terms $x^2 + y^2$, $xy + yz$, $y^2 + z^2$ are in:

(a) A.P (c) H.P

(b) G.P (d) none of these

4. If $S_n = n^2p$ and $S_m = m^2p$ $(m \neq n)$ is the sum of an A.P., then S_p=_____

(a) P^2 (c) $2p^3$

(b) P^3 (d) p^4

5. The arithmetic mean of the square of first 2n natural numbers is:

(a)$\frac{1}{6}(2n+1)(4n-1)$ (c) $\frac{1}{6}(2n-1)(4n+1)$

(b)$\frac{1}{6}(2n-1)(4n-1)$ (d) $\frac{1}{6}(2n+1)(4n+1)$

6. If the sum of first 'n' terms of an A.P is $6n^2 + 6n$, then the fourth term of the series:

(a)120 (c) 48

(b)72 (d) 24

7. If S be the sum, P the product and R is the sum of reciprocals of n terms in G.P then P^2R^n = _____

(a)S^{2n} (c) S^{-2n}

(b)S^n (d) S^{-n}

8. The sum of the series 1 + 11 + 111+ ..... to n terms is_____

(a)$\frac{1}{27}(10^{n+1}-9n-10)$ (c) $\frac{1}{81}(10^{n+1}-9n-10)$

(b)$10^{n+1}-9n-10$ (d) none of these

9. If the sum of 'n' terms of an Arithmetic progression (A.P) is $3x^2 + 5x$ and its m^{th} term is 164, then the value of m is:

(a)27 (c) 24

(b)28 (d) 26

10. If a, b, c are in Arithmetic Progression (A.P), then the value of a – b + c is:

(a)a (c) b

(b)–b (d) c

Answers

1.	**b**	**2.**	**c**	**3.**	**b**	**4.**	**b**	**5.**	**d**
6.	**c**	**7.**	**b**	**8.**	**c**	**9.**	**a**	**10.**	**c**

DPP-NO-6C

1. Find the two numbers whose geometric mean is 5 and arithmetic mean in 7.5.

(a)10 and 5 (c) 12 and 3

(b)13.9 and 1.91 (d) none of the above

2. The sum of n terms of the series log x + log $\frac{x^2}{y}$ + log $\frac{x^3}{y^2}$ +.....is

(a)$\frac{n}{2}\left[2n\log\left(\frac{x}{y}\right)+\log xy\right]$ (c) $\frac{n}{2}\left[n\log\left(\frac{x}{y}\right)-\log xy\right]$

(b)$\frac{n}{2}\left[n\log xy+\log\left(\frac{x}{y}\right)\right]$ (d) $\frac{n}{2}\left[n\log\left(\frac{x}{y}\right)+\log xy\right]$

3. If $\frac{1}{b+c},\frac{1}{c+a},\frac{1}{a+b}$ are in arithmetic progression then a^2, b^2, c^2 are in

(a)Arithmetic Progression (c) Both in arithmetic and geometric mean

(b)Geometric Progression (d) none of these

4. The income of a person is Rs 5,00,000 in the firm in the first year and he receives an increase of Rs 15,000 per year for next 10 years. The total amount he receives in 10 years is:

(a)Rs 56,75,000 (c) Rs 15,67,500

(b)Rs 72,50,000 (d) none of these

5. If the sum 50 + 45 + 40 + 35 + _____ is zero, then the number of terms is:

(a)22 (c) 21

(b)20 (d) 25

6. A person pays Rs 975 in monthly installments, each installment is less than former by Rs 5. The amount

(a)26 months (c) both (a) & (b)

(b)15 months (d) 18 months

7. The value C such that a, -3, b, 5, c are in A.P is:

(a)-7 (c) 13

(b)1 (d) 9

8. The sum of all numbers between 100 and 1000 which are divisible by 11 will be:

(a)44550 (c) 55440

(b)66770 (d) 33440

9. If the sum of n terms of an A.P be $3n^2 - n$ and its common difference is 6, then its first term is:

(a)2 (c) 4

(b)3 (d) 5

10. If the sum of the 4^{th} term and the 12^{th} term of an A.P is 8, what is the sum of the first 15 terms of the progression?

(a)60 (c) 110

(b)120 (d) 150

Answers

1.	**b**	**2.**	**d**	**3.**	**a**	**4.**	**a**	**5.**	**c**
6.	**b**	**7.**	**d**	**8.**	**a**	**9.**	**a**	**10.**	**a**

DPP-NO-7A

1. If the difference of S.I and C.I is Rs 72 at 12% for 2 years. Calculate the amount.

(a)Rs 8,000 (c) Rs 5,000

(b)Rs 6,000 (d) Rs 7,750

2. If a simple interest on a sum of money at 65 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 (c) 15 : 7

(b)7 : 15 (d) 1 : 7

3. By mistake a clerk, calculated the simple interest on principal for 5 months at 6.5% p.a. instead of 6 months at 5.5% p.a. If the error in calculation was Rs 25.40. The original sum of principal was_____

(a)Rs 60, 690 (c) Rs 90, 660

(b)Rs 60,960 (d) Rs 90,690

4. If the simple interest on Rs 1,400 for 3 years is less than the simple interest on Rs 1,800 for the same period by Rs 80, then the rate of interest is

(a)5.67% (c) 7.20%

(b)6.67% (d) 5.00%

5. Nominal rate of interest is 9.9% p.a. If interest is compounded monthly, What will be the effective rate of interest(given $\left(\frac{4033}{4000}\right)^{12}$ = 1.1036(approx))?

(a)10.36% (c) 11.36%

(b)9.36% (d) 9.9%

6. The S.I on a sum of money is $\frac{4}{9}$ of the principal and the no. of years is equal to the rate of interest per annum. Find the rate of interest per annum?

(a)5% (c) 22/7%

(b)20/3% (d) 6%

7. Simple interest on Rs 2,000 for 5 months at 16% p.a is _____.

(a)Rs 133.33 (c) Rs 134.00

(b)Rs 133.22 (d) Rs 132.09

8. How much investment is required to yield an Annual income of Rs 420 at 7% p.a simple interest.

(a)Rs 6,000 (c) Rs 5,580

(b)Rs 6,420 (d) Rs 5,000

9. Mr.X invests Rs 90,500 in post office at 7.5% p.a simple interest. While calculating the rate was wrongly taken as 5.7% p.a. The difference in amounts at maturity is Rs 9,774. Find the period for which the sum was invested:

(a)7 years (c) 6 years

(b)5.8 years (d) 8 years

10. In what will a sum of money double its y at 6.25% p.a simple interest?

(a)5 years (c) 12 years

(b)8 years (d) 16 years

Answers

1.	**c**	**2.**	**c**	**3.**	**b**	**4.**	**b**	**5.**	**a**
6.	**b**	**7.**	**b**	**8.**	**a**	**9.**	**c**	**10.**	**d**

DPP-NO-7B

1. The difference between compound and simple interest on a certain sum of money for 2 years at 4% p.a is Rs 1. The sum (in Rs) is:

(a)625 (c) 640

(b)630 (d) 635

2. A sum of money compounded annually becomes Rs 1,140 in two years and Rs 1,710 in three years. Find the rate of interest per annum.

