MATHEMATICS CLASS XI
CHAPTER – 16 PROBABILITY

Q.1. A coin is tossed. If it shows head, we throw a die. If it shows a tail, we toss another coin. Describe the sample space.

Q.2. A contains 1 white chair and 3 identical black chairs. Two chairs are chosen at random in succession without replacement. Write the sample space for the experiment.

Q.3. Suppose 3 TV sets are selected at random from a lot. Each TV set is tested and classified as defective (D) or non-defective (N). Write the sample space of this experiment.

Q.4. A box contains 1 red and 3 identical green balls. Two balls are drawn at random in succession without replacement. Write the sample space for this experiement.

Q.5. A di [illegible]e shows an even number" and F be the event " die shows less than 4". Are E and F mutually exclusive.

Q.6. Consider the experiment of rolling a die. Let A be the event " getting a prime number" and B be the event "getting an odd number". Write the sets representing the events

(i) A ∪ B **(ii) A ∩ B**

(iii) A – B **(iv) A '**

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

Q.7. Two dice are thrown and the sum of the numbers which come up on the dice is noted. Let us consider the following events associated with this experiment.

A : The sum is even.

B : The sum is a multiple of 3.

C : The sum is greater than 4.

D : The sum is greater than 11.

Which pairs of these events are mutually exclusive?

Q.8. Three coins tossed once. Let A denotes the event "three heads show", B denotes the event "two heads and one tail show", C denotes the event "three tails show" and D denotes the event " a head shows on the first coin" find that which are

(i) mutually exclusive events.

(ii) simple events.

(iii) compound events.

Q.9. A die is thrown 500 times with frequencies for the outcomes 1,2,3,4,5 and 6 as given in the following table

Outcome	1	2	3	4	5	6
Frequency	110	115	100	50	45	80

Q.10. Suppose we throw a die once. Find the probability of getting a number greater than 4.

Q.11. A die is thrown. Find

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

(i) P(a prime number)

(ii) P(a number ≥ 3)

(iii) P(a number ≤ 1)

(iv) P(a number more than 6).

(v) P (a number less than 6).

Q.12. An integer is chosen at random from first two hundred natural numbers. What is the probability that the integer chosen is divisible by 6 or 8?

Q.13. An urn contains 7 white, 5 black and 3 red balls. Two balls are drawn at random. Find the probability that

(i) both the balls are red.

(ii) one ball is red, other is black.

(iii) one ball is white

Q.14. Three coins are tossed once. Find the probability of getting all heads.

Q.15. A die is rolled. If the outcome is an odd number, then what is the probability that it is a prime number?

Q.16. Find the probability of the event "A or B" , when P(A) = $\frac{3}{5}$, P(B) = $\frac{2}{15}$ and P(A $\cap$ B) = $\frac{1}{15}$.

Q.17. Let S be the sample space and E be an event. Then, prove the following

(i) P(E) $\geq$ 0 (ii) P($\emptyset$) = 0 (iii) P(S) = 1

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

Q.18. If A and B are two events such that P(A) = $\frac{1}{4}$, P(B) = $\frac{1}{2}$ and P(A ∩ B) = $\frac{1}{8}$. Then, find P(not A and not B).

Q.19. Two unbiased dice are thrown. Find the probability that neither a doublet nor a total of 10 will appear.

Q.20. Probability that Ram passed in Mathematics is $\frac{2}{3}$ and the probability that he passed in English is $\frac{4}{9}$. If the probability of passing in both subjects is $\frac{1}{4}$, then what is the probability that Ram will pass in atleast one of these subjects?

Q.21. The probabilities of happening of two events A and B are 0.25 and 0.50, respectively. If the probability of happening of A and B together is 0.14, then find the probability that neither A nor B occurs.

Q.22. A coin is tossed and a die is thrown. Find the probability that the outcomes will be a head or a number greater than 4 or both.

