

Quiz Date: 27<sup>th</sup> August 2020

Directions (1-5): In the following questions two quantities are given for each question. Compare the numeric value of both the quantities and answers accordingly.

Q1.Quantity I : 'x'

A bag has balls of 3 colors i.e. Red, Black and White. There are 5 red ball and 2 black balls. Probability of selecting a white ball from this bag is  $\frac{x}{7+x}$ . 'x' is number of white balls in the bag. If one red and one black ball is taken out from the bag then the probability of picking one white ball is  $\frac{1}{2}$

Quantity II: 'Y'

Rahul invested Rs 500 at the ROI of y% per annum in SI and amount obtained by him after 10 year is Rs 745.

- (a) Quantity I > Quantity II
- (b) Quantity II > Quantity I
- (c) Quantity I  $\geq$  Quantity II
- (d) Quantity II  $\geq$  Quantity I
- (e) Quantity I = Quantity II or relation can't be established.

Q2.Cost price of one bat is 5x and that of one ball is  $\frac{x}{2}$

Quantity I: Profit earned on bat if he sold it at the price of 6.2x

Quantity II: Discount % on ball if he marks up the ball by 80% of cost price & earned a profit of  $\frac{3}{20}x$ .

- (a) Quantity I > Quantity II
- (b) Quantity II > Quantity I
- (c) Quantity I  $\geq$  Quantity II
- (d) Quantity II  $\geq$  Quantity I
- (e) Quantity I = Quantity II or relation can't be established.

Q3.Quantity I : curved surface area of a cone.

If the base radius of cone is 8 cm & height is 25% less than its radius.

Quantity II: Curved surface area of a cylinder.

If maximum volume of cylinder is  $200\pi$  and its height is 60% more than its radius.

- (a) Quantity I > Quantity II
- (b) Quantity II > Quantity I
- (c) Quantity I  $\geq$  Quantity II
- (d) Quantity II  $\geq$  Quantity I
- (e) Quantity I = Quantity II or relation can't be established.

Q4.Quantity I: Number of days taken by A to complete the work.

If A, B & C working all together can complete the work in 4 days & B & C together takes 6 days to complete it. C is 50% more efficient than B.

Quantity II: Number of hours taken by most efficient pipe to fill the tank.

Three pipes P, Q and R working alternatively in the cycle P → Q → R for 1 hour each, can fill tank in 15 hours. A pipe P alone will take 20 hours, & ratio of time taken by pipe Q to R is 3 : 2 to fill the tank.

- (a) Quantity I > Quantity II
- (b) Quantity II > Quantity I
- (c) Quantity I ≥ Quantity II
- (d) Quantity II ≥ Quantity I
- (e) Quantity I = Quantity II or relation can't be established.

Q5. Average age of A, B and C is 33 year. Ratio of age of B to C is 11 : 13 and age of A is 10% less than the average age of A and B.

Quantity I → Age of B

Quantity II → Average of A and C

- (a) Quantity I > Quantity II
- (b) Quantity II > Quantity I
- (c) Quantity I ≥ Quantity II
- (d) Quantity II ≥ Quantity I
- (e) Quantity I = Quantity II or relation can't be established.

Direction (6-10): In the given questions, two quantities are given, one as 'Quantity I' and another as 'Quantity II'. You have to determine relationship between two quantities and choose the appropriate option:

Q6. Total surface area of a hemisphere is 1039.5 m<sup>2</sup>.

Quantity I – If length of a rectangle is 36 m and breadth is two times of radius of hemisphere, then area of rectangle.

Quantity II – If side of square is  $166\frac{2}{3}\%$  more than radius of hemisphere, then area of square.

- (a) Quantity I > Quantity II
- (b) Quantity I ≤ Quantity II
- (c) Quantity I = Quantity II
- (d) Quantity I < Quantity II
- (e) Quantity I ≥ Quantity II

Q7. A shopkeeper marked an article at Rs. 1440 and sold it at three successive discounts of 20%, 25% & 7.5% respectively.

Quantity I – Ram sold a jeans equal to the selling price of article and made a profit of 20%, then cost price of jeans.

Quantity II – A total amount of Rs. 1276.5 distributed among Veer, Sameer and Mohit. Share of Veer is 10 times of Sameer and share of Mohit is 20% more than Veer, then share of Mohit.

- (a) Quantity I = Quantity II
- (b) Quantity I ≤ Quantity II
- (c) Quantity I ≥ Quantity II
- (d) Quantity I < Quantity II
- (e) Quantity I > Quantity II

Q8. Veer, Sameer and Divyaraj can do a work in 48 days, 36 days and 32 days respectively.

