Chapter 16

Probability

For important terms and definitions refer NCERT text book.

Type- I

Concept : sample space

(1)NCERT text book page 386 question no. 1 (*)

(2) NCERT text book page 386 question no. 2 (*)

(3) NCERT text book page 386 question no. 3 (*)

(4) NCERT text book page 386 question no. 4 (*)

(5) NCERT text book page 386 question no. 5 (*)

(6) NCERT text book page 386 question no. 11 (*)

(7) NCERT text book page 386 question no.12 (**)

Type- II

Concept : types of events

(1)NCERT text book page 393 question no. 2 (*)

(2) NCERT text book page 393 question no. 3 (*)

(3) NCERT text book page 393 question no. 1 (*)

(4) NCERT text book page 393 question no. 4 (**)

(5) NCERT text book page 392 example 7 (**)

Type- III

Concept : Algebra of events: AUB , A∩B , A but not B etc

(1) NCERT text book page 393 question no. 6 (**)

EXTRA AND HOT QUESTIONS

(1) From a group of 2 men and 3 women 2 persons are selected . Describe the sample space of the experiment. If E is the event in which 1 man and 1 woman are selected. Then which are the cases favourable to E (Type-I*)

(2) Two dice are rolled. A is the event that the sum of the numbers shown on the two dice is 5.B is the event that at least one of the dice shows up a 3.Are the two events A and B.
(a) Mutually exclusive.
(b) Exhaustive (Type-II**)

(3) Two dice are thrown the events A , B, C are as follows

A: Getting an odd number on the first die.

B: Getting a total of 7 on the two dice.

C: Getting a total of greater than or equal to 8 on the two dice.

Describe the following events

(a) AUB
(b) A'
(c) B – C
(d) B∩C

PROBABILITY OF AN EVENT

Important concepts

$$P(E) = \frac{no\ of\ outcomes\ favourable\ to\ E}{total\ no\ of\ outcomes}$$

If A and B are two mutually exclusive events P (AUB) = P(A) + P(B)

If A and B are any two events then P (AUB) = P(A) + P(B)-- P(A∩B)

P(not A) = 1—P(A)

Type – I

Concept: Probability of an event

(1) N.C.E.R.T text book page 404 question no.3(*)
(2) N.C.E.R.T text book page 404 question no.4(**)
(3) N.C.E.R.T text book page 404 question no.8(**)
(4) N.C.E.R.T text book page 404 question no.10(**)
(5) N.C.E.R.T text book page 403 example 14(**)
(6) N.C.E.R.T text book page 400 example 10(**)

EXTRA AND HOT QUESTIONS

(7) Three identical dice are rolled . Find the probability that the same number will appear on each of them.
Ans: 1/36 (hot)

(8) Two dice are thrown simultaneously . Find the probability of getting a total of 9.
Ans: 1/9 (*)

(9) A bag contains 8 red ,3 white and 9 blue balls. Three balls are drawn at random from the bag. Determine the probability that none of the balls drawn is white .
Ans: 34/57 (**)

(10) In a single throw of 3 dice. Find the probability of not getting the same number on all the dice.
Ans: 35/36 (**)

(11) The letters of the word “SOCIETY “ are placed at random in a row .What is the probability that the 3 vowels come together.
Ans: 1/7 (**)

(12) Find the probability that in an arrangement of the letters of the word “DAUGHTER” the letter D occupies the first place.
Ans: 1/8 (**)

(13) Find the probability that in a random arrangement of the letters of the word “INSTITUTION’ the three T’s are together.
Ans: P 1/110 (**)

Type – II

P(AUB)= P(A) + P(B) (mutually exclusive cases)

P (AUB) = P(A) + P(B)-- P(A∩B)

(1) N.C.E.R.T page 405 question no.14(**)

(2) N.C.E.R.T page 405 question no.15(*)

(3) N.C.E.R.T page 405 question no.16(**)

(4) N.C.E.R.T page 405 question no.17(**)

(5) N.C.E.R.T page 405 question no.18(**)

(6) N.C.E.R.T page 405 question no.19(**)

(7) N.C.E.R.T page 405 question no.20 (**)

(8) N.C.E.R.T page 409 misc exercise question no.3 (**)

(9) N.C.E.R.T page 401 example 11(**)

EXTRA AND HOT QUESTIONS

(1) One card is drawn from a set of 17 cards numbered 1 to 17. Find the probability that the number is divisible by 3 or 7.
Ans: 7/17. (*)

(2) Two dice are thrown together. What is the probability that the sum of the numbers of the two faces is neither 9 nor 11.
Ans : 5/16 (*)

(3) Two unbiased dice are thrown. Find the probability that neither a doublet nor a total of 10 will appear.
Ans: 7/9 (**)

(4) Two cards are drawn from a well shuffled pack of 52 cards without replacement .Find the probability that neither a jack nor a card of spade is drawn.
Ans: 105/221 (**)

(5) If P(AUB)=0.6 and P(A∩B)=0.2. Find $P(\bar{A}) + P(\bar{B})$
Ans: 1.2

(6) A and B are two mutually exclusive events if P(A) = 0.5 and P($\bar{B}$) =0.6.Find P(AUB)

Type – III

At least one, at most one cases

(1) N.C.E.R.T page 402 examples 12 (**) {hot}
(2) N.C.E.R.T page 407 example 15 (**)
(3) N.C.E.R.T page 408 misc exercise question .1 (**) {hot}
(4) N.C.E.R.T page 408 misc exercise question.2 (**)
(5) N.C.E.R.T page 409 misc exercise question 7 (**)
(6) N.C.E.R.T page 409 misc exercise question 9 (**)

EXTRA AND HOT QUESTIONS

(1) Three coins are tossed once . Find the probability of getting
(a) Atmost 2 heads
(b) Atleast 2 heads
(c) Exactly 2 tails
(d) Atmost 2 tails
(e) 3 heads
(f) No heads

Ans: (a) 7/8 (b)1/2 (c)3/8 (d)7/8 (e)1/8 (f)1/8

(2) The probability that a student will get A,B,C or D grade are 0.4,0.35,0.15and 0.1 respectively. Find the probability that she will get
(a) B or C grade
(b) Atmost C grade

(3) In a single throw of 2 dice write the corresponding events and the probability of getting
(a) A total of 9
(b) Two ones
(c) Atleast one 6
(d) A sum of 9 or 11
(e) A sum of atleast 10
(f) A sum as a prime number
Ans: (a)1/9(b)1/36(c)11/36(d)1/6(e)1/6(f)5/12