(a)30% (c) 50%

(b)40% (d) 60%

3. On what sum difference between compound interest and simple interest for two years at 7% p.a interest is Rs 29.4

(a)Rs 5,000 (c) Rs 6,000

(b)Rs 5,500 (d) Rs 6,500

4. The partners A and B together lent Rs 3,903 at 4% per annum interest compounded annually. After a span of 7 years, A gets the same amount as B gets after 9 years. The share of A in the sum of Rs 3,903 would have been:

(a)Rs 1,875 (c) Rs 2,028

(b)Rs 2,280 (d) Rs 2,820

5. If a sum triples in 15 years at simple rate of interest, the rate of interest per annum will be:

(a)13.0% (c) 13.5%

(b)13.3% (d) 18.0%

6. How much amount is required to be invested every year as to accumulate Rs 6,00,000 at the end of 10 years, if interest is compounded annually at 10% rate of interest [given: $(1.)^{10} = 2.59374$]

(a)Rs 37,467 (c) Rs 37,647

(b)Rs 37,476 (d) Rs 37,674

7. The future value of an annuity of Rs 1,000 made annually for 5 years at the interest of 14% compounded annually is: (given $(1.14)^5 = 1.92541$))

(a)Rs 5,610 (c) Rs 6,160

(b)Rs 6,610 (d) Rs 5,160

8. 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

(a)12 years (c) 20 years

(b)16 years (d) 24 years

9. A certain sum of money was invested at simple rate of interest for three years. If the same has been invested at a rate that was seven percent higher, the interest amount would have been Rs 882 more. The amount of sum invested is:

(a)Rs 12,600 (c) Rs 4,200

(b)Rs 6,800 (d) Rs 2,800

10. A sum of Rs 44,000 is divided into three parts such that the corresponding interest earned after 2 years, 3 years and 6 years may be equal. If the rate of simple interest are 6% p.a, 8% p.a and 6% p.a respectively, then the smallest part of the sum will be:

(a)Rs 4,000 (c) Rs 10,000

(b)Rs 8,000 (d) Rs 12,000

Answers

1.	a	2.	c	3.	c	4.	c	5.	b
6.	c	7.	b	8.	c	9.	c	10.	b

DPP-NO-7C

1. A sum of money doubles itself in 8 years at the simple interest. The number of years it would triple itself is _____

(a)20 years (c) 16 years

(b)12 years (d) none of these

2. Suppose your parent decides to open a PPF (Public Provident Fund) account in a bank towards your name with Rs 10,000 every year starting from today for next 15 years. When you receive and get 8.5% per annum interest rate compounded annually. What is the present value of this annuity? {given answer in Rs without any fraction) (given P (15,0.085) = 8.304236576)

(a)83,042 (c) 93,042

(b)1,66,084 (d) 8,30,423

3. In how many years will a sum of money become four times at 12% p.a simple interest?

(a)18 years (c) 25 years

(b)21 years (d) 28 years

4. The simple interest for a certain sum of 2 years at 10% per annum is Rs 90. The corresponding compound interest is (in Rs):

(a)99 (c) 94.50

(b)95.60 (d) 108

5. Mr. X bought an electronic item for Rs 1,000. What would be the future value of the same item after 2 years, if the value is compounded semi annually at 22% per annum?

(a)Rs 1,488.40 (c) Rs 2,008.07

(b)Rs 1,518.07 (d) Rs 2,200.00

6. If an amount is kept at simple interest, it earns an interest of Rs 600 in first two years but when kept at compound interest it earns an interest of Rs 660 for the same period, then the rate of interest and principal amount respectively are:

(a)20%, Rs 1,200 (c) 20%, Rs 1,500

(b)10%, Rs 1,200 (d) 10%, Rs 1,500

7. The sum invested at 4% per annum compounded semi-annually amounts to Rs 7,803 at the end of one year, is:

(a)RS 7,000 (c) Rs 7,225

(b)Rs 7,500 (d) Rs 8,000

8. A compound interest on a sum for 2 years is Rs 30 more than the simple interest at the rate of 5% per annum then the sum is:

(a)Rs 11,000 (c) Rs 12,000

(b)Rs 13,000 (d) Rs 15,000

9. A person lends Rs 6,000 for 4 years and Rs 8,000 for 3 years at simple interest. If he gets Rs 2,400 as total interest, the rate of interest is:

(a)5% (c) 6%

(b)4% (d) 7%

Answers

1.	**c**	**2.**	**c**	**3.**	**c**	**4.**	**c**	**5.**	**b**
6.	**c**	**7.**	**b**	**8.**	**c**	**9.**	**a**		

DPP-NO-7D

1. The future value of an annuity of Rs 1,500 made annually for five years at interest rate 10% compounded annually is (given that $(1.1)^5 = 1.61051$):

(a)Rs 9,517.56 (c) Rs 9,715.56

(b)Rs 9,157.65 (d) Rs 9,175.65

2. How much amount is required to be invested every year as to accumulate Rs 7,96,870 at the end of 10 years, if interest compounded annually at 10% given that A(10,0.1) = 15.9374?

(a)Rs 40,000 (c) Rs 48,000

(b)Rs 4,50,000 (d) Rs 50,000

3. If compound interest on any sum at the rate of %% for two years is Rs 512.50 then the sum would be:

(a)Rs 3,000 (c) Rs 5,000

(b)Rs 4,000 (d) Rs 6,000

4. The effective rate of interest equivalent to the nominal rate of 7% converted monthly:

(a)7.26% (c) 7.02%

(b)7.22% (d) 7.20%

5. Mr. X invest Rs 10,000 every year starting from today for next 10 years suppose interest rate is 8% per annual compounded annually. Calculate future value of the annuity.

(a)Rs 1,56,454.88 (c) Rs 1,44,865.625

(b)Rs 1,56,554.88 (d) none of these

6. How much amount is required to be invested every year so as to accumulate Rs 3,00,000at the end of 10 years, if interest is compounded annually at 10%?

