Question # 1

Total possible outcomes = $n(S)=1$

(i) Suppose A is the event that sweet is orange flavoured.
Since box only contained orange flavoured sweets
So favourable outcomes = $n(A)=1$

Probability = $P(A)=\frac{n(A)}{n(S)}=\frac{1}{1}=1$

(ii) Let B be the event that the sweet is lemon-flavoured.
Since box only contained orange-flavoured sweet
So favourable outcomes $=n(B)=0$

Probability = $P(B)=\frac{n(B)}{n(S)}=\frac{0}{1}=0$

Question # 2

Since there are three possibilities that Pakistan wins, loses or the match tied.
Therefore possible outcomes = $n(S)=3$

(i) Let A be the event that Pakistan wins
Favourable outcomes = $n(A)=1$

Required probability = $P(A)=\frac{n(A)}{n(S)}=\frac{1}{3}$

(ii) Let B be the event that India does not lose.
If India does not lose then India may win or the match tied
Therefore favourable outcomes = $n(B)=2$

Required probability = $P(B)=\frac{n(B)}{n(S)}=\frac{2}{3}$

Question # 3

Total number of balls $=5+3=8$
Therefore possible outcomes $=n(S)=8$

(i) Let A be event that the ball is green
Then favourable outcomes = $n(A)=5$

So probability = $P(A)=\frac{n(A)}{n(S)}=\frac{5}{8}$

(ii) Let B be the event that the ball is red
Then favourable outcomes = $n(B)=3$

So probability = $P(A)=\frac{n(B)}{n(S)}=\frac{3}{8}$

Question # 4

When a fair coin is tossed three times, the possible outcomes are
HHH, HHT, HTH, THH, HTT, THT, TTH, TTT.
So total possible outcomes = $n(S)=8$

(i) Let A be the event that the coin shows one tail then favourable outcomes are HHT, HTH, THH,

i.e. $n(A)=3$

So required probability = $P(A)=\frac{n(A)}{n(S)}=\frac{3}{8}$

(ii) Let B be the event that coin shows at least one head then favourable outcomes are
HHH, HHT, HTH, THH, HTT, THT, TTH.
i.e. $n(B) = 7$

So required probability = $P(B) = \frac{n(B)}{n(S)} = \frac{7}{8}$

Queston # 5

The possible outcomes are that die show 1, 2, 3, 4, 5, 6.
So possible outcomes = $n(S) = 6$

(i) Let A be the event that die show 3 or 4.
Then favourable outcomes = $n(A) = 2$

So required probability = $P(A) = \frac{n(A)}{n(S)} = \frac{2}{6} = \frac{1}{3}$

(ii) Let B be the event that top of the die show dots less than 5 then
Favourable outcomes = $n(B) = 4$

So required probability = $P(B) = \frac{n(B)}{n(S)} = \frac{4}{6} = \frac{2}{3}$

Question # 6

Since the box contain 5 slips
So possible outcomes = $n(S) = 5$

(i) Let A be the event that the number on the slip are prime numbers 2, 3 or 5
Then favourable outcomes = $n(A) = 3$

So required probability = $P(A) = \frac{n(A)}{n(S)} = \frac{3}{5}$

(ii) Let B be the event that number on the slips are multiple of 3 then
Favourable outcomes = $n(B) = 1$

So probability = $P(B) = \frac{n(B)}{n(S)} = \frac{1}{5}$

Question # 7

When two dice are rolled, the possible outcomes are

(1, 1)	(1, 2)	(1, 3)	(1, 4)	(1, 5)	(1, 6)
(2, 1)	(2, 2)	(2, 3)	(2, 4)	(2, 5)	(2, 6)
(3, 1)	(3, 2)	(3, 3)	(3, 4)	(3, 5)	(3, 6)
(4, 1)	(4, 2)	(4, 3)	(4, 4)	(4, 5)	(4, 6)
(5, 1)	(5, 2)	(5, 3)	(5, 4)	(5, 5)	(5, 6)
(6, 1)	(6, 2)	(6, 3)	(6, 4)	(6, 5)	(6, 6)

This show possible outcomes = $n(S) = 36$

(i) Let A be the event that the total of two scores is 5 then favourable outcome are
(1, 4), (2, 3), (3, 2), (4, 1)
i.e. favourable outcomes = $n(A) = 4$

So required probability = $P(A) = \frac{n(A)}{n(S)} = \frac{4}{36} = \frac{1}{9}$

(ii) Let B be the event that the total of two scores is 7 then favourable outcomes are
(1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1)
i.e. favourable outcomes = $n(B) = 6$

So probability = $P(B) = \frac{n(B)}{n(S)} = \frac{6}{36} = \frac{1}{6}$

(iii) Let C be the event that the total of two score is 11 then favourable outcomes are (5, 6), (6, 5) i.e. $n(C) = 2$

So probability = $P(B) = \frac{n(B)}{n(S)} = \frac{2}{36} = \frac{1}{18}$

Question # 8

Total number of balls = 40 i.e. $n(S) = 40$

Black balls = 15, Green balls = 5, Yellow balls = 40 – (15+5) = 20

(i) Let A be the event that the ball is black then $n(A) = 15$

So required probability = $P(A) = \frac{n(A)}{n(S)} = \frac{15}{40} = \frac{3}{8}$

(ii) Let B denotes the event that the ball is green then $n(B) = 5$

So required probability = $P(B) = \frac{n(B)}{n(S)} = \frac{5}{40} = \frac{1}{8}$

Let C denotes the event that the ball is not green then ball is either black or yellow therefore favourable outcomes = $n(C) = 15 + 20 = 35$

So required probability = $P(C) = \frac{n(C)}{n(S)} = \frac{35}{40} = \frac{7}{8}$

Question # 9

Number of students = 30

Then possible outcomes = $n(S) = 30$

(i) Now if A be the event that the monitor is the boy then

Favourable outcomes = $n(A) = 18$

So probability = $P(A) = \frac{n(A)}{n(S)} = \frac{18}{30} = \frac{3}{5}$

(ii) Now if B be the event that the monitor is the girl then

Favourable outcomes = $n(B) = 12$

So probability = $P(B) = \frac{n(B)}{n(S)} = \frac{12}{30} = \frac{2}{5}$

Question # 10

When the coin is tossed four times the possible outcomes are

HHHT	HHTH	HTHH	THHH
HHTT	HTTH	TTHH	THHT
HTTT	TTTH	TTHT	THTT
TTTT	HHHH	THTH	HTHT

i.e. $n(S) = 16$

(i) Let A be the event that the top shows all head then favourable outcome is HHHH i.e. $n(A) = 1$

Now probability = $P(A) = \frac{n(A)}{n(S)} = \frac{1}{16}$

(ii) Let B be the event that the top shows 2 head and two tails the favourable outcomes are HHTT, HTTH, TTHH, THHT, THTH, HTHT

i.e. $n(B) = 6$

Now probability = $P(B) = \frac{n(B)}{n(S)} = \frac{6}{16} = \frac{3}{8}$
