10th MATHS OR CODE	11. If $f(x) = \frac{1}{x}$ and $g(x) = \frac{1}{x^3}$, then $f \circ g \circ f(y)$ is
OUESTIONS - BOOK	(A) $\frac{1}{y^8}$ (B) $\frac{1}{y^6}$ (C) $\frac{1}{y^4}$ (D) $\frac{1}{y^3}$
NEW SYLLABUS EM (2024-2025)	12. If $f(x) = 2 - 3x$ then $f \circ f(1 - x) = ?$
CHAPTER – 1 (RELATIONS AND FUNCTIONS)	(A) $9x - 5$ (B) $5x - 9$ (C) $5x + 9$ (D) $5 - 9x$
1. If $f : R \to R$ defined by $f(x) = x^2 + 2$, then the	13. If $f(x) + f(1 - x) = 2$ then $f(\frac{1}{2})$ is
pre-images of 27 are	(A) 1 (B) -1 (C) 5 (D) -9
(A) 5, -5 (B) $\sqrt{5}$, $-\sqrt{5}$ (C) 5, 0 (D) 0,5	14. If f is a constant function of value $\frac{1}{10}$. Then the
2. If $f(x - \frac{1}{x}) = x^2 + \frac{1}{x^2}$, then $f(x) = $	value of $f(1) + f(2) + \dots + f(100)$ is
(A) $x^2 + 2$ (B) $x^2 - 2$ (C) $x^2 + \frac{1}{x^2}$ (D) $x^2 - \frac{1}{x^2}$	(A) $\frac{1}{10}$ (B) 10 (C) 100 (D) $\frac{1}{100}$
3. <i>If</i> $A = \{a, b, c\}, B = \{2,3\}$ and $C = \{a, b, c, d\}$ then	15. If $f(x) = \frac{x+1}{x-2}$ and $g(x) = \frac{1+2x}{x-1}$ then $f \circ g(x)$ is
$n[(A \cap C) \times B]$ is	(A) Constant function (B) Identity function
(A) 4 (B) 8 (C) 6 (D) 12	(C) Quadratic function (D) Cubic function
4. If the ordered pairs $(a, 1)$ and $(5, b)$ belong to	
$\{(x, y)/y = 2x + 3\}$, then the values of <i>a</i> and <i>b</i> are	CHAPTER – 2 (NUMBERS AND SEQUENCES)
(A) $-13,2$ (B) 2, 13 (C) 2, -13 (D) $-2,13$ 5 The function $f: M \to M$ is defined by $f(x) = 2x$	
5. The function $f: M \to M$ is defined by $f(x) = 2x$. Then the function f is	1. What is the HCF of the least prime number and the
(A) Not one-one but onto (B) one-one but not onto	$(A) 1 \qquad (B) 2 \qquad (C) 3 \qquad (D) 4$
(C) one-one and onto (D) not one-one and not onto	2 If 'a' and 'h' are two positive integers where $a > h$
6. If $f(x) = y + 1$, then $f(f(f(y + 2)))$ is	and 'b' is a factor of 'a' then HCF of (a, b) is
(A) $y + 3$ (B) $y + 5$ (C) $y + 7$ (D) $y + 9$	(A) <i>b</i> (B) <i>a</i> (C) <i>ab</i> (D) $\frac{a}{a}$
7. The function r which maps temperature in degree	3. If <i>m</i> and <i>n</i> are co-prime numbers, then m^2 and n^2
Celsius into temperature in degree Fahrenheit is	are
defined by $t(c) = \frac{9c}{5} + 32$. The Fahrenheit degree is	(A) co-prime (B) not co-prime
95 then the value of c will be	(C) even (D) odd
(A) 37 (B) 36 (C) 35 (D) 29	4. If 3 is the least prime factor of number a and 7 is the
8. If $f(x) = mx + n_J$ where <i>m</i> and <i>n</i> are integers,	least prime factor of b then the least prime factor of
f(-2) = 7 and $f(3) = 2$ then m and n are equal to	a + b is
(A) -1, 5 $(B) -1, -5$ $(C) 1, -9$ $(D) 1, 9$	(A) $a + b$ (B) 2 (C) 5 (D) 10
9. If $f(x) = ax - 2$, $g(x) = 2x - 1$ and $f \circ g = g \circ f$,	5. The remainder when the difference between 60002
then the value of <i>a</i> is	and 601 is divided by6is
(A) -3 (B) 3 (C) $\frac{1}{3}$ (D) 13	(A) 2 (B) 1 (C) 0 (D) 3
10. If f is a identity function, then the value of $f(1)$ –	6. $44 \equiv 8 \pmod{12}$, $113 \equiv 5 \pmod{12}$, thus $44 \times 112 = 2 \pmod{12}$
2f(2) + f(3) is	$113 \equiv \pmod{12}$ (A) 4 (B) 2 (C) 2 (D) 1
(A) 1 (D) 0 (C) 1 (D) 2	(A) 4 (D) 3 (C) 2 (D) 1

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7. Given $a_1 = -1$ and $a_n = \frac{a_{n-1}}{n+2}$ then a_4 is			17. A square is drawn by joining the mid points of the			
$(A)^{\frac{-1}{-1}}$ $(B)^{\frac{-1}{-1}}$	$(C) \frac{-1}{-1}$	$(D) \frac{-1}{-1}$	sides of a given s	square in	the same way	and this
$(11)_{20}$ (D) 4	(0) 840	(D) 120	process continues	s indefini	tely. If the sid	le of the first
8. The first term of an A.P. w	whose 8 th and 1	2 th terms	square is 4 cm, tl	hen the su	um of the area	is of all the
are 39 and 59 respectively	у		squares is			
(A) 5 (B) 6	(C) 4	(D) 3	(A) $8 \ cm^2$ (B)	16 cm ²	(C) 32 cm ²	(D) 64 <i>cm</i> ²
9. In the arithmetic series, S_{η}	n = k + 2k + 3	$3k + \cdots +$	18. Sum of first ' <i>n</i> '	terms of	the series $\sqrt{2}$	$+\sqrt{8}+$
100, k is a positive intege	er and k is a fac	tor of 100	$\sqrt{18} + \cdots$ is			
then S_n is			$(\mathbf{A}) \frac{n(n+1)}{n(n+1)} \qquad (\mathbf{I})$	$R)\sqrt{n}$	$(C) \frac{n(n+1)}{n(n+1)}$	(D) 1
(A) $5000 + \frac{50}{k}$	(B) $\frac{5000}{k} + 50$)	2	b) yn	$(C) \sqrt{2}$	
$(C)\frac{1000}{k} + 10$	(D) $1000 + \frac{1}{2}$	$\frac{0}{k}$	СНАР	TER – 3	(ALGEBRA	.)
10. How many terms are the	re in the G.P.		1. Which of the follo	owing are	e linear equat	ion in three
5,20,80,320, 20480?			variables			
(A) 5 (B) 6	(C) 7	(D) 9	(i) $2X = z$ (ii)	2 sin <i>X</i>	$+ Y \cos Y +$	$Z \tan Z = 2$
11. If p^{th} , q^{th} and r^{th} terms	of an A.P. are	a, b, c	(iii) $X + 2Y^2 + Z$	2 = 3	(iv) X - Y -	-Z = 7
respectively then $a(q - r)$	(r) + b(r - p) + b(r	+ c(p-q) is	(A) (i) and (iii) o	nly	(B) (i) and (iv) only
(A) 0	(B) $a + b + c$	Ç	(C) (iv) only		(D) All	
(C) $p + q + r$	(D) pqr		2. The HCF of two	polynomi	als $p(x)$ and	q(x) is
12. Sum of infinite terms of a G. <i>P</i> is 12 and the first		2x(x + 2) and L	CM is 24	$4x(x+2)^2(x+2)$	– 2) . If	
terms is 8. What is the for	urth term of the	e G.P?.	$p(x) = 8x^3 + 3x^3$	$2x^2 + 32$	x then $q(x)$ is	s equal to
(A) $\frac{8}{27}$ (B) $\frac{4}{27}$	$(C)\frac{8}{20}$	(D) $\frac{1}{3}$	(A) $4x^3 - 16x$		(B) $6x^3 - 2$	4 <i>x</i>
13. A boy saves B_1 on the fir	est day B_2 on th	e second day,	(C) $12x^3 + 24x$		(D) $12x^3 -$	24 <i>x</i>
B4 on the third day and so	o on. How mucl	h did the boy	3. Graphically an in	finite nur	nber of soluti	ons
will save up to 20 days?			represents			
(A) $2^{19} + 1$	(B) 2 ¹⁹ – 1		(A) three planes	with no p	oint in comm	on
(C) $2^{20} - 1$	(D) $2^{11} - 1$		(B) three planes	intersection	ng at a single	point
14. The sum of first ' n ' term	s of the series a	a, 3a, 5a,	(C) three planes	intersection	ng in a line oi	coinciding
is			with one another			
(A) na (B) $(2n-1)$	<i>a</i> (C) $n^2 a$	(D) $n^2 a^2$	(D) None			
15. If <i>p</i> , <i>q</i> , <i>r</i> , <i>x</i> , <i>y</i> , <i>z</i> are in A	.P, then $5p + 3$	5q + 35r +	4. Which of the following is correct			
3,5 <i>x</i> + 3,5 <i>y</i> + 3,5 <i>z</i> + 3 1	form		(i) Every polynomial has finite number of multiples			
(A) a G.P (B) an A.P	(C) a constan	t sequence	(ii) LCM of two	polynomi	ials of degree	2 may be a
(D) neither an A.P nor a C	G.P		constant	1		,
16. In an A.P if the p^{Th} term	is 'q' and the a	q Th term is	(iii) HCF of 2 polynomials may be a constant		nstant	
p_J then its n^{Th} term is			(iv) Degree of HCF of two polynomials is always			
(A) $p + q - n$			less then degree	UI LUM.		
	(B) <i>p</i>	+q+n	(Λ) (i) and (ii)		(B) (iii) and	(iv)

