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1. The random variable X has the discrete uniform distribution

$$P(X = x) = \frac{1}{\alpha} \quad \text{for } x = 1,\ 2,\ ...,\ \alpha$$

The mean of a random sample of size n, taken from this distribution, is denoted by $\bar{X}$

(a) Show that $2\bar{X}$ is a biased estimator of α

(2)

A random sample of 6 observations of X is taken and the results are given below.

8 7 3 7 2 9

(b) Use the sample mean to estimate the value of α

(2)

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Question 1 continued

Q1

(Total 4 marks)