Quantity I – If Ayush is  $33\frac{1}{3}\%$  more efficient than Divyaraj, then find in how many days Ayush and Sameer will complete the same work together.

Quantity II –  $15\frac{2}{5}$  days

- (a) Quantity I = Quantity II
- (b) Quantity I > Quantity II
- (c) Quantity I  $\geq$  Quantity II
- (d) Quantity I < Quantity II
- (e) Quantity I  $\leq$  Quantity II

Q9. A, B & C started a business by making investment in the ratio of 5 : 4 : 6 for 8 months, 6 months and 4 months respectively.

Quantity I – If difference between profit share of A and C is Rs. 450, then 60% of profit share of B.

Quantity II – Ram has Rs. 675. He gives 25% of that, to his child and 20% of remaining to his wife, what amount Ram kept with himself.

- (a) Quantity I  $\leq$  Quantity II
- (b) Quantity I > Quantity II
- (c) Quantity I = Quantity II
- (d) Quantity I < Quantity II
- (e) Quantity I  $\geq$  Quantity II

Q10. Quantity I –  $5x^2 + 23x + 18 = 0$

Quantity II –  $3y^2 + 4y + 1 = 0$

- (a) Quantity I  $\geq$  Quantity II
- (b) Quantity I  $\leq$  Quantity II
- (c) Quantity I = Quantity II
- (d) Quantity I < Quantity II
- (e) Quantity I > Quantity II

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### Solutions

S1. Ans.(a)

Sol.

Quantity I:

Total number of balls in bag is  $7+x$ . now, if 1 red & 1 black balls is taken out. Probability of drawing a White ball is

$$\frac{x}{5+x} = \frac{1}{2}$$

$$\Rightarrow x = 5$$

Quantity II

Interest obtained by him after 10 years

$$= 745 - 500$$

$$= \text{Rs } 245$$

$$= \frac{500 \times y \times 10}{100} = 245$$

$$y = 4.9$$

Quantity I > Quantity II

S2. Ans.(b)

Sol.

Quantity I

$$\text{profit} = \frac{1.2x}{5x} \times 100$$

$$= 24\%$$

Quantity II

$$80\% \text{ of } \frac{x}{2}$$

$$= \frac{4}{5} \left( \frac{x}{2} \right) = \frac{2}{5}x$$

$$\text{MP} = \frac{x}{2} + \frac{2}{5}x = \frac{9}{10}x$$

$$\text{SP} = \frac{x}{2} + \frac{3}{20}x = \frac{13}{20}x$$

$$\text{Discount} = \left[ \frac{9}{10}x - \frac{13}{20}x \right] = \frac{5x}{20}$$

$$\text{Required \%} = \left( \frac{5}{20}x \right) \left( \frac{10}{9}x \right) \times 100$$

$$= \frac{5}{18} \times 100 = \frac{500}{18} = 27.77$$

Quantity II > Quantity I

S3. Ans.(c)

Sol.

Quantity I

Curved surface area of a cone =  $\pi r \ell$

$$\ell = \sqrt{r^2 + h^2}$$

$$= \sqrt{(8)^2 + \left( \frac{75}{100} \times 8 \right)^2} = \sqrt{64 + 36} = 10$$

$$= \pi \times 8 \times 10$$

$$= 80\pi$$

Quantity II

Volume of cylinder  $\leq 200\pi$

$$\pi R^2 h \leq 200\pi$$

Let its radius is  $5x$  and height is  $8x$ .

$$\Rightarrow hR^2 \leq 200$$

$$x \leq 1$$

Therefore, curved surface area of cylinder is  $2\pi Rh$

$$2\pi \times 5x \times 8x = 80\pi x^2$$

But  $x$  is less than or equal to 1.

Therefore, curved surface area of cylinder is less than or equal to  $80\pi$

Quantity II  $\leq$  Quantity I

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S4. Ans.(a)

Sol.

Quantity I

$$\text{Efficiency of A + B + C} = \frac{1}{4}$$

$$\text{Efficiency of B + C} = \frac{1}{6}$$

$$\text{Efficiency of A} = \frac{1}{4} - \frac{1}{6} = \frac{1}{12}$$

A will take 12 day

Quantity II

If P, Q, R working alternatively taken 15 hours, together they will take 5 hour.

$$\text{Efficiency of P + Q + R} = \frac{1}{5}$$

$$\text{Efficiency of Q + R} = \frac{1}{5} - \frac{1}{20} = \frac{3}{20}$$

Let efficiency of Q is  $2x$  & R is  $3x$

$$\Rightarrow 5x = \frac{3}{20}$$

$$x = \frac{3}{100}$$

$$\text{The efficiency of Q} = \frac{6}{100}$$

$$R = \frac{9}{100}$$

$$R > Q > P$$

$$\text{Time taken by pipe R} = \frac{100}{9}$$

$$= 11\frac{1}{9} \text{ hours}$$

Hence quantity I > quantity II

S5 Ans.(e)

Sol.

