7. The cumulative distribution of a discrete random variable X is given by

x	1	2	3	4
$F(x)$	$\frac{1}{13}$	$\frac{2k-1}{26}$	$\frac{3(k+1)}{26}$	$\frac{k+4}{8}$

where k is a positive constant.

(a) Show that $k = 4$

(1)

(b) Find the probability distribution of the discrete random variable X

(3)

(c) Using your answer to part (b), write down the mode of X

(1)

(d) Calculate $\text{Var}(13X - 6)$

(5)

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 7 continued

Question 7 continued

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 7 continued

(Total for Question 7 is 10 marks)

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