

SAMPLE PAPER 3: PAPER 1

QUESTION 5 (25 MARKS)**Question 5 (a) (i)**

$$y = 2x^3 - 7x^2 + 5x - 3$$

$$\frac{dy}{dx} = 6x^2 - 14x + 5$$

Question 5 (b) (i)

$$v = 6 : v = 8t - 2t^2 = 6$$

$$2t^2 - 8t + 6 = 0$$

$$t^2 - 4t + 3 = 0$$

$$(t-3)(t-1) = 0$$

$$t = 1 \text{ s}, 3 \text{ s}$$

Question 5 (b) (iii)

$$a = 0 : a = 8 - 4t = 0$$

$$8 = 4t$$

$$t = 2 \text{ s}$$

$$t = 2 : v = 8t - 2t^2$$

$$= 8(2) - 2(2)^2$$

$$= 16 - 8 = 8 \text{ m/s}$$

Question 5 (a) (ii)

$$y = (2x-1)(2x+1)$$

$$= 4x^2 - 1$$

$$\frac{dy}{dx} = 8x$$

Question 5 (b) (ii)

$$a = \frac{dv}{dt} = 8 - 4t$$

$$t = 0 \text{ s} : a = 8 - 4(0) = 8 \text{ m/s}^2$$