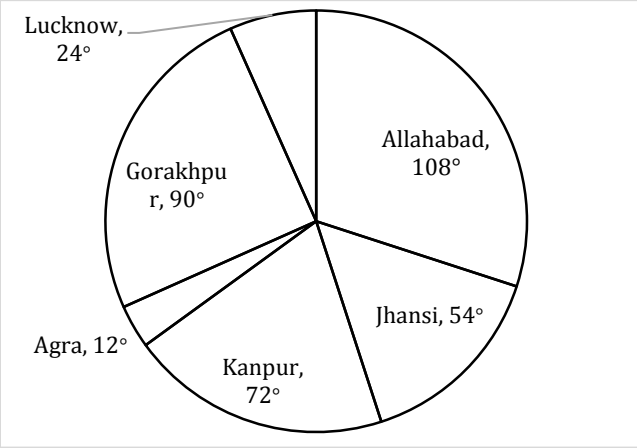
Quiz Date: 27th May 2020

Directions (1-5): The following pie-chart and table show the distribution of total number of seats of ALP and Technician in six different RRB divisions (in degrees) and ratio of ALP and Technician seats in each given RRB divisions respectively. Study the graphs carefully to answer the following questions.
Total ALP and technician seats = 60,000



RRB Divisions	Ratio of ALP & Technician seats (ALP: Technician)
Allahabad	2 : 1
Jhansi	3 : 1
Kanpur	3 : 5
Agra	1 : 1
Gorakhpur	3 : 2
Lucknow	3 : 1

Q1. What is the average no. of ALP seats in Allahabad, Kanpur and Lucknow divisions?
(a) 5600
(b) 6500
(c) 4500
(d) 6000
(e) 7500

Q2. Total no. of technician seats in Jhansi is what percent more or less than the total no. of technician seats in Kanpur division?
(a) 70%
(b) 80%
(c) 85%
(d) 75%
(e) 65%

Q3. What is the total no. of ALP and Technician seats in Kanpur, Agra and Gorakhpur together?
(a) 29,600
(b) 29,500
(c) 29,400
(d) 29,000
(e) 29,900

Q4. If no. of ALP and technician seats in Jhansi is interchanged, then what is the percentage change in ALP seats with respect to the total number of ALP and technician seats in the same division?
(a) 50% less
(b) 50% more
(c) can't be determined
(d) 60% more
(e) 60% less

Q5. What is the difference between total no. of ALP seats in Allahabad and Gorakhpur?
(a) 4500
(b) 3000
(c) 2800
(d) 2400
(e) 4800

Directions (6-10): What will come in place of question mark (?) in following questions (Find the exact value)?
Q6. 2151.46 + 5437.54 – 6795 =?
(a) 974
(b) 794
(c) 796
(d) 790
(e) 792

Q7. $\frac{2}{5}$ of 215 + $\frac{3}{4}$ of 128 – $\frac{4}{7}$ of 147 =?
(a) 94
(b) 96
(c) 98
(d) 92
(e) 100

Q8. 56% of 700 + 64% of 900 – 40% of 290 =?
(a) 848
(b) 852
(c) 850

(d) 854
(e) 846

Q9. $7777 \div 11 + 888 \div 6 = ?$
(a) 855
(b) 857
(c) 853
(d) 850
(e) 852

Q10. $\sqrt[3]{1331} \times \frac{3}{11}\%$ of $14300 = ?$
(a) 426
(b) 427
(c) 431
(d) 429
(e) 432

Direction (11 -15)- There are three bags A, B & C and each contains balls of three different colors (i.e. Blue, Yellow and Red).
Bag A contains x blue and y red balls. Number of blue balls is 3 less than the number of red balls. If Abhi selected one ball from bag A, then the probability of getting yellow ball is $\frac{1}{6}$. Value of x is $\frac{100}{3}\%$ less than that of y.
Blue balls in bag B is 200% more than that of yellow balls in bag A. If Sandeep is selecting two balls at random from bag B, then the probability of getting both red is $\frac{33}{203}$. Total number of balls in bag B is 29.
In bag C, the number of red balls is 150% of blue balls and blue balls are 20% more than number of yellow balls in that bag. If Kamal is selecting two balls at random from bag C, then the probability of getting both blue balls is $\frac{11}{130}$.

