Quiz Date: 19th May 2020

Directions (1-5): Study the following information and answer the related questions to it.

In DMRC exam, a certain number of people were selected through various stages (written, group discussion and personal interview) and finally $\frac{100}{3}$% of total candidates who appeared for the written exam were selected. 25% of total students who appeared for written exam were from UP, $\frac{50}{3}$% of total were from Delhi, $\frac{100}{3}$% of total were from Haryana, Rajasthan and Bihar together and rest were from MP and Panjab together. Ratio of male to female in those who appeared for written exam from UP and Delhi was 2 : 1 and 3: 2 respectively.

Ratio of students who appeared for written exam from Haryana, Rajasthan and Bihar respectively was 2 : 1 : 2. Ratio of students from MP and Punjab who were appeared in the written exam was 1 : 2. Number of students who appeared in written exam from Punjab was 13700. The total no. of students who finally got selected in DMRC were 40% from UP, 25% from Delhi, 20% from Haryana, Rajasthan and Bihar together and rest were from MP and Punjab together.

Q1. Find the total no. of students from UP, Bihar and Rajasthan together who appeared for written exam.
(a) 32990
(b) 36990
(c) 38990
(d) 34990
(e) 39690

Q2. If 80% out of total students who appeared for written exam cleared the written exam and then 50% out of them were short listed for personal interview on the basis of their performance in group discussion then find the difference between total no. of students who were shortlisted for interview to the total candidates who got finally selected.
(a) 5480
(b) 5840
(c) 5280
(d) 4850
(e) 5680

Q3. What is the total no. of male students who appeared in the written exam of DMRC from UP and Delhi together?
(a) 18920
(b) 20920
(c) 22190
(d) 21920
(e) 24920

Q4. Total no. of students who got final selection from UP is what percent of that from Delhi?
(a) 140%
(b) 150%
(c) 160%

(d) 155%
(e) 145%

Q5. Total no. of students who appeared in written exam from MP is what percent more or less than that from Rajasthan?
(a) 25% less
(b) 25% more
(c) 20% more
(d) 20% less
(e) 28 % more

Directions (6-10): In each of the following questions two equations are given. You have to solve the equations and
Give answer —

Q6.
I. $7x^2 + 13x + 6 = 0$
II. $4y^2 + 7y - 11 = 0$

(a) if x < y
(b) if x ≤ y
(c) relationship between x and y cannot be determined
(d) if x ≥ y
(e) if x > y

Q7.
I. $x^2 + 46x + 520 = 0$
II. $3y^2 - 17y + 24 = 0$

(a) if x < y
(b) if x ≤ y
(c) relationship between x and y cannot be determined
(d) if x ≥ y
(e) if x > y

I. $5y^2 - 13y - 18 = 0$
II. $11x^2 + 23x + 12 = 0$

Q8.
(a) if x < y
(b) if x ≤ y
(c) relationship between x and y cannot be determined
(d) if x ≥ y
(e) if x > y

I. $x^4 - 13x^2 + 36 = 0$
II. $y^2 + 4y - 45 = 0$

Q9.
(a) if x < y
(b) if x ≤ y
(c) relationship between x and y cannot be determined
(d) if x ≥ y
(e) if x > y

I. $6y^2 - 14y + 8 = 0$
II. $4x^2 - 15x + 14 = 0$

Q10.
(a) if x < y
(b) if x ≤ y
(c) relationship between x and y cannot be determined
(d) if x ≥ y
(e) if x > y

Directions (11-15): Data about crops produced by two different farmers i.e., Veer and Rahul is given below

Veer → Out of total crops produced by Veer, 37.5% and 50% are of rice and wheat respectively. Remaining production is of Sugarcanes.

Rahul → Total crops produced by Rahul is 150% more than total crops produced by Veer. Rice produced by Rahul is 140% more than that by Veer. Maize and Sugarcane produced by Rahul is equal to wheat produced by Rahul. 4% of total crops produced by Rahul is of Cotton. Production of maize is 50% less than that of sugar cane. Total sugarcane produced by Rahul is 900 units more than that of sugarcane produced by Veer and Rahul produced only 5 types of crops i.e. Rice, Wheat, Sugarcane, Maize, Cotton

Q11.   Total rice produced by Rahul and Veer together is how much more/less than total wheat produced by Rahul and Veer together?
(a) 180 units
(b) 120 units
(c) 90 units
(d) 30 units
(e) 60 units

