

Quiz Date: 22nd September 2020

Q1. A box contains 2 blue marbles, 4 red marbles, 5 green marbles and 1 yellow marble. If one marble is picked at random, what is the probability that it is either blue or yellow ?

- (a) $\frac{2}{9}$
- (b) $\frac{1}{4}$
- (c) $\frac{3}{8}$
- (d) $\frac{6}{11}$
- (e) $\frac{1}{6}$

Q2. What is the probability of getting the sum as a prime number when two dice are thrown?

- (a) $\frac{13}{36}$
- (b) $\frac{7}{18}$
- (c) $\frac{5}{12}$
- (d) $\frac{4}{9}$
- (e) $\frac{5}{9}$

Q3. What is the probability of getting the sum four when Abhimanyu throws 2 identical dice simultaneously?

- (a) $\frac{1}{12}$
- (b) $\frac{1}{18}$
- (c) $\frac{2}{3}$
- (d) $\frac{1}{7}$
- (e) $\frac{1}{9}$

Q4. A box contains 5 red balls, 8 green balls and 10 pink balls. A ball is drawn at random from the box. Find the probability that the ball drawn is either red or green.

- (a) $\frac{13}{23}$
- (b) $\frac{10}{23}$
- (c) $\frac{11}{23}$
- (d) $\frac{13}{529}$
- (e) $\frac{12}{23}$

Q5. The probabilities of solving a problem by three students. A, B and C are $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$, respectively. The probability that the problem will be solved, is

- (a) $\frac{1}{4}$

- (b) $\frac{1}{2}$
- (c) $\frac{3}{4}$
- (d) $\frac{1}{3}$
- (e) $\frac{3}{5}$

Q6. The simple interest on a certain sum of money for 2 years at 13% p.a is one-third of the compound interest on Rs. 13000 for 2 years at 10% p.a. find the sum on which simple interest is calculated?

- (a) Rs.3300
- (b) Rs.3500
- (c) Rs.3800
- (d) Rs.4000
- (e) Rs.3700

Q7. Amount of Rs. X is put at 10% compound interest per annum. If difference of 3rd year and 2nd year interest is Rs. 143, then find the value of 'X'

- (a) 13,000
- (b) 14,000
- (c) 12,000
- (d) 11,000
- (e) 10,000

Q8. Ravi invested Rs. P at 10% per annum, Aayush invested Rs.(P + 5400) at the rate of $16\frac{2}{3}\%$ per annum. If they both get total compound interest at the end of two years Rs.7090. find capital invested by Aayush?

- (a) Rs.9000
- (b) Rs.12000
- (c) Rs.14400
- (d) Rs.13000
- (e) Rs.8000

Q9. Amit and Veer invested in the ratio of 3:2 in C.I. for two years at the rate of $16\frac{2}{3}\%$ and $14\frac{2}{7}\%$ respectively. If both got a total C.I. of Rs.9970. find the investment of Veer?

- (a) Rs. 12320
- (b) Rs. 17640
- (c) Rs. 12500
- (d) Rs. 8500
- (e) Rs. 11760

Q10. At simple interest, a sum becomes 4 times in 21 years. Find the time in which the sum will be 6 times at the same rate of interest.

- (a) 32 years
- (b) 40 years
- (c) 38 years

- (d) 43 years
- (e) 35 years

Q11. A test paper consists of 15 Questions and each question has 4 choices. If each question is necessarily attempted, then find the number of ways of answering the test paper.

- (a) 4^{15}
- (b) 4^{17}
- (c) 4^{13}
- (d) 2^{25}
- (e) None of these

Q12. A tricolor flag is to be formed having three adjacent strips of three different colors chosen from six different colors. How many different colored flags can be formed with different design in which all the three strips are always in horizontal positions?

- (a) 112
- (b) 116
- (c) 120
- (d) 110
- (e) 124

Q13. In a party every person shakes hand with every other person. If there was a total of 210 handshakes in the party, find the no. of persons who were present in the party.

- (a) 21
- (b) 22
- (c) 25
- (d) 28
- (e) 19

Q14. How many different straight lines can be formed by joining 12 different points on a plane of which 4 are collinear and the rest are non-collinear?

- (a) 41
- (b) 51
- (c) 55
- (d) 61
- (e) 58

Q15. How many different words can be formed with the letters of the word EQUATION without changing the relative order of the vowels and consonants?

