Quiz Date: 16th July 2020

Directions (1-10): 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. $2x^2 - 7x + 6 = 0$
II. $6y^2 - 11y + 3 = 0$

Q2. I. $12x^2 + 16x - 3 = 0$
II. $6y^2 - 25y + 4 = 0$

Q3. I. $3x^2 + x - 2 = 0$
II. $2y^2 + 5y - 3 = 0$

Q4. I. $5x^2 + 11x + 2 = 0$
II. $3y^2 + 11y + 10 = 0$

Q5. I. $16x^2 = 16x - 4$
II. $4y^2 - 9y + 5 = 0$

Q6. I. $x^2 - 36 = 0$
II. $(y - 3)^2 = 0$

Q7.I. $6x^2 - 5x - 21 = 0$
II.$2y^2 - 19y + 35 = 0$

Q8. I.$2x^2 - x - 15 = 0$
II.$y^2 - 7y + 12 = 0$

Q9. I.$2x^2 - 5\sqrt{3}x + 6 = 0$
II.$15y^2 - 8\sqrt{3}y + 3 = 0$

Q10. I.$2x^{\frac{3}{2}} + 21x^{-\frac{1}{2}} = 13x^{\frac{1}{2}}$

II.$6y^2 - 19y + 15 = 0$

Directions (11-15): In the following questions two equations numbered I and II are given. You have to solve both the equations and–

Q11. I. $6p^2 + 5p + 1 = 0$
II. $20q^2 + 9q = -1$
(a) if p > q
(b) if p ≥ q
(c) if p < q
(d) if p ≤ q
(e) if p = q or the relationship cannot be established.

Q12. I. $3p^2 + 17p + 10 = 0$
II. $10q^2 + 9q + 2 = 0$
(a) if p > q
(b) if p ≥ q
(c) if p < q
(d) if p ≤ q
(e) if p = q or the relationship cannot be established.

Q13. I. $p^2 + 24 = 10p$
II. $2q^2 + 18 = 12q$
(a) if p > q
(b) if p ≥ q
(c) if p < q
(d) if p ≤ q
(e) if p = q or the relationship cannot be established.

Q14. I. $5p + 2q = 96$
II. $3(7p + 5q) = 489$
(a) if p > q
(b) if p ≥ q
(c) if p < q
(d) if p ≤ q
(e) if p = q or the relationship cannot be established.

I. $\frac{15}{\sqrt{p}} - \frac{9}{\sqrt{p}} = p^{\frac{1}{2}}$

II. $q^{10} - (36)^5 = 0$

Q15.

(a) if p > q

(b) if p ≥ q

(c) if p < q

(d) if p ≤ q

(e) if p = q or the relationship cannot be established.

Solutions

S1. Ans.(b)

Sol.

I. $2x^2 - 7x + 6 = 0$

$2x^2 - 4x - 3x + 6 = 0$

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

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

II. $6y^2 - 11y + 3 = 0$

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

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

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

$x \geq y$

S2. Ans.(d)

Sol.

I. $12x^2 + 16x - 3 = 0$

$12x^2 + 18x - 2x - 3 = 0$

$6x (2x + 3) - 1 (2x + 3) = 0$

$x = \frac{1}{6}, -\frac{3}{2}$

II. $6y^2 - 25y + 4 = 0$

$6y^2 - 24y - y + 4 = 0$

$6y (y - 4) - 1 (y - 4) = 0$

$y = \frac{1}{6}, 4$

$\therefore y \geq x$

S3. Ans.(e)

Sol.

I. $3x^2 + x - 2 = 0$

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

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

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

II. $2y^2 - 5y - 3 = 0$
$2y^2 + 6y - y - 3 = 0$
$2y(y + 3) - 1(y + 3) = 0$
$y = \frac{1}{2}, -3$
∴ no relation

S4. Ans.(e)
Sol.
I. $5x^2 + 11x + 2 = 0$
$5x^2 + 10x + x + 2 = 0$
$5x(x + 2) + 1(x + 2) = 0$
$x = -\frac{1}{5}, -2$
II. $3y^2 + 11y + 10 = 0$
$3y^2 + 5y + 6y + 10 = 0$
$y(3y + 5) + 2(3y + 5) = 0$
$y = -\frac{5}{3}, -2$

∴ no relation

S5. Ans.(c)
Sol.
I. $16x^2 = 16x - 4$
$16x^2 - 8x - 8x + 4 = 0$
$8x(2x - 1) - 4(2x - 1) = 0$
$x = \frac{1}{2}, \frac{1}{2}$
II. $4y^2 - 9y + 5 = 0$
$4y^2 - 5y - 4y + 5 = 0$
$y(4y - 5) - 1(4y - 5) = 0$
$y = \frac{5}{4}, 1$
∴ $y > x$

S6. Ans(e)
Sol.
I. $x^2 - 36 = 0$

$x^2 = 36$

$x = \pm 6$

II. $(y-3)^2 = 0$

y=3

so, no relation between x *and* y

S7. Ans(c)

sol.

