7. A bag contains 10 counters each with exactly one number written on it.

There are 6 counters with the number 7 on them
There are 3 counters with the number 8 on them
There is 1 counter with the number 9 on it

A random sample of 3 counters is taken from the bag (without replacement).
These counters are then put back in the bag.

This process is then repeated until 20 samples have been taken.

The random variable Y represents the number of these 20 samples that contain the counter with the number 9 on it.

(a) (i) Find the mean of Y

(ii) Find the variance of Y

(5)

A random sample of 3 counters is chosen from the bag (without replacement).

(b) List all possible samples where the median of the numbers on the 3 counters is 7

(2)

(c) Find the sampling distribution of the median of the numbers on the 3 counters.

(5)

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Question 7 continued

Question 7 continued

(Total for Question 7 is 12 marks)

TOTAL FOR PAPER: 75 MARKS

END

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