Quiz Date: 12th May 2020

Q1. A signal beam has 8 flags of different colours to generate a signal. How many different signals can be generated if a signal requires the use of two flags, one below the other?
(a) 54
(b) 56
(c) 63
(d) 60
(e) 72

Q2. How many three digit number can be formed by using the digits 2, 3, 7 and 8 if (i) Repetition of digits is allowed (ii) Repetition of digits is not allowed
(a) 64, 24
(b) 64, 22
(c) 28, 24
(d) 26, 22
(e) 36, 64

Q3. The difference in the probability of selecting 1 blue Ball and 2 Blue balls is 8/49. If total balls are 50, find the number of blue balls.
(a) 10
(b) 15
(c) 20
(d) 8
(e) 12

Q4. A committee of five members is to be formed out of 3 trainees, 4 professors and 6 research associates. In how many different ways can this be done if the committee should have all the 4 professors and 1 research associate or all 3 trainees and 2 professors?
(a) 15
(b) 18
(c) 25
(d) 12
(e) 16

Q5. A school team has 8 volleyball players. A five members team and a captain will be selected out of these eight players. How many different selections can be made?
(a)224
(b)112
(c)56
(d)88
(e)168

Q6. If a number of two digits is formed with the digits 2, 3, 5, 7, 9 without repetition of digits, what is the probability that the number formed is 35 or 53?
(a) 1/10
(b) 1/20
(c) 2/11
(d) 1/11
(e) 3/10

Q7. The letters of the word 'article' are arranged at random. Find the probability that the vowels may occupy the even places.
(a) 2/35
(b) 1/35
(c) 3/36
(d) 2/34
(e) None of these

Q8. In a college there are 7 boys and 6 girls. What is the probability of making a team of five students which contains at least two girls?
(a) 32/39
(b) 161/3003
(c) 562/3003
(d) 3/5
(e) 2/7

Q9.   Two bags A and B contain 7 red and 6 blue balls respectively. Some blue balls from bag B are taken out and kept into bag A. If probability of selecting two blue ball from bag A is 1/15, find the number of blue balls drawn from bag B.
(a) 2
(b) 4
(c) 3
(d) 5
(e) 6

Q10. A speaks the truth 3 out of 4 times, and B 5 out of 6 times. What is the probability that they will contradict each other in stating the same fact?
(a) 2/3

(b) 1/3
(c) 5/6
(d) 1/6
(e) 2/9

Direction (11-15): Pie chart given below shows the availability of six types of crops which a dealer have and bar chart given below shows percentage of fresh crops out of total crops. Study the data carefully and answer the following questions.
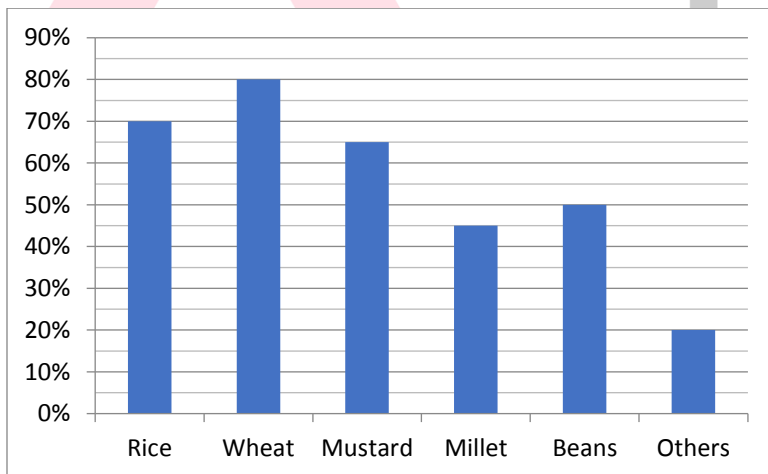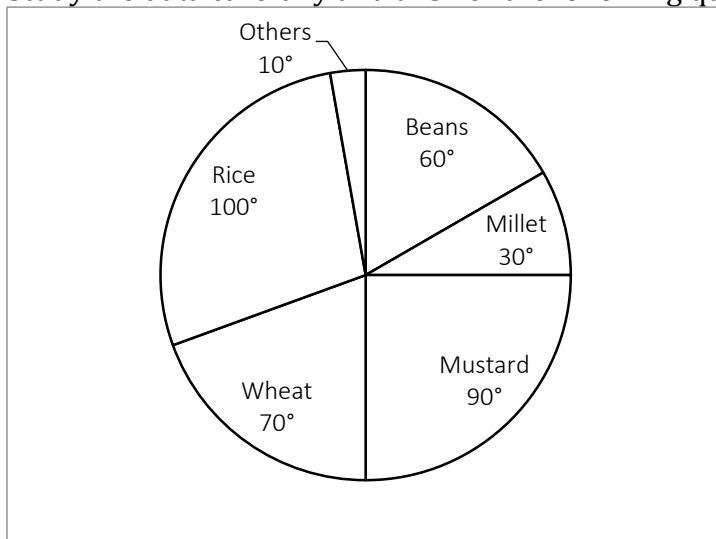
Note : - Total Others Crop = 15 ton
Total Crops = Fresh Crop + Non-fresh Crop

