1. A man is known to speak the truth 3 out of 4 times. He throws a die and reports that it is six. The probability that it is actually a six, is

(1) $\frac{3}{8}$ (2) $\frac{1}{5}$

(3) $\frac{3}{4}$ (4) None of these

2. An unbiased coin is tossed. If the outcome is a head then a pair of unbiased dice is rolled and the sum of the numbers obtained on them is noted. If the toss of the coin results in tail then a card from a well-shuffled pack of nine cards numbered $1, 2, 3, \ldots, 9$ is randomly picked and the number on the card is noted. The probability that the noted number is either 7 or 8 is

(1) $\frac{13}{36}$ (2) $\frac{19}{72}$

(3) $\frac{15}{72}$ (4) $\frac{19}{36}$

3. A card from a pack of 52 cards is lost. From the remaining cards of the pack two cards are drawn and found to be hearts. If the probability that lost card is hearts, is k, then the value of $100\,k$ is

4. A box A contains 2 white, 3 red and 2 black balls. Another box B contains 4 white, 2 red and 3 black balls. If two balls are drawn at random, without replacement from a randomly, selected box and one ball turns out to be white while the other ball turns out to be red, then the probability that both balls are drawn from box B is :

(1) $\frac{7}{8}$ (2) $\frac{9}{16}$

(3) $\frac{7}{16}$ (4) $\frac{9}{32}$

5. In a test, an examinee either guesses or copies or knows the answer to a multiple choice question with four choices. The probability that he makes a guess is $\frac{1}{3}$ and the probability that he copies the answer is $\frac{1}{6}$. The probability that his answer is correct given that he copies it is $\frac{1}{8}$. The probability that his answer is correct, given that he guesses it is $\frac{1}{4}$. The probability that he knew the answer to the question given that he correctly answered, is

(1) $\frac{24}{31}$ (2) $\frac{17}{24}$

(3) $\frac{24}{29}$ (4) $\frac{29}{31}$

6. If m and σ^2 are the mean and variance of the random variable X. whose distribution is given by

x	0	1	2	3
$P(x)$	$1/3$	$1/2$	0	$1/6$

then

(1) $m = \sigma^2 = 2$ (2) $m = 1, \sigma^2 = 2$

(3) $m = \sigma^2 = 1$ (4) $m = 2, \sigma^2 = 1$

7. A random variable X has the probability distribution given below. Its variance is

X	1	2	3	4	5
$P(X = x)$	K	$2K$	$3K$	$2K$	K

(1) $\frac{16}{3}$ (2) $\frac{4}{3}$

(3) $\frac{5}{3}$ (4) $\frac{10}{3}$

8. An unbiased coin is tossed 5 times. Suppose that a variable X is assigned the value k when k consecutive heads are obtained for $k = 3, 4, 5$, otherwise X takes the value -1. Then the expected value of X, is

(1) $\frac{3}{16}$ (2) $\frac{1}{8}$

(3) $-\frac{3}{16}$ (4) $-\frac{1}{8}$

9. A purse contains 10 ten rupee coins and 5 five rupee coins. Two coins are randomly drawn. If the expected value of 2 drawn coins is λ, then $\frac{9\lambda}{4}$ is equal to

10. A person throws two fair dice. He wins Rs. 15 for throwing a doublet (same numbers on the two dice), wins Rs 12 when the throw results in the sum of 9 , and loses Rs. 6 for any other outcome on the throw. Then the expected gain/loss (in Rs.) of the person is:

(1) $\frac{1}{2}$ loss (2) $\frac{1}{2}$ gain

(3) 2 gain (4) $\frac{1}{4}$ loss