**Quiz Date: 6th April 2020**

**Directions (1-5):** Solve the given quadratic equations and mark the correct option based on your answer—
(a) x < y
(b) x ≤ y
(c) x = y or no relation can be established between x and y.
(d) x > y
(e) x ≥ y

Q1.    I. $2x^2 - 9\sqrt{5}x + 50 = 0$
       II. $y^2 - 11\sqrt{3}y + 90 = 0$

Q2.    I. $25x^2 - 25x + 6 = 0$
       II. $49y^2 - 49y + 12 = 0$

Q3.    I. $9x^2 - 18x + 8 = 0$
       II. $15y^2 + 4y - 4 = 0$

Q4.    I. $12x^2 - 45x + 42 = 0$
       II. $8y^2 - 26y + 21 = 0$

Q5.    I. $x^2 + 30x + 221 = 0$
       II. $y^2 + 20y + 99 = 0$

**Directions (6-10):** 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.

Q6. I. $36x^2 - 13x + 1 = 0$
II. $24y^2 - 14y + 1 = 0$

Q7. I. $36x^2 + 33x - 20 = 0$
II. $12y^2 + 46y + 40 = 0$

Q8. I. $2x^2 + 7x - 60 = 0$
II. $3y^2 - 32y + 80 = 0$

Q9. I. $14x^2 + 11x + 2 = 0$
II. $42y^2 - 11y - 3 = 0$

Q10. I. $5x^2 - 46x + 96 = 0$
II. $10y^2 - 57y + 80 = 0$

**Directions (11-15): 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.

Q11.  **I.** $5x^2 - 28x + 39 = 0$
  **II.** $2y^2 - 13y + 20 = 0$

Q12.  **I.** $3x^2 - 13x + 14 = 0$
  **II.** $2y^2 - 17y + 33 = 0$

Q13.  I. 2x² + 3x – 27 = 0
  II. 3y² – 5y – 42 = 0

Q14.  I.  x² – 2x – 15 = 0
    II.  y² – 4y – 12 = 0

Q15 .  **I.**$12x^2 - 17x + 6 = 0$
    **II.**$y^2 - 16y + 63 = 0$

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**Solutions**

S1. Ans. (a)
Sol.
I. $2x^2 - 9\sqrt{5}x + 50 = 0$
$2x^2 - 4\sqrt{5}x - 5\sqrt{5}x + 50 = 0$
$2x(x - 2\sqrt{5}) - 5\sqrt{5}(x - 2\sqrt{5}) = 0$
$(2x - 5\sqrt{5})(x - 2\sqrt{5}) = 0$
$x = 2\sqrt{5}, \dfrac{5\sqrt{5}}{2}$

II. $y^2 - 11\sqrt{3}y + 90 = 0$
$y^2 - 5\sqrt{3}y - 6\sqrt{3}y + 90 = 0$
$y(y - 5\sqrt{3}) - 6\sqrt{3}(y - 5\sqrt{3}) = 0$
$(y - 6\sqrt{3})(y - 5\sqrt{3}) = 0$
$y = 6\sqrt{3}, 5\sqrt{3}$
$y > x$

S2. Ans. (c)
Sol.
I. $25x^2 - 25x + 6 = 0$
$25x^2 - 10x - 15x + 6 = 0$
$5x(5x - 2) - 3(5x - 2) = 0$
$(5x - 3)(5x - 2) = 0$
$x = \dfrac{3}{5}, \dfrac{2}{5}$
II. $49y^2 - 49y + 12 = 0$
$49y^2 - 28y - 21y + 12 = 0$
$7y(7y - 4) - 3(7y - 4) = 0$
$(7y - 3)(7y - 4) = 0$
$y = \dfrac{3}{7}, \dfrac{4}{7}$
No relation can be established between x & y.

