Quiz Date: 14th February 2020

Directions (1-15): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer
(a) if x>y
(b) if x≥y
(c) if x<y
(d) if x ≤y
(e) if x = y or no relation can be established between x and y.

Q1. I. $x^2 - 7x + 12 = 0$
II. $y^2 - 9y + 20 = 0$

Q2. I. $x^2 = 6x - 8$
II. $y^2 = 11y - 24$

Q3. I. $x^2 = 10x - 21$
II. $y^2 + 4y = 5$

Q4. I. $4x^2 - 8x + 3 = 0$
II. $2y^2 - 11y + 12 = 0$

Q5. I. $2x^2 - 22x + 48 = 0$
II. $2y^2 - 11y + 15 = 0$

Q6. I. $(x - 2)^2 = 16$
II. $(2y + 3)^2 = 4$

Q7. I. $x^2 + x - 2 = 0$
II. $4y^2 - 4y - 3 = 0$

Q8. I. $\frac{6}{x^2} - \frac{5}{x} + 1 = 0$
II. $\frac{1}{y^2} + 2 = \frac{3}{y}$

Q9. I. $\frac{3}{x^2} = \frac{4}{x} - 1$
II. $\frac{1}{y^2} - \frac{5}{y} = -6$

Q10. I. $x^2 + 7x + 10 = 0$
II. $y^2 + 11y + 30 = 0$

Q11. I. $3x^2 - 14x + 8 = 0$
II. $y^2 - 5y + 4 = 0$

Q12. I. $6x^2 + 5x + 1 = 0$
II. $2y^2 + 3y + 1 = 0$

Q13. I. $x^2 + 7x + 12 = 0$
II. $y^2 - \sqrt{256} = 0$

Q14. I. $5x^2 + 11x + 2 = 0$
II. $y^2 - y - 2 = 0$

Q15. I. $x^2 = 2x$
II. $y^2 - 6y + 8 = 0$

Solutions

S1. Ans.(d)
Sol.
I. $x^2 - 7x + 12 = 0$
$x^2 - 4x - 3x + 12 = 0$
$x (x - 4) - 3 (x - 4) = 0$
x = 4, 3
II. $y^2 - 9y + 20 = 0$
$y^2 - 5y - 4y + 20 = 0$
$y (y - 5) - 4(y - 5) = 0$
y = 5, 4
x ≤ y

S2. Ans.(e)
Sol.
I. $x^2 - 6x + 8 = 0$

$x^2 – 4x – 2x + 8 = 0$
$x (x – 4) – 2 (x – 4) = 0$
$x = 4, 2$

II. $y^2 – 11y + 24 = 0$
$y^2 – 8y - 3y + 24 = 0$
$y (y – 8) - 3 (y – 8) = 0$
$y = 8, 3$
∴ No relation

S3. Ans.(e)
Sol.
I. $x^2 – 10x + 21 = 0$
$x^2 – 7x – 3x + 21 = 0$
$x (x – 7) – 3(x – 7) = 0$
$x = 3, 7$
II. $y^2 + 4y - 5 = 0$
$y^2 + 5y - y - 5 = 0$
$y (y + 5) - 1 (y + 5) = 0$
$y = 1, 5$
no relations

S4. Ans.(d)
Sol.
I. $4x^2 - 8x + 3 = 0$
$4x^2 - 6x - 2x + 3 = 0$
$2x (2x - 3) - 1 (2x - 3) = 0$
$x = \frac{1}{2}, \frac{3}{2}$

II. $2y^2 – 11y + 12 = 0$
$2y^2 – 8y - 3y + 12 = 0$
$2y (y – 4) - 3 (y – 4) = 0$
$y = 4, \frac{3}{2}$
$x \le y$

S5. Ans.(b)
Sol.
I. $x^2 – 11x + 24 = 0$
$\Rightarrow x^2 – 8x – 3x + 24 = 0$
$\Rightarrow x(x – 8) – 3(x – 8) = 0$
$\Rightarrow (x – 3)(x – 8) = 0$
∴ $x = 3 \ or \ 8$

II. $2y^2 – 11y + 15 = 0$

$\Rightarrow 2y^2 - 6y - 5y + 15 = 0$
$\Rightarrow 2y(y - 3) - 5(y - 3) = 0$
$\Rightarrow (2y - 5)(y - 3)$
$\therefore y = \dfrac{5}{2} \, or \, 3$
x ≥ y

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S6. Ans. (e)
Sol.
I. $(x - 2)^2 = 16$
$\Rightarrow (x - 2) = \pm 4$
$\Rightarrow x = 6, \quad -2$

II. $(2y + 3)^2 = 4$
$(2y + 3) = \pm 2$
$\Rightarrow y = -\dfrac{1}{2}, -\dfrac{5}{2}$
No relation

S7. Ans. (e)
Sol.
I. $x^2 + x - 2 = 0$
$x^2 + 2x - x - 2 = 0$
$x(x + 2) - 1(x + 2) = 0$
$(x + 2)(x - 1) = 0$
$x = -2, +1$

