10^{TH} STD MATHEMATICS

–NEW SYLLABUS

BOOK BACK OBJECTIVES

Chapter 1: Relations and functions

Choose the correct answer

1. If n(A x B) = 6 and A ={1,3} then n(B) is
   (1) 1 (2) 2 (3) 3 (4) 6
2. A={ a,b,p}, B={ 2,3}, C={ p,q,r,s} then n[(A U C) x B] is
   (1) 8 (2) 20 (3)12 (4) 16
3. 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 x C) ⊂ (B x D) (2) (B x D) ⊂ (A x C)
   (3) (A x B) ⊂(A x D) (4) (D X A) ⊂ (B x A)
4. 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
5. The range of relation R={(x,x^2) | x is a prime number less than 13} 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}
6. 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)
7. 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}
8. If {(a,8), 96, b)} represents an identity function, then the value of a and b are respectively
   (1) (8,6) (2)(8,8) (3)(6,8) (4) (6,6)
9. Let A={1,2,3,4} and B={4,8,9,10}, A function f: A→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
10. If f(x) = $2x^2$ and g(x) =$\frac{1}{3x}$ then f o g is

(1) $\frac{3}{2x^2}$ (2) $\frac{2}{3x^2}$ (3) $\frac{2}{9x^2}$ (4) $\frac{1}{6x^2}$

11. If f: A→B is a bijective function and if n(B)= 7, then n(A) is equal to

(1) 7 (2) 49 (3)1 (4) 14

12. 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 o g is

(1){0,2,3,4,5} (2){-4,1,0,2,7} (3){1,2,3,4,5} (4){0,1,2}

13. Let f(x) =$\sqrt{1+x^2}$ then

(1)f(xy) = f(x).f(y) (2) f(xy) ≥ f(x).f(y)

(3) f(xy) ≤ f(x).f(y) (4) none of these

14. If g={(1,1),(2,3),(3,5),(4,7)} is a function given by g(x) = αx +β then the values of α and β are

(1) (-1,2) (2)(2,-1) (3)(-1,-2) (4)(1,2)

15. f(x)=$(x+1)^3 - (x-1)^3$ represents a function which is

(1) linear (2) cubic (3) reciprocal (4) quadratic

Chapter 2: Numbers and Sequences

1. Euclid's division lemma states that for positive integers a and b, there exist unique integers q and r such that a=bq +r, where r must satisfy.
   (1) 1<r<b (2)0<r<b (3)0≤r<b (4) 0<r≤ b
2. 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)0,1,3 (4)1,3,5
3. 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
4. The sum of the exponents of the prime factors in the prime factorization of 1729 is
   (1) 1 (2) 2 (3)3 (4)4
5. 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
6. $7^{4k} \equiv (\mathrm{mod}\, 10)$
   (1)1 (2) 2 (3)3 (4)4
7. 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
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
9. If 6 times of 6^{th} term of an A.P is equal to 7 times the 7^{th} term, then the 13^{th} term of the A.P is
   (1) 0 (2) 6 (3) 7 (4)13
10. An A.P consists of 31 terms. If its 16^{th} 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

11. 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

12. If A= 2^{65} and B= $2^{64}+2^{63}+2^{62}+\ldots+2^{0}$ which of the following is true?

(1) B is 2^{64} morethan A (2) A and B are equal

(3) B is larger than A by1 (4) A is larger than B by 1.

13. 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) $\frac{1}{81}$

14. 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 Geometric progression (2) an Arithmetic progression

(3)neither an Arithmetic progression nor Geometric Progression

(4) a constant sequence

15. The value of $(1^3+2^3+3^3+\ldots+15^3)-(1+2+3+\ldots+15)$ is

(1)14400 (2)14200 (3) 14280 (4) 14520

Chapter 3: Algebra

1. 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

2. The solution of the system x+y-3x = -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

3. 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

4. $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$ is

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

5. $y^2 + \frac{1}{y^2}$ 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

6. $\frac{x}{x^2-25} - \frac{8}{x^2+6x+5}$ 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) $\frac{x^2+10}{(x^2-25)(x+1)}$

7. 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) $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

8. 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) $-8x^2$

9. The solution of $(2x-1)^2$ =9 is equal to

   (1)-1 (2)2 (3)-1,2 (4) None of these

10. The values of a and b if $4x^4$-$24x^3$+$76x^2$+ax+b is a perfect square are

    (1)100,120 (2)10,12 (3)-120,100 (4) 12,10

11. 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 p,q,r are in _____.