S3. Ans. (d)
Sol.
I. $9x^2 - 18x + 8 = 0$
$9x^2 - 6x - 12x + 8 = 0$
$3x(3x - 2) - 4(3x - 2) = 0$
$(3x - 4)(3x - 2) = 0$
$x = \dfrac{2}{3}, \dfrac{4}{3}$
II. $15y^2 + 4y - 4 = 0$
$15y^2 + 10y - 6y - 4 = 0$
$5y(3y + 2) - 2(3y + 2) = 0$
$(5y - 2)(3y + 2) = 0$
$y = \dfrac{2}{5}, -\dfrac{2}{3}$
$x > y$

S4. Ans. (e)
Sol.
$12x^2 - 45x + 42 = 0$
$12x^2 - 24x - 21x + 42 = 0$
$12x(x - 2) - 21(x - 2) = 0$
$(12x - 21)(x - 2) = 0$

$x = 2, \dfrac{7}{4}$

II. $8y^2 - 26y + 21 = 0$

$8y^2 - 14y - 12y + 21 = 0$

$2y(4y - 7) - 3(4y - 7) = 0$

$(2y - 3)(4y - 7) = 0$

$y = \dfrac{3}{2}, \dfrac{7}{4}$

$x \geq y$

S5. Ans. (a)

Sol.

$x^2 + 30x + 221 = 0$

$x^2 + 17x + 13x + 221 = 0$

$x(x + 17) + 13(x + 17) = 0$

$(x + 13)(x + 17) = 0$

$x = -13, -17$

II. $y^2 + 20y + 99 = 0$
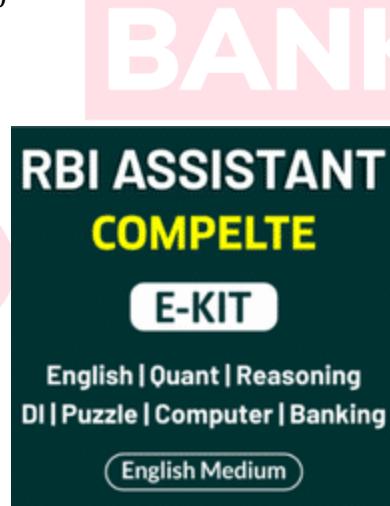
$y^2 + 11y + 9y + 99 = 0$

$y(y + 11) + 9(y + 11) = 0$

$(y + 9)(y + 11) = 0$

$y = -9, -11$

$y > x$

S6. Ans.(e)

Sol. I. $36x^2 - 13x + 1 = 0$

$36x^2 - 9x - 4x + 1 = 0$

$9x(4x - 1) - 1(4x - 1) = 0$

$(9x - 1)(4x - 1) = 0$

$x = \dfrac{1}{4}, \dfrac{1}{9}$

II. $24y^2 - 14y + 1 = 0$

$24y^2 - 12y - 2y + 1 = 0$

$12y(2y - 1) - 1(2y - 1) = 0$

$(2y - 1)(12y - 1) = 0$

$y = \dfrac{1}{2}, \dfrac{1}{12}$

No relation can be established between x and y

S7. Ans.(b)
Sol. I. $36x^2 + 33x - 20 = 0$
$36x^2 + 48x - 15x - 20 = 0$
$12x(3x + 4) - 5(3x + 4) = 0$
$(12x - 5)(3x + 4) = 0$
x $= \frac{-4}{3}, \frac{5}{12}$
II. $12y^2 + 46y + 40 = 0$
$12y^2 + 30y + 16y + 40 = 0$
6y(2y + 5) + 8(2y + 5) = 0
(2y + 5) (6y + 8) = 0
y$= \frac{-4}{3}, -2.5$
x $\geq$ y

S8. Ans.(d)
Sol. I. $2x^2 + 7x - 60 = 0$
$2x^2 + 15x - 8x - 60 = 0$
$x(2x + 15) - 4(2x + 15) = 0$
$(x - 4)(2x + 15) = 0$
x $= 4, -\frac{15}{2}$
II. $3y^2 - 32y + 80 = 0$
$3y^2 - 12y - 20y + 80 = 0$
$3y(y - 4) - 20(y - 4) = 0$
(y – 4) (3y – 20) = 0
$y = 4, \frac{20}{3}$
$x \leq$ y

