Probability Questions for sbi clerk

Instructions
For the following questions answer them individually

Question 1

A bag A contains 4 green and 6 red balls. Another bag B contains 3 green and 4 red balls. If one ball is drawn from each bag, and the probability that both are green.

A 13/70

B 1/4

C 6/35

D 8/35

E None of these

Answer: C

Explanation:
Total balls in bag A = 4 + 6 = 10

Probability that ball is green = $\frac{4}{10}$

Total balls in bag B = 3 + 4 = 7

Probability that ball is green = $\frac{3}{7}$

=> Required probability = $\frac{4}{10} \times \frac{3}{7}$

= $\frac{6}{35}$

Question 2

A bag contains 2 red, 3 green and 2 blue balls. 2 balls are to be drawn randomly. What is the probability that the balls drawn contain no blue ball ?

A 5/7

B 10/21

C 2/7

D 11/21

E None of these

Answer: B

Explanation:
Total number of balls = 2 + 3 + 2 = 7

Total number of outcomes = Drawing 2 balls out of 7

= $C_2^7 = \frac{7 \times 6}{1 \times 2} = 21$

Favourable outcomes = Drawing 2 balls out of 5 (so that none is blue)

= $C_2^5 = \frac{5 \times 4}{1 \times 2} = 10$

=> Required probability = $\frac{10}{21}$

Question 3

In how many different ways can the letters of the word "PRIDE" be arranged ?

A 60

B 120

C 15

D 360

E None of these

Answer: B

Explanation:
The word 'PRIDE' consists of 5 distinct letters

=> Number of arrangements = $5!$

= $5 \times 4 \times 3 \times 2 \times 1 = 120$

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Question 4

There are 8 brown balls, 4 orange balls and 5 black balls in a bag. Five balls are chosen at random. What is the probability of their being 2 brown balls, 1 orange ball and 2 black balls ?

A $\frac{191}{1547}$

B $\frac{180}{1547}$

C $\frac{280}{1547}$

D $\frac{189}{1547}$

E None of these

Answer: C

Explanation:
Total number of balls in the bag = 8 + 4 + 5 = 17

P(S) = Total possible outcomes

= Selecting 5 balls at random out of 17

=> $P(S) = C_5^{17} = \frac{17 \times 16 \times 15 \times 14 \times 13}{1 \times 2 \times 3 \times 4 \times 5}$

= 6188

P(E) = Favorable outcomes

= Selecting 2 brown, 1 orange and 2 black balls.

=> $P(E) = C_2^8 \times C_1^4 \times C_2^5$

= $\frac{8 \times 7}{1 \times 2} \times 4 \times \frac{5 \times 4}{1 \times 2}$

= $28 \times 4 \times 10 = 1120$

∴ Required probability = $\frac{P(E)}{P(S)}$

= $\frac{1120}{6188} = \frac{280}{1547}$

Question 5

In a bag there are 4 white, 4 red and 2 green balls. Two balls are drawn at random. What is the probability that at least one ball is of green colour ?

A $\frac{4}{5}$

B $\frac{3}{5}$

C $\frac{1}{5}$

D $\frac{2}{5}$

E None of these

Answer: D

Explanation:
There are 4 white, 4 red and 2 green balls and two balls are drawn at random.

Total possible outcomes = Selection of 2 balls out of 10 balls

= $C_2^{10} = \frac{10*9}{1*2} = 45$

Favourable outcomes = 1 green ball and 1 ball of other colour + 2 green balls

= $C_1^2 \times C_1^8 + C_2^2$

= 2*8 + 2 = 18

∴ Required probability = $\frac{18}{45} = \frac{2}{5}$

Question 6

A bag contains 24 eggs out of which 8 are rotten. The remaining eggs are not rotten eggs. The two eggs are selected at random, What is the probability that one of the eggs is rotten?