    (1)A.P (2) G.P (3) Both A.P and G.P (4) none of these

12. Graph of a linear polynomial is a

(1)straight line (2) circle (3) parabola (4) hyperbola

13. The number of point of intersection of the quadratic polynomial x^2+4x+4 with the X axis is

(1) 0 (2) 1 (3) 0 0r 1 (4) 2

14. For the given matrix $A=\begin{pmatrix}1 & 3 & 5 & 7\\ 2 & 4 & 6 & 8\\ 9 & 11 & 13 & 15\end{pmatrix}$ the order of the matrix A^T is

(1) 2 x 3 (2) 3 x 2 (3) 3 x 4 (4) 4 x3

15. If A is a 2 x 3 matrix and B is 3 x 4 matrix, how many columns does AB have

(1) 3 (2)4 (3)2 (4)5

16. If 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

17. Transpose of a column matrix is

(1) unit matrix (2)diagonal matrix (3)column matrix (4)row matrix

18. Find the matrix X if $2X+\begin{pmatrix}1 & 3\\ 5 & 7\end{pmatrix}=\begin{pmatrix}5 & 7\\ 9 & 5\end{pmatrix}$

(1) $\begin{pmatrix}-2 & -2\\ 2 & -1\end{pmatrix}$ (2) $\begin{pmatrix}2 & 2\\ 2 & -1\end{pmatrix}$ (3) $\begin{pmatrix}1 & 2\\ 2 & 2\end{pmatrix}$ (4) $\begin{pmatrix}2 & 1\\ 2 & 2\end{pmatrix}$

19. Which of the following can be calculated from the given matrices

(1) $A=\begin{pmatrix}1 & 2\\ 3 & 4\\ 5 & 6\end{pmatrix}$, $B=\begin{pmatrix}1 & 2 & 3\\ 4 & 5 & 6\\ 7 & 8 & 9\end{pmatrix}$, (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. If $A=\begin{pmatrix}1 & 2 & 3\\ 3 & 2 & 1\end{pmatrix}$, $B=\begin{pmatrix}1 & 0\\ 2 & -1\\ 0 & 2\end{pmatrix}$ and $C=\begin{pmatrix}0 & 1\\ -2 & 5\end{pmatrix}$. Which of the following statements are correct? (i) $AB+C=\begin{pmatrix}5 & 5\\ 5 & 5\end{pmatrix}$ (ii) $BC=\begin{pmatrix}0 & 1\\ 2 & -3\\ -4 & 10\end{pmatrix}$

(iii) $BA+C=\begin{pmatrix}2 & 5\\ 3 & 0\end{pmatrix}$ (iv)$(AB)C=\begin{pmatrix}-8 & 20\\ -8 & 13\end{pmatrix}$

(1) (i)and(ii)only (2)(ii)and(iii)only (3)(iii)and(iv)only (4)all of these

Chapter 4: Geometry

1. If in triangles 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) $\angle A = \angle F$

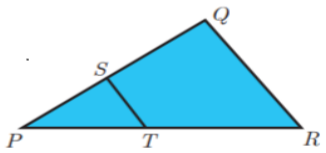
2. In △LMN, $\angle L$ =60⁰, ∠M=50⁰. If △LMN~△PQR then the value of $\angle R$ is

