KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

MATHS WORKSHEET I : 2023 – 24

CLASS: XII

CHAPTER : THREE DIMENSIONAL GEOMETRY

	MCQS
Q. 1: -	The direction cosines of the line joining A (0,7,10) and B (−1,6, 6) are (a) (1 /3√ 2, 1 /3√ 2, 4 /3√ 2) (b) (1 /3√ 2, 4 /3√ 2, 1/3√ 2) (c) (1 /3√ 2, 1 /3√ 2, 1 /3√ 2) (d) (4 /3√ 2, 1 /3√ 2, 4 /3√ 2)
Q. 2: -	If l, m, n be the d.c's of a line then $l^2 + m^2 + n^2$ is equal to (a)1 (b) 2 (c) 3 (d) 2
Q. 3: -	The shortest distance between the two lines are zero if the lines are (a) Intersecting (b) parallel (c) Skew (d) none of these
Q. 4: -	Assertion : If the cartesian equation of a line is $\frac{(x-5)}{3} = \frac{y+4}{7} = \frac{z-6}{2}$ then its vector form is r = 5 i- 4 j +6k + λ(3 i +7j + 2k). Reason : The cartesian equation of the line which passes through the point (–2, 4, –5) and parallel to the line given by $\frac{(x+3)}{3} = \frac{y-4}{5} = \frac{z+8}{6}$ is $\frac{(x+3)}{3} = \frac{y-4}{5} = \frac{z+8}{6}$ (a) A is true , R is true , R is correct explanation for A (b) A is true , R is true , R is not correct explanation for A (c) A is true , R is false

	(d) A is false , R is true.
Q. 5: -	Assertion : The three lines with direction cosines $\frac{12}{13}, \frac{-3}{13}, \frac{-4}{13}$ *and* $\frac{4}{13}, \frac{12}{13}, \frac{3}{13}$ *and* $\frac{3}{13}, \frac{-4}{13}, \frac{12}{13}$ are mutually perpendicular. Reason : The line through the points (1, −1, 2) and (3, 4, −2) is perpendicular to the line through the points (0, 3, 2) and (3, 5, 6). (a) A is true , R is true , R is correct explanation for A (b) A is true , R is true , R is not correct explanation for A (c) A is true , R is false (d) A is false , R is true.
NOTE: FOR Q NO 6 TO 10 USE SEPARATE SHEET TO SOLVE AND ATTACH WITH WORKSHEET.	
Q. 6: -	Find the values of p so that the lines $\frac{1-x}{3} = \frac{7y-14}{2p} = \frac{z-3}{2}$ and $\frac{7-7x}{3p} = \frac{y-5}{1} = \frac{6-z}{5}$ are at right angles.
Q. 7: -	If a line makes angles 90° , 60° , 30° with the x,y and z axes respectively, find its direction cosines
Q. 8: -	Find the shortest distance between the lines r=(4i-j)+λ(i+2j-3k) and r=(i-j+2k)+**υ**(2i+4j-5k)
Q. 9: -	Prove that the line through A(0, −1, −1) and B(4, 5,1) intersects the line through C(3, 9, 4) and D(−4, 4, 4).
Q. 10: -	Find the perpendicular distance of the point (1, 0, 0) from the line $\frac{x-1}{2} = \frac{y+1}{-3} = \frac{z+10}{8}$. Also find the coordinates of the foot of the perpendicular and the equation of the perpendicular.

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MATHS WORKSHEET II: 2023 – 24

CLASS: XII

CHAPTER : THREE DIMENSIONAL GEOMETRY

	MCQS
Q. 1: -	If the direction cosines of a line are k, k, k, then (A) k > 0 (B) 0 < k < 1 (C) k = 1 (D) k = 1/√3 or -1/√3
Q. 2: -	The length of perpendicular from origin to the line $\vec{r} = (4\hat{i} + 2\hat{j} + 4\hat{k}) + \lambda(3\hat{i} + 4\hat{j} - 5\hat{k})$ is (a) 2 (b) 2√3 (c) 6 (d) 7
Q. 3: -	The equation of y-axis in space is (a) x = y = 0 (b) x = z = 0 (c) y = z = 0 (d) y = 0
Q. 4: -	Assertion : The points (1, 2, 3), (−2, 3, 4) and (7, 0, 1) are collinear. Reason : If a line makes angles $\frac{\pi}{2}, \frac{3\pi}{4}$ and $\frac{\pi}{4}$ with X, Y, and Z-axes respectively, then its direction cosines are 0, −1/√2 and 1/√ 2 (a) A is true , R is true , R is correct explanation for A (b) A is true , R is true , R is not correct explanation for A (c) A is true , R is false (d) A is false , R is true.

Q. 5: -	Assertion : The pair of lines given by r = i- j + λ(2 i +k)and r = 2 i- k + υ(i +j -k) intersect Reason : Two lines intersect each other, if they are not parallel and shortest distance = 0. (a) A is true , R is true , R is correct explanation for A (b) A is true , R is true , R is not correct explanation for A (c) A is true , R is false (d) A is false , R is true.
NOTE: FOR Q NO 6 TO 10 USE SEPARATE SHEET TO SOLVE AND ATTACH WITH WORKSHEET.	
Q. 6: -	Show that the lines $\frac{x-5}{7} = \frac{y+2}{-5} = \frac{z}{1}$ and $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ are perpendicular
Q. 7: -	Find the vector and Cartesian equation of the lines that passes through the origin and (5,-2,3)
Q. 8: -	Find the equation of the line passing through the point (−1, 3, −2) and perpendicular to the lines $\frac{x}{1} = \frac{y}{2} = \frac{z}{3}$ and $\frac{(x+2)}{-3} = \frac{y-1}{2} = \frac{z+1}{5}$
Q. 9: -	Find the foot of the perpendicular from the point P(0, 2, 3) on the line $\frac{x+3}{5} = \frac{y-1}{2} = \frac{z+4}{3}$. Also find the length of the perpendicular.
Q. 10: -	A line makes angles α, β, γ and δ with the diagonals of a cube, prove that $\cos^2 \alpha + \cos^2 \beta + \cos^2 \gamma + \cos^2 \delta = \frac{4}{3}$