

Quiz Date: 6th August 2020

Directions (1-15): In each of the following questions two equations are given. Solve these equations and give answer.

I. $3x + 5y = 28$

II. $8x - 3y = 42$

Q1.

- (a) if $x \geq y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x < y$
- (e) if $x = y$ or no relation can be established between x and y

I. $6x^2 + 23x + 20 = 0$

II. $6y^2 + 31y + 35 = 0$

Q2.

- (a) if $x \geq y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x < y$
- (e) if $x = y$ or no relation can be established between x and y

I. $4x^2 - 25x + 39 = 0$

II. $18y^2 - 15y + 3 = 0$

Q3.

- (a) if $x \geq y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x < y$
- (e) if $x = y$ or no relation can be established between x and y

I. $x^2 - 72 = x$

II. $y^2 = 64$

Q4.

- (a) if $x \geq y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x < y$
- (e) if $x = y$ or no relation can be established between x and y

I. $30x^2 + 11x + 1 = 0$

II. $42y^2 + 13y + 1 = 0$

Q5.

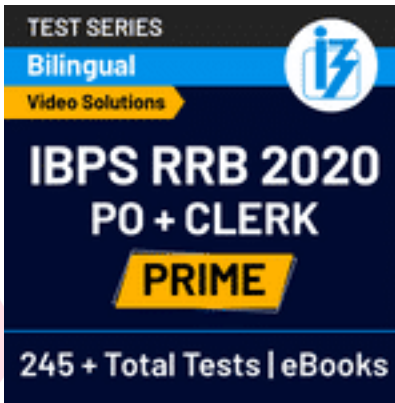
- (a) if $x \geq y$
- (b) if $x > y$
- (c) if $x \leq y$
- (d) if $x < y$
- (e) if $x = y$ or no relation can be established between x and y

I. $x^2 - x - 12 = 0$

II. $y^2 + 5y + 6 = 0$

Q6.

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or the relationship cannot be established.



I. $x^2 - 8x + 15 = 0$

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

Q7.

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or the relationship cannot be established.

I. $x^2 - 32 = 112$

II. $y - \sqrt{169} = 0$

Q8.

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or the relationship cannot be established.

$$\text{I. } x - \sqrt{121} = 0$$

$$\text{II. } y^2 - 121 = 0$$

Q9.

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or the relationship cannot be established.

$$\text{I. } x^2 - 16 = 0$$

$$\text{II. } y^2 - 9y + 20 = 0$$

Q10.

- (a) if $x > y$
- (b) if $x \geq y$
- (c) if $x < y$
- (d) if $x \leq y$
- (e) if $x = y$ or the relationship cannot be established.

$$\text{I. } 2x^2 - 13x + 21 = 0$$

$$\text{II. } 2y^2 - 9y + 10 = 0$$

Q11.

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) $x = y$ or relation cannot be established between x and y

$$\text{I. } 3x^2 - 14x + 15 = 0$$

$$\text{II. } 2y^2 - 9y + 9 = 0$$

Q12.

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) $x = y$ or relation cannot be established between x and y

$$\text{I. } 3x^2 - 10x + 8 = 0$$

$$\text{II. } 2y^2 - 11y + 15 = 0$$

Q13.

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) $x = y$ or relation cannot be established between x and y

I. $x^2 = 25$

Q14. II. $y^2 - 6y + 9 = 0$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) $x = y$ or relation cannot be established between x and y

I. $x^2 = 10$

Q15. II. $y^2 - 9y + 20 = 0$

- (a) if $x > y$
- (b) if $x < y$
- (c) if $x \geq y$
- (d) if $x \leq y$
- (e) $x = y$ or relation cannot be established between x and y



Solutions

S1. Ans.(b)

Sol.

I. $3x + 5y = 28 \dots(i)$

II. $8x - 3y = 42 \dots(ii)$

Multiplying (i) by 3 and (ii) by 5

$$9x + 15y = 84$$

$$40x - 15y = 210$$

$$49x = 294$$

$$x = 6$$

$$18 + 5y = 28$$

$$y = 2$$

$$\therefore x > y$$

S2. Ans.(e)

Sol.

$$\text{I. } 6x^2 + 23x + 20 = 0$$

$$6x^2 + 15x + 8x + 20 = 0$$

$$3x(2x + 5) + 4(2x + 5) = 0$$

$$\therefore x = \frac{-5}{2} \text{ or } \frac{-4}{3}$$

$$\text{II. } 6y^2 + 31y + 35 = 0$$

$$6y^2 + 21y + 10y + 35 = 0$$

$$3y(2y + 7) + 5(2y + 7) = 0$$

$$y = \frac{-7}{2} \text{ or } \frac{-5}{3}$$

No relation

S3. Ans.(b)

Sol.

$$\text{I. } 4x^2 - 25x + 39 = 0$$

$$4x^2 - 13x - 12x + 39 = 0$$

$$x(4x - 13) - 3(4x - 13) = 0$$

$$x = \frac{13}{4} \text{ or } 3$$

$$\text{II. } 18y^2 - 15y + 3 = 0$$

$$18y^2 - 9y - 6y + 3 = 0$$

$$9y(2y - 1) - 3(2y - 1) = 0$$

$$y = \frac{1}{2} \text{ or } \frac{1}{3}$$

$$x > y$$

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S4. Ans.(e)

Sol.