Q11.　If he sells fresh rice and non-fresh rice both at 10% profit. Both profit% and loss% are calculated on fresh rice cost price. Also cost price of non-fresh rice is 20% lower than that of fresh rice. Calculate his actual profit % if he sold all the rice. (Rounded upto one digit)
(a) 16.6%
(b) 14.8%

(c) 12.3%
(d) 10.6%
(e) 8.6%

Q12.   What is the ratio of fresh mustard to non-fresh millet.
(a) 13 : 10
(b) 10 : 7
(c) 16 : 3
(d) 39 : 11
(e) None of these

Q13.   If the 'others' compromises of 3 different crops A, B and C and these are in the ratio of 1 : 2 : 2. Also ratio of cost per ton of these is in 5 : 1 : 2 respectively. Find the total cost of whole 'others' crop if 1 ton of B cost Rs.10000.
(a) 4.2 lakhs
(b) 3.3 lakhs
(c) 3.1 lakhs
(d) 4.4 lakhs
(e) None of these
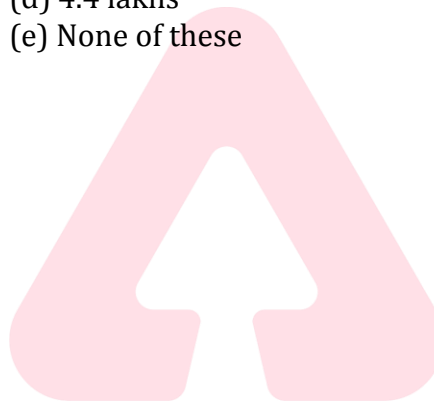
Q14.   Fresh wheat comes from 3 different places & these have 6% impurity,12% impurity and 0% impurity and quantity of these categories is in ratio 1: 5:1 respectively. Find the total impurity in fresh wheat.
(a) 9.4 tons
(b) 7.92 tons
(c) 9.62 tons
(d) 9.84 tons
(e) 9.9 tons

Q15.   If the profit earn from beans is Rs. 4000/ton and from mustard is 6000/ton. Find the difference of total profit earned from these crops.
(a) 4.5 lakhs
(b) 3.6 lakhs
(c) 2.4 lakhs
(d) 4.8 lakhs
(e) 5 lakhs

Solutions

S1. Ans.(b)
Sol. The upper flag can be only one of the 8 flags and the lower flag can be only one of (8 – 1) flags.
Places : upper lower
Flags : 8   7
Total, signals = 8 × 7 = 56

S2. Ans.(a)
Sol.
Total digits = 4
Now, Places : 0 0 0
Digits   : 4 4 4
Total numbers = 4 × 4 × 4 = 64
(ii) Places : 0 0 0
Digits   : 4 3 2
Total numbers = 4 × 3 × 2 = 24

S3. Ans.(a)
Sol.
Total balls = 50
Blue balls = x
Probability of selection of 1 blue ball = $\frac{x}{50}$
Probability of selection of 2 blue balls
$= \frac{x \times (x-1)}{50 \times 49}$
Now $\frac{x}{50} - \frac{x(x-1)}{50 \times 49} = \frac{8}{49}$
∴ x = 10 or 40

S4. Ans.(d)
Sol.
3 trainees, 4 professors, 6 research associates
No. of ways
$= (4P \& 1 R.A.) or (3\ trainee \& 2P)$
$= {}^4C_4 \times {}^6C_1 + {}^3C_3 \times {}^4C_2$
$= 6 + 6$
$= 12$

S5. Ans.(e)

Sol.
Required selections

$$= \underset{\text{Captain}}{\overset{^8C_1}{\downarrow}} \times \underset{\text{Members}}{\overset{^7C_5}{\downarrow}}$$

$$= 8 \times \frac{7 \times 6}{2} = 168$$

S6. Ans.(a)
Sol.
Total possible cases = 20 cases i.e. {23, 25, 27, 29, 32, 35, 37, 39, 52, 53, 57, 59, 72, 73, 75, 79, 92, 93, 95, 97}

So, required probability $= \frac{1}{20} + \frac{1}{20} = \frac{1}{10}$

S7. Ans. (b)
Sol.

$$\underset{1}{\overset{a}{\downarrow}} \quad \underset{2}{\overset{r}{\downarrow}} \quad \underset{3}{\overset{t}{\downarrow}} \quad \underset{4}{\overset{i}{\downarrow}} \quad \underset{5}{\overset{c}{\downarrow}} \quad \underset{6}{\overset{l}{\downarrow}} \quad \underset{7}{\overset{e}{\downarrow}}$$