5. Consider the following statements: (i) The HCF of X + Y and $X^8 - Y^8$ is X + Y(ii) The HCF of X + Y and $X^8 + Y^8$ is X + Y(iii) The HCF of X - Y and $X^8 + Y^8$ is X - Y(iv) The HCF of X - Y and $X^8 - Y^8$ is X - YWhich of the statements given above are correct? (A) (i) and (ii) (B) (ii) and (iii) (C) (i) and (iv) (D) (ii) and (iv) 6. For what set of values $\frac{x^2+5x+6}{x^2+8x+15}$ is undefined (A) -3, -5 (2) -5 (3) -2, -3, -5 (4) -2, -37. $\frac{x^2+7x+12}{x^2+8x+15} \times \frac{x^2+5x}{x^2+6x+8}$ (A) x + 2 (B) $\frac{x}{x+2}$ (C) $\frac{35x^2+60x}{49x^2+120}$ (D) $\frac{1}{x+2}$ 8. If $\frac{p}{a} = a$ then $\frac{p^2 + q^2}{p^2 - q^2}$ is (A) $\frac{a^2+1}{a^2-1}$ (B) $\frac{1+a^2}{1-a^2}$ (C) $\frac{1-a^2}{1+a^2}$ (D) $\frac{a^2-1}{a^2+1}$ 9. The square root of $4m^2 - 24m + 36 = 0$ is (A) 4(m-3)(B) 2 (m - 3)(C) $(2m - 3)^2$ (D) (m - 3)10. The real roots of the quadratic equation $x^2 - x - x^2 - x^2$ 1 = 0 are (A) 1, 1 (B) -1,1 (C) $\frac{1+\sqrt{5}}{2}$, $\frac{1-\sqrt{5}}{2}$ (D) No real roots 11. Axis of symmetry in the term of vertical line separates parabola into (B) 5 equal halves (A) 3 equal halves (D) 4 equal halves (C) 2 equal halves 12. The parabola $y = -3x^2$ is (B) Open downward (A) Open upward (C) Open rightward (D) Open leftward 13. The product of the sum and product of roots of equation $(a^2 - b^2)x^2 - (a + b)^2x + (a^3 - b^3) =$ (A) $\frac{a^2+ab+b^2}{a-b}$ 0 is (B) $\frac{a+b}{a-b}$ $(C)\frac{a-b}{a+b}$ (D) $\frac{a-b}{a^2+ab+b^2}$ 14. A quadratic polynomial whose one zero is 5 and sum of the zeros is 0 is given by (A) $x^2 - 25$ (B) $x^2 - 5$ (C) $x^2 - 5x$ (D) $x^2 - 5x + 5$

15. Choose the correct answer (i) Every scalar matrix is an identity matrix (ii) Every identity matrix is a scalar matrix (iii) Every diagonal matrix is an identity matrix (iv) Every null matrix is a scalar matrix (A) (i) and (iii) only (B) (iii) only (C) (iv) only (D) (ii) and (iv) only 16. If $2A + 3B = \begin{pmatrix} 2 & -1 & 4 \\ 3 & 2 & 5 \end{pmatrix}$ and A + 2B = $\begin{pmatrix} 5 & 0 & 3 \\ 1 & 6 & 2 \end{pmatrix}$ then B = $(A)\begin{pmatrix} 8 & -1 & -2 \\ -1 & 10 & -1 \end{pmatrix} \qquad (B)\begin{pmatrix} 8 & -1 & 2 \\ -1 & 10 & -1 \end{pmatrix}$ $(C)\begin{pmatrix} 8 & 1 & 2\\ 1 & 10 & 1 \end{pmatrix} \qquad (D)\begin{pmatrix} 8 & 1 & 2\\ -1 & 10 & -1 \end{pmatrix}$ 17. If $\begin{bmatrix} 4 & 3 & 2 \end{bmatrix} \begin{vmatrix} 1 \\ -2 \\ -2 \end{vmatrix} = \begin{bmatrix} 6 \end{bmatrix}$ then x is (A) 4 (B) 3 (C) 2 (D) 1 18. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ -5 & 6 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ then which of the following products can be made from these matrices (ii) B^2 (i) A^2 (iii) AB (iv) BA (B) (ii) and (iii) only (A) (i) only (C) (iii) and (iv) only (D) All the above 19. If $A = \begin{bmatrix} y & 0 \\ 3 & 4 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then $A^2 = 16I$ for (A) y = 4 (B) y = 5 (C) y = -4 (D) y = 1620. If P and Q are matrices_t then which of the following is true? (B) $(P^T)^T \neq P$ (A) $PQ \neq QP$ (C) $P + Q \neq Q + P$ (D) All are true **CHAPTER – 4 (GEOMETRY)** 1. If triangle PQR is similar to triangle LMN such that 4PQ = LM and QR = 6 cm then MN is equal to (A) 12 *cm* (B) 24 *cm* (3) 10 *cm* (4) 36 cm



8.	The	height	of an	equi	lateral	triang	le of	side	a 18
						_			_

(A)
$$\frac{a}{2}$$
 (B) $\sqrt{3}a$ (C) $\frac{\sqrt{3}}{2}a$ (D) $\frac{\sqrt{3}}{4}a$

- 9. The perimeter of right triangle is 40 *cm*. Its hypotenuse is 15 *cm_J* then the area of the triangle is
 (A) 100 *cm²*(B) 200 *cm²*(C) 160 *cm²*(D) 225 *cm²*
- 10. A line which intersects a circle at two distinct points is called
 - (A) Point of contact (B) secant
 - (C) diameter (D) tangent
- 11. If the angle between two radii of a circle is 130^{o_J} the angle between the tangents at the end of the radii is
 - (A) 50° (B) 90° (C) 40° (D) 70°
- 12. In figure $\angle 0AB = 60^{\circ}$ and $OA = 6 \ cm$ then radius of the circle is



- (A) $\frac{3}{2}\sqrt{3}$ cm (B) 2 cm (C) $3\sqrt{3}$ cm (D) $2\sqrt{3}$ cm
- 13. In the given figure if $OC = 9 \ cm$ and $OB = 15 \ cm$ then OB + BD is equal to



(A) 23 cm (B) 24 cm (C) 27 cm (D) 30 cm
14. Two concentric circles of radii a and b where a > b are given. The length of the chord of the larger circle which touches the smaller circle is

(A)
$$\sqrt{a^2 - b^2}$$
 (B) $2\sqrt{a^2 - b^2}$
(C) $\sqrt{a^2 + b^2}$ (D) $2\sqrt{a^2 + b^2}$

15. Three circles are drawn with the vertices of a triangle as centres such that each circle touches the other two if the sides of the triangle are 3 *cm* and 4 *cm*. Find the diameter of the smallest circle.

