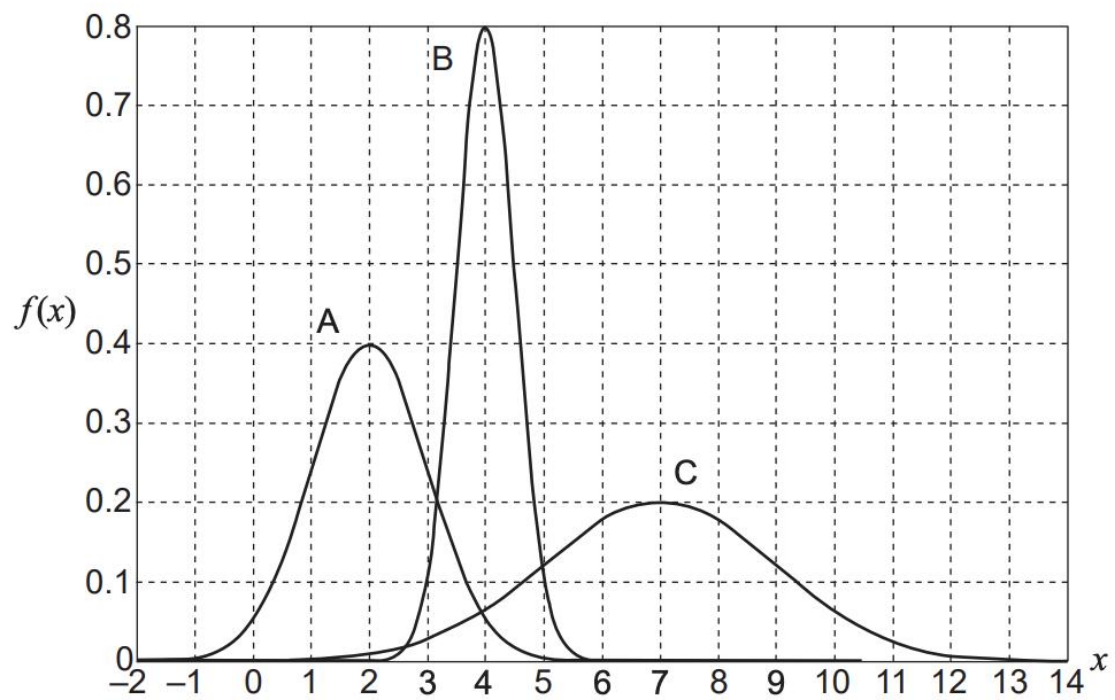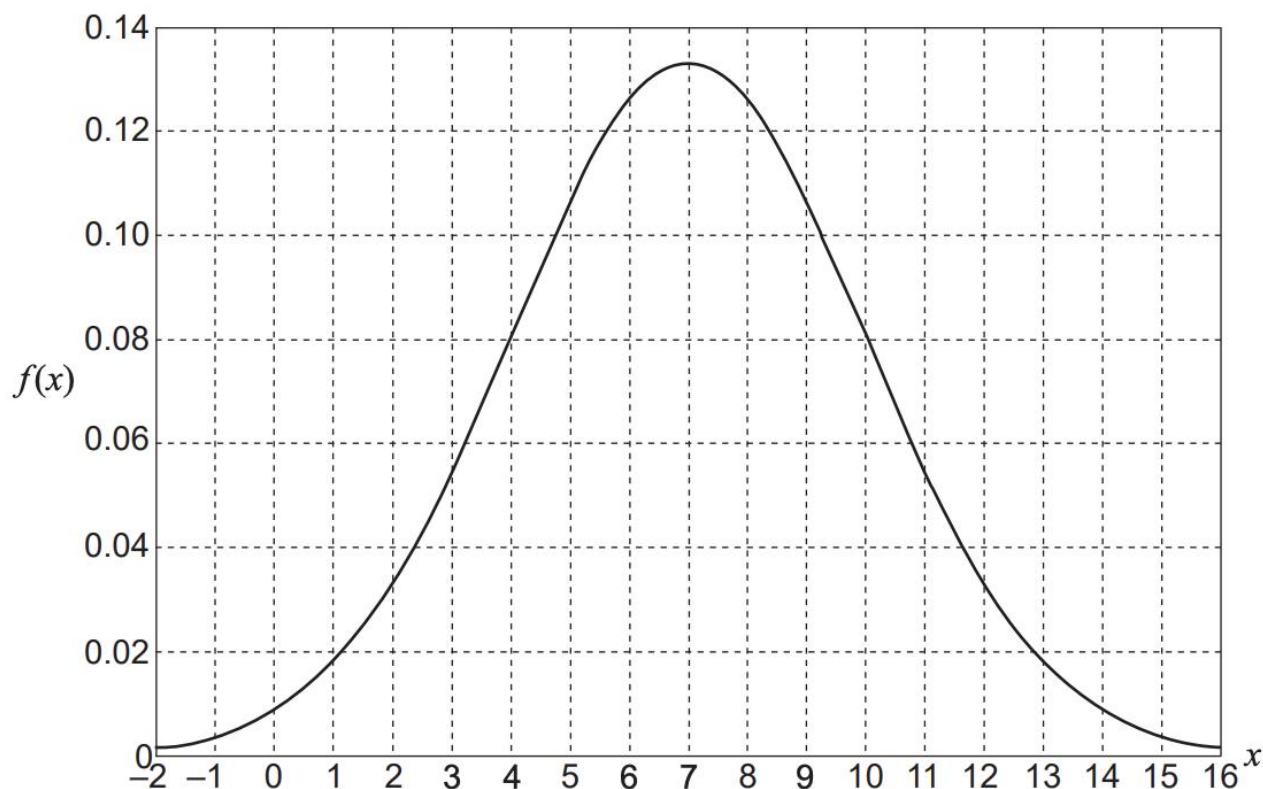**Question 6** (7 marks)

(a) The graphs of three normal distributions are displayed below. The distributions have been labelled A, B and C.

(i) What is the mean of distribution A? (1 mark)

(ii) Which of the distributions has the largest standard deviation? Justify your answer. (1 mark)

(b)   A random variable X is normally distributed. The distribution of X is graphed below.

(i)   Shade the region with area corresponding to $P(6 \leq X \leq 9)$.   (1 mark)

(ii)   Is $P(6 \leq X \leq 9) \geq 0.5$? Justify your answer.   (2 marks)

(c)   A random variable Y has probability $P(Y \geq 2) > P(Y > 2)$. Explain whether it is possible for the distribution of Y to be normal or binomial.   (2 marks)