Quiz Date: 20th June 2020

Directions (1-5): 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. $14x^2 + 11x - 15 = 0$
II. $20y^2 - 31y + 12 = 0$

Q2. I. $16x^2 - 40x - 39 = 0$
II. $12y^2 - 113y + 255 = 0$

Q3. I. $x^2 - 16x + 63 = 0$
II. $y^2 - 2y - 35 = 0$

Q4. I. $5x^2 + 26x - 24 = 0$
II. $5y^2 - 34y + 24 = 0$

Q5. I. $15x^2 - 41x + 14 = 0$
II. $2y^2 - 13y + 20 = 0$

Directions (6-10): In the following questions, calculate quantity I and quantity II, compare them and answer
(a) If quantity I > quantity II
(b) If quantity I < quantity II
(c) If quantity I ≥ quantity II
(d) if quantity I ≤ quantity II
(e) if quantity I = quantity II or no relation can be established

Q6. Quantity I - B's age four years hence. if ratio of present ago of A to B is 3 : 4. 8 years ago, B's age was 60% more than A's age.
Quantity II - Present age of Niraj. Mahendra is 12 year younger than Niraj. Niraj's age 3 years ago was three times the present age of Bhavya. At present Mahendra's age is twice the age of Bhavya.

Q7.
Quantity I – 'x' men can complete a work in (x–2) days while (x–10) men can complete same work in 2x days. Find the value of x?
Quantity II - $x^2 + 5x - 300 = 0$. Find the value of x?

Q8. **Quantity I -** Distance covered by truck (in km), truck covers a certain distance at certain speed. If speed is 4 km/hr more than the original speed it would take 4 hour less to cover the

same distance and if speed is 6 km/hr less than original speed it would take 8 hour more than the normal time.
Quantity II – 1440 km

Q9. **Quantity I -** The quantity of wine in the mixture (in lit) initially, a mixture contains wine and water in the ratio 5 : 1. On adding 5 litre of water, the ratio of wine to water becomes 5 : 2.
Quantity II – Final quantity of milk in container (in lit), a container contained 40 lit milk. Out of this 5 lit of milk was taken out and replaced with water. This process was repeated two more times further.

Q10. **Quantity I, cost price of book (in Rs) :** If the book is sold at a profit of 5% instead of 5% of loss, the shopkeeper get Rs 18 more.
Quantity II, selling price of bottle (in Rs) : A shopkeeper marked up the price of the bottle by 50% and gives a discount of $16\frac{2}{3}\%$. The cost price of the bottle is Rs 160.

Solutions

S1. Ans (c)
Sol. I. $14x^2 + 11x - 15 = 0$
$14x^2 + 21x - 10x - 15 = 0$
$7x(2x + 3) - 5(2x + 3) = 0$
$(7x - 5)(2x + 3) = 0$
$x = \frac{5}{7}, -\frac{3}{2}$
II. $20y^2 - 31y + 12 = 0$
$20y^2 - 15y - 16y + 12 = 0$
$5y(4y - 3) - 4(4y - 3) = 0$
$(5y - 4)(4y - 3) = 0$
$y = \frac{3}{4}, \frac{4}{5}$
$\Rightarrow x < y$

S2. Ans (c)
Sol. I. $16x^2 - 40x - 39 = 0$
$16x^2 - 52x + 12x - 39 = 0$
$4x(4x - 13) + 3(4x - 13) = 0$

$(4x - 13)(4x + 3) = 0$
$x = \frac{13}{4}, -\frac{3}{4}$
II. $12y^2 - 113y + 255 = 0$
$12y^2 - 68y - 45y + 255 = 0$
$4y(3y - 17) - 15(3y - 17) = 0$
$(3y - 17)(4y - 15) = 0$
$y = \frac{15}{4}, \frac{17}{3}$
$\Rightarrow x < y$

S3. Ans (b)
Sol. **I.** $x^2 - 16x + 63 = 0$
$x^2 - 7x - 9x + 63 = 0$
$x(x - 7) - 9(x - 7) = 0$
$(x - 7)(x - 9) = 0$
$x = 9, 7$
II. $y^2 - 2y - 35 = 0$
$y^2 + 5y - 7y - 35 = 0$
$y(y + 5) - 7(y + 5) = 0$
$(y - 7)(y + 5) = 0$
$y = 7, -5$
$\Rightarrow x \geq y$