Sum of age of A, B and C = 99 year

Let age of B and C is  $11x$  and  $13x$  respectively and age of A =  $\frac{(A + 11x)}{2} \times \frac{90}{100}$

$$20A = 9A + 99x$$

$$11A = 99x$$

$$A = 9x$$

$$\text{So, } 9x + 11x + 13x = 99$$

$$x = 3$$

Quantity I

Age of B = 33 years.

Quantity II

Average age of A & C is  $11x$

Average age is = 33 years.

Quantity I = quantity II.

S6. Ans(d)

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Sol.

Given, Total surface area of a hemisphere =  $3\pi r^2 = 1039.5 \text{ m}^2$

$$r^2 = \frac{346.5 \times 7}{22}$$

$$r^2 = 110.25$$

$$r = 10.5 \text{ m}$$

Quantity I – Breath or rectangle =  $10.5 \times 2 = 21 \text{ m}$

Area of rectangle =  $36 \times 21 = 756 \text{ m}^2$

$$\begin{aligned} \text{Quantity II – Side of square} &= 10.5 + 10.5 \times \frac{5}{3} \\ &= 10.5 + 17.5 \\ &= 28 \text{ m} \end{aligned}$$

Area of square =  $28 \times 28 = 784 \text{ m}^2$

Quantity I < Quantity II

S7. Ans(a)

Sol.

Selling price of article =  $1440 \times \frac{80}{100} \times \frac{75}{100} \times \frac{92.5}{100} = 799.2 \text{ Rs.}$

Quantity I – Cost price of jeans =  $\frac{799.2}{120} \times 100 = 666 \text{ Rs.}$

Quantity II – Let Share of Sameer =  $x$

So, share of Veer =  $10x$

And, share of Mohit =  $10x \times \frac{120}{100} = 12x$

$$x + 10x + 12x = 1276.5$$

$$x = 55.5 \text{ Rs.}$$

Share of Mohit =  $12 \times 55.5 = 666 \text{ Rs.}$

Quantity I = Quantity II

S8. Ans(d)

Sol.

Let total work = 288 units

Efficiency of Veer =  $\frac{288}{48} = 6 \text{ units/day}$

Efficiency of Sameer =  $\frac{288}{36} = 8 \text{ units/day}$

Efficiency of Divyaraj =  $\frac{288}{32} = 9 \text{ units/day}$

Quantity I – Efficiency of Ayush =  $9 \times \frac{4}{3} = 12 \text{ units/day}$

So, Ayush and Sameer complete together =  $\frac{288}{(12+8)} = 14 \frac{2}{5} \text{ days}$

Quantity II –  $15 \frac{2}{5} \text{ days}$

Quantity I < Quantity II

S9. Ans(c)

Let A, B & C invested Rs,  $5x$ ,  $4x$  &  $6x$  respectively

Profit ratio of A, B & C =  $(5x \times 8) : (4x \times 6) : (6x \times 4)$

$$= 40x : 24x : 24x$$

$$= 5 : 3 : 3$$

Quantity I – Given,  $(5 - 3)unit = 450$  Rs.

$$2 \text{ unit} = 450 \text{ Rs.}$$

$$1 \text{ unit} = 225 \text{ Rs.}$$

60% of profit share of B =  $3 \times 225 \times \frac{60}{100} = 405$  Rs.

Quantity II – Ram kept with himself =  $675 \times \frac{(100-25)}{100} \times \frac{(100-20)}{100} = 405$  Rs.

Quantity I = Quantity II

S10.Ans (b)

Sol.

I.  $5x^2 + 23x + 18 = 0$

$$\Rightarrow 5x^2 + 5x + 18x + 18 = 0$$

$$\Rightarrow (x+1)(5x+18) = 0$$

$$\Rightarrow x = -1, -\frac{18}{5}$$

II.  $3y^2 + 4y + 1 = 0$

$$\Rightarrow 3y^2 + 3y + y + 1 = 0$$

$$\Rightarrow (y+1)(3y+1) = 0$$

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

Quantity I  $\leq$  Quantity II

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