5. A company produces steel cable.

Defects in the steel cable produced by this company occur at random, at a constant rate of 1 defect per 16 metres.

On one day the company produces a piece of steel cable 80 metres long.

(a) Find the probability that there are at most 5 defects in this piece of steel cable.

(2)

The company produces a piece of steel cable 80 metres long on each of the next 4 days.

(b) Find the probability that fewer than 2 of these 4 pieces of steel cable contain at most 5 defects.

(4)

The following week the company produces a piece of steel cable x metres long.

Using a normal approximation, the probability that this piece of steel cable has fewer than 26 defects is 0.5398

(c) Find the value of x

(8)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 5 continued

Question 5 continued

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Question 5 continued

(Total for Question 5 is 14 marks)

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA