

Quiz Date: 16<sup>th</sup> May 2020

Directions (1-15): In these questions, two equations numbered I and II are given. You have to solve both the equations and give answer:

**I.  $x^2 - 9x + 18 = 0$**

**II.  $5y^2 - 22y + 24 = 0$**

Q1.

- (a) if  $x < y$
- (b) if  $x > y$
- (c) if  $x \leq y$
- (d) if  $x \geq y$
- (e) if relationship between  $x$  and  $y$  cannot be determined

**I.  $6x^2 + 11x + 5 = 0$**

**II.  $2y^2 + 5y + 3 = 0$**

Q2.

- (a) if  $x < y$
- (b) if  $x > y$
- (c) if  $x \leq y$
- (d) if  $x \geq y$
- (e) if relationship between  $x$  and  $y$  cannot be determined

**I.  $x^2 + 10x + 24 = 0$**

**II.  $y^2 - \sqrt{625} = 0$**

Q3.

- (a) if  $x < y$
- (b) if  $x > y$
- (c) if  $x \leq y$
- (d) if  $x \geq y$
- (e) if relationship between  $x$  and  $y$  cannot be determined

**I.  $10x^2 + 11x + 1 = 0$**

**II.  $15y^2 + 8y + 1 = 0$**

Q4.

- (a) if  $x < y$
- (b) if  $x > y$
- (c) if  $x \leq y$
- (d) if  $x \geq y$
- (e) if relationship between  $x$  and  $y$  cannot be determined

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**I.**  $15x^2 - 11x + 2 = 0$

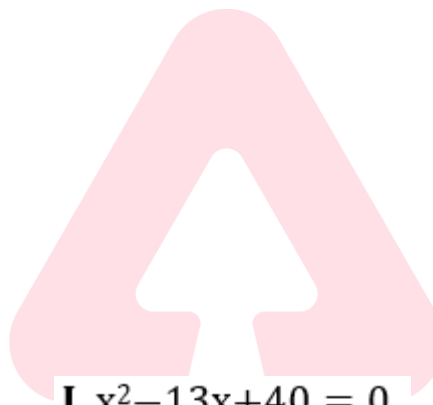
Q5. **II.**  $10y^2 - 9y + 2 = 0$

- (a) if  $x < y$
- (b) if  $x > y$
- (c) if  $x \leq y$
- (d) if  $x \geq y$
- (e) if relationship between  $x$  and  $y$  cannot be determined

**I.**  $5x - 7y = -24$

Q6. **II.**  $13x + 3y = 86$

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



**I.**  $x^2 - 13x + 40 = 0$

Q7. **II.**  $y^2 + 3y - 40 = 0$

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

**I.**  $8x^2 - 26x + 15 = 0$

Q8. **II.**  $2y^2 - 17y + 30 = 0$

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

$$\text{I. } x^2 = 484$$

$$\text{II. } y^2 - 45y + 506 = 0$$

Q9.

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

$$\text{I. } 13x - 21 = 200 - 4x$$

$$\text{II. } y = \sqrt[3]{2197}$$

Q10.

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

$$\text{I. } 4x^2 - 15x - 46 = 0$$

$$\text{Q11. II. } 6y^2 + 35y + 46 = 0$$

- (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

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

$$\text{Q12. II. } 2y^2 - y - 21 = 0$$

- (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

$$\text{I. } x^2 - 3x - 88 = 0$$

$$\text{Q13. II. } y^2 + 8y - 48 = 0$$

- (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

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$$\text{I. } 2x^2 - 9x + 9 = 0$$

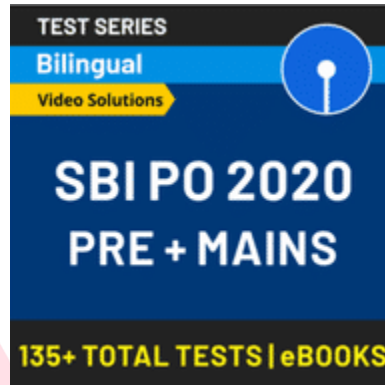
$$\text{Q14. II. } y^2 - 7y + 12 = 0$$

- (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

$$\text{I. } 4x^2 + 19x + 22 = 0$$

$$\text{Q15. II. } 2y^2 + 11y + 15 = 0$$

- (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



Solutions

S1. Ans.(b)

