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FATIMA MATRIC HR SEC SCHOOL, JAYANKONDAM

X STD MATHS

ONE MARK TEST

STUDY MATERIAL

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1.RELATIONS AND FUNCTIONS

1. If $f: A \to B$ is a bijective function and if n(B)=7 , then n(A) is equal to
(1) 7 (2) 49 (3) 1 (4) 14

2.If there are 1024 relations from a set A={ 1,2,3,4,5} to a set B . Then the number of elements in B is
(1) 3 (2) 2 (3) 4 (4) 8

3.If $n(A \times B) = 6$ and A = { 1,3 } then n (B) is
(1) 1 (2) 2 (3) 3 (4) 6

4. If g={(1,1), (2,3),(3,5),(4,7)} is function given by $g(x) = \alpha x + \beta$, then value of α and β are
(1) (-1,2) (2) (2,-1) (3) (-1,-2) (4) (1,2)

5.Let A={1,2,3,4} and B={4,8,9,10}. A function $f: A \to B$ given by $f = \{(1,4), (2,8), (3,9), (4,10)\}$ is a
(1) Many – one function (2) Identity function
(3) One to one function (4) Into function

6. A = { a, b, p } , B = { 2, 3 } , C = { p, q, r, s } then $n[(A \cup C) \times B]$ is
(1) 8 (2) 20 (3) 12 (4) 16

7. $f(x) = (x+1)^3 - (x-1)^3$ represents a function which is
(1) linear (2) cubic (3) reciprocal (4) quadratic

8.If the ordered pairs $(a+2, 4)$ and $(5, 2a+b)$ are equal then (a, b) is
(1) (2,-2) (2) (5, 1) (3) (2, 3) (4) (3, -2)

9. If {(a,8),(6,b)} represents an identity function, then the value of a and b are respectively.
(1) (8, 6) (1) (8,8) (3) (6,8) (4) (6,6)

10. If A = { 1, 2 } , B = { 1, 2, 3, 4 }, C = { 5, 6 } and D = { 5, 6, 7, 8 }, then state which of the following statement is true
(1) $(A \times C) \subset (B \times D)$ (2) $(B \times D) \subset (A \times C)$
(3) $(A \times B) \subset (A \times D)$ (4) $(D \times A) \subset (B \times A)$

11. Let f and g be two functions given by $f = \{(0,1), (2,0), (3,-4), (4,2), (5,7)\}$, $g = \{(0,2), (1,0), (2,4), (-4,2), (7,0)\}$ then the range of $f \circ g$ is
(1) {0,2,3,4,5} (2) {-4,1,0,2,7} ,
(3) {1,2,3,4,5} (4) {0,1,2}

12. The range of the relations R = $\{(x, x^2) | \ x \text{ is a}$ prime number less than13 } is
(1) {2,3,5,7} (2) {2,3, 5,7,11}
(3) {4,9,25,49,121} (4) {1,4,9,25,49,121}

13. Let f(x)=$\sqrt{1+x^2}$ then
(1) $f(xy) = f(x).f(y)$ (2) $f(xy) \geq f(x).f(y)$
(3) $f(xy) \leq f(x).f(y)$ (4) None of these

14. Let n(A) = m, and n(B) = n, then the total number of non-empty relations that can be defined from A to B is
(1) m^n (2) n^m (3) $2^{mn} - 1$ (4) 2^{mn}

15. If f(x) = $2x^2$ and g(x) = $\frac{1}{3x}$, then $f \circ g$ is
(1) $\frac{3}{2x^2}$ (2) $\frac{2}{3x^2}$ (3) $\frac{2}{9x^2}$ (4) $\frac{1}{6x^2}$

2.NUMBERS AND SEQUENCES

1. Given $F_1 = 1, F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$, then F_5 is
(1) 3 (2) 5 (3) 8 (4) 11

2. If $A = 2^{65}$ and $B = 2^{64} + 2^{63} + 2^{62} + \cdots \ldots + 2^0$ Which of the following is true ?
(1) B is 2^{64} more than A (2) A and B are equal
(3) B is larger than A by 1 (4) A is larger than B by 1

