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7. A company makes cricket balls and tennis balls.

The weights of cricket balls, C grams, follow a normal distribution

$$C \sim \mathrm{N}(160, 1.25^2)$$

Three cricket balls are selected at random.

(a) Find the probability that their total weight is more than 475.8 grams.

(4)

The weights of tennis balls, T grams, follow a normal distribution

$$T \sim \mathrm{N}(60, 2^2)$$

Five tennis balls and two cricket balls are selected at random.

(b) Find the probability that the total weight of the five tennis balls and the two cricket balls is more than 625 grams.

(4)

A random sample of n tennis balls $T_1,\ T_2,\ T_3,\ ...,\ T_n$ is taken.

The random variable $Y = (n-1)T_1 - \sum_{r=2}^{n} T_r$

Given that $\mathrm{P}(Y > 40) = 0.0838$ correct to 4 decimal places,

(c) find n.

(8)

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Q7

(Total 16 marks)

TOTAL FOR PAPER: 75 MARKS

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