Velocity of a particle is defined as $V = kx^3 - x^2 + 6x$ where V is in m/sec and x in . Compute the acceleration when $x = 2$ and $K = 3$

Q.2 A particle is dropped from the top of tower 200m high and another particle is projected at the same time vertically upwards from the foot of the tower so as to meet the first particle at a height of 50m. Find the velocity of projection of the second particle.

Q.3. The driver of a car travelling at 72Km/h observe the traffic light 300m ahead of him turning red. The traffic light is timed to remain red for 20s before it turns green. If the driver wishes to pass the light without stopping to wait for it to turn green, determine

a) The required uniform deceleration of the car.

b) The speed with which the driver crosses the traffic light.

Q. A projected stone moves in vertically upward direction from a point A passes a point B after 3 sec. If it returns to A after further interval of 4 sec find

(i) The height of B above A

(ii) The velocity with which the stone passes the point midway between A and B

cricket ball projected with a velocity of
15m/s If the ball has a range of 20m
find the least angle of projection and