3.In an A.P , the first term is 1 and the common difference is 4. How many terms of the A.P must be taken for their sum to be equal to 120 ?
(1) 6 (2) 7 (3) 8 (4) 9

4. Using Euclid's division lemma , if the cube of any Positive integer is divided by 9 then the possible Remainders are
(1) 0,1,8 (2) 1,4,8 (3) 0,1,8 (4) 1,3,5

5. If the sequence $t_1, t_2, t_3, \ldots$ are in A.P. then the Sequence $t_6, t_{12}, t_{18}, \ldots$ is
(1) a G. P. (2) an A. P.
(3) Neither an A.P nor a G.P
(4) a constant sequence

6. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is
(1) 2025 (2) 5220 (3) 5025 (4) 2520

7. The sum of the exponents of the prime factors in the prime factorization of 1729 is
(1) 1 (2) 2 (3) 3 (4) 4

8. The first term of an arithmetic progression is unity and the common difference is 4. Which of the following will be a term of this A.P.
(1) 4551 (2) 10091 (3) 7881 (4) 13531

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16. A system of three linear equations in three Variables is inconsistent if their planes
(1) intersect only at a point (2) intersect in a line
(3) Coincides with each other (4) do not intersect

17. For the given matrix $A = \begin{bmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{bmatrix}$
The order of the matrix A^T is
(1) 2 X 3 (2) 3 X 2 (3) 3 X 4 (4) 4 X 3

18. Graph of a linear polynomial is a
(1) straight line (2) circle
(3) Parabola (4) hyperbola

19. Which of the following can be calculated from the given matrices
$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$
(i) A^2 (ii) B^2 (iii) AB (iv) BA
(1) (i) and (ii) only (2) (ii) and (iii) only
(3) (ii) and (iv) only (4) all of these.

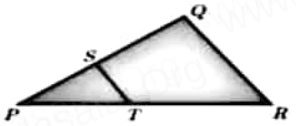
20. $\frac{x}{x^2-25} - \frac{8}{x^2+6x+5}$ gives
(1) $\frac{x^2-7x+40}{(x-5)(x+5)}$ (2) $\frac{x^2+7x+40}{(x-5)(x+5)(x+1)}$
(3) $\frac{x^2-7x+40}{(x^2-25)(x+1)}$ (4) $\frac{x^2+10}{(x^2-25)(x+1)}$

4 . GEOMETRY

1. A tangent is perpendicular to the radius at the
(1) centre (2) point of contact
(3) Infinity (4) chord

2. If in triangle ABC and EDF, $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when
(1) $\angle B = \angle E$ (2) $\angle A = \angle D$
(3) $\angle B = \angle D$ (4) $\angle A = \angle F$

3. In a given figure ST ∥ QR, PS = 2 cm and SQ = 3 cm. Then the ratio of the area of ΔPQR to the area of ΔPST is



(1) 25:4 (2) 25:7 (3) 25:11 (4) 25:13

4. The two poles of heights 6 m and 11 m stand vertically on a plane ground. If the distance between their feet is 12 m. What is the distance between their tops ?
(1) 13 m (2) 14 m (3) 15 m (4) 12.8 m

5. The perimeters of two similar triangle ΔABC and ΔPQR are 36 cm and 24 cm respectively. If PQ=10 cm. Then the length of AB is
(1) $6\frac{2}{3}$ cm (2) $\frac{10\sqrt{6}}{3}$ cm (3) $66\frac{2}{3}$ cm (4) 15 cm

6. In $\Delta LMN, \angle L = 60°, \angle M = 50°$ .If $\Delta LMN \sim \Delta PQR$, then the value of $\angle R$ is
(1) 40° (2) 70° (3) 30° (4) 110°

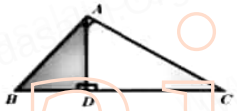
7. How many tangents can be drawn to the circle from an exterior point ?
(1) one (2) two (3) Infinite (4) zero