(A) 1 cm (B) 3 cm (C) 5 cm (D) 4 cm

CHAPTER - 5 (COORDINATE GEOMETRY)

1. Find the ratio in which the line segment joining the points (-3,10) and (6,-8) is internally divided by (-1,6)

(A) 7:2 (B) 3:4 (C) 2:7 (D) 5:3

2. If the points (0,0), (a, 0) and (0, b) are collinear then

(A) a = b (B) a + b = 0 (C) ab = 0 (D) $a \neq b$

3. If the mid-point of the line segment |oining $A\left(\frac{x}{2}, \frac{y+1}{2}\right)$ and B(x + 1, y - 3) is C(5, -2) then find the values of x, y

(A) (6, -1) (B) (-6,1) (C) (-2,1) (D) (3,5)

4. The area of triangle formed by the points (a, b + c), (b, c + a) and (c, a + b) is

(A) a + b + c (B) abc (C) $(a + b + c)^2$ (D) 0

5. The four vertices of a quadrilateral are (1,2), (-5,6), (7, -4) and (k, -2) taken in order. If the area of quadrilateral is zero then find the value of

(A) -4 (B) -2 (C) 6 (D) 3

6. Find the equation of the line passing through the point (5,3) which is parallel to the y axis is

(A)
$$y = 5$$
 (B) $y = 3$ (C) $x = 5$ (D) $x = 3$

7. Find the slope of the line 2y = x + 8

(A)
$$\frac{1}{2}$$
 (B) 1 (C) 8 (D) 2

- 8. Find the value of , given that the line $\frac{y}{2} = x p$ passes through the point (-4,4) is
 - $(A) 4 \qquad (B) 6 \qquad (C) 0 \qquad (D) 8$
- 9. Find the slope and the *y* -intercept of the line $3y \sqrt{3}x + 1 = 0$ is

(A)
$$\frac{1}{\sqrt{3}}, -\frac{1}{3}$$
 (B) $-\frac{1}{\sqrt{3}}, -\frac{1}{3}$ (C) $\sqrt{3}, 1$ (D) $-\sqrt{3}, 3$

10. The lines y = 5x - 3, y = 2x + 9 intersect at *A*. The coordinates of *A* are

(A) (2,7) (B) (2,3) (C) (4,17) (D) (-4,23)

11. Find the value of a' if the lines 7y = ax + 4 and 2y = 3 - x are parallel.

(A)
$$a = \frac{7}{2}$$
 (B) $a = -\frac{2}{7}$ (C) $a = \frac{2}{7}$ (D) $a = -\frac{7}{2}$

12. Aline passing through the point $(2_t 2)$ and the axes enclose an area α . The intercepts on the axes made by the line are given by the roots of

(A)
$$x^2 - 2\alpha x + \alpha = 0$$
 (B) $x^2 + 2\alpha x + 2\alpha = 0$
(C) $x^2 - \alpha x + 2\alpha = 0$ (D) none of these

13. Find the equation of the line passing through the point (0,4) and is parallel to the line 3x + 5y + 15 = 0 is

(A)
$$3x + 5y + 15 = 0$$
 (B) $3x + 5y - 20 = 0$
(C) $2x + 7y - 20 = 0$ (D) $4x + 3y - 15 = 0$

14. In a right angled triangle , right angled at B, if the side BC is parallel to x axis, then the slope of AB is

(A)
$$\sqrt{3}$$
 (B) $\frac{1}{\sqrt{3}}$ (C) 1 (D) not defined

15. The Y-intercept of the line 3x - 4y + 8 = 0 is

(A)
$$-\frac{8}{3}$$
 (B) $\frac{3}{8}$ (C) 2 (D) $\frac{1}{2}$

CHAPTER – 6 (TRIGONOMETRY)



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3. If $X = r \sin \theta \cos \varphi$, $y = r \sin \theta \sin \varphi$ and $z =$			
$r\cos heta$,1	Then, $X^2 + Y^2$	$+ Z^2$ is equal	to
(A) <i>r</i>	(B) r^{2}	(C) $\frac{r^2}{2}$	(D) 2 <i>r</i> ²
4. If $\cos \theta$	$+\cos^2\theta = 1$ t	hen $\sin^2\theta + s$	$\sin^4 \theta$ is equal to
(A) 1	(B) 0 (C	C) -1 (D)	none of these
5. If $\tan \theta$	+ $\cot \theta = 3 t$	hen tan ² θ + c	$\cot^2\theta$ is equal to
(A) 4	(B) 7	(C) 6	(D) 9
6. If <i>m</i> cos ($\theta + n \sin \theta =$	a and $m \sin \theta$	$\theta - n\cos\theta = b$
then a^2 -	$\vdash b^2$ is equal to	0	
(A) m^2 -	$-n^{2}$	(B) m^2 +	n^2
(C) $m^2 n^2$	2	(D) $n^2 - 2$	m^2
7. $\frac{\tan\theta}{\sec\theta-1}$ +	$\frac{\tan\theta}{\sec\theta+1}$ is equ	al to	
(A) 2 tai	n θ	(B) 2 sec	θ
(C) 2 <i>cos</i>	sec θ	(D) 2 tan	$\theta \sec \theta$
8. The value	$e \operatorname{of}\left(\frac{3}{\operatorname{cot}^2\theta} - \frac{1}{\operatorname{cot}^2\theta}\right)$	$\left(\frac{3}{\cos^2\theta}\right)$ is equal	to
$(A)\frac{1}{3}$	(B) 3	(C) 0	(D) - 3
9. If sin (α	$(+\beta) = 1_J$ the	en cos ($\alpha - \beta$) can be
reduced t	to		
(A) $\sin a$	α (B) cos β	(C) $\sin 2\beta$	(D) $\cos 2\beta$
10. $If X = a$	$\iota \sec \theta$ and Y	$= b \tan \theta_t$ the	$\ln b^2 X^2 - a^2 Y^2$
(Λ) ab	$(\mathbf{P}) a^2 b$	2 (C) a^{2} [h^2 (D) $a^2 h^2$
(A) ab	(B) $u = b$	(C) u + i	b = (D) a b
noint at a	distance of 2	50 m from its	here is (0°) The
point at a	f the tree is	50 m from its	base is 60. The
neights o		- 250	
(A) 250 1	m (B) 250 $\sqrt{3}$	$3m (C) \frac{100}{\sqrt{3}}m$	i (D) 200 $\sqrt{3m}$
12. The ang	le of depressio	on of a boat fro	om a 50 $\sqrt{3}m$
high brid	lge is 30°. The	horizontal dis	stance of the
boat fron	n the bridge is		
(A) 150 r	m (B) $150\sqrt{3}$	$\overline{3}m$ (C) 60 m	(D) $60 \sqrt{3}m$
13. A Ladde	r of length 14	<i>m</i> just reache	s the top of a
wall. If th	he ladder mak	es an angle of	60^o with the
horizonta	al then the heig	ght of the wall	is
(A) 14 √	$\overline{3} m$	(B) $28\sqrt{3}$	m
(C) $7\sqrt{3}$	m	(D) $35\sqrt{3}$	m

14. The top of two poles of height 18.5 m and 7 m are connected by a wire. If the wire makes an angle of measure 30° with horizontal then the length of the wire is

(A) 23 m (B) 18 m (C) 28 m (D) 25.5 m

15. The banks of a river are parallel. A swimmer starts from a point on one of the banks and swims in a straight line inclined to the bank at 45° and reaches the opposite bank at a point 20 *m*, from the point opposite to the starting point. The breadth of the river is equal to ($\sqrt{2} = 1.414$).