- (a) 125
- (b) 620
- (c) 880
- (d) 720
- (e) None of these

Solutions

S1. Ans. (b)

$$\text{Sol. Req. Probability} = \frac{{}^2C_1 + {}^1C_1}{{}^{12}C_1} = \frac{3}{12} = \frac{1}{4}$$

S2. Ans.(c)

Sol.

$$\text{Required probability} = \frac{15}{36} = \frac{5}{12}$$

S3. Ans.(a)

Sol. Favorable event = {3, 1}, {2, 2}, {1, 3}

$$\text{Possibility of getting the sum four} = \frac{3}{36} = \frac{1}{12}$$

S4. Ans.(a)

Sol.

$$\text{Required Probability} = \frac{5}{23} + \frac{8}{23} = \frac{13}{23}$$

S5. Ans.(c)

Sol.

First, we find the probability of not solving the problem

$$= \left(1 - \frac{1}{2}\right) \times \left(1 - \frac{1}{3}\right) \times \left(1 - \frac{1}{4}\right)$$

$$= \frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} = \frac{1}{4}$$

$$\text{Required Probability} = 1 - \frac{1}{4} = \frac{3}{4}$$

S6. Ans(b)

Sol.

Let principal = p Rs

ATQ.

$$\frac{p \times 13 \times 2}{100} = \frac{1}{3} \times 13000 \left\{ \left(1 + \frac{10}{100}\right)^2 - 1 \right\}$$

$$p = \frac{13000 \times 21 \times 100}{3 \times 100 \times 13 \times 2}$$

$$p = \text{Rs. } 3500$$

S7. Ans.(a)

Sol.

Let Principal be 1,00,000

So,

Interest in Ist year at 10% = 10,000

Interest in IInd year at 10% = 10,000 + 1000

Interest in IIIrd year at 10% = 10,000 + 1000 + 1000 + 100

If principal is 1,00,000 the difference between 3rd year interest and 2nd year interest is

$$= (10,000 + 1,000 + 1,000 + 100) - (10,000 + 1000)$$

= 1100

So, value of $x = \frac{1,00,000}{1100} \times 143 = 13000$

S8. Ans.(c)

Sol.

Ravi invested = P Rs.

Aayush invested = (P + 5400)

ATQ—

$$P\left\{\left(1 + \frac{10}{100}\right)^2 - 1\right\} + (P + 5400)\left\{\left(1 + \frac{1}{6}\right)^2 - 1\right\} = 7090$$

$$\frac{21P}{100} + \frac{13P}{36} + 1950 = 7090$$

$$\frac{514P}{900} = 5140$$

P=9000

Aayush's Capital = 9000+5400=Rs.14400

S9. Ans.(e)

Sol.

Let capital of Amit and Veer is $126x$ and $84x$ respectively.

ATQ,

$$126x\left\{\left(1 + \frac{1}{6}\right)^2 - 1\right\} + 84x\left\{\left(1 + \frac{1}{7}\right)^2 - 1\right\} = 9970$$

$$\frac{997x}{14} = 9970$$

$x = 140$

Veer's investment = $84x = \text{Rs.}11760$

S10. Ans(e)

Sol.

4 times in 21 years

So, interest will be 3 times of principal

Let principal=Rs. P

And rate = $r\%$

$$3p = \frac{p \times r \times 21}{100}$$

$$R = \frac{100}{7}\%$$

Let required time be t years

$$5p = \frac{p \times 1 \times t}{7}$$

$t = 35$ years

S11. Ans. (a)

Sol. Since each question can be answered in four ways

Hence, the total number of ways of answering 15 questions = $4 \times 4 \times 4 \times 4 \dots 15$ times = 4^{15}

S12. Ans. (c)

Sol.

First strips can be colored in 6 ways and second strip can be colored in 5 ways and third strip can be colored in 4 ways

Hence, all the three strips can be colored in $6 \times 5 \times 4 \text{ ways} = 120$

S13. Ans. (a)

Sol.

For each selection of two persons there will be one handshake.

Hence, no. of handshakes in the party = ${}^n C_2$ where n is the no. of persons.

Acc. to question

$${}^n C_2 = 210$$

$$\text{or, } \frac{n(n-1)}{2} = 210$$

$$\text{or, } n = 21$$

S14. Ans. (d)

Sol.

Total no. of lines formed by 12 points = ${}^{12} C_2$

No. of lines formed by 4 points = ${}^4 C_2$

Hence, required no. of line = Total lines formed by 12 points - Number of lines formed by 4 collinear points + 1

$$= {}^{12} C_2 - {}^4 C_2 + 1 = 61$$

S15. Ans. (d)

Sol. In the word EQUATION, the 5 vowels E, U, A, I and O occupy 5 places 1, 3, 4, 6 and 7 respectively whereas the 3 consonants Q, T and N occupy the 3 places 2, 5 and 8 respectively.

All the letters of the word are different i.e. there is no repetition of any letter.

The 5 vowels can be arranged in the five places in 5! Ways = 120

While the 3 consonants can be arranged in the 3 places in 3! Ways = 6

Hence, required no. = $120 \times 6 = 720$

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