(a)Rs 18,823.65 (c) Rs 18,828.65

(b)Rs 18 (d) Rs 18,882.65

7. If Rs 1,000 be invested at interest rate of 5% and the interest be added to the principal every 10 years, than the number of years in which it will amount to Rs 2,000 is:

(a)$16\frac{2}{3}$ years (c) 16 years

(b)$6\frac{1}{4}$ years (d) $6\frac{2}{3}$ years

8. A person borrows Rs 5,000 for 2 years at 4% per annual simple interest. He immediately lends to another person at $6\frac{1}{4}\%$. Per annual for 2 years find his gain in the transaction for year:

(a)Rs 112.50 (c) Rs 125

(b)Rs 225 (d) Rs 107.50

9. If an amount is kept at S.I it earns an interest of Rs 600 in first two years but when kept at compound interest it earns an interest of Rs 660 for the same period, then the rate of interest and principal amount respectively are:

(a)20%, Rs 1,200 (c) 10%, Rs 1,200

(b)20%, Rs 1,500 (d) 10%, Rs 1,500

10. The future value of an annuity of Rs 1,000 made annually for 5 years at the interest of 14% compounded annually is:

(a)Rs 5,610 (c) Rs 6,160

(b)Rs 6,610 (d) Rs 5,160

Answers

1.	**b**	**2.**	**d**	**3.**	**c**	**4.**	**b**	**5.**	**a**
6.	**a**	**7.**	**a**	**8.**	**b**	**9.**	**b**	**10.**	**b**

DPP-NO-8A

1. Find the number of arrangements of 5 things taken out of 12 things, in which one particular thing must always be included.

(a)39,000 (c) 39,600

(b)37,600 (d) 36,000

2. In how many ways 3 prizes out of 5 can be distributed amongst 3 brothers equally?

(a)10 (c) 60

(b)45 (d) 120

3. There are 12 questions to be answered to be yes or no. how many ways can these be answered?

(a)1024 (c) 4096

(b)2048 (d) none

4. The letters of the word "VIOLENT" are arranged so that the vowels occupy even place only. The number of permutations is _____.

(a)144 (c) 24

(b)120 (d) 72

5. If ${}^{n}P_4 = 20\ ({}^{n}P_2)$ then the value of 'n' is _____

(a)-2 (c) -2 and 7 both

(b)7 (d) none of these

6. A man has 3 sons and 6 schools within his reach. In how many ways, he can send them to school, if two of his sons are to read in the same school?

(a) ${}^{6}P_2$ (c) 6^3

(b) ${}^{6}P_3$ (d) 3^6

7. How many permutations can be formed from the letters of the word "DRAUGHT", if both vowels may not be separated?

(a)720 (c) 140

(b)1,440 (d) 1,000

8. If ${}^{13}C_6 + 2\ {}^{13}C_5 + {}^{13}C_4 = {}^{15}C_x$ then, x = _____.

(a)6 (c) 8

(b)7 (d) 9

9. A polygon has 44 diagonals then the number of its sides are:

(a)8 (c) 10

(b)9 (d) 11

10. The number of words that can be formed out of the letters of the word "ARTICLE" so that vowels occupy even place is:

(a)36 (c) 574

(b)144 (d) 754

Answers

1.	**c**	**2.**	**c**	**3.**	**c**	**4.**	**a**	**5.**	**b**
6.	**b**	**7.**	**b**	**8.**	**a**	**9.**	**d**	**10.**	**b**

DPP-NO-8B

1. How many different words can be formed with the letters of the word "LIBERTY"

(a)4050 (c) 5400

(b)5040 (d) 4500

2. In how many ways can a family consist of three children here different birthdays in a leap year

(a) $^{365}C_3$ (c) $366 \times 365 \times 364$

(b) $^{366}C_3 - 3$ (d) $^{366}C_3$

3. If $^{100}C_{98} = {}^{999}C_{97} + {}^{x}C_{901}$, then the value of x will be:

(a)999 (c) 997

(b)998 (d) none of these

4. If six times the number of permutations of 'n' items taken 3 at a time is equal to seven times the number of permutation of (n-1) items taken 3 at a time, then the value of 'n' will be:

(a)7 (c) 13

(b)9 (d) 21

5. If $^{6}P_r = 360$, then the value of 'r' is :

(a)5 (c) 4

(b)3 (d) none of these

6. There are 5 books on English, 4 books on Tamil and 3 books on Hindi. In how many ways can these books be placed in a shelf if the books on the same subjects are to be together?

(a)1,36,800 (c) 1,03,680

(b)1,83,600 (d) 1,63,800

7. 5 men and 4 women to sit in a row in such a manner that the woman always occupy the even places. The number of such arrangement will be:

(a)126 (c) 2080

(b)1056 (d) 2880

8. The four digit numbers that can be formed out of the seven digits 1, 2, 3, 5, 7, 8, 9 such that no digit is repeated in any number and are greater than 3000 are:

(a)120 (c) 600

(b)480 (d) 840

9. A person has ten friends of whom six are relatives. If the invites five guests such that three of them are his relatives, then the total number of ways in which he can invite them are:

(a)30 (c) 120

(b)60 (d) 75

10. An examination paper with 10 questions consists of 6 questions in mathematics and 4 questions in statistic part. At least one question from each part is to be attempted in how many ways can this be done?

(a)1024 (c) 1005

(b)945 (d) 1022

Answers

1.	b	2.	c	3.	a	4.	d	5.	c
6.	c	7.	d	8.	c	9.	c	10.	b

DPP-NO-9A

1. If f(x) = ${}^{x}C_3$; then f'(1) = ?

(a)$\frac{1}{6}$ (c) $\frac{5}{6}$

(b)$\frac{-1}{6}$ (d) $\frac{-5}{6}$

2. If Y = X^X then $\frac{d^2y}{dx^2}$ = _____

(a)$\frac{dy}{dx}(1+\log x)+Y\frac{d}{dx}(1+\log x)$

(b)$\frac{dy}{dx}(1+\log x)+\frac{d}{dx}(1+\log x)$

(c)$\frac{dy}{dx}(1+\log x)-Y\frac{d}{dx}(1+\log x)$

(d)$\frac{dy}{dx}(1+\log x)-\frac{d}{dx}(1+\log x)$

3. if $y = e^{a\log x} + e^{x\log a}$, then $\frac{dy}{dx}$ =

(a)$x^a + a^x$ (c) $a\,x^{a-1} + x\,a^{x-1}$

(b)$a\,x^{a-1} + a^x \log a$ (d) $x^x + a^a$

4. For the functions $y = x^3 - 3x$, the value of $\frac{d^2y}{dx^2}$ at which $\frac{dy}{dx}$ is zero, is

(a)$\pm$ 1 (c) ± 6

(b)± 3 (d) none of these

5. The equation of the tangent to the curve, $f = x^2 - 3x + 2$, at the point (2, 7) is –

(a)Y = 2x – 13 (c) y = 10x – 13

(b)Y = 10x (d) y = 10

6. If $y = \log\left(\frac{5-4x^2}{3+5x^2}\right)$, *then* $\frac{dy}{dx}$ = _____

(a)$\frac{8}{4x-5}-\frac{10}{3+5x}$ (c) $\frac{8x}{4x^2-5}-\frac{10x}{3+5x^2}$

(b)$(4x^2 - 5) - (3 + 5x^2)$ (d) 8x – 10

7. If $y = \log_y x$, then $\frac{dy}{dx}$ is equal to :

(a)$\frac{1}{x+\log y}$ (c) $\frac{1}{1+x\log y}$

(b)$\frac{1}{x+x\log y}$ (d) $\frac{1}{y+\log x}$

8. If x = log t, $y = e^t$, then $\frac{dy}{dx}$ =

(a)1/t (c) -1/t2

(b)t.e^t (d) none of these

9. The points on the curve $y = x^3 - x^2 - x + 1$, where the tangent is parallel to x – axis are

(a)$\left(\frac{-1}{3}, \frac{32}{27}\right) and\ (1, 0)$ (c) (1, 0) and (1, 1)