(A) 12.12 m
(B) 14. 14 m
(C) 16.16 m
(D) 18.18 m

CHAPTER – 7 (MENSURATION)

	1. The curved surface area of a right circular cone of				
	height 15 cm and base diameter 16 cm is				
	(A) 60 πcm^2	(B) 66π <i>cm</i>	2		
	(C) 120πcm ²	(D) 136π <i>c</i>	m ²		
	2. If S_1 denotes the t	total surface area of a	sphere of		
72	radius r and S_2 d	enotes the total surface	ce area of a		
	cylinder of base r	radius r and height $2n$	r, then		
2	(A) $S_1 = S_2$ (B)	$S_1 > S_2$ (C) $S_1 < S_2$	$_{2}$ (D) $S_{1} = 2S_{2}$		
-	3. The ratio of the ve	olumes of two sphere	s is 8: 27. If <i>r</i>		
1	and R are the rad	ii of spheres Respecti	vely, then		
ne	(R - r): r is				
	(A) 1:2 (B) 1	:3 (C) 2:3	(D) 4:9		
т	(A) 1: 2 (B) 1 4. The radius of a wa	: 3 (C) 2: 3 ire is decreased to one	(D) 4: 9 e-third of the		
m	(A) 1:2 (B) 14. The radius of a way original. If volum	: 3 (C) 2: 3 ire is decreased to one ne remains the same, t	(D) 4: 9 e-third of the then the length		
m	 (A) 1:2 (B) 1 4. The radius of a way original. If volum will be increased 	: 3 (C) 2: 3 ire is decreased to one ne remains the same, the of the original.	(D) 4: 9 e-third of the then the length		
m	 (A) 1:2 (B) 1 4. The radius of a way original. If volum will be increased (A) 3 times (B) 	 :3 (C) 2:3 ire is decreased to one remains the same, and the original. 6 times (C) 9 times 	(D) 4: 9 e-third of the then the length (D) 27 times		
m 1	 (A) 1:2 (B) 1 4. The radius of a way original. If volum will be increased (A) 3 times (B) 5. The height of a comparison of the second second	 :3 (C) 2:3 ire is decreased to one remains the same, and the original. of the original. 6 times (C) 9 times one is 60 <i>cm</i>. A small 	(D) 4: 9e-third of thethen the length(D) 27 timescone is cut off		
m 1	 (A) 1: 2 (B) 1 4. The radius of a way original. If volum will be increased (A) 3 times (B) 5. The height of a conduct at the top by a place 	 :3 (C) 2:3 ire is decreased to one ne remains the same, the remains the same, the original. — of the original. 6 times (C) 9 times one is 60 <i>cm</i>. A small ane parallel to the base 	 (D) 4: 9 e-third of the then the length (D) 27 times cone is cut off the and its 		
n	 (A) 1: 2 (B) 1 4. The radius of a way original. If volum will be increased (A) 3 times (B) 5. The height of a conduct at the top by a plat volume is (1/64)th 	 :3 (C) 2:3 ire is decreased to one ne remains the same, the remains the same, the original. — of the original. 6 times (C) 9 times one is 60 <i>cm</i>. A small ane parallel to the base the volume the original 	 (D) 4: 9 e-third of the then the length (D) 27 times cone is cut off the and its that cone. The 		
m	 (A) 1: 2 (B) 1 4. The radius of a way original. If volum will be increased (A) 3 times (B) 5. The height of a conduct at the top by a plat volume is (1/64)th height of the small 	 :3 (C) 2:3 ire is decreased to one ne remains the same, the remains the same, the original. — of the original. 6 times (C) 9 times one is 60 <i>cm</i>. A small ane parallel to the base the volume the original ller cone is 	 (D) 4: 9 e-third of the then the length (D) 27 times cone is cut off the and its that cone. The 		
n	(A) 1: 2 (B) 1 4. The radius of a way original. If volum will be increased (A) 3 times (B) 5. The height of a co at the top by a pla volume is $\left(\frac{1}{64}\right)^{\text{th}}$ height of the sma (A) 45 cm (B) 3	 :3 (C) 2:3 ire is decreased to one ne remains the same, the remains the same, the original. 6 times (C) 9 times one is 60 cm. A small ane parallel to the base the volume the original ller cone is 30 cm (C) 15 cm 	 (D) 4: 9 e-third of the then the length (D) 27 times cone is cut off the and its that cone. The (D) 20 cm 		

6. A solid frustum is of height 8 <i>cm</i> . If the radii of its lower and upper ends are 3 <i>cm</i> and 9 <i>cm</i>	flasks can this milk be filled if the flask radius and height is 50 <i>cm</i> each?
respectively, then its slant height is	(A)50 (B)500 (C) 120 (D)160
(A) 15 cm (B) 12 cm (C) 10 cm (D) 17 cm	15. A floating boat having a length 3 m and breadth 2
7. A solid is hemispherical at the bottom and conical	m is floating on alake. The boat sinks by 1 cm
above. If the curved surface areas of the two parts	when a man gets into it. The mass of the man is
are equal, then the ratio of its radius and the height	(density of water is 1000 kg/m^3)
of its conical part is	(A) 50 kg (B) 60 kg (C) 70 kg (D) 80 kg
(A) 1: 3 (B) $1:\sqrt{3}$ (C) 1: 1 (D) $\sqrt{3}:1$	
8. The material of a cone is converted into the shape of	CHAPTER – 8 (STATISTICS AND PROBABILITY)
a cylinder of equal radius. If the height of the	1. The range of first 10 prime numbers is
cylinder is 5 <i>cm</i> , then height of the cone is	(A) 9 (B) 20 (C) 27 (D) 5
(A) 10 cm (B) 15 cm (C) 18 cm (D) 24 cm	2. If the smallest value and co-efficient of range of a
9. The curved surface area of a cylinder is 264 m^2 and	data are 25 and 0.5 respectively. Then the largest
its volume is 924 m^3 . The ratio of diameter to its	value is
height is	(A) 25 (B) 75 (C) 100 (D) 12.5
(A) 3:7 (B) 7:3 (C) 6:7 (D) 7:6	3. If the standard deviation of a variable x is 4 and if
10. When Karuna divided surface area of a sphere by	$y = \frac{3x+5}{4}t$ then the standard deviation of y is
the sphere's volume, he got the answer as $\frac{1}{3}$. What is	(A) 4 (B) 3.5 (C) 3 (D) 2.5
the radius of the sphere?	4. If the observations 1, 2, 3, 50 have the variance V_1
(A) 24 cm (B) 9 cm (C) 54 cm (D) 4.5 cm	and the observations 51, 52, 53, 100 have the
11. A spherical steel ball is melted to make 8 new	variance V_2 then $\frac{y_1}{y_2}$ is
identical balls. Then the radius each new ball is how	(A) 2 (B) 1 (C) $\frac{1}{2}$ (D) 0
much times the radius of the original ball?	5. If the data is multiplied by 4, then the corresponding
(A) $\frac{1}{3}$ (B) $\frac{1}{4}$ (C) $\frac{1}{2}$ (D) $\frac{1}{8}$	variance is get multiplied by
12. A semicircular thin sheet of a metal diameter 28 cm	(A) 4 (B) 16 (C) 2 (D) None
is bent and an open conical cup is made. What is the	6. If the co-efficient of variation and standard deviation
capacity of the cup?	of a data are 35% and 7.7 respectively then the mean
(A) $\left(\frac{1000}{2}\right)\sqrt{3}cm^3$ (B) $300\sqrt{3}cm^3$	is
$(0) \binom{700}{7} \sqrt{2} = 3$ (D) $\binom{1078}{7} \sqrt{2} = 3$	(A) 20 (B) 30 (C) 25 (D) 22
$(C)\left(\frac{1}{3}\right)\sqrt{3}Cm^2 \qquad (D)\left(\frac{1}{3}\right)\sqrt{3}Cm^2$	7. The batsman A is more consistent than batsman B if
13. A cone of height 9 <i>cm</i> with diameter of its base 18	(A) C.V of $A > C.V$ of B (B) C.V of $A < C.V$ of B
<i>cm</i> is carved out from a wooden solid sphere of	(C) C.V of $A = C.V$ of B (D) C.V of $A \ge C.V$ of B
radius 9 cm. The percentage of wood wasted is $(A) = A^{20} (m + 1)^{-20} (m + 1)^{-2$	8. If an event occurs surely, then its probability is
(A) 45% (B) 56% (C) 67% (D) 75%	(A) 1 (B) 0 (C) $\frac{1}{2}$ (D) $\frac{3}{2}$
14. A cylinder having radius 1 m and height 5 m is	9. A number x is chosen at random from -4 -3 -2
completely filled with milk. In how many conical	-1.0.1.2.3.4. The probability that $ x < 3$ is