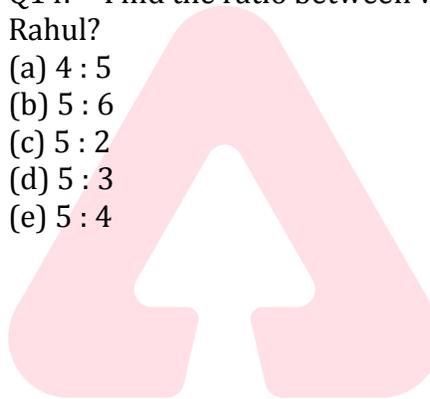Q12. Sugarcane produced by Rahul is what percent more than Rice produced by Veer?
(a) $66\frac{2}{3}\%$
(b) 75%
(c) 100%
(d) 50%
(e) $33\frac{1}{3}\%$

Q13. Average crops produced by Rahul is how much more than average crops produced by Veer?
(a) 200 units
(b) 300 units
(c) 400 units
(d) 500 units
(e) 600 units

Q14. Find the ratio between wheat and sugarcane produced by Veer to Maize produced by Rahul?
(a) 4 : 5
(b) 5 : 6
(c) 5 : 2
(d) 5 : 3
(e) 5 : 4

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Q15. Cotton produced by Rahul is what percent more/less than sugarcane produced by Veer?
(a) 20%
(b) 80%
(c) 40%
(d) 60%
(e) 25%

Solutions

S (1-5)

Let total students appeared for written exam = 100x

Students appeared from UP for written exam = $\frac{25}{100} \times 100x = 25x$

Students appeared for written exam from Delhi = $16\frac{2}{3}x = \frac{50}{3}x$

Students appeared for written exam from (Haryana + Rajasthan + Bihar) = $33\frac{1}{3}x = \frac{100}{3}x$

Now, students appeared from MP and Punjab together for written exam = $100x - 25x - \frac{50}{3}x - \frac{100}{3}x = 25x$

Since, it is given that ratio of no. of students appeared from MP and Punjab for written exam = 1: 2

$\therefore \frac{2}{3} \times 25x = 13,700$

x = 822

100x = 82,200 = Total number of appeared students for written exam

Finally, selected students = $\frac{1}{3} \times 82,200 = 27,400$

States	Appeared students for written exam	Finally, selected students	No. of male and female students in appeared students for written exam	
			Male	Female
'UP	$\frac{25}{100} \times 82200$ $= 20550$	$\frac{40}{100} \times \frac{1}{3} \times 82200=$ 10960	$20550 \times \frac{2}{3} = 13700$	$\frac{1}{3} \times 20550=$ 6850
Delhi	$\frac{1}{6} \times 82200 = 13700$	$\frac{25}{100} \times \frac{1}{3} \times 82200=$ 6850	$\frac{3}{5} \times 13700=8220$	$\frac{2}{5} \times 13700=$ 5480
Haryana	$\frac{2}{5} \times \frac{1}{3} \times 82200$ $= 10960$			
Rajasthan	$\frac{1}{5} \times \frac{1}{3} \times 82200$ $= 5480$	$\frac{20}{100} \times \frac{1}{3} \times 82200=$ 5480		
Bihar	$\frac{2}{5} \times \frac{1}{3} \times 82200$ $= 10960$			
Punjab	13700	$\frac{15}{100} \times$		
MP	$\frac{1}{2} \times 13700 = 6850$	$\frac{1}{3} \times 82200=4110$		

S1. Ans.(b)
Sol.
Required answer = 20550+ 10960 + 5480
= 36990

S2. Ans.(a)
Sol.

Total no. of students shortlisted for interview

$$= \frac{50}{100} \times \frac{80}{100} \times 82200 = 32880$$

Total selected students $= \frac{1}{3} \times 82200$

= 27400

∴ required difference = 32880 – 27400

= 5480

S3. Ans.(d)
Sol.
Required answer = 13700 + 8220
= 21920

S4. Ans.(c)
Sol.
Required percentage $= \frac{10960}{6850} \times 100$
= 160 %

S5. Ans.(b)
Sol.
Required percentage $= \frac{6850 - 5480}{5480} \times 100$
= 25% more

S6. Ans.(c)
Sol.
I. $7x^2 + 13x + 6 = 0$
  $\Rightarrow 7x^2 + 7x + 6x + 6 = 0$
  $\Rightarrow (7x + 6)(x + 1) = 0$
   $\Rightarrow x = \frac{-6}{7}, -1$
II. $4y^2 + 7y - 11 = 0$
   $\Rightarrow 4y^2 + 11y - 4y - 11 = 0$
   $\Rightarrow (y - 1)(4y + 11) = 0$
   $\Rightarrow y = 1, \frac{-11}{4}$
No relation

S7. Ans.(a)
Sol.