8. If ΔABC is an isosceles triangle with $\angle C = 90°$ and AC= 5 cm then AB is
(1) 2.5 cm (2) 5cm (3) 10 cm (4) $5\sqrt{2}$ cm

9. In a ΔABC, AD is the bisector of $\angle BAC$. If AB=8 cm BD = 6 cm and DC = 3 cm .The length of the side AC is
(1) 6 cm (2) 4 cm (3) 3 cm (4) 8 cm

10. The two tangents from an external point P to a circle with centre at O are PA and PB. If $\angle APB = 70°$ then the value of $\angle AOB$ is
(1) 100° (2) 110° (3) 120° (4) 130°

11. In the adjacent figure $\angle BAC = 90°$ and $AD \perp BC$, then



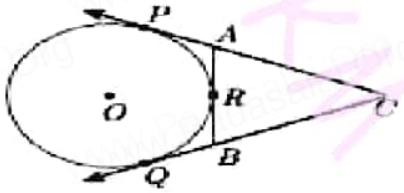
(1) $BD.CD = BC^2$ (2) $AB.AC = BC^2$
(3) $BD.CD = AD^2$ (4) $AB.AC = AD^2$

12. In the given figure, PR= 26 cm, QR= 24 cm $\angle PAQ = 90°$, PA= 6 cm, and QA= 8 cm. Find $\angle PQR$

(1) 80° (2) 85° (3) 75° (4) 90°

13. If in $\Delta ABC, DE \parallel BC$, AB=3.6 cm, AC= 2.4 cm and AD=2.1 cm then the length of AE is
(1) 1.4 cm (2) 1.8 cm (3) 1.2 cm (4) 1.05 cm

14. In the figure CP and CQ are tangents to a circle with centre at O. ARB is the another tangent touching the circle at R. If CP= 11 cm and BC=7 cm then the length of BR is



(1) 6 cm (2) 5 cm (3) 8 cm (4) 4 cm

9. The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \ldots$ *is*
(1) $\frac{1}{24}$ (2) $\frac{1}{27}$ (3) $\frac{2}{3}$ (4) $\frac{1}{81}$

10. $7^{4k} \equiv$ _____ $(mod\ 100)$
(1) 1 (2) 2 (3) 3 (4) 4

11. Euclid's divisions lemma states that for positive integers a and b, there exists unique integers q and r such that a = bq + r, where r must satisfy
(1) $1 < r < b$ (2) $0 < r < b$
(3) $0 \leq r < b$ (4) $0 < r \leq b$

12. If 6 times of 6th term of an A.P is equal to 7 times the 7th term, then the 13th term of the A.P is
(1) 0 (2) 6 (3) 7 (4) 13

13. If the HCF of 65 and 117 is expressible in the form of $65m - 117$ then the value of m is
(1) 4 (2) 2 (3) 1 (4) 3

14. The value of
$(1^3 + 2^3 + 3^3 + \cdots + 15^3) - (1 + 2 + 3 + \cdots + 15)$
(1) 14400 (2) 14200 (3) 14280 (4) 14520

15. An A.P consists of 31 terms. If its 16th term is m, then the sum of all the terms of this A.P is
(1) 16m (2) 62m (3) 31m (4) $\frac{31}{2}$ m

3. ALGEBRA

1. The values of a and b if $4x^4 - 24x^3 + 76x^2 + ax + b$ is a perfect square
(1) 100,120 (2) 10,12 (3) $-120, 100$ (4) 12,10

2. If $(x - 6)$ is the HCF of $x^2 - 2x - 24$ *and* $x^2 - kx - 6$ then the value of k is
(1) 3 (2) 5 (3) 6 (4) 8

3. The number of columns and rows are not equal in a matrix then it is said to be a
(1) diagonal matrix (2) rectangular matrix
(3) Square matrix (4) identity matrix