(b)$(0, 0), and\ (1, 0)$ (d) (0, 1) and (1, 1)

10. If $y = 1 + \frac{x}{\underline{|1}} + \frac{x^2}{\underline{|2}} + \cdots \ldots \ldots \ldots + \frac{x^n}{\underline{|n}} + \cdots \ldots \ldots$ then the value of $\frac{dy}{dx} - y$ = _____

(a)1 (c) 2

(b)0 (d) -1

Answers

1.	**b**	**2.**	**a**	**3.**	**b**	**4.**	**c**	**5.**	**c**
6.	**c**	**7.**	**b**	**8.**	**b**	**9.**	**a**	**10.**	**b**

DPP-NO-9B

1. If $x^p y^q = (x + y)^{p+q}$, then $\frac{dy}{dx}$ is equal to _____

(a) $\frac{q}{p}$ (c) $\frac{y}{x}$

(b) $\frac{x}{y}$ (d) $\frac{p}{q}$

2. If $e^{xy} - 4xy = 4$ then $\frac{dy}{dx}$ = _____

(a) $\frac{y}{x}$ (c) $\frac{x}{y}$

(b) $\frac{-y}{x}$ (d) $\frac{-x}{y}$

3. If $u = 3t^4 + 5t^3 + 2t^2 + t + 4$, then the value of $\frac{du}{dt}$ at t = -1 is:

(a)0 (c) 2

(b)1 (d) 5

4. If $y = ae^{nx} + be^{-nx}$, then $\frac{d^2y}{dx^2}$ is equal to _____.

(a)n^2y (c) ny

(b)$-n^2y$ (d) none of these

5. The slope of the tangent to the curve $y = \frac{x-1}{x+2}$ at x = 2 is :

(a) $\frac{3}{16}$ (c) $\frac{1}{4}$

(b) $-\frac{3}{16}$ (d) $-\frac{1}{4}$

6. If $y = \sqrt{\frac{1-x}{1+x}}$, then $\frac{dy}{dx}$ is equal to –

(a) $\frac{y}{x^2-1}$ (c) $\frac{y}{1+x^2}$

(b) $\frac{y}{1-x^2}$ (d) $\frac{y}{y^2-1}$

7. The equation of the curve which passes through the point (1, 2) and has the slope 3x – 4 at any point (x, y) is :

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

(b)$y = 6x^2 - 8x + 9$ (d) $2y = 3x^2 - 8x + c$

8. If $x = at^3 + bt^2 - t$ and $y = at^2 - 2bt$, then the value of $\frac{dy}{dx}$ at t = 0 is :

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

(b)– 2b (d) $-\frac{1}{2b}$

9. If $x^y = e^{x-y}$ then $\frac{dy}{dx}$ is equal to :

(a)$\frac{2\log x}{(1+\log x)^2}$ (c) $\frac{\log x}{(1+\log x)^2}$

(b)$\frac{\log x}{1+\log x}$ (d) none of the above

10. If $y = 1 + \frac{x}{\lfloor 1} + \frac{x^2}{\lfloor 2} + \frac{x^3}{\lfloor 3} + \cdots \ldots \ldots \infty$ then the value of $\frac{dy}{dx}$ is equal to :

(a)x (c) 1

(b)y (d) 0

Answers

1.	**c**	**2.**	**b**	**3.**	**a**	**4.**	**a**	**5.**	**a**
6.	**a**	**7.**	**a**	**8.**	**a**	**9.**	**c**	**10.**	**b**

DPP-NO-9C

1. If f(x) = $\log_e\left(\frac{x-1}{x+1}\right)$, then the value of x at which f'(x) = 1, is

(a)0 (c) $\pm\sqrt{3}$

(b)1 (d) $\pm\sqrt{2}$

2. If x = at^2, y = 2at then the value of $\frac{dy}{dx}$ at t = 2 is :

(a)2 (c) $\frac{1}{2}$

(b)4 (d) $\frac{1}{4}$

3. If y = log x^x then $\frac{dy}{dx}$ is equal to :

(a)log ex (c) $\log\frac{x}{e}$

(b)$\log\frac{e}{x}$ (d) 1

4. $\frac{d}{dx}\left[2^{\log_2 x}\right]$ = _____

(a)1 (c) ½

(b)0 (d) $2^x.\log_2 x$

5. If x = c t, y = c/t, then $\frac{dy}{dx}$ is equal to :

(a)1/t (c) -1/t2

(b)$t.e^t$ (d) none of these

Answers

1.	c	2.	c	3.	a	4.	a	5.	c

DPP-NO-10A

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

(a) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(720)}+c$ (c) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(180)}+c$

(b) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(360)}+c$ (d) $\frac{2^{3x}.3^{2x}.5^{x}}{\log(90)}+c$

2. $\int (a)^{2x}dx$_____

(a) $\frac{a^{2x}}{2\log a}$ (c) $\frac{a^{2x}.\log a}{2}$

(b) $\frac{2.a^{2x}}{\log a}$ (d) none of these

3. $\int_0^5 \frac{x^2dx}{x^2+(5-x)^2}$ is equal to _____.

(a)5 (c) 1

(b) $\frac{5}{2}$ (d) none of these

4. The value of definite integral $\int_0^2 |1-x|\,dx$ = _____

(a)0 (c) 3/2

(b)½ (d) 1

5. The value of $\int_0^{1/2} \frac{dx}{\sqrt{3-2x}}$ is

(a)1 (c) $\sqrt{3}-\sqrt{2}$

(b)1 - $\sqrt{3/2}$ (d) $\sqrt{2}-\sqrt{3}$

6. The value of $\int_0^2 xe^{x^2}$ dx is

(a)1 (c) (e/2) – 1

(b)e – 1 (d) $\frac{1}{2}(e^4-1)$

7. The value of $\int_1^2 \frac{1-x}{1+x}$ dx is equal to :

(a) $\log\frac{3}{2}-1$ (c) $\frac{1}{2}\log\frac{3}{2}-1$

(b) $2\log\frac{3}{2}-1$ (d) $\frac{1}{2}\log\frac{2}{3}-1$

8. $\int_0^2 \frac{3^{\sqrt{x}}}{\sqrt{x}}$ dx is equal to _____

(a) $\frac{2\sqrt{2}}{\log_e 3}$ (c) $\frac{2\left(3^{\sqrt{2}}-1\right)}{\log_e 3}$