S4. Ans (d)
Sol. **I.** $5x^2 + 26x - 24 = 0$
$5x^2 + 30x - 4x - 24 = 0$
$5x(x + 6) - 4(x + 6) = 0$
$(5x - 4)(x + 6) = 0$
$x = \frac{4}{5}, -6$
II. $5y^2 - 34y + 24 = 0$
$5y^2 - 30y - 4y + 24 = 0$
$5y(y - 6) - 4(y - 6) = 0$
$(5y - 4)(y - 6) = 0$
$y = \frac{4}{5}, 6$
$\Rightarrow x \leq y$

S5. Ans (c)
Sol. **I.** $15x^2 - 41x + 14 = 0$
$15x^2 - 35x - 6x + 14 = 0$
$5x(3x - 7) - 2(3x - 7) = 0$
$(5x - 2)(3x - 7) = 0$
$x = \frac{7}{3}, \frac{2}{5}$
II. $2y^2 - 13y + 20 = 0$
$2y^2 - 8y - 5y + 20 = 0$

$2y(y-4)-5(y-4)=0$
$(2y-5)(y-4)=0$
$y=4,\frac{5}{2}$
$\Rightarrow x<y$

S6. Ans (b)
Sol.
From quantity I -
Let Present age of A and B be a and b respectively
ATQ,
b – 8 = 1.6 (a–8)
5b – 40 = 8a – 64
⇒ 8a – 5b = 24 ...(i)
while $\frac{a}{b}=\frac{3}{4}$ .....(ii)
On solving (i) & (ii)
a = 18, b = 24
B's age four years hence = 24 + 4 = 28 years

From quantity II-
Let present age of Mahendra = x
So present age of Niraj = x + 12
Present age of Bhavya = $\frac{(x+12-3)}{3}$
$=\frac{x+9}{3}$
Now,
$\frac{x}{\frac{x+9}{3}}=\frac{2}{1}$
$x=18$
Niraj's age ⇒ 18 + 12 = 30
So, quantity II > quantity I

S7. Ans (a)
Sol.
From quantity I -
Total work = (x) (x–2) = (x –10) (2x)
⇒ x – 2 = 2x – 20 ⇒ x = 18

From quantity II –
$x^2 + 5x - 300 = 0$
$x^2 + 20x - 15x - 300 = 0$
$x(x + 20) - 15(x + 20) = 0$
$(x + 20)(x - 15) = 0$
$x = -20, 15$
So, quantity I > quantity II

S8. Ans (e)
Sol. from quantity I –
We know
Distance(D) = Speed (S) × time (t)
ATQ
(S + 4) (t – 4) = St
(S – 6) (t+ 8) = st
-4S + 4t = 16 ...(i)
8S – 6t = 48
+4S – 3t = 24 ..(ii)
Solving (i) & (ii)
t = 40 hours, S = 36 km/hour
Distance = 40 × 36 = 1440 km
So, quantity I = Quantity II

S9. Ans (b)
Sol. from quantity I -
Let wine and water be $5x$ litre and x litre respectively
Now, $\frac{5x}{x+5} = \frac{5}{2} \Rightarrow 10x = 5x + 25$
$x = 5$
$\Rightarrow$ $25 : 5$ | $25 : 10$
Before mixture | After mixture
Quantity of wine = 25ℓ

from quantity II –
Remaining milk in the container
$= x\left[1 - \frac{y}{x}\right]^n$
Where, x = Initial quantity of milk
And, y = Quantity of milk taken out
$= 40\left[1 - \frac{5}{40}\right]^3$
$\Rightarrow 40 \times \frac{7}{8} \times \frac{7}{8} \times \frac{7}{8} \approx 26.8$ lit
So, quantity II > quantity I

S10. Ans (b)
Sol. from quantity I,
Let cost price of the book be Rs 100x.
ATQ
$105x - 95x = 18$
$x = 1.8$
So, cost price of book $= 100x = Rs\ 180$

From quantity II,
Selling price of bottle $= 160 \times \frac{150}{100} \times \frac{5}{6} = Rs\ 200$
∴ quantity II > quantity I