8. The weights, X grams, of tins of coconut milk are normally distributed with

$$X \sim \mathrm{N}(443, 9)$$

A tin is selected at random.

(a) Find, using standardisation, the probability that the weight of this tin is

(i) less than 440 grams,

(ii) between 441.5 grams and 447.5 grams.

(4)

(b) Find the value of k such that $\mathrm{P}(443 - k < X < 443 + k) = 0.98$

(3)

The weights, Y grams, of tins of carrots are normally distributed with

$$\mathrm{Y} \sim \mathrm{N}(\mu, \sigma^2)$$

Given that 2.5% of these tins weigh less than 338.1 grams and 30% weigh more than 344 grams,

(c) calculate the mean and standard deviation of their weights.

(5)

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(Total for Question 8 is 12 marks)

TOTAL FOR PAPER IS 75 MARKS

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