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6 (a) Explain what you understand by the sampling distribution of a statistic.

(1)

At Sam's cafe a standard breakfast consists of 6 breakfast items. Customers can then choose to upgrade to a medium breakfast by adding 1 extra breakfast item or they can upgrade to a large breakfast by adding 2 extra breakfast items. Standard, medium and large breakfasts are sold in the ratio 6 : 3 : 2 respectively.

A random sample of 2 customers is taken from customers who have bought a breakfast from Sam's cafe on a particular day.

(b) Find the sampling distribution for the total number, T, of breakfast items bought by these 2 customers. Show your working clearly.

(7)

(c) Find $E(T)$

(2)

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(Total 10 marks)

Q6