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ROUGH WORK

- (A) $\frac{3}{9}$ (B) $\frac{4}{9}$ (C) $\frac{2}{9}$ (D) $\frac{7}{9}$ 10. A letter is selected at random from the word 'PROBABILITY'. The Probability that it is not a vowel is (A) $\frac{4}{11}$ (B) $\frac{7}{11}$ (C) $\frac{3}{11}$ (D) $\frac{6}{11}$
- 11. In a competition containing two events A and B_J the probability of winning the events A and B are $\frac{1}{3}$ and $\frac{1}{4}$ respectively and the probability of winning both the events is $\frac{1}{12}$. The probability of winning only one event is
 - (A) $\frac{1}{12}$ (B) $\frac{5}{12}$ (C) $\frac{1}{12}$ (D) $\frac{7}{12}$
- 12. If the probability of non-happening of an events is q_J then the probability of happening of the event is
 - (A) 1 q (B) q (C) $\frac{q}{7}$ (D) 2q
- 13. When three coins are $tossed_t$ the probability of getting the same face on all the three coins is
 - (A) $\frac{1}{8}$ (B) $\frac{1}{4}$ (C) $\frac{3}{8}$ (D) $\frac{1}{3}$
- 14. In one thousand lottery tickets, there are 50 prizes to be given. The probability of Mani winning a prize who bought one ticket is

(A)
$$\frac{1}{50}$$
 (B) $\frac{1}{100}$ (C) $\frac{1}{1000}$ (D) $\frac{1}{2000}$

15. A box contains some milk chocolates and some coco chocolates and there are 60 chocolates in the box. If the probability of taking a milk chocolate is $\frac{2}{3}$ then the number of coco chocolates is (A) 40 (B) 50 (C) 20 (D) 30

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10th MATHS QR CODE	11. If $f(x) = \frac{1}{x}$ and $g(x) = \frac{1}{x}$	$\frac{1}{x^3}$, then $f \circ g \circ f(y)$ is
OUESTIONS ANSWER - BOOK	(A) $\frac{1}{y^8}$ (B) $\frac{1}{y^6}$	(C) $\frac{1}{y^4}$ (D) $\frac{1}{y^3}$
NEW SYLLABUS EM (2024-2025)	12. If $f(x) = 2 - 3x$ then f	$\circ f(1-x) = ?$
CHAPTER – 1 (RELATIONS AND FUNCTIONS)	(A) $9x - 5$ (B) $5x - 9$	(C) $5x + 9$ (D) $5 - 9x$
1. If $f : R \to R$ defined by $f(x) = x^2 + 2$, then the	13. If $f(x) + f(1 - x) = 2^{-1}$	then $f(\frac{1}{2})$ is
pre-images of 27 are	(A) 1 (B) -1	(C) 5 (D) -9
(A) 5, -5 (B) $\sqrt{5}$, $-\sqrt{5}$ (C) 5, 0 (D) 0,5	14. If f is a constant function	n of value $\frac{1}{10}$. Then the
2. If $f(x - \frac{1}{\chi}) = x^2 + \frac{1}{x^2}$, then $f(x) = $	value of $f(1) + f(2) + \cdots$	r + f(100) is
(A) $x^2 + 2$ (B) $x^2 - 2$ (C) $x^2 + \frac{1}{x^2}$ (D) $x^2 - \frac{1}{x^2}$	(A) $\frac{1}{10}$ (B) 10 (C)	100 (D) $\frac{1}{100}$
3. <i>If</i> $A = \{a, b, c\}, B = \{2,3\}$ and $C = \{a, b, c, d\}$ then	15. If $f(x) = \frac{x+1}{x-2}$ and $g(x) = \frac{x+1}{x-2}$	$=\frac{1+2x}{x-1}$ then $f \circ g(x)$ is
$n[(A \cap C) \times B]$ is	(A) Constant function	(B) Identity function
(A) 4 (B) 8 (C) 6 (D) 12	(C) Quadratic function	(D) Cubic function
4. If the ordered pairs $(a, 1)$ and $(5, b)$ belong to		
$\{(x, y)/y = 2x + 3\}$, then the values of a and b are	CHAPTER – 2 (NUMBE	RS AND SEQUENCES)
(A) -13,2 (B) 2, 13 (C) 2, -13 (D) -2,13		
5. The function $f : M \to M$ is defined by $f(x) = 2x$.	1. What is the HCF of the lea	ast prime number and the
Then the function f is	least composite number?	
(A) Not one-one but onto (B) one-one but not onto	(A) 1 (B) 2	(C) 3 (D) 4
(C) one-one and onto (D) not one-one and not onto	2. If ' a ' and ' b ' are two positions of the position of th	tive integers where $a > b$
6. If $f(x) = \chi + 1_j$ then $f(f(y + 2))$ is	and 'b' is a factor of 'a' the factor of a' the factor of the factor	then HCF of (a, b) is
(A) $y + 3$ (B) $y + 5$ (C) $y + 7$ (D) $y + 9$	(A) <i>b</i> (B) <i>a</i>	(C) ab (D) $\frac{a}{b}$
7. The function r which maps temperature in degree	3. If m and n are co-prime m	umbers, then m^2 and n^2
Celsius into temperature in degree Fahrenheit is	are	
defined by $t(c) = \frac{9c}{5} + 32$. The Fahrenheit degree is	(A) co-prime	(B) not co-prime
95 then the value of <i>c</i> will be	(C) even	(D) odd
(A) 37 (B) 36 (C) 35 (D) 29	4. If 3 is the least prime facto	or of number a and 7 is the
8. If $f(x) = mx + n_j$ where <i>m</i> and <i>n</i> are integers,	least prime factor of b the	en the least prime factor of
f(-2) = 7 and $f(3) = 2$ then m and n are equal to	a + b is	
(A) $-1,5$ (B) $-1,-5$ (C) $1,-9$ (D) $1,9$	(A) $a + b$ (B) 2	(C) 5 (D) 10
9. If $f(x) = ax - 2$, $g(x) = 2x - 1$ and $f \circ g = g \circ f$,	5. The remainder when the d	ifference between 60002
then the value of <i>a</i> is	and 601 is divided by6is	
(A) -3 (B) 3 (C) $\frac{1}{2}$ (D) 13	(A) 2 (B) 1	(C) 0 (D) 3
10 If f is a identity function than the value of $f(1)$	6. $44 \equiv 8(mod12), 113 \equiv 5$	5 (mod 12), thus 44 \times
$2f(2) \perp f(3)$ is	$113 \equiv \pmod{12}$	
(A) 1 (B) 0 (C) -1 (D) -3	(A) 4 (B) 3	(C) 2 (D) 1

