

Section- A (1 X 10)

1. A bag has 5 white marbles, 8 red marbles and 4 purple marbles. If we take a marble randomly, then what is the probability of not getting purple marble?
(a) 0.5 (b) 0.66 (c) 0.08 (d) 0.77
2. Two dice are thrown simultaneously. What is the probability of getting doublet?
(a) 1/36 (b) 1/6 (c) 5/6 (d) 11/36
3. A box contains cards numbered 9 to 53. A card is drawn at random from the box. The probability that the drawn card has a number which is a perfect square is :
(a) 1/45 (b) 2/15 (c) 4/45 (d) 1/9
4. A card is selected from a deck of 52 cards. The probability of being a red face card is
(a) 3/26 (b) 3/13 (c) 2/13 (d) 1/2
5. The probability of getting a bad egg in a lot of 400 is 0.035. The number of bad eggs in the lot is
(a) 7 (b) 14 (c) 21 (d) 28
6. If the roots of $ax^2 + bx + c = 0$ are equal in magnitude but opposite in sign, then
(a) $a = 0$ (b) $b = 0$ (c) $c = 0$ (d) none of these
7. If the roots of equation $3x^2 + 2x + (p + 2)(p - 1) = 0$ are of opposite sign then which of the following cannot be the value of p ?
(a) 0 (b) -1 (c) $\frac{1}{2}$ (d) -3
8. The value of k for which the equation $x^2 + 2(k + 1)x + k^2 = 0$ has equal roots is
(a) -1 (b) $-\frac{1}{2}$ (c) 1 (d) none of these

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

9. **Assertion (A):** If one root of the quadratic equation $6x^2 - x - k = 0$ is $\frac{2}{3}$, then the value of k is 2.

Reason (R): The quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$ has almost two roots.

10. **Assertion (A):** The roots of the quadratic equation $x^2 + 2x + 2 = 0$ are imaginary

Reason (R): If discriminant $D = b^2 - 4ac < 0$ then the roots of quadratic equation $ax^2 + bx + c = 0$ are not real i.e. imaginary.

Section- B (3 X 5)

11. Find the probability of getting 53 Fridays in a leap year.
12. One card is drawn at random from a well-shuffled deck of 52 playing cards. Find the probability that the card drawn is (i) either a red card or a king, (ii) neither a red card nor a queen.
13. Find the value of α such that the quadratic equation $(\alpha - 12)x^2 + 2(\alpha - 12)x + 2 = 0$, has equal roots.
14. Find the value of p , for which one root of the quadratic equation $px^2 - 14x + 8 = 0$ is 6 times the other.
15. Two coins are tossed simultaneously. What is the probability of getting
(i) At least one head? (ii) At most one tail? (iii) A head and a tail?

Section- C (5 X 1)

16. Solve the following for x : $\frac{1}{2a+b+2x} = \frac{1}{2a} + \frac{1}{b} + \frac{1}{2x}$