Sol.

$$\text{I. } x^2 - 9x + 18 = 0$$

$$x^2 - 6x - 3x + 18 = 0$$

$$x(x - 6) - 3(x - 6) = 0$$

$$(x - 3)(x - 6) = 0$$

$$x = 3, 6$$

$$\text{II. } 5y^2 - 22y + 24 = 0$$

$$5y^2 - 10y - 12y + 24 = 0$$

$$5y(y - 2) - 12(y - 2) = 0$$

$$(y - 2)(5y - 12) = 0$$

$$y = 2, \frac{12}{5}$$

$$\therefore x > y$$

S2. Ans.(d)

Sol.

$$\text{I. } 6x^2 + 11x + 5 = 0$$

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

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

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

$$x = 1, -\frac{5}{6}$$

$$\text{II. } 2y^2 + 5y + 3 = 0$$

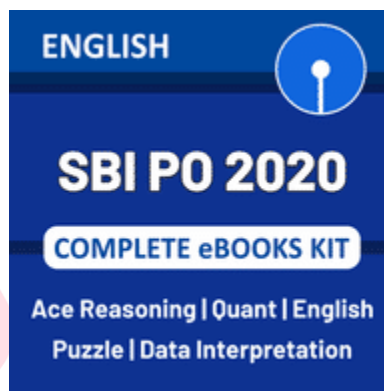
$$2y^2 + 2y + 3y + 3 = 0$$

$$2y(y + 1) + 3(y + 1) = 0$$

$$(y + 1)(2y + 3) = 0$$

$$y = -1, -\frac{3}{2}$$

$$\therefore x \geq y$$



S3. Ans.(e)

Sol.

$$\text{I. } x^2 + 10x + 24 = 0$$

$$x^2 + 6x + 4x + 24 = 0$$

$$x(x + 6) + 4(x + 6) = 0$$

$$(x + 4)(x + 6) = 0$$

$$x = -4, -6$$

$$\text{II. } y^2 - \sqrt{625} = 0$$

$$y^2 = \sqrt{625}$$

$$y^2 = 25; y = \pm 5$$

$\therefore$  Relationship between x and y  
cannot be determined

S4. Ans.(e)

Sol.

$$\text{I. } 10x^2 + 11x + 1 = 0$$

$$10x^2 + 10x + x + 1 = 0$$

$$10x(x + 1) + 1(x + 1) = 0$$

$$(x + 1)(10x + 1) = 0$$

$$x = -1, -\frac{1}{10}$$

$$\text{II. } 15y^2 + 8y + 1 = 0$$

$$15y^2 + 5y + 3y + 1 = 0$$

$$5y(3y + 1) + 1(3y + 1) = 0$$

$$(3y + 1)(5y + 1) = 0$$

$$y = -\frac{1}{3}, -\frac{1}{5}$$

∴ Relationship between x and y  
cannot be determined

S5. Ans.(c)

Sol.

$$\text{I. } 15x^2 - 11x + 2 = 0$$

$$15x^2 - 5x - 6x + 2 = 0$$

$$5x(3x - 1) - 2(3x - 1) = 0$$

$$(3x - 1)(5x - 2) = 0$$

$$x = \frac{1}{3}, \frac{2}{5}$$

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

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

$$5y(2y - 1) - 2(2y - 1) = 0$$

$$(2y - 1)(5y - 2) = 0$$

$$y = \frac{1}{2}, \frac{2}{5}$$

∴  $x \leq y$

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S6. Ans.(c)

Sol.

$$65x - 91y = -312$$

$$65x + 15y = 430$$

Solving eqn,  $y = +7, x = 5$

$x < y$

S7. Ans.(b)

Sol.

$$x^2 - 8x - 5x + 40 = 0$$

$$x(x - 8) - 5(x - 8) = 0$$

$$x = 5, 8$$

$$y^2 + 8y - 5y - 40 = 0$$

$$y(y + 8) - 5(y + 8) = 0$$

$$y = 5, -8$$

$$x \geq y$$

S8. Ans.(d)

Sol.

