**KARATINA UNIVERSITY**

**PHY 110 CAT 1 SEMESTER ONE 2017(SEPT)**

1. The time depended velocity of a particle is given by *v=(2t+1)j+(t2+2t)i+5k.* determine :
   1. The displacement covered between time *t=0* and *t=2* seconds.(3marks)
   2. The velocity of the particle at time *t=1* second.(3 marks)
2. A ball is shot vertically upwards from the ground with an initial velocity of 108km/hr.

Determine:

* + 1. The time taken to reach the maximum height.(3 marks)
    2. The maximum height attained by the ball. (2 marks)

1. Two vectors *u* and *v* are given by *u=7i+3j-12k* and *v=6i-2j+3k* respectively.

Determine:

1. *u.v (2 marks)*
2. *uxv (3 marks)*
3. The angle between them. (2 marks)
4. With reasons explain whether the two vectors are perpendicular. (2 marks)