$$\text{I. } x^2 - x - 72 = 0$$

$$x^2 - 9x + 8x - 72 = 0$$

$$x(x - 9) + 8(x - 9) = 0$$

$$x = 9 \text{ or } -8$$

$$\text{II. } y^2 = 64$$

$$y = \pm 8$$

No relation

S5. Ans.(c)

Sol.

$$\text{I. } 30x^2 + 11x + 1 = 0$$

$$30x^2 + 5x + 6x + 1 = 0$$

$$5x(6x + 1) + 1(6x + 1) = 0$$

$$x = -\frac{1}{6} \text{ or } -\frac{1}{5}$$

$$\text{II. } 42y^2 + 13y + 1 = 0$$

$$42y^2 + 6y + 7y + 1 = 0$$

$$6y(7y + 1) + 1(7y + 1) = 0$$

$$y = -\frac{1}{7} \text{ or } -\frac{1}{6}$$

$$y \geq x$$

S6. Ans.(e)

Sol.

$$\text{I. } x^2 - x - 12 = 0$$

$$\Rightarrow (x - 4)(x + 3) = 0$$

$$\Rightarrow x = 4, -3$$

$$\text{II. } y^2 + 5y + 6 = 0$$

$$\Rightarrow (y + 3)(y + 2) = 0$$

$$\Rightarrow y = -3, -2$$

No relation between x & y

S7. Ans.(a)

Sol.

$$\text{I. } x^2 - 8x + 15 = 0$$

$$\Rightarrow (x - 5)(x - 3) = 0$$

$$\Rightarrow x = 5, 3$$

$$\text{II. } y^2 - 3y + 2 = 0$$

$$\Rightarrow (y - 2)(y - 1) = 0$$

$$\Rightarrow y = 2, 1$$

$$\Rightarrow x > y$$

S8. Ans.(c)

Sol.

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$$\text{I. } x^2 - 32 = 112$$

$$\Rightarrow x^2 = 144$$

$$\Rightarrow x = 12, -12$$

$$\text{II. } y - \sqrt{169} = 0$$

$$\Rightarrow y = \sqrt{169}$$

$$\Rightarrow y = 13$$

$$\Rightarrow y > x$$

S9. Ans.(b)

Sol.

$$\text{I. } x - \sqrt{121} = 0$$

$$\Rightarrow x = \sqrt{121}$$

$$\Rightarrow x = 11$$

$$\text{II. } y^2 = 121$$

$$\Rightarrow y = 11, -11$$

$$\Rightarrow x \geq y$$

S10. Ans.(d)

Sol.

$$\text{I. } x^2 - 16 = 0$$

$$\Rightarrow x = 4, -4$$

$$\text{II. } y^2 - 9y + 20 = 0$$

$$\Rightarrow (y - 4)(y - 5) = 0$$

$$\Rightarrow y = 4, 5$$

$$\Rightarrow x \leq y$$

S11. Ans. (a)

Sol.

$$\text{I. } 2x^2 - 13x + 21 = 0$$

$$\Rightarrow 2x^2 - 6x - 7x + 21 = 0$$

$$\Rightarrow (x-3)(2x-7) = 0$$

$$\Rightarrow x = 3, \frac{7}{2}$$

$$\text{II. } 2y^2 - 9y + 10 = 0$$

$$\Rightarrow 2y^2 - 4y - 5y + 10 = 0$$

$$\Rightarrow (y-2)(2y-5) = 0$$

$$\Rightarrow y = 2, \frac{5}{2}$$

$$x > y$$

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S12. Ans. (e)

Sol.

$$\begin{aligned}\text{I. } 3x^2 - 14x + 15 &= 0 \\ \Rightarrow 3x^2 - 9x - 5x + 15 &= 0 \\ \Rightarrow (x-3)(3x-5) &= 0 \\ \Rightarrow x &= 3, \frac{5}{3} \\ \text{II. } 2y^2 - 9y + 9 &= 0 \\ \Rightarrow 2y^2 - 6y - 3y + 9 &= 0 \\ \Rightarrow (y-3)(2y-3) &= 0 \\ \Rightarrow y &= 3, \frac{3}{2} \\ \text{No relation}\end{aligned}$$

S13. Ans. (b)

Sol.

$$\begin{aligned}\text{I. } 3x^2 - 10x + 8 &= 0 \\ \Rightarrow 3x^2 - 6x - 4x + 8 &= 0 \\ \Rightarrow (x-2)(3x-4) &= 0 \\ \Rightarrow x &= 2, \frac{4}{3} \\ \text{II. } 2y^2 - 11y + 15 &= 0 \\ \Rightarrow 2y^2 - 6y - 5y + 15 &= 0 \\ \Rightarrow (y-3)(2y-5) &= 0 \\ \Rightarrow y &= 3, \frac{5}{2} \\ y &> x\end{aligned}$$

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S14. Ans. (e)

Sol.

$$\begin{aligned}\text{I. } x^2 &= 25 \\ \Rightarrow x &= \pm 5 \\ \text{II. } y^2 - 6y + 9 &= 0 \\ \Rightarrow (y-3)^2 &= 0 \\ \Rightarrow y &= 3 \\ \text{No. relation}\end{aligned}$$

S15. Ans. (b)

Sol.

I. $x^2 = 10$

$\Rightarrow x = \pm \sqrt{10}$

II. $y^2 - 9y + 20 = 0$

$\Rightarrow (y - 5)(y - 4) = 0$

$\Rightarrow y = 5, 4$

$y > x$

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