A $\frac{11}{23}$

B $\frac{17}{23}$

C $\frac{13}{23}$

D $\frac{11}{17}$

E $\frac{11}{33}$

Answer: C

Explanation:
Number of rotten eggs = 8
Number of non-rotten eggs = 16

Required probability = $\frac{{}^8C_1 . {}^{16}C_1}{{}^{24}C_2} + \frac{{}^8C_2}{{}^{24}C_2}$

$= \frac{8\times16+28}{276}$

$= \frac{13}{23}$

Question 7

In a bag, there are 6 red balls and 9 green balls. Two balls are drawn at random, what is the probability that at least one of the balls drawn is red ?

A 29/35

B 7/15

C 23/35

D 2/5

E 19/35

Answer: C

Explanation:
Probability that at least 1 ball is red = 1 - probability that none of them is red.
Probability that none if the two balls is red = (9/15)(8/14)
Probability that at least 1 ball is red = 1 - probability that none of them is red. = 1- [(9/15)(8/14)] = (210-72)/210
= 138/210
=23/35
Option C is the correct answer.

Question 8

A bag contains 4 red balls, 6 green balls and 5 blue balls. If three balls are picked at random, what is the probability that two of them are green and one of them is blue in colour ?

A $\frac{20}{91}$

B $\frac{10}{91}$

C $\frac{15}{91}$

D $\frac{5}{91}$

E $\frac{25}{91}$

Answer: C

Explanation:
Probability of drawing blue ball in first attempt = 5/15

Probability of drawing two green balls in the next two attempts = (6/14)(5/13)
Probability of drawing 2 green and 1 blue ball = (5/15)(6/14)(5/13) = 150/2730

Probability of drawing green ball in first attempt = 6/15
Probability of drawing blue ball in the next attempt = (5/14)
Probability of drawing green ball in the next attempt = (5/13)
Probability of drawing 2 red and 1 green ball = (6/15)(5/14)(5/13) = 150/2730

Probability of drawing two green balls in first two attempts = (6/15)(5/14)
Probability of drawing blue ball in the next attempt =(5/13)
Probability of drawing 2 red and 1 green ball = (6/15)(5/14)(5/13) = 150/2730

Probability of drawing 2 red balls and 1 green ball= 150/2730 + 150/2730 + 150/2730 = 3(150/2730) = 150/910 = 15/91
Option C is the correct answer

Question 9

A bag contains 16 eggs out of which 5 are rotten. The remaining eggs are in good condition. If two eggs are drawn randomly, what is the probability that exactly one of the eggs drawn is rotten ?

A $\frac{11}{24}$

B $\frac{13}{24}$

C $\frac{65}{12}$

D $\frac{17}{24}$

E $\frac{7}{12}$

Answer: A

Explanation:
Out of the 16 eggs, 5 eggs are rotten and 11 eggs are in good condition.

According to the question, out of the two eggs drawn one is rotten and the other is in good condition.

Hence, required probability = $\frac{^5C_1 * ^{11}C_1}{^{16}C_2} = \frac{5*11}{16*15/2} = \frac{11}{24}$

Hence, option A is the right choice.

Question 10

A bag contains 3 white balls and 2 black balls. Another bag contains 2 white and 4 black balls. A bag and a ball are picked at random. What is the probability that the ball drawn is white ?

A $\frac{7}{11}$

B $\frac{7}{30}$

C $\frac{5}{11}$

D $\frac{7}{15}$

E $\frac{8}{15}$

Answer: D

Explanation:
Probability of choosing bag 1 = (1/2)
Probability of choosing bag 2 = (1/2)
Probability of choosing white ball from bag 1 = 3/5
Probability of choosing white ball from bag 2 = 2/6
Probability of choosing bag 1 and white ball from it = (1/2)(3/5) = 3/10
Probability of choosing bag 2 and white ball from it = (1/2)(2/6) = 2/12
Probability of choosing a bag and drawing a white ball = (3/10) + (2/12) = (28/60) = (7/15)
Option D is the correct answer.