

BHARAT SCHOOL OF BANKING

PERMUTATION & COMBINATION AND PROBABILITY

1. A bag has six red marbles and six blue marbles. If two marbles are drawn randomly from the bag, what is the probability that they will both be red?

- A) $1/2$
- B) $11/12$
- C) $5/12$
- D) $5/22$
- E) $1/3$

2. There are five students in a study group: two finance majors and three accounting majors. If two students are chosen at random, what is the probability that they are both accounting students?

- A) $3/10$
- B) $2/5$
- C) $1/5$
- D) $3/5$
- E) $4/5$

3. At a certain business school, 400 students are members of the sailing club, the wine club, or both. If 200 students are members of the wine club and 50 students are members of both clubs, what is the probability that a student chosen at random is a member of the sailing club?

- A) $1/2$
- B) $5/8$
- C) $1/4$
- D) $3/8$
- E) $3/5$

4. A bag contains 3 red marbles, 3 blue marbles, and 3 green marbles. If a marble is randomly drawn from the bag and a fair, six-sided dice is tossed, what is the probability of obtaining a red marble and getting 6 from dice?

- A. $1/15$
- B. $1/6$
- C. $1/3$
- D. $1/4$
- E. $1/18$

5. A letter is randomly select from the word "STUDIOUS". What is the probability that the letter be a U?

- A. $1/8$
- B. $1/4$
- C. $1/3$
- D. $1/2$

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E. $\frac{3}{8}$

6. In how many different ways can the letters of the word 'MATHEMATICS' be arranged so that the vowels always come together?

- A. 124045
- B. 20890
- C. 133156
- D. 120960
- E. None of these

7. How many 4-letter words can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?

- A. 400
- B. 4050
- C. 5040
- D. 5773
- E. None of these

8. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?

- A. 156
- B. 209
- C. 193
- D. 245
- E. None of these

9. In a bag, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?

- A. $\frac{3}{91}$
- B. $\frac{1}{3}$
- C. $\frac{3}{7}$
- D. $\frac{7}{15}$
- E. None of these

10. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card (Jack, Queen and King only)?

- A. $\frac{3}{13}$
- B. $\frac{1}{13}$
- C. $\frac{7}{52}$
- D. $\frac{9}{13}$
- E. None of these

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Answers:-

1.D

Probability that both are red marbles = $\frac{6}{12} \times \frac{5}{11} = \frac{5}{22}$

2. A

Probability of first student to be accounting student = $\frac{3}{5}$

Probability of second student to be accounting student = $\frac{2}{4} = \frac{1}{2}$

Probability that both students to be accounting students = $\frac{3}{5} \times \frac{1}{2} = \frac{3}{10}$

3.B

Members in sailing club = 250

Probability of choosing member from sailing club = $\frac{250}{400} = \frac{5}{8}$

4.E

Probability getting red marble = $\frac{3}{9} = \frac{1}{3}$

Probability of getting 6 = $\frac{1}{6}$

Probability of getting red marble and 6 = $\frac{1}{3} \times \frac{1}{6} = \frac{1}{18}$

5. B

Probability of choosing u - $\frac{2}{8} = \frac{1}{4}$

6.D

No. of ways = $\frac{8!}{(2! \cdot 2!)} \times \frac{4!}{2!} = 10080 \cdot 12 = 120960$

7. C

Required no. of words = $10P_4 = 10 \cdot 9 \cdot 8 \cdot 7 = 5040$

8.B

For at least one boy required no. of way = $({}^6C_1 \cdot {}^4C_3) + ({}^6C_2 \cdot {}^4C_2) + ({}^6C_3 \cdot {}^4C_1) + ({}^6C_4) = 209$

9.B

Total no. of balls = $8 + 7 + 6 = 21$

Probability to chose neither red nor green ball = $\frac{7}{21} = \frac{1}{3}$

10. A

Required Probability = $\frac{12}{52} = \frac{3}{13}$