

186. For the random variable X , you are given:

(i) $E[X] = \theta, \quad \theta > 0$

(ii) $\text{Var}(X) = \frac{\theta^2}{25}$

(iii) $\hat{\theta} = \frac{k}{k+1}X, \quad k > 0$

(iv) $\text{MSE}_{\hat{\theta}}(\theta) = 2[\text{bias}_{\hat{\theta}}(\theta)]^2$

Determine k .

(A) 0.2

(B) 0.5

(C) 2

(D) 5

(E) 25