**NOBLE ONYEBUCHI OFFOR**

**19/ENG03/019**

**NO 188**

 **MAT 102**

If A = 2i-j

 B = 3i+j-11k

 C = 4i+4j-5k

1i) -3A+7B-8C = -6i+3j + 21i+7j-77k – 32i-32j+40k = -17i-22j-37k.

ii) Dimension cosine of K=2A+4B-C;

K = 4i-2j + 12i+4j-44k + -4i-4j+5k

K = 12i-2j-39k

**Firstly calculating the magnitude of a vector**

122+(-2)2+(-39)2 = 1669 = 40.86

**Calculating direction of cosine**

Cos I = i = 12 = 0.2937,,

 /A//B//C/ 40.86

Cos J = j = -2 = -0.048955,,

 /A//B//C/ 40.86

Cos K = k = -39 = -0.0955,,

 /A//B//C/ 40.86

iii) (A\*B\*C) = 2i-j \* 3i+j-11k \* 4i+4j-5k

(2\*3\*4)i + (-1\*1\*4)j + (-11-5)k

= 24i+5j+55k,,

iv) (3A\*B) . (A\*2B)

 6i-3j \*3i+j-11k . 2i-j \* 6i+2j-22k

 18i-3j-11k . 12i-2j-22k

 = 216i+6j+242k,,

v) A-2B-C = 2i-j + -3i-2j+22k + -4i-4j+5k = 4i-7j+27k,,

2) Define perpendicular and co-planar vectors.

Perpendicular vectors are two dimensional vectors whose product is equal to zero ie A.B = 0.

Co-planar vectors are three dimensional vectors whose product is equal to zero. A.B.C = 0.