

Chapter - 15

(Probability)

Key Concept

- (1) Experiment - A job which produces some outcomes.
- (2) Trial - Performing an experiment.
- (3) Event - The group of outcomes, denoted by capital letter of English alphabets like A, B, E etc.
- (4) The empirical (or experimental) probability $P(E)$ of an event E is given by
$$P(E) = \frac{\text{Number of trials in which } E \text{ has happened}}{\text{Total no. of trials}}$$
- (5) The probability of an event lies between 0 and 1 (0 and 1 are included)
- (6) Impossible event: Event which never happen.
- (7) Certain event - event which definitely happen.

Section - A

- Q.1 Define an event.
- Q.2 Give definition of probability.
- Q.3 Probability of certain event is
- Q.4 Probability of impossible event is
- Q.5 Which is not a probability of an event?
(a) 2 (b) $\frac{2}{3}$ (c) .001 (d) .25
- Q.6 A bag contains 50 coins and each coin marked from 51 to 100. One coin is picked up at random. The probability that the number on the coin is not a prime number is.....

Section - B

- Q.7 A coin is tossed 1000 times with the following frequencies.
Head: 455, Tail: 545
compute the probability for each event.

Q.8 In a cricket match, a batsman hits a boundary 6 times out of 30 balls plays. Find the probability that on a ball played.

(i) He hits boundary (ii) He does not ht a boundary.

Q.9 Three coins tossed simultaneously 100 times with the following frequencies of different outcomes.

Out come	No head	one head	two head	three head
Frequency	14	38	36	12

If the coin tossed again then find the probability.

- (i) two heads coming up
- (ii) 3 heads coming up
- (iii) getting more tails than heads
- (iv) at least one head coming up

Q.10 In a football match, a player makes 4 goals from 10 kicks. The probability of a goal is from 10 kicks is.

Section - C

Q.11 The percentage of marks obtained by a student in the monthly unit tests are given as :

Unit Test	I	II	III	IV	V
% marks obtained	58	64	76	62	85

Find the probability that the student get a distinction (marks more than 75%)

Q.12 1000 families with 2 children were selected randomly, and the following data were recorded.

No. of boys in a family	0	1	2
No. of families	140	560	300

If a family chosen at random, find the prob. that it has

- (a) No boys
- (b) One boy
- (c) Two boys
- (d) at least one boy
- (e) at most two boy.

Q.13 The record of a weather station shows that out of the past 250 consecutive days, its weather forecast correct 175 times. What is the probability that on a given day.

- (i) it was correct.
- (ii) it was not correct.

Section - D

Q.14 A die is thrown 1000 times with following frequency of out comes 1, 2, 3, 4, 5 and 6 as given below

No. on die	1	2	3	4	5	6
Frequency	179	150	157	149	175	190

Find the probability of each out come.

Q.15 Following table shows the marks scored by a group of 90 students in a mathematics test of 100 marks.

Marks	0-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of student	7	10	10	20	20	15	8

Find the probability that a student obtained

- (i) less than 20% marks
- (ii) 60 or more marks

Q.16 The following table gives the life of 400 lamps.

Life time in Hours	300-400	400-500	500-600	600-700	700-800	800-900	900-1000
No. of Lamp	14	56	60	86	74	62	48

A bulb is selected at random find the probability that the life time of the selected bulb is:

- (i) less than 400
- (ii) between 300 to 800 hours.
- (iii) at least 700 hours.

Q.17 The percentage of attendance of different classes in a year in a school is given below:

Class	X	IX	VIII	VII	VI	V
Attendance	30	62	85	92	76	55

What is the probability that the class attendance is more than 75%

Answers:

- Q.5 a 6. $\frac{4}{5}$ 7. 0.455, 0.545
- 8. (i) 0.2 (ii) 0.8
- 9. (i) 0.36 (ii) 0.12 (iii) 0.52 (iv) 0.86
- 10. $\frac{4}{10}$
- 11. 0.4
- 12. (a) 0.14 (b) 0.56 (c) 0.30 (d) 0.86 (e) 0.7
- 13. (i) 0.7 (ii) 0.3
- 14. (i) .179 (ii) .15 (iii) .157 (iv) .149 (v) .175 (vi) .19
- 15. $\frac{7}{90}$ $\frac{23}{90}$
- 16. (i) $\frac{7}{200}$ (ii) $\frac{29}{40}$ (iii) $\frac{23}{50}$
- 17. $\frac{1}{2}$