Q11. Total number of blue balls in bag A and B together is what percent more or less than total number of red balls in bag B and C together?
(a) 40 %
(b) 45 %
(c) 50 %
(d) 55 %
(e) 60 %

Q12. Number of total balls in bag D is 35% less than total number of balls in bag C and balls are of three same colors as above and out of which yellow balls are equal to average of blue balls in all the three given bags (A, B & C). If the probability of selecting a red ball from bag D is $\frac{6}{13}$ then number of blue balls in bag D is what percent of total number of balls of bag A?
(a) $\frac{245}{9}\%$

(b) $\frac{82}{3}$ %
(c) $\frac{83}{3}$ %
(d) 25 %
(e) $\frac{250}{9}$ %

Q13. Find the ratio of difference between averages of yellow balls in all three bags taken together and $\frac{75}{2}$ % of total number of balls in bag C to the number of red balls in bag B?
(a) 1 : 3
(b) 2 : 3
(c) 3 : 4
(d) 3 : 2
(e) 4 : 3

Q14. Find the difference between total number of balls from bag A and B taken together and total number of balls from bag C?
(a) 7
(b) 8
(c) 9
(d) 10
(e) 11

Q15. 'p' number of black balls are added into bag A and (p+2) number of black balls are added into bag C. Find value of 'p' if probability of selecting a black ball from bag A is $\frac{1}{12}$ more than probability of selecting a black ball from bag C. (Given: p<20)
(a) 10
(b) 8
(c) 18
(d) 6
(e) 12

Solutions

S1. Ans.(b)
Sol.

Required average no. of ALP seats

$$= \frac{1}{3} \times \left(\frac{2}{3} \times \frac{108}{360} \times 60{,}000 + \frac{3}{8} \times \frac{72}{360} \times 60{,}000 + \frac{3}{4} \times \frac{24}{360} \times 60{,}000\right)$$

$$= \frac{1}{3} \times (12000 + 4500 + 3000)$$

$$= \frac{1}{3} \times 19500 = 6500$$

S2. Ans.(a)

Sol.

Total no. of Technician seats in Jhansi

$$= \frac{1}{4} \times \frac{54}{360} \times 60{,}000$$

= 2250

Total no. of technician seats in Kanpur

$$= \frac{5}{8} \times \frac{72}{360} \times 60000$$

= 7500

$$\therefore \text{Required } \% = \frac{7500-2250}{7500} \times 100$$

= 70%

S3. Ans.(d)

Sol.

Total no. of ALP and technician seats in Kanpur, Gorakhpur and Agra together

$$= \frac{(72 + 12 + 90)}{360} \times 60{,}000 = 29{,}000$$

S4. Ans.(a)

Sol.

$$\text{Required percentage change} = \frac{3-1}{4} \times 100$$

= 50% less

S5. Ans.(b)

Sol.

Required difference

$$= \frac{2}{3} \times \frac{108}{360} \times 60{,}000 - \frac{3}{5} \times \frac{90}{360} \times 60{,}000$$

= 12000 – 9000

= 3000

S6. Ans.(b)

Sol.