(b) 0 (d) $\frac{3^{\sqrt{2}}}{\sqrt{2}}$

9. $\int \frac{x}{(x^2+1)(x^2+2)}$ dx is equal to _____

(a) $\log\left(\frac{x^2+1}{x^2+2}\right)+c$ (c) $\frac{1}{2}\log\left(\frac{x^2+2}{x^2+1}\right)+c$

(b) $\frac{1}{2}\log\left(\frac{x^2+1}{x^2+2}\right)+c$ (d) $-\log\left(\frac{x^2+1}{x^2+2}\right)+c$

10. The value of $\int_1^2 \frac{x}{x^2+1}$ dx is equal to :

(a) $\log_e\left(\frac{5}{2}\right)$ (c) $\log_e(5)-\log_e 2+c$

(b) $\frac{1}{2}\log_e\left(\frac{5}{2}\right)$ (d) none of these

Answers

1.	**b**	**2.**	**a**	**3.**	**b**	**4.**	**d**	**5.**	**c**
6.	**d**	**7.**	**b**	**8.**	**c**	**9.**	**b**	**10.**	**b**

DPP-NO-10B

1. The value of $\int e^x[f(x)+f^1(x)]dx$ =_____

(a)$e^x f(x) + c$

(b)$e^x f^1(x) + c$

(c) $\left|\frac{f^1(x)}{f(x)}\right| + c$

(d) $e^x \left|\frac{f(x)}{f^1(x)}\right| + c$

2. $\int x.e^{x^2} dx$ is equal to :

(a)$2e^{x^2} + c$

(b)$e^{x^2} + c$

(c) $\frac{1}{2}e^{x^2} + c$

(d) $xe^{x^2} + c$

3. The value of $\int_1^2 \frac{1-x}{1+x} dx$ is equal to :

(a)$\log\frac{3}{2} - 1$

(b)$2\log\frac{3}{2} - 1$

(c) $\frac{1}{2}\log\frac{3}{2} - x$

(d) $\frac{1}{2}\log\frac{2}{3} - x$

4. $\int_0^2 \frac{3^{\sqrt{x}}}{\sqrt{x}} dx$ is equal to _____

(a)$\frac{2\sqrt{2}}{\log_e 3}$

(b)0

(c) $\frac{2\left(3^{\sqrt{2}}-1\right)}{\log_e 3}$

(d) $\frac{3^{\sqrt{2}}}{\sqrt{2}}$

5. $\int_0^2 \frac{\sqrt{x}}{\sqrt{x}+\sqrt{2-x}} dx$ is :

(a)0

(b)3

(c) 2

(d) 1

6. Solve: $\int_{-1}^{1}(e^x - e^{-x})dx$

(a)0

(b)1

(c) 12

(d) none of the above

7. If f'(x) = $3x^2 - \frac{2}{x^3}$, f'(1) = 0 and f(x) = _____.

(a)$\frac{x^6}{3} - x^{-2} - 2$

(b)$x^3 + x^2 + 2$

(c) $x^3 + x^{-2} - 2$

(d) none of these

8. $\int_{-1}^{1} \frac{|x|}{x} dx$ = _____

(a)-1

(b)0

(c) 1

(d) 2

Answers

1.	a	2.	c	3.	b	4.	c	5.	d
6.	a	7.	c	8.	b				

DPP-NO-11A

1. If the difference between mean and mode is 63, then the difference between mean and median will be_____.
   (a)63 (c) 21
   (b)31.5 (d) none of the above

2. If the Arithmetic mean between two numbers is 64 and the geometric mean between them is 16. The Harmonic mean between them is _____.
   (a)64 (c) 16
   (b)4 (d) 40

3. The average of 5 quantities is 6 and the average of 3 is 8. What is the average of the remaining two.
   (a)4 (c) 3
   (b)5 (d) 3.5

4. The average age of a group of 10 students was 20 years. The average age increased by two years when two new students joined the group. What is the average age of two new students who joined the group?
   (a)22 years (c) 44 years
   (b)30 years (d) 32 years

5. Geometric Mean of three observations 40, 50 and X is 10. The value of X is
   (a)2 (c) ½
   (b)4 (d) none of the above

6. The mean of first three term is 14 and mean of next two terms is 18. The mean of all five term is :
   (a)14.5 (c) 14
   (b)15 (d) 15.6

7. The mean salary of a group of 50 persons is Rs 5,850. Later on it is discovered that the salary of one employee has been wrongly taken as Rs 8,000 instead of Rs 7,800. The corrected mean salary is
   (a)Rs 5,854 (c) Rs 5,650
   (b)Rs 5,846 (d) none of the above

8. If the mode of a data is 18 and mean is 24, then median is –
   (a)18 (c) 22

(b)24 (d) 21

9. A man travels from Agra to Gwalior at an average speed of 30 km per hour and back at an average speed of 60 km per hour. What is his average speed?
   (a)38 km per hour (c) 45 km per hour
   (b)40 km per hour (d) 35 km per hour

10. If sum of squares of the values = 3390, N = 30 and standard deviation = 7, find out the mean.
   (a)113 (c) 8
   (b)210 (d) none of these

Answers

1.	c	2.	b	3.	c	4.	d	5.	c
6.	d	7.	b	8.	c	9.	b	10.	c

DPP-NO-11B

1. Geometric mean of 8, 4, 4, 2 is
   (a)4 (c) 8
   (b)2 (d) none of these

2. The average age of 15 students of a class is 15 years. Out of them, the average age of 5 students is 14 years and that cf the other 9 students is 6 years. The age of the 15^{th} students is :
   (a)11 years (c) 15 years
   (b)14 years (d) none of these

3. The mean of the following data is 6. Find the value of 'P'.

X:	2	4	6	10	P +5
Y:	3	2	3	1	2

   (a)4 (c) 8
   (b)6 (d) 7

4. The harmonic mean H of two numbers is 4 and their arithmetic mean A and the geometric mean G satisfy the equation $2A + G^2 = 27$, then the numbers are
   (a)(1, 3) (c) (6, 3)
   (b)(9, 5) (d) (12, 7)

5. In a class of 50 students, 10 have failed and their average marks in 2.5. the total marks secured by the entire class were 281. The average marks who have passed is :
   (a)5.32 (c) 6.40
   (b)7.25 (d) none of the above

6. In a class of 50 students, 10 have failed and their average marks in 2.5. the total marks secured by the entire class were 281. The average marks who have passed is :
   (a)5.32 (c) 6.40
   (b)7.25 (d) none of the above

7. For moderately skewed distribution of marks in commerce for a group of 200 students the mean marks and mode marks were found to be 55.60 and 46. What is the median marks?
   (a)55.5 (c) 52.4
   (b)60.5 (d) none of these

8. Mean for the data 6, 4, 1, 6, 5, 10, 3 is 5 when each observation added by 2, what is mean of the data
   (a)5 (c) 7
   (b)6 (d) 10