4. $y^2 + \frac{1}{y^2}$ is not equal to
(1) $\frac{y^4+1}{y^2}$ (2) $\left(y + \frac{1}{y}\right)^2$
(3) $\left(y - \frac{1}{y}\right)^2 + 2$ (4) $\left(y + \frac{1}{y}\right)^2 - 2$

5. The solution of the system $x + y - 3z = -6$, $-7y + 7z = 7$, $3z = 9$ is
(1) x=1, y=2, z=3 (2) x=-1, y=2, z=3
(3) x=-1, y=-2, z=3 (4) x= 1, y=2, z=3

6. The square root of $\frac{256x^8y^4z^{10}}{25x^6y^6z^6}$ is equal to
(1) $\frac{16}{5}\left|\frac{x^2z^4}{y^2}\right|$ (2) $16\left|\frac{y^2}{x^2z^4}\right|$
(3) $\frac{16}{5}\left|\frac{y}{xz^2}\right|$ (4) $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

7. Find the matrix X if $2X + \begin{bmatrix}1 & 3\\5 & 7\end{bmatrix} = \begin{bmatrix}5 & 7\\9 & 5\end{bmatrix}$
(1) $\begin{bmatrix}-2 & -2\\2 & -1\end{bmatrix}$ (2) $\begin{bmatrix}2 & 2\\2 & -1\end{bmatrix}$
(3) $\begin{bmatrix}1 & 2\\2 & 2\end{bmatrix}$ (4) $\begin{bmatrix}2 & 1\\2 & 2\end{bmatrix}$

8. The solution of $(2x - 1)^2 = 9$ is equal to
(1) -1 (2) 2 (3) $-1, 2$ (4) none of these

9. If the roots of the equation $q^2x^2 + p^2x + r^2 = 0$ are the squares of the roots of the equation $qx^2 + px + r = 0$, then q, p, r are in.....
(1) A.P (2) G.P
(3) Both A.P and G.P (4) none of these

10. Which of the following should be added to make $x^4 + 64$ a perfect square ?
(1) $4x^2$ (2) $16x^2$ (3) $8x^2$ (4) $-8x^2$

11. If $A = \begin{bmatrix}1 & 2 & 3\\3 & 2 & 1\end{bmatrix}, B = \begin{bmatrix}1 & 0\\2 & -1\\0 & 2\end{bmatrix}, C = \begin{bmatrix}0 & 1\\-2 & 5\end{bmatrix}$
Which of the following statements are correct ?
(i). $AB + C = \begin{bmatrix}5 & 5\\5 & 5\end{bmatrix}$ (ii). $BC = \begin{bmatrix}0 & 1\\2 & -3\\-4 & 10\end{bmatrix}$
(iii). $BA + C = \begin{bmatrix}2 & 5\\3 & 0\end{bmatrix}$ (iv). $(AB)C = \begin{bmatrix}-8 & 20\\-8 & 13\end{bmatrix}$
(1) (i) and (ii) only (2) (ii) and (iii) only
(3) (iii) and (iv) only (4) all of these

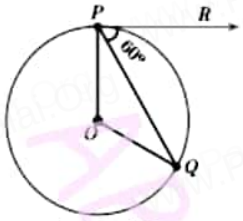
12. The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with X-axis is
(1) 0 (2) 1 (3) 0 or 1 (4) 2

13. If A is a 2 X 3 matrix and B is a 3 X 4 matrix, how many columns does AB have
(1) 3 (2) 4 (3) 2 (4) 5

14. $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$ is
(1) $\frac{9y}{7}$ (2) $\frac{9y^2}{(21y-21)}$
(3) $\frac{21y^2-42y+21}{3y^3}$ (4) $\frac{7(y^2-2y+1)}{y^2}$

15. Transpose of a column matrix is
(1) unit marix (2) diagonal matrix
(3) Column matrix (4) row matrix

15. In figure if PR is tangent to the circle at P and O is the centre of the circle. Then $\angle POQ$ is



(1) 120° (2) 100° (3) 110° (4) 90°

5. COORDINATE GEOMETRY

1. A man walks near a wall, such that distance between him and the wall is 10 units. Consider the wall to be Y-axis . The path travelled by the man is
(1) x=10 (2) y=10 (3) x=0 (4) y=0