   (1) 40⁰ (2) 70⁰ (3) 30⁰ (4) 110⁰

3. If △ABC is an isosceles triangle with $\angle C$ =90⁰ and AC=5cm, then AB is

   (1)2.5cm (2)5cm (3)10cm (4) $5\sqrt{2}$ cm

4. In a given figure ST‖QR, PS=2cm and SQ=3cm. Thenthe ratio of the area of△PQR tothe△PST is



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

5. The perimeter of two similar triangles △ABC and △PQR are 36cm and 24cm respectively. If PQ=10cm, 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) 15cm

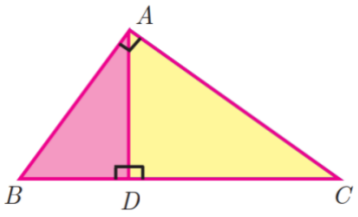
6. If in △ABC, DE ‖ BC. AB=3.6cm, AC=2.4cm and AD=2.1cm then the length of AE is

   (1) 1.4cm (2)1.8cm (3)1.2cm (4) 1.05cm

7. In a △ABC, AD is the bisector of ∠BAC. If AB=8cm, BD=6cm and DC= 3cm. The length of the side AC is

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

8. In the adjacent figure ∠BAC =90⁰ and AD ⊥ BC then



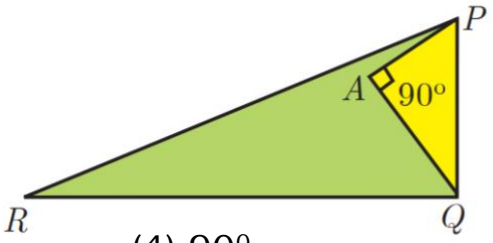
   (1)BD.CD=BC² (2)AB.AC = BC²

   (3)BD.CD=AD² (4)AB.AC=AD²

9. Two poles of height 6m and 11m stand vertically on a plane ground. If the distance between their feet is 12m, what is the distance between their tops?

   (1) 13m (2)14m (3)15m (4)12.8cm

10. In the given figure, PR=26cm, QR=24cm, ∠PAQ=90^0, PA=6cm and QA=8cm. Find ∠PQR.



(1) 80^0 (2)85^0 (3)75^0 (4) 90^0

11. A tangent is perpendicular to the radius at the

(1)centre (2) point of contact (3) infinity (4) chord

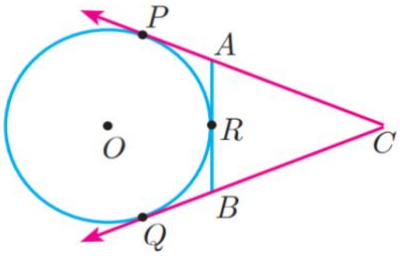
12. How many tangents can be drawn to the circle from an exterior point?

(1) one (2)two (3)infinite (4) zero

13. The two tangents from an external points P to a circle with centre at O are PA and PB. If ∠APB=70^0 then the value of ∠A0B is