9. If the mean of two numbers is 30 and geometric mean is 24 then what will be these two numbers?
   (a)36 and 24 (c) 48 and 12
   (b)30 and 30 (d) none of these

10. The geometric mean of three numbers 40, 50 and x is 10, the value of x is
   (a)5 (c) 2
   (b)4 (d) $\frac{1}{2}$

Answers

1.	a	2.	a	3.	d	4.	c	5.	c
6.	c	7.	c	8.	c	9.	c	10.	d

DPP-NO-11C

1. If standard deviation of first 'n' natural numbers is 2 then value of 'n' is
   (a)10 (c) 6
   (b)7 (d) 5

2. The standard deviation is independent of change of
   (a)Scale (c) both origin and scale
   (b)Origin (d) none of these

3. If the mean of a frequency distribution is 100 and coefficient of variation is 45% then standard deviation is :
   (a)45 (c) 4.5
   (b)0.45 (d) 450

4. Which of the following measures of central tendency cannot be calculated by graphical method?
   (a)Mean (c) median
   (b)Mode (d) Quartile

5. Find at the variance given that the Arithmetic Mean = (8 + 4) /2
   (a)2 (c) 1
   (b)6 (d) 4

6. In normal distribution mean, median and mode are
   (a)Equal (c) zero
   (b)Not equal (d) none of above

7. Coefficient of mean deviation about mean for the first 9 natural numbers is
   (a)200/9 (c) 400/9
   (b)80 (d) 50

8. If mean = 5, standard deviation = 2.6, median = 5 and quartile deviation = 1.5, then the coefficient of quartile deviation equals
   (a)35 (c) 30
   (b)39 (d) 32

9. What is value of mean deviation about mean from the number 5, 8, 6, 3 and 4?
   (a)5.20 (c) 1.44
   (b)7.20 (d) 2.23

10. For the observation of 6, 4, 1, 6, 5, 10, 4, 8 the range is :
    (a)10 (c) 8
    (b)9 (d) none

11. If a variance of a random variable 'x' is 23, then what is variance of 2x + 10?
    (a)56 (c) 46
    (b)33 (d) 92

12. If variance = 148.6 and $\overline{x}$ = 40, then the coefficient of variation is :
    (a)37.15 (c) 33.75
    (b)30.48 (d) none of the above

13. The SD of first n natural number is _____
    (a) $\sqrt{\frac{n^2-1}{12}}$ (c) $\sqrt{\frac{n(n-1)}{6}}$
    (b) $\sqrt{\frac{n(n+1)}{12}}$ (d) none of these

14. If mean and coefficient of variation of the marks of 10 students is 20 and 80 respectively. What will be variance of them?
    (a)256 (c) 25
    (b)16 (d) none of these

15. If same amount is added to or subtracted from all the values of individual series then the standard deviation and variance both shall be _____
    (a)Changed (c) same
    (b)Unchanged (d) none of these

Answers

1.	b	2.	b	3.	a	4.	a	5.	b
6.	a	7.	c	8.	c	9.	c	10.	b
11.	d	12.	b	13.	a	14.	a	15.	b

DPP-NO-12A

1. Two regression lines for a bivariate data are: 2x – 5y + 6 = 0 and 5x – 4y + 3 = 0. Then the coefficient should be:

(a)$\frac{-2\sqrt{2}}{5}$ (c) $\frac{+2\sqrt{2}}{5}$

(b)$\frac{2}{5}$ (d) $\frac{\sqrt{2}}{5}$

2. When each individual gets the exactly opposite rank by the two judges, then the rank correlation will be_____.

(a)0 (c) +1

(b)-1 (d) $\frac{1}{2}$

3. If the mean of the two variables 'x' and 'y' are 3 and 1 respectively. Then the equation of two regression lines are _____.

(a)5x + 7y – 22 = 0, 6x + 2y – 20 = 0

(b)5x + 7y – 22 = 0, 6x + 2y + 20 = 0

(c)5x + 7y + 22 = 0, 6x + 2y – 20 = 0

(d)5x + 7y + 22 = 0, 6x + 2y + 20 = 0

4. The equation of two lines of regression for 'x' and 'y' are 5x = 22 + y and 64x = 24 + 45y then the value of regression coefficient of 'y' on 'x' will be _____.

(a)5 (c) $\frac{64}{45}$

(b)$\frac{1}{5}$ (d) $\frac{45}{64}$

5. If the correlation coefficient between two variables is zero, then the lines of regression are :

(a)Parallel (c) coincide

(b)Perpendicular (d) none of these

6. If the value of correlation between x & y is 1, then the value of correlation coefficient between x – 2 and $\frac{-y}{2}$ +1 is :

(a)1 (c) -1/2

(b)-1 (d) ½

7. The equations of two regression lines are x + y = 6 and x + 2y = 10, then the value of correlation coefficient between x and y is :

(a)-1/2 (c) -1/$\sqrt{2}$

(b)+1/2 (d) $+1/\sqrt{2}$

8. Two regression lines are

16x – 20y + 132 = 0

80x – 36y – 428 = 0

The value of the correlation coefficient is

(a)0.6 (c) 0.54

(b)-0.6 (d) 0.45

9. When the correlation coefficient r is equal to + 1, all the points in a scatter diagram would be

(a)On a straight line directed from upper left to lower right

(b)On a straight line directed from lower to upper right

(c)On a straight line

(d)Both (a) and (b)

10. Out of following which is correct?

(a) $b_{yx} = r\frac{\sigma_x}{\sigma_y}$ (c) $b_{yx} = \frac{\pi.\sum xy}{\sigma_x}$

(b) $b_{yx} = r\frac{\sigma_y}{\sigma_x}$ (d) $b_{yx} = \frac{\pi.\sum xy}{\sigma_y}$

Answers

1.	**c**	**2.**	**b**	**3.**	**a**	**4.**	**c**	**5.**	**b**
6.	**b**	**7.**	**c**	**8.**	**a**	**9.**	**b**	**10.**	**b**

DPP-NO-12B

1. Two regression equations are as follows:
Regression equation of x on y: 5x – y = 22
Regression equation of y on x: 64x – 45y = 24
What will be the mean of x and y?
(a)$\overline{x} = 8, \overline{y} = 6$ (c) $\overline{x} = 6, \overline{y} = 8$
(b)$\overline{x} = 6, \overline{y} = 6$ (d) $\overline{x} = 8, \overline{y} = 8$

2. If the coefficient of correlation between X and Y variables is +0.90 then what will be the coefficient of determination?
(a)0.30 (c) 0.94
(b)0.81 (d) none of these

3. The two lines of regression become identical when
(a)R = 1 (c) r = 0
(b)R=-1 (d) (a) or (b)

4. If r = 0.6, then the coefficient of determination is
(a)0.4 (c) 0.36
(b)-0.6 (d) 0.64

5. The two regression lines passing through
(a)Represent means (c) (a) and (b)
(b)Represent S.Ds (d) none of these

6. Out of the following the one which effects the regression coefficient is
(a)Change of origin only
(b)Change of scale and origin both
(c)change of scale only
(d)neither change in origin nor change of scale