2. If A is a point on the Y-axis whose ordinate is 8 and B is a point on the X-axis whose abscissae is 5 then the equation of the line AB is
(1) $8x + 5y = 40$ (2) $8x - 5y = 40$
(3) $x = 8$ (4) $y = 5$

3. A straight line has equation $8y = 4x + 21$.
Which of the following is true ?
(1) The slope is 0.5 and y intercept is 2.6
(2) The slope is 5 and y intercept is 1.6
(3) The slope is 0.5 and y intercept is 1.6
(4) The slope is 5 and y intercept is 2.6

4.The area of triangle formed by the points $(-5, 0), (0, -5)$ *and* $(5, 0)$ is
(1) 0 sq.units (2) 25 sq.units
(3) 5 sq.units (4) none of these

5.When proving that a quadrilateral is a trapezium, it is necessary to show ?
(1) Two sides are parallel
(2) Two parallel and two non-parallel sides
(3) Opposite sides are parallel
(4) All sides are of equal length

6. The slope of the line joining (12, 3), (4, a) is $\frac{1}{8}$
The value of a is
(1) 1 (2) 4 (3) -5 (4) 2

7.The straight line given by the equation x=11 is
(1) parallel to X-axis (2) parallel to Y-axis
(3) Passing through the orign
(4) passing through the point (0, 11)

8. The point of intersection of $3x - y = 4$ *and* $x + y = 8$ is
(1) (5, 3) (2) (2, 4) (3) (3, 5) (4) (4, 4)

9. (2, 1) is the point of intersection of two lines
(1) $x - y - 3 = 0$; $3x - y - 7 = 0$
(2) $x + y = 3$; $3x + y = 7$
(3) $3x + y = 3$; $x + y = 7$
(4) $x + 3y - 3 = 0$; $x - y - 7 = 0$

10. If slope of the line PQ is $\frac{1}{\sqrt{3}}$ then the slope of the perpendicular bisector of PQ is
(1) $\sqrt{3}$ (2) $-\sqrt{3}$ (3) $\frac{1}{\sqrt{3}}$ (4) 0

11. If (5, 7), (3, p) and (6, 6) are collinear, then the Value of p is
(1) 3 (2) 6 (3) 9 (4) 12

12. Consider four straight lines
(*i*) $l_1: 3y = 4x + 5$ (*ii*) $l_2: 4y = 3x - 1$
(*iii*) $l_3: 4y + 3x = 7$ (*iv*) $l_4: 4x + 3y = 2$
Which of the following statement is true ?
(1) l_1 *and* l_2 are perpendicular
(2) l_1 *and* l_4 are parallel
(3) l_2 *and* l_4 are perpendicular
(4) l_2 *and* l_3 are parallel

13. The equation of a line passing through the origin and perpendicular to the line $7x - 3y + 4 = 0$
(1) $7x - 3y + 4 = 0$ (2) $3x - 7y + 4 = 0$
(3) $3x + 7y = 0$ (4) $7x - 3y = 0$

14. The slope of the line which is perpendicular to line joining the points (0, 0) and $(-8, 8)$ is
(1) -1 (2) 1 (3) $\frac{1}{3}$ (4) -8

15. When proving that a quadrilateral is a Parallelogram by using slopes you must find
(1) The slopes of two sides
(2) The slopes of two pair of opposite sides
(3) The length of all sides
(4) Both the lengths and slopes of two sides.

