INDIAN SCHOOL DARSAIT
DEPARTMENT OF MATHEMATICS

Subject : Mathematics	Topic : 3D	Date of Worksheet :07/05/2017
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Name of the Student :_____	Class & Division : XI	Roll Number : __

S.No.	Questions	Marks
	Section A (Basics):	
1 .	Distance Formula: $\sqrt{(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2}$	
2.	Section Formula: i) $\left(\frac{mx_2+nx_1}{m+n}, \frac{my_2+ny_1}{m+n}, \frac{mz_2+nz_1}{m+n}\right)$ [internally] ii) $\left(\frac{mx_2-nx_1}{m-n}, \frac{my_2-ny_1}{m-n}, \frac{mz_2-nz_1}{m-n}\right)$ [externally]	
3.	Mid – Point Formula : $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}, \frac{z_1+z_2}{2}\right)$	
4.	Centroid : $\left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}, \frac{z_1+z_2+z_3}{3}\right)$	
	Section B :	
1.	Show that the points (a, b, c), (b, c, a) and (c, a, b) are the vertices of an equilateral triangle.	4
2.	Find the locus of P if $PA^2+PB^2=2k^2$, where A and B are the points (3 , 4 , 5) and (-1 , 3 , 7)	4
3.	Determine the point on XY-plane which is equidistant from three points A(2,0,3), B(0,3,2) and C(0,0,1).	4
4.	Find the co-ordinates of the point which is three fifth of the way from (3,4,5) to (-2,-5,-7).	4
5.	Centroid of a triangle with vertices (a, 1, 3), (-2,b,-5) and (4, 7, c) is origin. Find the values of a, b and c.	4
6.	The midpoints of the sides of a triangle are (1, 5, -1), (0, 4, -2) and (2, 3, 4). Find the co-ordinates of the vertices of the triangle.	4
7.	Find the ratio in which the join of A (2, 1, 5) and B (3, 4, 3) is divided by the plane $2x + 3y – 2z = 1$. Also find the coordinates of the point of division.	4
	Section C (Hots):	
1.	Show that the plane $ax + by + cz + d = 0$ divides the line joining the points (x_1, y_1, z) and (x_2, y_2, z_2) in the ratio - $\frac{ax_1+by_1+cz_1+d}{ax_2+bx_2+cz_2+d}$.	6
2.	Find the ratio in which the sphere $x^2 + y^2 + z^2 = 504$ divides the line joining the points (12 , - 4 , 8) and (27 , - 9 , 18).	6