7. The regression equation x and y is 3x + 2y = 100, the value of b_{xy}
(a)$-\frac{2}{3}$ (c) $\frac{3}{2}$
(b)$\frac{100}{3}$ (d) $\frac{2}{3}$

8. In a beauty contest there were 10 competitions. Rank of these candidates are assigned by two judges A and B. the sum of squares of differences of ranks is 44. The value of rank correlation is:

(a)0.70 (c) 0.80
(b)0.73 (d) 0.60

9. If two regression lines are x + y = 1and x – y = 1 then mean values of x and y will be:
(a)0 and 1 (c) 1 and 0
(b)1 and 1 (d) -1 and -1

10. The coefficient of correlation between x and y is 0.6. If x and y values are multiplied by -1, then the coefficient of correlation will be:
(a)0.6 (c) $\frac{1}{0.6}$
(b)-0.6 (d) 1 – 0.6

11. If two regression lines are 5y = 9x – 22 and 20x = 9y + 350, then the value of correlation coefficient (r) will be:
(a)0.10 (c) -0.90
(b)-0.10 (d) 0.90

12. If r = 0.6 then the coefficient of non-determination will be:
(a)0.40 (c) 0.36
(b)-0.60 (d) 0.64

13. The correlation coefficient (r) is the _____ of the two regression coefficients (b_{yx} and b_{xy})
(a)AM (c) HM
(b)GM (d) median

14. The coefficient of determination is defined by the formula
(a)$r^2 = \frac{1-unexplained\ variance}{total\ variance}$ (c) both (a) and (b)
(b)$r^2 = \frac{1-explained\ \ variance}{total\ variance}$ (d) none

15. A relationship $r^2 = 1 - \frac{500}{300}$ is not possible
(a)True (c) both
(b)False (d) none

Answers

1.	**c**	**2.**	**b**	**3.**	**d**	**4.**	**c**	**5.**	**a**
6.	**b**	**7.**	**a**	**8.**	**b**	**9.**	**c**	**10.**	**a**
11.	**d**	**12.**	**d**	**13.**	**b**	**14.**	**c**	**15.**	**a**

DPP-NO-13A

1. In a game, cards are thoroughly shuffled and distributed equally among four players. What is the probability that a specific player gets all the four kings?

(a) (b)

(c) (d)

2. A bag contains 4 red and 5 black balls. Another bag contains 5 Red and # Black balls. If one ball is drawn at random from each bag. Then the probability that one red and one black drawn is –

(a)$\frac{12}{72}$ (b)$\frac{25}{72}$

(c)$\frac{37}{72}$ (d)$\frac{13}{72}$

3. If P(A) = $\frac{2}{3}$, P(B) = $\frac{3}{5}$ and P(A∪B) = $\frac{5}{6}$ then P$\left(\frac{A}{B^1}\right)$ is

(a)$\frac{7}{12}$ (b)$\frac{5}{12}$

(c)$\frac{1}{4}$ (d)$\frac{1}{2}$

4. If two unbiased dice are rolled, what is the probability of getting points neither 3 nor 6?

(a)0.25 (b)0.50

(c)0.75 (d)0.80

5. Two dice are tossed. What is the probability that the total is divisible by 3 or 4.

(a)$\frac{20}{36}$ (b)$\frac{21}{36}$

(c)$\frac{14}{36}$ (d)none of these

6. If two events A, B, P(A) = $\frac{1}{2}$, P(B) = $\frac{1}{3}$ and P(A∪B) = $\frac{2}{3}$ then P(A∩B) is:

(a)$\frac{1}{4}$ (b)$\frac{1}{6}$

(c)$\frac{2}{3}$ (d)$\frac{1}{2}$

7. A bag contains 6 white and 5 red balls. One ball is drawn. The probability that it is red is:

(a)$\frac{5}{11}$ (b)$\frac{6}{11}$

(c)$\frac{1}{11}$ (d)none of these

8. For two events A, B let $P(A) = \frac{2}{3}$, $P(B) = \frac{3}{8}$ and $P(A \cap B) = \frac{1}{4}$ then A and B are:

(a)Mutually exclusive but not independent

(b)Independent but not mutually exclusive

(c)Mutually exclusive and independent

(d)none of these

Answers

1.	**b**	**2.**	**c**	**3.**	**a**	**4.**	**d**	**5.**	**a**
6.	**b**	**7.**	**a**	**8.**	**b**				

DPP-NO-13B

1. If for two mutually exclusive events A and BP (A∪B) = $\frac{2}{3}$ and P(A) = $\frac{2}{5}$ then what is the value of P(B)?

(a)$\frac{4}{15}$ (b)$\frac{4}{9}$

(c)$\frac{5}{9}$ (d)$\frac{7}{15}$

2. The probability distribution of the demand for a commodity is given below:

Demand(x)	5	6	7	8	9	10
Probability[P(x)]	0.05	0.10	0.30	0.40	0.10	0.05

The expected value of demand will be

(a)7.55 (b)7.85

(c)1.25 (d)8.35

3. Two broad divisions of probability are:

(a)Subjective probability and objective probability

(b)Deductive probability and mathematical probability

(c)Statistical probability and mathematical probability

(d)none of these

4. The term "chance" and probability are synonyms :

(a)True (b)False

(c)Both (d)none

5. The theorem of compound probability states that for any two events A an B

(a)P(A∩B) = P(A) × P(B/A) (b) P(A∪B) = P(A) × P(B/A)

(c) P(A∩B) = P(A) × P(B) (d) P(A∪B) = P(A) + P(B) – P(A∩B)

6. Variance of a random variable x is given by

(a)$E(X - \mu)^2$ (b)$E[X - E(X)]^2$

(c)$E(X^2 - \mu)$ (d)(a) or (b)

7. If two random variables x and y are related by y = 2 – 3x, then the SD of y is given by

(a)-3 × SD of x (b)3 × SD of x

(c)9 × SD of x (d) 2 × SD of x

8. What is the probability of having at least one 'six' year 3 throws of a project die?

(a)5/6 (b)$(5/6)^3$

(c)$1-(1/6)^3$ (d)$1-(5/6)^3$

9. Sum of all probabilities mutually exclusive and exhaustive events is equal to

(a)0 (b)1/2

(c)1/4 (d)1

Answers

1.	**a**	**2.**	**a**	**3.**	**a**	**4.**	**a**	**5.**	**a**
6.	**d**	**7.**	**b**	**8.**	**d**	**9.**	**d**		

DPP-NO-14A

1. If x and y are independent normal variates with Mean and Standard Deviation as μ_1 and μ_2 and σ_1 and σ_2 respectively, then z = x + y also follows normal distribution with

