

**Question 16****(10 marks)**

An automated milk bottling machine fills bottles uniformly to between 247 ml and 255 ml. The label on the bottle states that it holds 250 ml.

- (a) Determine the probability that a bottle selected randomly from the conveyor belt of this machine contains less than the labelled amount. (3 marks)

- (b) Calculate the mean and standard deviation of the amount of milk in the bottles. (4 marks)

A worker selects bottles from the conveyor belt, one at a time.

- (c) Determine the probability that it takes the selection of 15 bottles before five bottles containing less than the labelled amount have been selected. (3 marks)