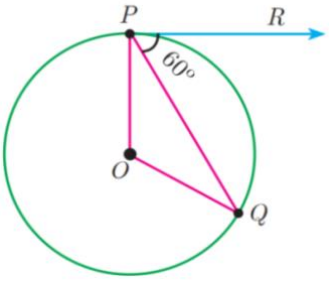
(1) 100^0 (2) 110^0 (3) 120^0 (4) 130^0

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



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

15. In figure if PR is tangent to the circle at P and O is the centre of the circle, then ∠POQ is



(1) 120^0 (2) 100^0 (3) 110^0 (4) 90^0

Chapter 5: Coordinate Geometry

1. The area of a 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
2. A man walks near a wall, such that the distance between him and the wall is 10units. Consider the wall to be the Y axis. The path travelled by the man is
   (1) x=10 (2) y=10 (3) x=0 (4) y=0
3. The straight line given by the equation x=11 is
   (1) parallel to X axis (2) parallel to Y axis
   (3)passes through the origin (4) passing through the point (0,11)
4. If(5,7),(3,p) and(6,6) are collinear, then the value of p is
   (1)3 (2)6 (3)9 (4)12
5. 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)
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 slope of the line which is perpendicular to a line joining the points (0,0) and (-8,8) is
   (1) -1 (2)1 (3)$\frac{1}{3}$ (4)-8
8. If slope of the line PQ is $\frac{1}{\sqrt{3}}$ then slope of the perpendicular bisector of PQ is
   (1)$\sqrt{3}$ (2)$-\sqrt{3}$ (3) $\frac{1}{\sqrt{3}}$ (4)0
9. If A is a point on the Y axis whose ordinate is 8 and B is a point on the X axis whose abscissa is 5 then the equation of the line AB is
   (1) 8x +5y=40 (2)8x-5y=40 (3)x=8 (4)y=5
10. The equation of a line passing through the origin and perpendicular to the line 7x-3y+4 =0 is
    (1) 7x-3y+4=0 (2)3x-7y+4=0 (3)3x+7y =0 (4)7x-3y=0

11. 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 an l_3 are parallel

12. A straight line has equation 8y=4x+21. Which of the following is true?

    (1) The slope is 0.5 and the y intercept is 2.6

    (2) The slope is 5 and the y intercept is 1.6

    (3) The slope is 0.5 an y intercept is 1.6

    (4) The slope is 5 and the y intercept is 2.6

13. When proving that a quadrilateral is 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.

14. When proving that a quadrilateral is parallelogram by using slopes you must find

    (1) The slopes of two sides (2) The slopes of two pair of opposite sides

    (3)The lengths of all sides (4)Both the lengths and slopes of two sides

15. (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

Chapter 6: Trigonometry

1. 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

2. $\tan\theta\operatorname{cosec}^2\theta - \tan\theta$ is equal to

   (1) $\sec\theta$ (2) $\cot^2\theta$ (3) $\sin\theta$ (4) $\cot\theta$

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 equal to

   (1) 9 (2) 7 (3)5 (4) 3

4. 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

5. 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

6. 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) $\frac{-2}{3}$

7. 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) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 0$

8. $(1+\tan\theta+\sec\theta)(1+\cot\theta-\operatorname{cosec}\theta)$ is equal to

   (1) 0 (2) 1 (3)2 (4)-1

9. $a\cot\theta + \operatorname{cosec}\theta = p$ and $b\cot\theta + a\operatorname{cosec}\theta = q$ 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

10. 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°

11. The electric pole subtends an angle of 30° at a point on the same level as its foot. At a second point 'b' meters above the first, the depression of the foot of the tower is 60°. The height of the tower(in meter) is equal to

    (1) $\sqrt{3}b$ (2)$\frac{b}{3}$ (3) $\frac{b}{2}$ (4) $\frac{b}{\sqrt{3}}$

12. A tower is 60m height. Its shadow is x meters shorter when the sun's

    (1) 41.92m (2) 43.92m (3) 43m (4) 45.6m

13. The angle of depression of the bottom of 20m tall building from the top of multistoried building are 30° and 60° respectively. The height of the multistoried building and the distance between two buildings (in meters) is

(1)20, $10\sqrt{3}$ (2)30, $5\sqrt{3}$ (3)20,10 (4)30,$10\sqrt{3}$

14. Two persons are standing 'x' meters 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 meters) is

(1)$\sqrt{2}x$ (2)$\frac{x}{2\sqrt{2}}$ (3)$\frac{x}{\sqrt{2}}$ (4) 2x

15. The angle of elevation of a cloud from a point 'h' meters above a lake is β. The angle of depression of its reflection in the lake is 45^0. 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(45^0 –β) (4) none of these.