Y. SEDINJVASAIN/INI.SouB. QuestionseA CHDER (MACHIS) - 18489880553ai DVI (ABWAA2024-2025)

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7. Given $a_1 = -1$ and $a_n = \frac{a_{n-1}}{n+2}$ then a_4 is (A) $\frac{-1}{20}$ (B) $\frac{-1}{4}$ (C) $\frac{-1}{840}$ (D) $\frac{-1}{120}$ 8. The first term of an A.P. whose 8 th and 12 th terms are 39 and 59 respectively (A) 5 (B) 6 (C) 4 (D) 3 9. In the arithmetic series, $S_n = k + 2k + 3k + \dots + 100$, k is a positive integer and k is a factor of 100 then S_n is (A) $5000 + \frac{50}{k}$ (B) $\frac{5000}{k} + 50$	 17. A square is drawn by joining the mid points of the sides of a given square in the same way and this process continues indefinitely. If the side of the first square is 4 cm, then the sum of the areas of all the squares is (A) 8 cm² (B) 16 cm² (C) 32 cm² (D) 64 cm² 18. Sum of first 'n' terms of the series √2 + √8 + √18 + is (A) ⁿ⁽ⁿ⁺¹⁾/₂ (B) √n (C) ⁿ⁽ⁿ⁺¹⁾/_{√2} (D) 1
(C) $\frac{1000}{k} + 10$ (D) $1000 + \frac{10}{k}$	CHAPTER – 3 (ALGEBRA)
10. How many terms are there in the G.P.	1. Which of the following are linear equation in three
5,20, 80, 320, 20480?	variables
(A) 5 (B) 6 (C) 7 (D) 9	(i) $2X = z$ (ii) $2 \sin X + Y \cos Y + Z \tan Z = 2$
11. If p^{th} , q^{th} and r^{th} terms of an A.P. are a , b , c	(iii) $X + 2Y^2 + Z = 3$ (iv) $X - Y - Z = 7$
respectively then $a(q-r) + b(r-p) + c(p-q)$ is	(A) (i) and (iii) only (B) (i) and (iv) only
(A) 0 (B) $a + b + c$	(C) (iv) only (D) All
(C) $p + q + r$ (D) pqr	2. The HCF of two polynomials $p(x)$ and $q(x)$ is
12. Sum of infinite terms of a G. <i>P</i> is 12 and the first	$2x(x+2)$ and LCM is $24x(x+2)^2(x-2)$. If
terms is 8. What is the fourth term of the G.P?.	$p(x) = 8x^3 + 32x^2 + 32x$ then $q(x)$ is equal to
(A) $\frac{8}{27}$ (B) $\frac{4}{27}$ (C) $\frac{8}{20}$ (D) $\frac{1}{2}$	(A) $4x^3 - 16x$ (B) $6x^3 - 24x$
13. A boy saves B_1 on the first day B_2 on the second day.	(C) $12x^3 + 24x$ (D) $12x^3 - 24x$
B_4 on the third day and so on. How much did the boy	3. Graphically an infinite number of solutions
will save up to 20 days?	represents
(A) $2^{19} + 1$ (B) $2^{19} - 1$	(A) three planes with no point in common
$(C) 2^{20} - 1 \qquad (D) 2^{11} - 1$	(B) three planes intersecting at a single point
14. The sum of first 'n' terms of the series a, 3a, 5a,	(C) three planes intersecting in a line or coinciding
is	with one another
(A) na (B) $(2n-1)a$ (C) n^2a (D) n^2a^2	(D) None
15. If p, q, r, x, y, z are in A.P, then $5p + 3,5q + 3,5r + 3,5r$	4. Which of the following is correct
3,5x + 3,5y + 3,5z + 3 form	(i) Every polynomial has finite number of multiples
(A) a G.P (B) an A.P (C) a constant sequence	(ii) LCM of two polynomials of degree 2 may be a
(D) neither an A.P nor a G.P	constant
16. In an A.P if the p^{Th} term is 'q' and the q^{Th} term is	(iii) HCF of 2 polynomials may be a constant
p_1 then its n^{Th} term is	(iv) Degree of HCF of two polynomials is always
$(A) n + q - n \qquad (B) n + q + n$	less then degree of LCM.
(D) p + q + n $(D) n = q + n $ $(D) n = q + n$	(A) (i) and (ii) (B) (iii) and (iv)
(C) p - q + n $(D) p - q - n$	(C) (iii) only (D) (iv) only

5. Consider the following statements: (i) The HCF of X + Y and $X^8 - Y^8$ is X + Y(ii) The HCF of X + Y and $X^8 + Y^8$ is X + Y(iii) The HCF of X - Y and $X^8 + Y^8$ is X - Y(iv) The HCF of X - Y and $X^8 - Y^8$ is X - YWhich of the statements given above are correct? (A) (i) and (ii) (B) (ii) and (iii) (C) (i) and (iv) (D) (ii) and (iv) 6. For what set of values $\frac{x^2+5x+6}{x^2+8x+15}$ is undefined (A) -3, -5 (2) -5 (3) -2, -3, -5 (4) -2, -3 7. $\frac{x^2+7x+12}{x^2+8x+15} \times \frac{x^2+5x}{x^2+6x+8}$ (A) x + 2 (B) $\frac{x}{x+2}$ (C) $\frac{35x^2+60x}{48x^2+120}$ (D) $\frac{1}{x+2}$ 8. If $\frac{p}{a} = a$ then $\frac{p^2 + q^2}{p^2 - q^2}$ is (A) $\frac{a^2+1}{a^2-1}$ (B) $\frac{1+a^2}{1-a^2}$ (C) $\frac{1-a^2}{1+a^2}$ (D) $\frac{a^2-1}{a^2+1}$ 9. The square root of $4m^2 - 24m + 36 = 0$ is (A) 4(m-3)(B) 2 (m - 3)(C) $(2m-3)^2$ (D) (m - 3)10. The real roots of the quadratic equation $x^2 - x - x^2 - x^2$ 1 = 0 are (A) 1, 1 (B) -1,1 (C) $\frac{1+\sqrt{5}}{2}$, $\frac{1-\sqrt{5}}{2}$ (D) No real roots 11. Axis of symmetry in the term of vertical line separates parabola into (B) 5 equal halves (A) 3 equal halves (C) 2 equal halves (D) 4 equal halves 12. The parabola $y = -3x^2$ is (B) Open downward (A) Open upward (C) Open rightward (D) Open leftward 13. The product of the sum and product of roots of equation $(a^2 - b^2)x^2 - (a + b)^2x + (a^3 - b^3) =$ (A) $\frac{a^2 + ab + b^2}{a - b}$ (B) $\frac{a + b}{a - b}$ 0 is (C) $\frac{a-b}{a+b}$ (D) $\frac{a-b}{a^2+ab+b^2}$ 14. A quadratic polynomial whose one zero is 5 and sum of the zeros is 0 is given by (A) $x^2 - 25$ (B) $x^2 - 5$ (C) $x^2 - 5x$ (D) $x^2 - 5x + 5$

15. Choose the correct answer (i) Every scalar matrix is an identity matrix (ii) Every identity matrix is a scalar matrix (iii) Every diagonal matrix is an identity matrix (iv) Every null matrix is a scalar matrix (A) (i) and (iii) only (B) (iii) only (C) (iv) only (D) (ii) and (iv) only 16. If $2A + 3B = \begin{pmatrix} 2 & -1 & 4 \\ 3 & 2 & 5 \end{pmatrix}$ and A + 2B = $\begin{pmatrix} 5 & 0 & 3 \\ 1 & 6 & 2 \end{pmatrix}$ then B = $(A)\begin{pmatrix} 8 & -1 & -2 \\ -1 & 10 & -1 \end{pmatrix} \qquad (B)\begin{pmatrix} 8 & -1 & 2 \\ -1 & 10 & -1 \end{pmatrix}$ $(C)\begin{pmatrix} 8 & 1 & 2\\ 1 & 10 & 1 \end{pmatrix} \qquad (D)\begin{pmatrix} 8 & 1 & 2\\ -1 & 10 & -1 \end{pmatrix}$ 17. If $\begin{bmatrix} 4 & 3 & 2 \end{bmatrix} \begin{vmatrix} 1 \\ -2 \\ -2 \end{vmatrix} = \begin{bmatrix} 6 \end{bmatrix}$ then x is (A) 4 (B) 3 (C) 2 (D) 1 18. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ - & - \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ then which of the following products can be made from these matrices (i) A^2 (ii) B^2 (iii) AB (iv) BA (A) (i) only (B) (ii) and (iii) only (C) (iii) and (iv) only (D) All the above 19. If $A = \begin{bmatrix} y & 0 \\ 3 & 4 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then $A^2 = 16I$ for (A) y = 4 (B) y = 5 (C) y = -4 (D) y = 1620. If P and Q are matrices_t then which of the following is true? (B) $(P^T)^T \neq P$ (A) $PQ \neq QP$ (C) $P + Q \neq Q + P$ (D) All are true **CHAPTER – 4 (GEOMETRY)** 1. If triangle PQR is similar to triangle LMN such that 4PQ = LM and QR = 6 cm then MN is equal to (A) 12 cm (B) 24 cm (3) 10 *cm* (4) 36 cm



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15. Three circles are drawn with the vertices of a triangle as centres such that each circle touches the other two if the sides of the triangle are 3 *cm* and 4 *cm*. Find the diameter of the smallest circle.