? = 794

S7. Ans.(c)

Sol.
? = 86 + 96 – 84 = 98

S8. Ans.(b)
Sol.
? = 56 × 7 + 64 × 9 – 4 × 29
$= 392 + 576 - 116$
= 852

S9. Ans.(a)
Sol.
? = 707 + 148
= 855

S10. Ans.(d)
Sol.
$? = 11 \times \frac{3}{1100} \times 14300 = 429$

Solutions (11-15):
Bag A:
$x = y - 3$ .....(i)
And $x = \frac{2}{3}y$.....(ii)
From (i) and (ii)
x=6 and y=9
Now, let the number of yellow ball be 'u'
Then,
$\frac{u}{15+u} = \frac{1}{6}$
$\Rightarrow$ u= 3
i.e. number of yellow balls=3
number of blue balls=6
number of red balls=9
Bag B:
Number of blue balls in bag B = $\frac{300}{100} \times 3 = 9$

Let number of red balls be x.
Then, yellow balls = 29 – (9 + x)
ATQ,
$\frac{^{x}C_2}{^{29}C_2} = \frac{33}{203}$
$\Rightarrow \frac{x(x-1)\times 2}{2\times 29\times 28} = \frac{33}{203}$
$\Rightarrow \frac{x(x-1)}{4} = 33$
$\Rightarrow x^2 - x = 132$
$\Rightarrow x^2 - x - 132 = 0$
$\Rightarrow x^2 - 12x + 11x - 132 = 0$
$\Rightarrow x(x - 12) + 11(x - 12) = 0$
$\Rightarrow x = 12.$
$\therefore$ Yellow balls = 29 – (9 + 12) = 8
Red balls = 12.

Bag C:
Let the number of yellow balls be 100x
Then, blue balls = $\frac{120}{100} \times 100x = 120x$
Red ball = $\frac{150\times 120x}{100} = 180x$
ATQ,
$\frac{^{120x}C_2}{^{400x}C_2} = \frac{11}{130}$
$\Rightarrow \frac{120x(120x-1)}{400x(400x-1)} = \frac{11}{130}$
$\Rightarrow \frac{3(120x-1)}{10(400x-1)} = \frac{11}{130}$
$\Rightarrow 4680x - 39 = 4400x - 11$
$\Rightarrow 280x = 28$
$\Rightarrow x = \frac{1}{10}$
number of yellow balls = $100 \times \frac{1}{10} = 10$
number of blue balls = $120 \times \frac{1}{10} = 12$
number of red balls = $180 \times \frac{1}{10} = 18$

Bags / Colors	A	B	C
Blue	6	9	12
Red	9	12	18
Yellow	3	8	10

S11. Ans.(c)
Sol.

Required %= $\frac{(12+18)-(6+9)}{(12+18)} \times 100 = 50\%$

S12. Ans.(e)
Sol.
Number of total balls in bag D=$65 \times \frac{40}{100} = 26$
Number of yellow balls in bag D=$\frac{1}{3}(6 + 9 + 12) = 9$
Let the number of red balls in bag D be x.
ATQ
$\frac{x}{26} = \frac{6}{13}$
⇒x=12
Number of blue balls in bag D=26-(9+12) =5
Required %=$\frac{5}{18} \times 100\% = 27\frac{7}{9}\%$

S13. Ans.(b)
Sol.
Required difference=$\frac{3}{8} \times (12 + 18 + 10) - \frac{1}{3}(3 + 8 + 10) = 8$
Required ratio=$\frac{8}{12} = 2 : 3$

S14. Ans.(a)
Sol.
Required difference= {(6+9+3) + (9+12+8) - (12+18+10)} =7

S15. Ans.(d)
Sol.
ATQ
$\frac{p}{18+p} - \frac{(p+2)}{42+p} = \frac{1}{12}$
$\Rightarrow \frac{p^2+42p-(p^2+20p+36)}{(18+p)(42+p)} = \frac{1}{12}$
$\Rightarrow \frac{22p-36}{p^2+60p+756} = \frac{1}{12}$
$\Rightarrow 264p - 432 = p^2 + 60p + 756$
$\Rightarrow p^2 - 204p + 1188 = 0$
$\Rightarrow p^2 - 198p - 6p + 1188 = 0$
$\Rightarrow p = 198$ or 6
$\Rightarrow p = 6$