DEPARTMENT OF MATHEMATICAL SCIENCES
2012/2013 RAIN SEMESTER
MAT104 TEST 1

Instruction: Answer All   Time Allowed: 30minutes

1.(a) Given the vectors $A=2i+3j-5k$, $B=3i+j+2k$ and $C=i-j+3k$

    Compute:

        (i) the scalar triple product $A.(B \times C)$

        (ii) the vector triple product $A \times (B \times C)$

(b) If the vectors $A=2i+3j-k$, $B=i-2j+2k$, $C=qi+j+3k$ are coplanar. Find the value of q.

    (c). find the angle between $A=2i+2j-k$ and $B=6i-3j+2k$

2.(a). Classify each of the following as scalars or vectors.

        (i) Distance (ii) Speed (iii) Displacement (iv) Upthrust (v) Acceleration (vi) Time (vii) Mass (viii) Momentum (ix) Temperature (x) Velocity (xi) Current (xii) Weight.

(b). If $a=2i+3j+4k$, $b=i-j+3k$, $c=3i-2j-k$. find the component of:

        (i) $a+b$ (ii) $2a+b$ (iii). $2a+c$

(c). If $|A+B|=60$, $|A-B|=40$ and $|B|=46$. Find $|A|$.

3. (a). If $A=(u^2+5)i-(u^3+3)j+2u^3k$ compute.

        (v) the velocity. (ii) Acceleration at $u=2$

   (b). Find the equation of a circle with centre $(-1,2)$ and radius 6