Chapter 7: Mensuration

1. The curved surface area of right circular cone of height 15cm and base diameter 16cm is

   (1)60π cm^2 (2) 68 π cm^2 (3)120 π cm^2 (4) 136 π cm^2

2. 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 πr^2 sq.units (2) 6 πr^2 sq.units (3)3 πr^2 sq.units (4) 8 πr^2 sq.units

3. The height of a right circular cone whose radius is 5cm and slant height is 13cm will be

   (1)12cm (2) 10cm (3)13cm (4) 5cm

4. If the radius of the base of a right circular cylinder is halved keeping the same height, then the ration of the volume of the cyclinder thus obtained to the volume of original cylinder is

   (1)1:2 (2)1:4 (3)1:6 (4) 1:8

5. The total surface area of cylinder whose radius is $\frac{1}{3}$ of its height is

   (1)$\frac{9\pi h^2}{8}$ sq.units (2)24πh^2sq.units (3) $\frac{8\pi h^2}{9}$ sq.units (4) $\frac{56\pi h^2}{9}$ sq.units

6. In a hollow cylinder, the sum of the external and internal radii is 14cm and the width is 4cm. if its height is 20cm, the volume of the material in it is

   (1)5600π cm^3 (2)11200 π cm^3 (3)56 π cm^3 (4)3600 π cm^3

7. 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. The total surface area of hemi- sphere is how much times the square of its radius.

   (1)π (2)4 π (3)3 π (4)2 π

9. A solid sphere of 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)4 x cm (4)2 x cm

10. A frustum of right circular cone is of height 16cm with radii of its ends as 8cm and 20cm. Then the volume of the frustum is

(1)3328 π cm^3 (2)3228 π cm^3 (3)3240 π cm^3 (4) 3340 π cm^3

11. A shuttle cock used for playing badminton has the shape of combination 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 hemisphere

12. A spherical ball of radius r_1 units is melted to make 8 new identical balls each of radius r_2 units. Then $r_1:r_2$ is

(1)2:1 (2)1:2 (3) 4:1 (4) 1:4

13. The volume (in cm^3) of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1cm and height 5cm is

(1)$\frac{4}{3}\pi$ (2) $\frac{10}{3}\pi$ (3)5π (4) $\frac{20}{3}\pi$

14. The height and radius of the cone of which the frustum is 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. The ratio of the volumes of a cylinder, a cone and sphere if ach has the same diameter and same height is

(1) 1:2:3 (2)2:1:3 (3)1:3:2 (4) 3:1:2

Chapter 8: Statistics and Probability

1. Which of the following is not a measure of dispersion?
   (1) Range (2) Standard deviation (3) Arithmetic mean (4) Variance
2. The range of the data 8,8,8,8,8…..8 is
   (1) 0 (2)1 (3)8 (4)3
3. The sum of all deviations of the data from its mean is
   (1)Always positive (2) always negative (3) zero (4) non –zer0 integer
4. 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
5. Variance of first 20 natural numbers is
   (1)32.25 (2)44.25 (3) 33.25 (4)30
6. 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
7. If the standard deviation if 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
8. If the mean and coefficient 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
9. Which of the following is incorrect ?
   (1)P(A)>1 (2)$0 \leq P(A) \leq 1$ (3)$P(\emptyset) = 0$ (4) $P(A)+P(\bar{A}) = 1$

10. The probability a red marble selected at random from a jar containing p red, q blue and r green marbles 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. A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is

(1) $\frac{3}{10}$ (2) $\frac{7}{10}$ (3) $\frac{3}{9}$ (4) $\frac{7}{9}$

12. 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

13. 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

14. If a letter is chosen at a random from the English alphabets {a,b,…,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. A purse contains10 notes of Rs.2000, 15notes of Rs.500 and 25 notes of Rs.200. one note is drawn at random. What is the probability that the note is either a Rs500 note or Rs.200 note?

(1) $\frac{1}{5}$ (2) $\frac{3}{10}$ (3) $\frac{2}{3}$ (4) $\frac{4}{5}$

Chapter 1: ANSWERS

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

Chapter 2:

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

Chapter 3:

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

Chapter 4:

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

Chapter 5:

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

Chapter 6:

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

Chapter 7:

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

Chapter 8:

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