(A) 1 cm (B) 3 cm (C) 5 cm (D) 4 cm

CHAPTER - 5 (COORDINATE GEOMETRY)

1. Find the ratio in which the line segment joining the points (-3,10) and (6,-8) is internally divided by (-1,6)

(A) 7:2 (B) 3:4 (C) 2:7 (D) 5:3

2. If the points (0,0), (a, 0) and (0, b) are collinear then

(A) a = b (B) a + b = 0 (C) ab = 0 (D) $a \neq b$

3. If the mid-point of the line segment |oining $A\left(\frac{x}{2}, \frac{y+1}{2}\right)$ and B(x + 1, y - 3) is C(5, -2) then find the values of x, y

(A) (6, -1) (B) (-6, 1) (C) (-2, 1) (D) (3, 5)

4. The area of triangle formed by the points (a, b + c), (b, c + a) and (c, a + b) is

(A) a + b + c (B) abc (C) $(a + b + c)^2$ (D) 0

5. The four vertices of a quadrilateral are (1,2), (-5,6), (7, -4) and (k, -2) taken in order. If the area of quadrilateral is zero then find the value of

(A) - 4 (B) - 2

6. Find the equation of the line passing through the point (5,3) which is parallel to the y axis is

(C) 6

(D) 3

2

(A)
$$y = 5$$
 (B) $y = 3$ (C) $x = 5$ (D) $x = 3$

7. Find the slope of the line 2y = x + 8

(A)
$$\frac{1}{2}$$
 (B) 1 (C) 8 (D)

- 8. Find the value of , given that the line $\frac{y}{2} = x p$ passes through the point (-4,4) is
 - (A) 4 (B) 6 (C) 0 (D) 8
- 9. Find the slope and the y -intercept of the line $3y \sqrt{3}x + 1 = 0$ is

$$(A)\frac{1}{\sqrt{3}}, -\frac{1}{3}(B)-\frac{1}{\sqrt{3}}, -\frac{1}{3}(C)\sqrt{3}, 1(D)-\sqrt{3}, 3$$

10. The lines y = 5x - 3, y = 2x + 9 intersect at *A*. The coordinates of *A* are

(A) (2,7) (B) (2,3) (C) (4,17) (D) (-4,23)

11. Find the value of a' if the lines 7y = ax + 4 and 2y = 3 - x are parallel.

(A)
$$a = \frac{7}{2}$$
 (B) $a = -\frac{2}{7}$ (C) $a = \frac{2}{7}$ (D) $a = -\frac{7}{2}$

12. Aline passing through the point $(2_t 2)$ and the axes enclose an area α . The intercepts on the axes made by the line are given by the roots of

(A)
$$x^2 - 2\alpha x + \alpha = 0$$
 (B) $x^2 + 2\alpha x + 2\alpha = 0$
(C) $x^2 - \alpha x + 2\alpha = 0$ (D) none of these

13. Find the equation of the line passing through the point (0,4) and is parallel to the line 3x + 5y + 15 = 0 is

(A)
$$3x + 5y + 15 = 0$$
 (B) $3x + 5y - 20 = 0$
(C) $2x + 7y - 20 = 0$ (D) $4x + 3y - 15 = 0$

14. In a right angled triangle , right angled at B, if the side BC is parallel to x axis, then the slope of AB is

(A)
$$\sqrt{3}$$
 (B) $\frac{1}{\sqrt{3}}$ (C) 1 (D) not define

15. The Y-intercept of the line 3x - 4y + 8 = 0 is

(A)
$$-\frac{8}{3}$$
 (B) $\frac{3}{8}$ (C) 2 (D) $\frac{1}{2}$

CHAPTER – 6 (TRIGONOMETRY)



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3. $If X = r \sin \theta \cos \varphi$, $y = r \sin \theta \sin \varphi$ and $z =$	14. The top of two poles of height 18.5 m and 7 m are			
$r \cos \theta$, Then, $X^2 + Y^2 + Z^2$ is equal to	connected by a wire. If the wire makes an angle of			
(A) r (B) r^2 (C) $\frac{r^2}{2}$ (D) $2r^2$	measure 30° with horizontal then the length of the			
4. If $\cos \theta + \cos^2 \theta = 1$ then $\sin^2 \theta + \sin^4 \theta$ is equal to	wire is			
(A) 1 (B) 0 (C) -1 (D) none of these	(A) $23 m$ (B) $18 m$ (C) $28 m$ (D) $25.5 m$			
5. If $\tan \theta + \cot \theta = 3$ then $\tan^2 \theta + \cot^2 \theta$ is equal to	15. The banks of a river are parallel. A swimmer starts			
(A) 4 (B) 7 (C) 6 (D) 9	from a point on one of the banks and swims in a			
6. If $m \cos \theta + n \sin \theta = a$ and $m \sin \theta - n \cos \theta = b$	straight line inclined to the bank at 45 and reaches			
then $a^2 + b^2$ is equal to	the opposite bank at a point 20 m , from the point			
(A) $m^2 - n^2$ (B) $m^2 + n^2$	opposite to the starting point. The breadth of the			
(C) $m^2 n^2$ (D) $n^2 - m^2$	river is equal to $(\sqrt{2} = 1.414)$.			
7. $\frac{\tan\theta}{\cos\theta} + \frac{\tan\theta}{\cos\theta}$ is equal to	(A) $12.12 m$ (B) $14.14 m$			
$(A) 2 \tan \theta \qquad (B) 2 \sec \theta$	(C) 16.16 m (D) 18.18 m			
$(\mathbf{C}) 2 \operatorname{cosec} \theta \qquad (\mathbf{D}) 2 \operatorname{tan} \theta \operatorname{sec} \theta$	CHADTED 7 (MENSUDATION)			
8. The value of $\left(\frac{3}{3}, \frac{3}{3}\right)$ is equal to	1. The curved surface area of a right circular cone of			
8. The value of $\left(\frac{1}{\cot^2\theta} - \frac{1}{\cos^2\theta}\right)$ is equal to	height 15 cm and base diameter 16 cm is			
(A) $\frac{1}{3}$ (B) 3 (C) 0 (D) -3	(A) 60 πcm^2 (B) 66 πcm^2			
9. If $\sin(\alpha + \beta) = 1_J$ then $\cos(\alpha - \beta)$ can be	$(\Gamma) 120\pi cm^2$ (D) $136\pi cm^2$			
reduced to	2 If S denotes the total surface area of a sphere of			
(A) $\sin \alpha$ (B) $\cos \beta$ (C) $\sin 2\beta$ (D) $\cos 2\beta$	2. If S_1 denotes the total surface area of a sphere of radius r and S denotes the total surface area of a			
10. $If X = a \sec \theta$ and $Y = b \tan \theta_t$ then $b^2 X^2 - a^2 Y^2$	$radius r$ and s_2 denotes the total surface area of a cylinder of base radius r and beight $2r$, then			
is equal to	(A) S = S (B) S > S (C) S < S (D) S = 2S			
(A) ab (B) $a^2 - b^2$ (C) $a^2 + b^2$ (D) a^2b^2	(A) $S_1 = S_2$ (B) $S_1 \ge S_2$ (C) $S_1 \le S_2$ (D) $S_1 = 2S_2$ 3 The ratio of the volumes of two spheres is 8:27 If r			
11. The angle of elevation of the top of tree from a	5. The facto of the volumes of two spheres is 0.27 . If r			
point at a distance of 250 m from its base is 60°. The	$(P - r) \cdot r$ is			
heights of the tree is	$(\Lambda - 7).7$ is (A) 1.2 (B) 1.3 (C) 2.3 (D) 4.9			
(A) 250 m (B) 250 $\sqrt{3}m$ (C) $\frac{250}{\sqrt{3}}m$ (D) 200 $\sqrt{3}m$	4. The radius of a wire is decreased to one-third of the			
12. The angle of depression of a boat from a 50 $\sqrt{3}m$	original. If volume remains the same, then the length			
high bridge is 30°. The horizontal distance of the	will be increased — of the original.			
boat from the bridge is	(A) 3 times (B) 6 times (C) 9 times (D) 27 times			
(A) 150 m (B) 150 $\sqrt{3}m$ (C) 60 m (D) 60 $\sqrt{3}m$	5. The height of a cone is 60 cm. A small cone is cut off			
13. A Ladder of length 14 <i>m</i> just reaches the top of a	at the top by a plane parallel to the base and its			
wall. If the ladder makes an angle of 60° with the	volume is $\left(\frac{1}{2}\right)^{\text{th}}$ the volume the original cone. The			
horizontal then the height of the wall is	height of the smaller sone is			
(A) $14\sqrt{3}m$ (B) $28\sqrt{3}m$	(A) 45 cm (B) 30 cm (C) 15 cm (D) 20 cm			
(C) $7\sqrt{3}m$ (D) $35\sqrt{3}m$				

