

60. You are given the following information about six coins:

Coin	Probability of Heads
1 – 4	0.50
5	0.25
6	0.75

A coin is selected at random and then flipped repeatedly.  $X_i$  denotes the outcome of the  $i$ th flip, where “1” indicates heads and “0” indicates tails. The following sequence is obtained:

$$S = \{X_1, X_2, X_3, X_4\} = \{1, 1, 0, 1\}$$

Determine  $E(X_5|S)$  using Bayesian analysis.

- (A) 0.52
- (B) 0.54
- (C) 0.56
- (D) 0.59
- (E) 0.63