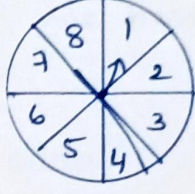# 14. Probability

8 Marks:

1) Two dice, one blue and one grey, are thrown at the same time. Write down all the possible outcomes. What is the probability that the sum of the two numbers appearing on the top of the dice is i) 8 ii) 13 iii) less than or equal to 12. iv) a prime number v) 2

2) A game of chance consists of spinning an arrow which comes to rest pointing at one of the numbers 1,2,3,4,5,6,7,8 and these are equally likely outcomes. What is the probability that it will point at

i) 8 ii) an odd number iii) a number greater than 2 iv) a number less than 9?

3) A die is thrown once. Find the probability of getting
i) a prime number ii) a number lying between 2 and 6
iii) an odd number. iv) an odd prime number

4) One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting i) a king of red colour
ii) a face card iii) a red face card iv) the jack of hearts v) a spade vi) the queen of diamonds.

5) Five cards, — the ten, jack, queen, king and ace of diamonds, are well-shuffled with their face downwards. One card is then picked up at random
i) What is the probability that the card is the queen?
ii) If the queen is drawn and put aside, what is the probability that the second card picked up is a) an ace
b) a queen?

6) A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears i) a two-digit number ii) a perfect square number iii) a number divisible by 5.

7) A lot consists of 144 ball pens of which 20 are defective and the others are good. Nuri will buy a pen if it is good, but will not buy if it is defective. The shopkeeper draws one pen at random and gives it to her. What is the probability that i) she will buy it? ii) she will not buy it?

8) A die is thrown twice. What is the probability that i) 5 will not come up either time ii) 5 will come up atleast once?

9) Two unbiased coins are tossed simultaneously. Find the probability of getting i) exact one head ii) atleast one head iii) atmost one head iv) no head.

10) Two dice are rolled simultaneously, and counts are added.
i) Complete the following table:

Event: 'Sum on 2 dice'	2	3	4	5	6	7	8	9	10	11	12
Probability	$\frac{1}{36}$										$\frac{1}{36}$

11) A box contains 100 discs which are numbered from 1 to 100. If one disc is drawn at random from the box, find the probability that it bears i) a two-digit number ii) a perfect square iii) a number divisible by 5 iv) a number divisible by 10.

12) One card is drawn from a well shuffled deck of 52 cards. Find the probability of getting: i) A queen of black colour ii) a face card iii) a jack of diamond iv) a club card v) face card of spades vi) queen vii) a king of black colour viii) a non face card ix) an ace x) red queen xi) a black face card xii) a face card of red colour xiii) jack of spades xiv) a king of spade xv) jack of clubs

4 Marks:

1) Savitha and Hamida are friends. What is the probability that both will have i) different birthdays ii) same birthday (ignoring a leap year).

2) A bag contain 3 red balls and 5 black balls if a ball is drawn at random from the bag, what is the probability that the ball drawn is i) red ii) not red?

3) A bag contains lemon flavoured candies only. Malini takes out one candy without looking into the bag. What is the probability that she takes out i) an orange flavoured candy? ii) a lemon flavoured candy?

4) It is given that in a group of 3 students, the probability of 2 students not having the same birthday is 0.992. What is the probability that the 2 students have the same birthday?

5) A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be i) red ii) white iii) not green.

6) A lot of 20 bulbs contains 4 defective ones. One bulb is drawn at random from the lot. Suppose the bulb drawn is not defective and not replaced. Now one bulb is drawn at random from the rest. What is the probability that this bulb is not defective?

7) The king, queen, and jack of clubs are removed from a pack of 52 cards and then the remaining cards are well shuffled. A card is selected from the remaining cards. Find the probability of getting a card i) of space ii) of black king iii) of club iv) of jacks.

8) A piggy bank contains hundred 50p coins, fifty ₹1 coins, twenty ₹2 coins and ten ₹5 coins. If it is equally likely that one of the coins will fall out when the bank is turned upside down, what is the probability that the coin. i) will be a 50p coin ii) will not be a ₹5 coin.

9) A game consists of tossing a one rupee coin 3 times and recording its outcome each time. Hanif wins if all the tosses give the same result i.e., three heads or three tails, and loses otherwise. Calculate the probability that Hanif will lose the game.

10) Suppose we throw a die once.
   i) What is the probability of getting a number greater than 4?
   ii) What is the probability of getting a number less than or equal to 4?

11) A box contains 3 blue, 2 white and 4 red marbles. If a marble is drawn at random from the box, what is the probability that it will be i) white ii) blue iii) red

12) Harpeet tosses two different coins simultaneously. What is the probability that she gets atleast one head?

13) What is the probability that a non-leap year has
i) 53 mondays   ii) 52 sundays

14) A number is selected at random from 1 to 30. Find the probability that it is i) a prime number ii) a number neither prime nor composite iii) a multiple of 3

15) 12 defective pens are accidentally mixed with 132 good ones. It is not possible to just look at a pen and tell whether or not it is defective. One pen is taken out at random from this lot. Determine the probability that the pen taken out is a good one.

1 Mark:

1) If $P(E) = 0.05$, what is the probability of 'not E'?

2) If $P(E) = 0.95$ then $P(\bar{E}) = $ ____.

3) Out of one-digit prime numbers, one number is selected at random. The probability of selecting an even number is ____

4) The sum of the probabilities of all the elementary events of an experiment is ____

5) If one letter is selected randomly from the letters of the word 'COVID' then the probability of getting a consonant is ____

6) What is the probability of sure event?

7) If E is any event, then $P(E) + P(\bar{E}) = $ ____

8) On random selection, find the probability of getting a composite number among the numbers from 51 to 100

9) The probability of getting right answer to a question is 0.68, then find the probability of getting a wrong answer.

10) A box contains pencils and pens. The probability of picking out a pen at random is 0.65. Then find the probability of not picking a pen.

11) A card is pulled from a deck of 52 cards. Find the probability of obtaining a club card.

12) When a dice is thrown, find the probability of getting neither a prime nor a composite number.

13) How many faces does a die have?

14) Probability of an event is always ____

15) Complementary events means ____

16) When a die is thrown once the probability of an event get 7 is ____

17) In a die, one face is 3 then exactly opposite face is ____

18) Probability of impossible event is ____

19) If $P(\bar{E}) = 0.003$ then find $P(E)$

20) If $P(E) = 0.3$ then $P(\text{not } E) = $ ____

21) A bag contains 10 black balls. If one ball is selected randomly from the bag, then the probability of getting a white ball is ———

22) If one letter is selected randomly from the letters of the word EXAMINATION, then the probability of getting a vowel is ———

23) If $P(E) = 0.43$ then $P(\bar{E})$ is ———

24) Which of the following cannot be the probability of an event? A) $\frac{2}{3}$ B) 0.7   C) 0.15   D) 1.5

25) A single letter is selected at random from the word SUCCESS. The probability that it is a vowel is ———

26) If $P(E) = 0.09$ then find $P(\text{not } E)$

27) Can $\frac{7}{2}$ be the probability of an event?

28) If $P(E) = 1$ then find $P(\bar{E})$