6. The events A and B satisfy

$$P(A) = x \qquad P(B) = y \qquad P(A \cup B) = 0.65 \qquad P(B \mid A) = 0.3$$

(a) Show that

$$14x + 20y = 13$$

(3)

The events B and C are mutually exclusive such that

$$P(B \cup C) = 0.85 \qquad P(C) = \frac{1}{2}x + y$$

(b) (i) Find a second equation in x and y

(ii) Hence find the value of x and the value of y

(4)

(c) Determine whether or not A and B are statistically independent.
You must show your working clearly.

(2)

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Question 6 continued

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Question 6 continued

(Total for Question 6 is 9 marks)