I. $x^2 + 46x + 520 = 0$

$\Rightarrow x^2 + 20x + 26x + 520 = 0$

$\Rightarrow (x + 20)(x + 26) = 0$

$\Rightarrow x = -20, -26$

II. $3y^2 - 17y + 24 = 0$

$\Rightarrow 3y^2 - 9y - 8y + 24 = 0$

$\Rightarrow (y - 3)(3y - 8) = 0$

$\Rightarrow y = 3, \dfrac{8}{3}$

$y > x$

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S8. Ans.(b)
Sol.

I. $5y^2 - 13y - 18 = 0$

$\Rightarrow 5y^2 - 18y + 5y - 18 = 0$

$\Rightarrow (5y - 18)(y + 1)$

$\Rightarrow y = -1, \dfrac{18}{5}$

II. $11x^2 + 23x + 12 = 0$

$\Rightarrow 11x^2 + 11x + 12x + 12 = 0$

$\Rightarrow (x + 1)(11x + 12) = 0$

$\Rightarrow x = -1, \dfrac{-12}{11}$

$y \geq x$

S9. Ans.(c)
Sol.

I. $x^4 - 13x^2 + 36 = 0$
   $\Rightarrow (x^2 - 9)(x^2 - 4) = 0$
   $\Rightarrow x = \pm 3, \pm 2$
II. $y^2 + 4y - 45 = 0$
   $\Rightarrow y^2 + 9y - 5y - 45 = 0$
   $\Rightarrow (y + 9)(y - 5) = 0$
   $\Rightarrow y = -9, 5$
No relation

S10. Ans.(e)
Sol.
I. $6y^2 - 14y + 8 = 0$
   $\Rightarrow 3y^2 - 7y + 4 = 0$
   $\Rightarrow 3y^2 - 3y - 4y + 4 = 0$
   $\Rightarrow (y - 1)(3y - 4) = 0$
   $\Rightarrow y = 1, \dfrac{4}{3}$
II. $4x^2 - 15x + 14 = 0$
   $\Rightarrow 4x^2 - 8x - 7x + 14 = 0$
   $\Rightarrow (x - 2)(4x - 7) = 0$
   $\Rightarrow x = 2, \dfrac{7}{4}$
   $x > y$

Solutions (11-15):
Let total crops produced by Veer = 100x
Rice produced by Veer = 37.5x
Wheat produced by Veer = 50x
Sugarcane produced by Veer = 100x – 50x – 37.5x
= 12.5x
Total crops produced by Rahul $= \dfrac{250}{100} \times 100x = 250x$
Rice produced by Rahul $= \dfrac{240}{100} \times 37.5x = 90x$
Cotton produced by Rahul $= \dfrac{4}{100} \times 250x = 10x$
Remaining production is of maize, sugarcane and wheat = 250x – 90x -10x = 150x
Wheat produced by Rahul = Maize and sugarcane produced by Rahul $= \dfrac{150x}{2} = 75x$

Let 'y' units sugarcane produced by Rahul
Then, Maize produced by Rahul = 0.5y
ATQ,
y + 0.5y = 75x
$\Rightarrow y = \dfrac{75x}{1.5} = 50x$

And, 0.5y = 25x

	Rice	Wheat	Sugarcane	Maize	Cotton	Total
Veer	37.5x	50x	12.5x	–	–	100x
Rahul	90x	75x	50x	25x	10x	250x

ATQ,

50x – 12.5x = 900

$\Rightarrow x = \dfrac{900}{37.5} = 24$

	Rice	Wheat	Sugarcane	Maize	Cotton	Total
Veer	900	1200	300	–	–	2400
Rahul	2160	1800	1200	600	240	6000

S11. Ans.(e)
Sol.
Required difference = (900 + 2160) – (1200 + 1800)
= 3060 – 3000 = 60 units

S12. Ans.(e)
Sol.
Required % $= \dfrac{1200-900}{900} \times 100 = \dfrac{300}{900} \times 100 = 33\frac{1}{3}\%$

S13. Ans.(c)
Sol.
Required difference $= \dfrac{6000}{5} - \dfrac{2400}{3}$
= 1200 – 800 = 400 units

S14. Ans.(c)
Sol.
Required ratio $= \dfrac{1200+300}{600} = \dfrac{1500}{600} = \dfrac{5}{2}$

S15. Ans.(a)
Sol.
Required % $= \dfrac{300-240}{300} \times 100 = \dfrac{60}{300} \times 100 = 20\%$

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