(a)mean = $\mu_1 + \mu_2$ and S.D = 0 respecively

(b) Mean = 0 ann S.D = $\sigma_1^2 + \sigma_2^2$

(c)Mean = $\mu_1 + \mu_2$ and S.D

(d)none of these

2. A Poisson random variable has $\mu_4 = 2$, its variance i.e μ_2 is

(a)$\frac{2}{3}$ (b)$\frac{1}{2}$

(c)$\frac{1}{3}$ (d)$\frac{3}{2}$

3. Name the distribution which has mean = variance

(a)Binomial (b)Poisson

(c)Normal (d)Chi-square

4. An example of a bi-parametric probability distribution:

(a)Binomial (b)Poisson

(c)Normal (d)(a) and (b)

5. If X – N(50, 16), then which of the following is not possible:

(a)P(X > 60) = 0.30 (b)P(X < 50) = 0.50

(c)P(X < 60) = 0.40 (d)P(X > 50) = 0.50

6. If for a distribution mean = variance, then the distribution is said to be:

(a)Normal (b)binomial

(c)Poisson (d)None of the above

7. For a binomial distribution if variance = $(\text{mean})^2$, then the values of n and p will be:

(a)1 and $\frac{1}{2}$ (b)2 and $\frac{1}{2}$

(c)3 and $\frac{1}{2}$ (d) 1 and 1

8. In a normal distribution about 95 percent of the observations lie between _____and_____.

(a)$\mu - 2\sigma, \mu + 2\sigma$ (b)$\mu - 3\sigma, \mu+3\sigma$

(c)$\mu - 1.96\sigma, \mu + 1.96\sigma$ (d)$\mu - 2.58\sigma, \mu + 2.58\sigma$

9. An example of a bi-parametric discrete probability distribution is

(a)Binomial distribution (b)Poisson distribution

(c)Normal distribution (d)both (a) and (b)

10. In_____ distribution, mean = variance

(a)Normal (b)Binomial

(c)Poisson (d)none of the above

Answers

1.	**c**	**2.**	**a**	**3.**	**b**	**4.**	**c**	**5.**	**c**
6.	**c**	**7.**	**a**	**8.**	**c**	**9.**	**a**	**10.**	**c**

DPP-NO-14B

1. The variance of a binomial distribution with parameter n and p is:

(a)$np^2(1-p)$ (b)$\sqrt{np-(1-p)}$

(c)$nq(1-q)$ (d)$n^2P^2\,(1-p)^2$

2. X is a Poisson variate satisfying the following condition 9 P(X = 4) + 90(X = 6) = P(X = 2). What is the value of $P(X \leq 1)$?

(a)0.5655 (b)0.6559

(c)0.7358 (d)0.8201

3. What is the first quartile of x having the following probability density function?

$F(x) = \frac{1}{\sqrt{72\pi}} e^{-(x-10)^2/72}$ for $-\infty < x < \infty$

(a)4 (b)5

(c)5.95 (d)6.75

4. An example of a bi-parameter discrete probability distribution is

(a)binomial distribution (b)Poisson distribution

(c)normal distribution (d)both (a) and (b)

5. Probability distribution may be

(a)discrete (b)continuous

(c)infinite (d)(a) or (b)

6. If the aera of standard normal curve between z = 0 to z = 1 is 0.3412, then the value of ϕ (1) is

(a)0.5000 (b)0.8413

(c)-0.5000 (d)1

Answers

1.	c	2.	c	3.	c	4.	a	5.	d
6.	b								

DPP-NO-15A

1. The monthly income of an employee was Rs 8,000 in 2014. The consumer price index number was 160 in 2014, which rose to 200 in 2017. If he has to be rightly compensated, the additional dearness allowance to be paid to him in 2017 would be:

(a)Rs 2,400 (b)Rs 2,750

(c)Rs 2,500 (d)none of these

2. If Laspeyre's index number (L) and Paasche's index number (P) are known, then one can comput Fisher's index number (F) by:

(a)F = LP (b)$\sqrt{F}$ = LP

(c)F = $\frac{1}{LP}$ (d)F^2 = LP

3. Fisher's index number does not satisfy:

(a)unit test (b)circular test

(c)time reversal test (d) factor reversal test

4. Circular test is an extension of _____.

(a)factor reversal test (b)time reversal test

(c)neither (a) nor (b) (d)both (a) and (b)

5. Fishers index number is based on:

(a)The arithmetic mean of Laspeyre's and Paasche's index numbers

(b)The median of Laspeyre's and Passche's index numbers

(c)The mode of Laspeyre's and Paasche's index numbers

(d)None of these

6. Price relative is equal to:

(a)$\frac{price\ in\ the\ given\ year}{price\ in\ the\ base\ year} \times 100$ (b)$\frac{price\ in\ the\ base\ year}{price\ in\ the\ given\ year} \times 100$

(c)price in the given year ×100 (d)price in the base year ×100

7. For consumer price index, prices are collected form:

(a)retail traders (b) wholesale traders

(c)fair price shops (d)government depots

8. Time reversal & factor reversal are:

(a)Quantity index (b)Ideal index

(c)price index (d)test of consistency

9. A series of numerical figures which show the relative position is called

(a)Index number (b)Relative number

(c)Absolute number (d)none

10. The number of test of Adequacy is

(a)2 (b)5

(c)3 (d)4

Answers

1.	**d**	**2.**	**d**	**3.**	**b**	**4.**	**b**	**5.**	**d**
6.	**a**	**7.**	**a**	**8.**	**d**	**9.**	**a**	**10.**	**d**

DPP-NO-15B

1. P_{01} is the index for time
(a)1 on 0 (b)0 on 1
(c)1 on 1 (d)0 on 0

2. The circular test is an extension of
(a)The time is reversal test (b)The factor reversal test
(c)The unit test (d)None of these

3. If $\sum P_0Q_0 = 1360, \sum P_nQ_0 = 1900, \sum P_0Q_n = 1344, \sum P_nQ_n = 1880$ then the Laspeyre's. index number is
(a)0.71 (b)1.39
(c)1.75 (d)none of these

4. Price relative is expressed in term of
(a)$P = \frac{P_n}{P_o}$ (b) $P = \frac{P_p}{P_n}$
(c) $P = \frac{P_n}{P_o} \times 100$ (d) $P = \frac{P_o}{P_n} \times 100$

5. Circular test is satisfied by
(a)Laspeyre's index number
(b)Paasche's index number
(c)The simple geometric mean of price relatives and the weighed aggregative with fixed weights.
(d)none of these

6. If the 1970 index with base 1965 is 200 and 1965 index with base 1900 is 150, the index 1970 on base 1960 will be:
(a)700 (b)300
(c)500 (d)600

7. The multiplicative time series model is
(a)Y = T+S+C+I (b)y = TSCI
(c)y = a + bx (d) $y = a + bx + cx^2$

Answers

1.	a	2.	a	3.	b	4.	c	5.	c
6.	b	7.	a						