6. TRIGONOMETRY

1. The angle of depression of the top and bottom of 20 m tall building from the top of a multistoried building are 30 *and* 60° respectively. The height of the multistoried building and the distance between two buildings (in metres) is
(1) $20, 10\sqrt{3}$ (2) $30, 5\sqrt{3}$
(3) 20, 10 (4) $30, 10\sqrt{3}$

2. $(1 + \tan\theta + \sec\theta)(1 + \cot\theta - \operatorname{cosec}\theta)$ is equal to
(1) 0 (2) 1 (3) 2 (4) –1

3. If $(\sin\alpha + \operatorname{cosec}\alpha)^2 + (\cos\alpha + \sec\alpha)^2 = k + \tan^2\alpha + \cot^2\alpha$, then the value of k is
(1) 9 (2) 7 (3) 5 (4) 3

4. The angle of elevation of a cloud from a point h metres above a lake is β. The angle of depression of its reflection in the lake is $45°$. The height of location of the cloud from the lake is
(1) $\frac{h(1+\tan\beta)}{1-\tan\beta}$ (2) $\frac{h(1-\tan\beta)}{1+\tan\beta}$
(3) $h\tan(45° - \beta)$ (4) *none of these*

5. $\tan\theta \operatorname{cosec}^2\theta - \tan\theta$ is equal to
(1) $\sec\theta$ (2) $\cot^2\theta$ (3) $\sin\theta$ $\cot\theta$

6. If $x = a\tan\theta$ *and* $y = b\sec\theta$ *then*
(1) $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$ (2) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$
(3) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ (4) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 0$

7. The electric pole subtends an angle of $30°$ at a point on the same level as its foot. At a second point 'b' metres above the first, the depression of the foot of the tower is $60°$. The height of the tower (metres) is equal to
(1) $\sqrt{3}\,b$ (2) $\frac{b}{3}$ (3) $\frac{b}{2}$ (4) $\frac{b}{\sqrt{3}}$

8. $a\cot\theta + b\operatorname{cosec}\theta = p$, $b\cot\theta + a\operatorname{cosec}\theta = q$ then $p^2 - q^2$ is equal to
(1) $a^2 - b^2$ (2) $b^2 - a^2$
(3) $a^2 + b^2$ (4) $b - a$

9. If $\sin\theta = \cos\theta$, *then* $2\tan^2\theta + \sin^2\theta - 1$ is equal to
(1) $\frac{-3}{2}$ (2) $\frac{3}{2}$ (3) $\frac{2}{3}$ (4) $\frac{-2}{3}$

10. A tower is 60 m height. Its shadows is x metres shorter when the sun's altitude is $45°$ than when it has been $30°$, then x is equal to
(1) 41.92 m (2) 43.92 m (3) 43 m (4) 45.6 m

11. The value of $\sin^2\theta + \frac{1}{1+\tan^2\theta}$ is equal to
(1) $\tan^2\theta$ (2) 1 (3) $\cot^2\theta$ (4) 0

12. If $5x = \sec\theta$ *and* $\frac{5}{x} = \tan\theta$, *then* $x^2 - \frac{1}{x^2}$ is equal to
(1) 25 (2) $\frac{1}{25}$ (3) 5 (4) 1

13. Two persons are standing 'x' metres apart from each other and the height of the first person is double that of the other. If from the middle point of the line joining their feet an observer finds the angular elevations of their tops to be complementary, then the height of the shorter person (in metres) is
(1) $\sqrt{2}\,x$ (2) $\frac{x}{2\sqrt{2}}$ (3) $\frac{x}{\sqrt{2}}$ (4) $2x$

14. If $\sin\theta + \cos\theta = a$ *and* $\sec\theta + \operatorname{cosec}\theta = b$, then the value of $b(a^2 - 1)$ is equal to
(1) 2a (2) 3a (3) 0 (4) 2ab

15. If the ratio of the height of a tower and the length of its shadow is $\sqrt{3} : 1$, then the angle of elevation of the sun has measure
(1) $45°$ (2) $30°$ (3) $90°$ (4) $60°$

7. MENSURATION

1. If two solid hemisphere of same base radius r units are joined together along their bases, then curved surface area of this new solid is
(1) $4\pi r^2$ *sq.units* (2) $6\pi r^2$ *sq.units*
(3) $3\pi r^2$ *sq.units* (4) $8\pi r^2$ *sq.units*