Total vowels = 3 (a, i, e)

$\therefore$ Required probability $= \frac{3! \times 4!}{7!} = \frac{1}{35}$

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S8. Ans.(a)
Sol.
Total possible ways $= 13_{c_5} = 1287$
Favorable cases
$= 6_{c_2} \times 7_{c_3} + 6_{c_3} \times 7_{c_2} + 6_{c_4} \times 7_{c_1} + 6_{c_5}$
$= 1056$

$\therefore$ Required probability $= \frac{1056}{1287}$

$= \frac{352}{429}$

S9. Ans.(c)

Sol.

Method 1:-

At least 2 Blue balls should be there

If 2 Blue are there than probability of 2 B

$$= \frac{2}{(7+2)} = \frac{2}{9}$$

If three balls are there

Than probability of 2 B ball will be

$$= \frac{3c_2}{10c_2} = \frac{1}{15}$$

So answer will be 3 B

Method 2:-

7R, 6B

Let x no. of blue balls were taken out from bag B

$\therefore$ Required probability $= \dfrac{xc_2}{7 + xc_2}$

$$= \frac{1}{15}$$

$$\Rightarrow \frac{x(x-1)}{(x+7)(x+6)} = \frac{1}{15}$$

$\Rightarrow 15\,(x^2 - x) = x^2 + 13x + 42$

$\Rightarrow 14x^2 - 28x - 42 = 0$

$\Rightarrow x^2 - 2x - 3 = 0$

$\Rightarrow x = 3$

S10. Ans.(b)
Sol.

$P\,(A \text{ speak truth}) = \dfrac{3}{4}$

$P\,(B \text{ speak truth}) = \dfrac{5}{6}$

Required probability

$$= \frac{3}{4} \times \frac{1}{6} + \frac{1}{4} \times \frac{5}{6}$$

$$= \frac{8}{24}$$

$$= \frac{1}{3}$$

S11. Ans.(d)
Sol.
Let the C.P. of fresh rice is 10x.

Then CP of non-fresh rice is 8x.

S.P. of fresh rice is 11x

∴ SP of non-fresh rice is 9x.

Quantity of fresh rice he have

$= \frac{70}{100} \times \frac{100}{10} \times 15$

= 105 tons

Remaining rice $= \frac{100}{10} \times 15 - 105 = 45$ tons

Total CP = (10x × 105) + (8x × 45)

= 1050x + 360x

= 1410x

Total SP = (11x × 105) + (9x × 45)

= 1155x + 405x

= 1560x

Profit % $= \frac{1560x - 1410x}{1410x} \times 100$

$= \frac{150x}{1410x} \times 100$

≃ 10.6%

S12. Ans.(d)

Sol.

Fresh year mustard $= \frac{65}{100} \times \frac{90}{10} \times 15 = 87.75$ tons

Non fresh year millet $= \frac{55}{100} \times \frac{30}{10} \times 15 = 24.75$

Required ratio = 87.75 : 24.75

⇒ 351 : 99

⇒ 39 : 11

S13. Ans.(b)

Sol.

A : B : C = 1 : 2 : 2 = 1x + 2x + 2x

Total quantity of others = 5x = 15 tons

x = 3

Hence, we have

A = 3 tons

B = 6 tons

C = 6 tons

Ratio of their costs/ton is in 5 : 1 : 2

Cost/ton of B is Rs. 10000

∴ cost of A/ton = Rs. 50000

Cost of B/ton = Rs. 10000

Cost of C/ton = Rs. 20000

Total cost = 3 × 50000 + 6 × 10000 + 6 × 20000

= 1.5 lakhs + 0.6 lakhs + 1.2 lakhs

= 3.3 lakhs

S14. Ans.(b)
Sol.
Total fresh what wheat available = $\frac{80}{100} \times \frac{70}{100} \times 15$ tons
= 84 tons
Ratio of 3 types of categories is 1 : 5 : 2.
Therefore,
 quantity of 6% impurity $\frac{1}{7} \times 84$ = 12 tons
Quantity of 12% impurity $\frac{5}{7} \times 84$ = 60 tons
Quantity of 0% impurity $\frac{1}{7} \times 84$ = 12 tons
Total impurity in fresh wheat
= $\frac{6}{100} \times 12 + \frac{12}{100} \times 60 + \frac{0}{100} \times 12$
= 0.72 tons + 7.2 tons
= 7.92 tons

S15. Ans.(a)
Sol.
Total profit earned from Beans
= $4000 \times \frac{60}{10} \times 15$
= Rs. 360000/-
Total profit earned from Mustard
= $6000 \times \frac{90}{10} \times 15$
= Rs. 810000/-
Difference = Rs. 450000/-

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