5 A particle P moves in a straight line such that at time t seconds, the displacement, s metres, of P from a fixed point O on the line is given by

$$s = t^3 - 5t^2 + 6t \qquad t \geqslant 0$$

(a) Find the values of $t (t > 0)$ when P passes through O.

(3)

(b) Find the speed of P when $t = 1$

(4)

(c) Find the magnitude of the acceleration of P at each of the times when it passes through O.

(3)

Question 5 continued

(Total for Question 5 is 10 marks)