2. A frustum of a right circular cone is of height 16 cm with radii of its end s as 8 cm and 20 cm. Then the volume of the frustum is
(1) $3328\pi\ cm^3$ (2) $3228\pi\ cm^3$
(3) $3240\pi\ cm^3$ (4) $3340\pi\ cm^3$

3. The total surface area of a cylinder whose radius is $\frac{1}{3}$ of its height is
(1) $\frac{9\pi h^2}{8}$ *sq.units* (2) $24\pi h^2$ *sq.units*
(3) $\frac{8\pi h^2}{9}$ *sq.units* (4) $\frac{56\pi h^2}{9}$ *sq.units*

4. The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be
(1) 12 cm (2) 10 cm (3) 13 cm (4) 5 cm

5. A spherical ball of radius r_1 units is melted to make 8 new identical balls each of radius r_2. then $r_1 : r_2$ is
(1) 2 : 1 (2) 1 : 2 (3) 4 : 1 (4) 1 : 4

6. In a hollow cylinder, the sum of the external and internal radii is 14 cm and the width is 4 cm. If its height is 20 cm, the volume of the material in it is
(1) $5600\pi\ cm^3$ (2) $11200\pi\ cm^3$
(3) $56\pi\ cm^3$ (4) $3600\pi\ cm^3$

7. The ratio of the volume of a cylinder, a cone and a sphere, if each has the same diameter and same height is
(1) 1 : 2 : 3 (2) 2 : 1 : 3 (3) 1 : 3 : 2 (4) 3 : 1 : 2

8. A solid sphere of a radius 'x' cm is melted and cast into a shape of a solid cone of same radius. the height of the cone is
(1) 3x cm (2) x cm (3) 4x cm (4) 2x cm

9. A shuttle cock used for playing badmintons has the shape of the combinations of
(1) a cylinder and a sphere
(2) a hemisphere and a cone
(3) A sphere and a cone
(4) frustum of a cone and a hemisphere

10. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is
(1) $60\pi\ cm^2$ (2) $68\pi\ cm^2$
(3) $120\pi\ cm^2$ (4) $136\pi\ cm^2$

11. The volume (in cm^3) of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5 cm is
(1) $\frac{4}{3}\pi$ (2) $\frac{10}{3}\pi$ (3) 5π (4) $\frac{20}{3}\pi$

12. If the radius of the base of a right circular cylinder is halved keeping the same height, then the ratio of the volume of the cylinder thus obtained to the volume of original cylinder is
(1) 1 : 2 (2) 1 : 4 (3) 1 : 6 (4) 1 : 8

13. The total surface area of a hemi-sphere is how much times the square of its radius.
(1) π (2) 4π (3) 3π (4) 2π

14. The height and radius of the cone of which the frustum is a part are h_1 *units and* r_1 *units* respectively. Height of the frustum is h_2 units and radius of the smaller base is r_2 units. If $h_2 : h_1 = 1 : 2$ then $r_2 : r_1$ is
(1) 1 : 3 (2) 1 : 2 (3) 2 : 1 (4) 3 : 1 15.

15. If the radius of the base of a cone is tripled and the height is doubled then the volume is
(1) made 6 times (2) made 18 times
(3) made 12 times (4) unchanged

8.STATISTICS AND PROBABILITY

1. Variance of first 20 natural numbers is
(1) 32.25 (2) 44.25 (3) 33.25 (4) 30

2. The range of the data 8,8,8,8,8.....8 is
(1) 0 (2) 1 (3) 8 (4) 3

3. A purse contains 10 notes of Rs.2000, 15 notes of Rs. 500 and 25 notes of Rs.200.One note is drawn at random . What is the probability that the note is either Rs.500 or Rs. 200 note ?
(1) $\frac{1}{5}$ (2) $\frac{3}{10}$ (3) $\frac{2}{3}$ (4) $\frac{4}{5}$