S9. Ans.(c)
Sol. I. $14x^2 + 11x + 2 = 0$
$14x^2 + 7x + 4x + 2 = 0$
$7x(2x + 1) + 2(2x + 1) = 0$
$(7x + 2)(2x + 1) = 0$
$x = \frac{-1}{2}, \frac{-2}{7}$
II. $42y^2 - 11y - 3 = 0$
$42y^2 - 18y + 7y - 3 = 0$
$6y(7y - 3) + 1(7y - 3) = 0$
$(6y + 1)(7y - 3) = 0$
y $= \frac{3}{7}, -\frac{1}{6}$
$x < y$

S10. Ans.(b)
Sol. I. $5x^2 - 46x + 96 = 0$

$5x^2 - 30x - 16x + 96 = 0$
$5x(x - 6) - 16(x - 6) = 0$
$(5x - 16)(x - 6) = 0$
$x = \frac{16}{5}, 6$
II. $10y^2 - 57y + 80 = 0$
$10y^2 - 25y - 32y + 80 = 0$
$5y(2y - 5) - 16(2y - 5) = 0$
$(5y - 16)(2y - 5) = 0$
$y = \frac{16}{5}, \frac{5}{2}$
$x \geq y$

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S11. Ans.(e)
Sol.
I. $5x^2 - 28x + 39 = 0$
 $5x^2 - 13x - 15x + 39 = 0$
 $x(5x - 13) - 3(5x - 13) = 0$
 $x = 3, \frac{13}{5}$

II. $2y^2 - 13y + 20 = 0$
 $2y^2 - 8y - 5y + 20 = 0$
 $2y(y - 4) - 5(y - 4) = 0$
 $y = 4, \frac{5}{2}$

No relation

S12. Ans.(c)
Sol
I. $3x^2 - 13x + 14 = 0$
 $3x^2 - 7x - 6x + 14 = 0$
 $x(3x - 7) - 2(3x - 7) = 0$
 $x = 2, \frac{7}{3}$

II. $2y^2 - 17y + 33 = 0$
 $2y^2 - 11y - 6y + 33 = 0$
 $y(2y - 11) - 3(2y - 11) = 0$
 $y = 3, \frac{11}{2}$

$y > x$

S13. Ans.(e)
Sol.
I) $2x^2 + 3x - 27 = 0$
$2x^2 + 9x - 6x - 27 = 0$
$x(2x + 9) - 3(2x + 9) = 0$
$(2x + 9)(x - 3) = 0$

$x = \frac{-9}{2}, 3$

II) $3y^2 - 5y - 42 = 0$

$3y^2 - 14y + 9y - 42 = 0$

$y (3y - 14) + 3 (3y - 14) = 0$

$(y + 3) (3y - 14) = 0$

$y = -3, \frac{14}{3}$

No relation can be established between x & y

S14. Ans.(e)
Sol.
(i) $x^2 - 5x + 3x - 15 = 0$

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

$x = -3, 5$

(ii) $y^2 - 6y + 2y - 12 = 0$

$y (y - 6) + 2 (y - 6) = 0$

$(y + 2) (y - 6) = 0$

$y = -2, 6$

No relation can be established between x and y.

S15. Ans.(c)
Sol.

**I.** $12x^2 - 17x + 6 = 0$         **II.** $y^2 - 16y + 63 = 0$

$12x^2 - 9x - 8x + 6 = 0$             $y^2 - 7y - 9y + 63 = 0$

$3x(4x - 3) - 2(4x - 3) = 0$         $y(y - 7) - 9(y - 7) = 0$

$x = \frac{2}{3}, \frac{3}{4}$                 $(y - 9)(y - 7) = 0$

                                      $y = 9, 7$

                                      $x < y$

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