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6. A solid frustum is of height 8 <i>cm</i> . If the radii of its lower and upper ends are 3 <i>cm</i> and 9 <i>cm</i> respectively, then its slant height is (A) 15 <i>cm</i> (B) 12 <i>cm</i> (C) 10 <i>cm</i> (D) 17 <i>cm</i> 7. A solid is hemispherical at the bottom and conical above. If the curved surface areas of the two parts are equal, then the ratio of its radius and the height of its conical part is (A) 1: 3 (B) $1:\sqrt{3}$ (C) 1: 1 (D) $\sqrt{3}$: 1	R (MATHS) - 84899880559 TEMONOW (2024-2025)flasks can this milk be filled if the flask radius and height is 50 cm each?(A)50(B)500(C) 120(D)16015. A floating boat having a length 3 m and breadth 2 m is floating on alake. The boat sinks by 1 cm when a man gets into it. The mass of the man is (density of water is 1000 kg/m^3)(A) 50 kg (B) 60 kg (C) 70 kg (D) 80 kg
8. The material of a cone is converted into the shape of	CHAPTER – 8 (STATISTICS AND PROBABILITY)
a cylinder of equal radius. If the height of the	1. The range of first 10 prime numbers is
cylinder is 5 <i>cm</i> , then height of the cone is	(A) 9 (B) 20 (C) 27 (D) 5
(A) 10 cm (B) 15 cm (C) 18 cm (D) 24 cm	2. If the smallest value and co-efficient of range of a
9. The curved surface area of a cylinder is 264 m^2 and	data are 25 and 0.5 respectively. Then the largest
its volume is 924 m^3 . The ratio of diameter to its	value is
height is	(A) 25 (B) 75 (C) 100 (D) 12.5
(A) 3: 7 (B) 7: 3 (C) 6: 7 (D) 7:6	3. If the standard deviation of a variable x is 4 and if
10. When Karuna divided surface area of a sphere by	$y = \frac{3x+5}{4}t$ then the standard deviation of y is
the sphere's volume, he got the answer as $\frac{1}{3}$. What is	(A) 4 (B) 3.5 (C) 3 (D) 2.5
the radius of the sphere?	4. If the observations 1, 2, 3, 50 have the variance V_1
(A) 24 cm (B) 9 cm (C) 54 cm (D) 4.5 cm	and the observations 51, 52, 53, 100 have the
11. A spherical steel ball is melted to make 8 new	variance V_2 then $\frac{y_1}{y_2}$ is
identical balls. Then the radius each new ball is how	(A) 2 (B) 1 (C) $\frac{1}{2}$ (D) 0
much times the radius of the original ball?	5. If the data is multiplied by 4, then the corresponding
(A) $\frac{1}{3}$ (B) $\frac{1}{4}$ (C) $\frac{1}{2}$ (D) $\frac{1}{8}$	variance is get multiplied by
12. A semicircular thin sheet of a metal diameter 28 cm	(A) 4 (B) 16 (C) 2 (D) None
is bent and an open conical cup is made. What is the	6. If the co-efficient of variation and standard deviation
capacity of the cup?	of a data are 35% and 7.7 respectively then the mean
(A) $\left(\frac{1000}{3}\right)\sqrt{3}cm^3$ (B) $300\sqrt{3}cm^3$	is
(C) $\left(\frac{700}{2}\right)\sqrt{3}cm^3$ (D) $\left(\frac{1078}{2}\right)\sqrt{3}cm^3$	(A) 20 (B) 30 (C) 25 (D) 22
13 A cone of height 9 cm with diameter of its base 18	7. The batsman A is more consistent than batsman B if
<i>cm</i> is carved out from a wooden solid sphere of	(A) C.V of $A > C.V$ of B (B) C.V of $A < C.V$ of B
radius 9 <i>cm</i> . The percentage of wood wasted is	(C) C.V of $A = C.V$ of B (D) C.V of $A \ge C.V$ of B
(A) 45% (B) 56 % (C) 67% (D) 75%	8. If an event occurs surely, then its probability is
14. A cylinder having radius 1 m and height 5 m is	(A) 1 (B) 0 (C) $\frac{1}{2}$ (D) $\frac{3}{4}$
completely filled with milk. In how many conical	9. A number x is chosen at random from -4 , -3 , -2 ,
	$-1,0,1,2,3,4$. The probability that $ x \leq 3$ is
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$(A)\frac{3}{9}$	(B) $\frac{4}{9}$	$(C)\frac{2}{9}$	(D) 7 9	ROUGH WORK
10. A letter	is selected at r	andom from the	e word	
'PROB	ABILITY'. The	e Probability that	at it is not a	
vowel is	S			
$(A)\frac{4}{11}$	(B) $\frac{7}{11}$	$(C)\frac{3}{11}$	(D) $\frac{6}{11}$	
11. In a co	mpetition conta	ining two even	ts A and B_J	
the prob	bability of winn	ing the events A	A and <i>B</i> are $\frac{1}{3}$	
and $\frac{1}{4}$ re	spectively and	the probability	of winning	
both the	e events is $\frac{1}{12}$. T	he probability o	of winning	
only on	e event is			
$(A)\frac{1}{12}$	$(B)\frac{5}{12}$	(C) $\frac{1}{12}$	(D) $\frac{7}{12}$	
12. If the p	orobability of no	on-happening o	f an events is	
q_J then	the probability	of happening o	f the event is	
(A) 1 –	q (B) q	(C) $\frac{q}{7}$	(D) 2q	
13. When t	three coins are	$tossed_t$ the pro-	bability of	
getting	the same face o	on all the three c	coins is	G
$(A)\frac{1}{8}$	$(B)\frac{1}{4}$	(C) $\frac{3}{8}$	(D) $\frac{1}{3}$	
14. In one	thousand lotter	y tickets, there	are 50 prizes	
to be gi	ven. The probal	bility of Mani v	vinning a	
prize w	ho bought one t	icket is		
$(A)\frac{1}{50}$	(B) $\frac{1}{100}$	$(C)\frac{1}{1000}$	(D) $\frac{1}{20}$	
15. A box o	contains some r	nilk chocolates	and some	
coco ch	ocolates and th	ere are 60 choc	olates in the	
box. If t	the probability	of taking a milk	chocolate is	
$\frac{2}{3}$ then the	ne number of co	oco chocolates i	S	
(A) 40	(B) 50	(C) 20	(D) 30	
	*	**		
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