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4. A page is selected at random from a book. The probability that the digit at unit place of the page number chosen is less than 7 is
(1) $\frac{3}{10}$ (2) $\frac{7}{10}$ (3) $\frac{3}{9}$ (4) $\frac{7}{9}$

5. The standard deviation of a data is 3. If each value is multiplied by 5 then the new variance is
(1) 3 (2) 15 (3) 5 (4) 225

6. The probability of getting a job for a person is $\frac{x}{3}$. If the probability of not getting the job is $\frac{2}{3}$, Then the value of x is
(1) 2 (2) 1 (3) 3 (4) 1.5

7. Kamalam went to play a lucky draw contest. 135 tickets of the lucky draw were sold. If the probability of Kamalam winning is $\frac{1}{9}$, then the number of tickets bought by Kamalam is
(1) 5 (2) 10 (3) 15 (4) 20

8. Which of the following is incorrect ?
(1) $P(A) > 1$ (2) $0 \le P(A) \le 1$
(3) $P(\emptyset) = 0$ (4) $P(A) + P(\bar{A}) = 1$

9. The sum of all deviations of the data from its mean is
(1) Always positive (2) always negative
(3) zero (4) non-zero integer

10. The probability a red marble selected at random from a jar containing p red, q blue and r green marble is
(1) $\frac{q}{p+q+r}$ (2) $\frac{p}{p+q+r}$
(3) $\frac{p+q}{p+q+r}$ (4) $\frac{p+r}{p+q+r}$

11. The mean of 100 observations is 40 and their standard deviation is 3 . The sum of squares of all deviations is
(1) 40000 (2) 160900 (3) 160000 (4) 30000

12. If the mean and co-efficient of variation of a data are 4 and 87.5 %, then the standard deviation is
(1) 3.5 (2) 3 (3) 4.5 (4) 2.5

13. Which of the following is not a measure of dispersion ?
(1) Range (2) Standard deviation
(3) Arithmetic mean (4) Variance

14. If a letter is chosen at random from the English Alphabets { a, b, c, ...z } . then the probability that the letter chosen precedes x
(1) $\frac{12}{13}$ (2) $\frac{1}{13}$ (3) $\frac{23}{26}$ (4) $\frac{3}{26}$

15. If the standard deviations of x , y , z is p, then the Standard deviation of 3x+5 , 3y+5 , 3z+5 is
(1) 3p + 5 (2) 3p (3) p + 5 (4) 9p + 15

Answers

Unit 1

1	2	3	4	5	6	7	8	9	10
1	2	3	2	3	3	4	4	1	1
11	12	13	14	15					
4	3	3	3	3					

Unit 2

1	2	3	4	5	6	7	8	9	10
4	4	3	1	2	4	3	3	2	1
11	12	13	14	15					
3	1	2	3	3					

Unit 3

1	2	3	4	5	6	7	8	9	10
3	2	2	2	1	4	2	3	2	2
11	12	13	14	15	16	17	18	19	20
1	2	2	1	4	4	4	1	2	3

Unit 4

1	2	3	4	5	6	7	8	9	10
2	3	1	1	4	2	2	4	2	2
11	12	13	14	15					
3	4	1	4	1					

Unit 5

1	2	3	4	5	6	7	8	9	10
1	1	1	2	2	4	2	3	2	2
11	12	13	14	15					
3	3	3	2	1					

Unit 6

1	2	3	4	5	6	7	8	9	10
4	3	2	1	4	1	2	2	2	2
11	12	13	14	15					
2	2	2	1	4					

Unit 7

1	2	3	4	5	6	7	8	9	10
1	1	3	1	1	2	4	3	4	4
11	12	13	14	15					
1	2	3	2	2					

Unit 8

1	2	3	4	5	6	7	8	9	10
3	1	4	2	4	2	3	1	3	2
11	12	13	14	15					
2	1	3	3	2					

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Answers

Unit 1

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15					

Unit 2

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15					

Unit 3

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Unit 4

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15					

Unit 5

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15					

Unit 6

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15					

Unit 7

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15					

Unit 8

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15					