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

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

$$x = \frac{3}{4}, \frac{5}{2}$$

$$2y^2 - 12y - 5y + 30 = 0$$

$$2y(y - 6) - 5(y - 6) = 0, y = \frac{5}{2}, 6$$

$$x \leq y$$

S9. Ans.(d)

Sol.

$$x = 22, -22$$

$$y^2 - 22y - 23y + 506 = 0$$

$$y(y - 22) - 23(y - 22) = 0$$

$$y = 22, 23$$

$$x \leq y$$

S10. Ans.(e)

Sol.

$$x = 13$$

$$y = 13$$

$$x = y$$

S11. Ans.(b)

Sol.

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$$\begin{aligned} \text{I. } 4x^2 - 15x - 46 &= 0 \\ \Rightarrow 4x^2 - 23x + 8x - 46 &= 0 \\ \Rightarrow (4x - 23)(x + 2) &= 0 \\ \Rightarrow x &= -2, \frac{23}{4} \end{aligned}$$

$$\begin{aligned} \text{II. } 6y^2 + 35y + 46 &= 0 \\ \Rightarrow 6y^2 + 12y + 23y + 46 &= 0 \\ \Rightarrow (y + 2)(6y + 23) &= 0 \\ \Rightarrow y &= -2, -\frac{23}{6} \end{aligned}$$

$$x \geq y$$

S12. Ans.(e)

Sol.

$$\begin{aligned} \text{I. } 2x^2 - x - 10 &= 0 \\ \Rightarrow 2x^2 - 5x + 4x - 10 &= 0 \\ \Rightarrow (2x - 5)(x + 2) &= 0 \\ \Rightarrow x &= \frac{5}{2}, -2 \end{aligned}$$

$$\begin{aligned} \text{II. } 2y^2 - y - 21 &= 0 \\ \Rightarrow 2y^2 - 7y + 6y - 21 &= 0 \\ \Rightarrow (2y - 7)(y + 3) &= 0 \\ \Rightarrow y &= \frac{7}{2}, -3 \end{aligned}$$

No relation

S13. Ans.(e)

Sol.

$$\begin{aligned} \text{I. } x^2 - 3x - 88 &= 0 \\ \Rightarrow (x - 11)(x + 8) &= 0 \\ \Rightarrow x &= 11, -8 \end{aligned}$$

$$\begin{aligned} \text{II. } y^2 + 8y - 48 &= 0 \\ \Rightarrow (y + 12)(y - 4) &= 0 \\ \Rightarrow y &= 4, -12 \end{aligned}$$

No relation

S14. Ans.(d)

Sol.

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$$\begin{aligned} \text{I. } & 2x^2 - 9x + 9 = 0 \\ & \Rightarrow 2x^2 - 6x - 3x + 9 = 0 \\ & \Rightarrow (x - 3)(2x - 3) = 0 \\ & \Rightarrow x = 3, \frac{3}{2} \\ \text{II. } & y^2 - 7y + 12 = 0 \\ & \Rightarrow y^2 - 3y - 4y + 12 = 0 \\ & \Rightarrow (y - 3)(y - 4) = 0 \\ & \Rightarrow y = 3, 4 \\ & y \geq x \end{aligned}$$

S15. Ans.(e)

Sol.

$$\begin{aligned} \text{I. } & 4x^2 + 19x + 22 = 0 \\ & \Rightarrow 4x^2 + 8x + 11x + 22 = 0 \\ & \Rightarrow (x + 2)(4x + 11) = 0 \\ & \Rightarrow x = -2, -\frac{11}{4} \\ \text{II. } & 2y^2 + 11y + 15 = 0 \\ & \Rightarrow 2y^2 + 6y + 5y + 15 = 0 \\ & \Rightarrow (y + 3)(2y + 5) = 0 \\ & \Rightarrow y = -3, -\frac{5}{2} \\ & \text{No relation} \end{aligned}$$

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