Q.23. In a class of 60 students, 30 opted for NCC, 32 opted for NSS and 24 opted for both NCC and NSS. If one of these students is selected at random, then find the probability that

(i) the student opted for NCC or NSS.

(ii) the student has opted for neither NCC nor NSS.

(iii) the student has opted NSS but not NCC.

Q.24. 3 cards are drawn at random from a pack of well-shuffled 52 cards. Find the probability that

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

(i) all the three cards are of same suit.

(ii) one is king, the other is a queen and third is a jack.

Q.25. In an interview for a job in call center 5 boys and 3 girls appeared. If 4 persons are to be selected at random from this group. Find the probability that 3 boys and 1 girl or 1 boy and 3 girls are selected.

Q.26. Find the probability of the event "A or B" , when P(A) = $\frac{2}{3}$, P(B) = $\frac{2}{5}$ and P(A ∩ B) = $\frac{1}{5}$.

Q.27. In a single throw of die, find the probability of getting a total of 9 or 11.

Q.28. Find the probability of getting 2 or 3 tails, when a coin is tossed four times.

Q.30. If A and B are mutually exclusive events associated with a random experiment such that P(A) = 0.4 and P(B) = 0.5 Then, find

(i) P(A ∪ B)

(ii) P($\bar{A}$ ∩ $\bar{B}$)

Q.31. The probability that atleast one of the events A and B occurs is 0.6. If A and B occur simultaneously with probability 0.2, then find P($\bar{A}$) + P($\bar{B}$).

Q.32. A bag contains 9 discs out of which 4 are red, 3 are blue and 2 are yellow. A disc is drawn at random from a bag. Calculate the probability that it will be

(i) red **(ii) yellow**

(iii) blue **(iv) not blue**

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

Q.33. Three coins are tossed once. Find the probability of getting

(i) 3 tails **(ii) exactly 2 tails**

(iii) no tail **(iv) exactly one tail**

(v) a head on the first coin.

Q.34. If the probabilities for A to fail in an examination is 0.2 and that for B is 0.3, then find the probability that either A or B fails.

Q.35. A card is drawn from a pack of 52 cards. Find the probability of getting spade or ace or red card.

Q.36. In a class 30% of student offered Mathematics, 20% offered Chemistry and 10% offered both. If a student is selected at random, then find the probability that he has offered Mathematics or Chemistry.

Q.37. A card is drawn at random from a well-shuffled deck of cards. Find the probability that card is a

(i) king or a red card.

(ii) club or a diamond.

Q.38. An urn contains 6 red, 4 white and 8 blue balls. If three balls are drawn at random, then find the probability that

(i) one ball is red and two balls are white.

(ii) two balls are blue and one ball is red.

(iii) none is red.

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

Q.39. In a lottery of 50 tickets numbered 1 to 50, two tickets are drawn simultaneously. Find the probability that

(i) both the tickets drawn have prime numbers.

(ii) none of the ticket drawn has prime number.

(iii) one ticket has prime number.

Q.40. Two students Anil and Ashima appeared in an examination. The probability that Anil will qualify the examination is 0.05 and that Ashima will qualify the examination is 0.10. The probability that both will qualify the examination is 0.02. find the probability that

(i) both Anil and Ashima will not qualify the examination.

(ii) atleast one of them will not qualify the examination and

(iii) only one of them will qualify the examination.

Q.41. 20 students appeared for an examination, out of which 3 students were caught copying. These three students are to be chosen for an advice and make them understand to acquire positive values in life. What is the probability of choosing the student who were caught copying? Which values in life they are lacking?

Q.42. In a room, there are 9 persons out of which 3 persons like to ride a cycle as it is "ENVIORNMENT FRIENDLY" as well as mode of exercise, 4 persons are promoters of 'SAVE THE TIGER' compaign and 2 persons believe in 'HONESTY IS THE BEST POLICY'. A person is selected at random from the room. What is the

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

probability that a person related to 'SAVE THE TIGER' campaign is chosen? Give your views about the same.

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co