II. $4y^2 - 4y - 3 = 0$
$4y^2 + 2y - 6y - 3 = 0$
$2y(2y + 1) - 3(2y + 1) = 0$
$(2y - 3)(2y + 1) = 0$
$y = \dfrac{-3}{2}, \quad \dfrac{-1}{2}$

no relation

S8. Ans. (a)
Sol.
I. $\dfrac{6}{x^2} - \dfrac{5}{x} + 1 = 0$
$\Rightarrow x^2 - 5x + 6 = 0$
$\Rightarrow x^2 - 3x - 2x + 6 = 0$
$x(x - 3) - 2(x - 3) = 0$
$(x - 3)(x - 2) = 0$
$x = 3, \qquad 2$

II. $\dfrac{1}{y^2} + 2 = \dfrac{3}{y}$
$\Rightarrow 2y^2 - 3y + 1 = 0$
$(2y - 1)(y - 1) = 0$
$y = 1, \dfrac{1}{2}$
$x > y$

S9. Ans. (a)
Sol.
I. $\dfrac{3}{x^2} = \dfrac{4}{x} - 1$
$\Rightarrow x^2 - 4x + 3 = 0$
$\Rightarrow x^2 - 3x - x + 3 = 0$
$\Rightarrow x(x - 3) - 1(x - 3) = 0$
$\Rightarrow (x - 1)(x - 3) = 0$
$x = 1, \qquad 3$
II. $\dfrac{1}{y^2} - \dfrac{5}{y} = -6$
$\Rightarrow 6y^2 - 5y + 1 = 0$
$\Rightarrow 6y^2 - 3y - 2y + 1 = 0$
$\Rightarrow 3y(2y - 1) - 1(2y - 1) = 0$
$\Rightarrow (2y - 1)(3y - 1) = 0$
$y = \dfrac{1}{2}, \dfrac{1}{3}$
$x > y$

S10. Ans. (b)
Sol.
I. $x^2 + 7x + 10 = 0$
$x^2 + 5x + 2x + 10 = 0$
$x(x + 5) + 2(x + 5) = 0$
$(x + 5)(x + 2) = 0$

$x = -5, -2$

II. $y^2 + 11y + 30 = 0$
$y^2 + 6y + 5y + 30 = 0$
$y(y + 6) + 5(y + 6) = 0$
$(y + 6)(y + 5) = 0$
$y = -6, \quad -5$

$x \geq y$

S11. Ans.(e)
Sol.
I. $3x^2 - 12x - 2x + 8 = 0$
$3x(x - 4) - 2(x - 4) = 0$
$(3x - 2)(x - 4) = 0$
$x = \frac{2}{3}, 4$
II. $y^2 - 4y - y + 4 = 0$
$y(y - 4) - 1(y - 4) = 0$
$(y - 1)(y - 4) = 0$
$y = 1, 4$
no relation

S12. Ans.(a)
Sol.
I. $6x^2 + 5x + 1 = 0$
$6x^2 + 3x + 2x + 1 = 0$
$3x(2x + 1) + 1(2x + 1) = 0$
$(2x + 1)(3x + 1) = 0$
$x = -\frac{1}{2}, -\frac{1}{3}$

II. $2y^2 + 3y + 1 = 0$
$2y^2 + 2y + y + 1 = 0$
$2y(y + 1) + 1(y + 1) = 0$
$(y + 1)(2y + 1) = 0$
$y = -1, -\frac{1}{2}$
$\therefore x \geq y$

S13. Ans.(e)
Sol.
I. $x^2 + 7x + 12 = 0$
$x^2 + 4x + 3x + 12 = 0$
$x(x + 4) + 3(x + 4) = 0$
$(x + 4)(x + 3) = 0$

x = –4, –3

II. $y^2 - \sqrt{256} = 0$

$y^2 = \sqrt{256}$

$y^2 = 16; y = \pm 4$

∴ Relationship between x and y cannot be determined

S14. Ans.(e)

Sol.

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

$5x^2 + 10x + x + 2 = 0$

$5x (x + 2) + 1 (x + 2) = 0$

$(5x + 1) (x + 2) = 0$

$x = -2, -\dfrac{1}{5}$

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

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

y = -1, 2

∴ Relationship between x and y cannot be determined

S15. Ans.(d)

Sol.

I. $x^2 = 2x$

$x^2 - 2x = 0$

$x(x - 2) = 0$

$x = 0, \qquad 2$

II. $y^2 - 6y + 8 = 0$

$y^2 - 4y - 2y + 8 = 0$

$y(y - 4) - 2 (y - 4) = 0$

$(y - 2) (y - 4) = 0$

$y = 2, \ 4$

∴ x ≤ y