I. $6x^2 - 5x - 21 = 0$

$6x^2 - 14x + 9x - 21 = 0$

$(2x+3)(3x-7) = 0$

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

II. $2y^2 - 19y + 35 = 0$

$2y^2 - 14y - 5y + 35 = 0$

$(2y-5)(y-7) = 0$

$y = 7, \frac{5}{2}$

So, $x < y$

S8. Ans(d)

Sol.

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

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

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

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

II. $y^2 - 7y + 12 = 0$

$y^2 - 4y - 3y + 12 = 0$

$(y-4)(y-3) = 0$

$y = 3, 4$

So, $x \leq y$

S9. Ans (a)

Sol.

I. $2x^2 - 5\sqrt{3}x + 6 = 0$

$2x^2 - 4\sqrt{3}x - \sqrt{3}x + 6 = 0$

$\left(x - 2\sqrt{3}\right)\left(2x - \sqrt{3}\right) = 0$

$x = 2\sqrt{3}, \frac{\sqrt{3}}{2}$

II. $15y^2 - 8\sqrt{3}y + 3 = 0$

$15y^2 - 5\sqrt{3}y - 3\sqrt{3}y + 3 = 0$

$\left(\sqrt{3}y - 1\right)\left(5\sqrt{3}y - \sqrt{3}\right) = 0$

$y = \frac{1}{\sqrt{3}}, \frac{\sqrt{3}}{5}$
$So, x > y$

S10. Ans (a)
Sol.
I. $2x^{\frac{3}{2}} + 21x^{-\frac{1}{2}} = 13x^{\frac{1}{2}}$
$2x^2 - 13x + 21 = 0$
$2x^2 - 7x - 6x + 21 = 0$
$(2x - 7)(x - 3) = 0$
$x = \ 3, \frac{7}{2}$

II. $6y^2 - 19y + 15 = 0$
$6y^2 - 9y - 10y + 15 = 0$
$(3y - 5)(2y - 3) = 0$
$y = \frac{5}{3}, \frac{3}{2}$
So, $x > y$

S11. Ans.(c)
$6p^2 + 5p + 1 = 0$
$6p^2 + 3p + 2p + 1 = 0$
$3p(2p + 1) + 1(2p + 1) = 0$
$\Rightarrow p = \frac{-1}{3}, \frac{-1}{2}$

$20q^2 + 9q + 1 = 0$
$\Rightarrow 20q^2 + 5q + 4q + 1 = 0$
$5q(4q + 1) + 1(4q + 1) = 0$
$\Rightarrow q = \frac{-1}{5}, \frac{-1}{4}$
$\therefore p < q$
Sol.

S12. Ans.(c)

$3p^2 + 17p + 10 = 0$
$3p^2 + 15p + 2p + 10 = 0$
$3p(p + 5) + 2(p + 5) = 0$
$\Rightarrow p = -5, \frac{-2}{3}$

$10q^2 + 9q + 2 = 0$
$\Rightarrow 10q^2 + 5q + 4q + 2 = 0$
$5q + (2q + 1) + 2(2q + 1) = 0$
$\Rightarrow q = \frac{-2}{5}, \frac{-1}{2}$
$\therefore p < q$

Sol.

S13. Ans.(a)

$p^2 + 24 = 10p$
$\Rightarrow p^2 - 10p + 24 = 0$
$p^2 - 6p - 4p + 24 = 0$
$p(p - 6) - 4(p - 6) = 0$
$\therefore p = 6, 4$

$2q^2 + 18 = 12q$
$\Rightarrow 2q^2 - 12q + 18 = 0$
$2q^2 - 6q - 6q + 18 = 0$
$\Rightarrow 2q(q - 3) - 6(q - 3) = 0$
$\Rightarrow q = 3, 3$
$\therefore p > q$

Sol.

S14. Ans.(a)

$5p + 2q = 96$ .....(× 5)
$7p + 5q = \frac{489}{3} = 163$ .....(× 2)
$\Rightarrow 25p + 10q = 480$ ...(i)
$14p + 10q = 326$ ...(ii)
Subtract (ii) from (i)
$11p = 480 - 326$
$\Rightarrow p = \frac{154}{11} = 14$
Now, $5p + 2q = 96$
$2q = 96 - 5 \times 14$
$q = \frac{96-70}{2} = 13$
$\therefore p > q$

Sol.

S15. Ans.(b)

Sol.

$$\frac{15}{\sqrt{p}} - \frac{9}{\sqrt{p}} = p^{\frac{1}{2}}$$

$$\Rightarrow 6 = \sqrt{p} \times \sqrt{p}$$

$$p = 6$$

$$q^{10} - (36)^5 = 0$$

$$q^{10} = (6^2)^5$$

$$\Rightarrow q = \pm 6$$

$$\therefore p \geq q$$