**SENIOR SIX TOPICAL TEST ON VECTORS**

**ATTEMPT ALL QNS**

1. The line plane intersect at A. determine;
2. Coordinates of A
3. Angle between L and P
4. Given that OP= and OQ=, find the coordinates of point M that divides PQ externally in the ratio
5. A line through point A (4i +7j +5k) is parallel to 3i – 2j +4k. find;

i). equation of the line

ii). Point of intersection of the line with the plane x + 2y – z = 4

1. Find the Cartesian equation of the plane with parametric equations
2. The position vector of points P and Q are given by and respectively. Point R divides line PQ in the ratio. Determine the coordinates of the point R
3. The points  and  have position vectors  and , determine the values of  given that the angle , O is the origin
4. The lines L1 and L2 are given by intersect. Find the value of k and the point of intersection
5. PQRS is a quadrilateral with vertices P(1,-2), Q(4,-1), R(5,2) and S(2,1). Show that the quadrilateral is a rhombus
6. Find the equation of a plane containing the point
7. (a) Determine the equation of the plane represented by

(b) find the perpendicular distance from the point A(2,3,4) from the line λ **(07 marks)**

1. Prove that the lines intersect. Find the point of intersection and the angle between the lines.
2. (a) find the vector equation of the line of intersection of the planes

b) use dot product to find the equation of a plane through A(0,1,1) B(2,1,0) and C(-2,0,3)

1. (a) find the equation of the plane passing through A(1,4,6) B(2,7,5)and C(-3,8,7) **(06 marks)**

(b) Given that the points A(2,13,-5), B(3,y,-3) and C(6,-7,m) are collinear, find m and y

1. (a) Find the point of intersection of the line and the plane

b) Find the angle between the line and the plane above

1. four points A(3, 4, 7) B(13, 9, 2) C(1, 2, 3,) and D(10, K, 6). The lines AB and CD intersect at P. determine the:
2. Vector equations of AB and CD

(II) Value of k (**o4 marks)**

1. Coordinates of P. **(02 marks)**
2. a) The position vectors of points A,B, C are ,  and

 Respectively. Prove that the points lie in a straight line and determine the ratio  (5 marks)

b) Prove that the vectors,  and  are coplanar(04 mx)

c) The vector equation of a line is given by . Find:

i) A vector parallel to this line.

ii) State one point through which the line passes**.**

1. (a) Show that the lines λ intersect  **(06 marks)**

(b) Find the;

(i) Point of intersection of the lines above

(ii) Cartesian equation of a plane which contains the lines above

END