

## RBI Assistant Mains Practice Marathon Quant (Solutions)

### S1. Ans.(b)

**Sol.**

$$\text{No. of employees who promoted from Google} = 1150 \times \frac{19}{23} \times \frac{20}{100} = 190$$

Average no. of male employees from TCS, LST and Google

$$= \left( 1400 \times \frac{13}{28} + 1525 \times \frac{35}{61} + 1300 \times \frac{9}{13} \right) \frac{1}{5}$$

$$= (650 + 875 + 900) \frac{1}{5}$$

$$= \frac{2425}{5} = 485$$

$$\text{Required \%} = \frac{485-190}{485} \times 100$$

$$= 60.82\% \approx 61\%$$

### S2. Ans.(c)

**Sol.**

No. of senior employees who got promoted

$$= 1200 \times \frac{18}{25} \times 0.50 + 1400 \times \frac{17}{28} \times 0.36 + 1600 \times \frac{5}{8} \times 0.45 + 1250 \times \frac{13}{25} \times 0.34 + 1525 \times \frac{14}{25} \times 0.50 +$$

$$1300 \times \frac{8}{25} \times 0.5 + 1150 \times \frac{19}{23} \times 0.20$$

$$= 432 + 306 + 450 + 221 + 427 + 208 + 190$$

$$= 2234$$

$$\text{Foreign employees from Wipro, LST and Google together} = 1600 \times \frac{3}{5} + 1525 \times \frac{1}{5} + 1150 \times \frac{7}{23}$$

$$= 960 + 305 + 350$$

$$= 1615$$

$$\text{Required employees} = 1615 - \frac{2234}{2}$$

$$= 1615 - 1117$$

$$= 498$$

### S3. Ans.(d)

$$\text{Sol. Required ratio} = (400 - 213) : 1200 \times \frac{11}{25}$$

$$= 187 : 528$$

$$= 17 : 48$$

### S4. Ans.(e)

**Sol.** No. of employees from all of the companies together = 9425

Indian employees of all of the companies together

$$= 900 + 1000 + 640 + 875 + 1220 + 800 + 800 = 6235$$

$$\text{Required \%} = \frac{9425}{6235} \times 100 = 151.16\%$$

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**S5. Ans.(a)****Sol.** Male employees from all of the companies

$$= 1200 \times \frac{14}{25} + 1400 \times \frac{13}{28} + 1600 \times \frac{27}{32} + 1250 \times \frac{17}{25} + 1525 \times \frac{35}{61} + 1300 \times \frac{9}{13} + 1150 \times \frac{17}{46}$$

$$= 672 + 650 + 1350 + 850 + 875 + 900 + 425 = 5722$$

$$\therefore \text{female employees} = 9425 - 5722 = 3703$$

Required no. of employees = 2019

**S6. Ans.(b)****Sol.** Let speed of Avinash in still water be  $a$  kmph and speed of stream be  $b$  kmph.Let  $AB = BC = x$  km

From first condition,

$$\frac{x}{a+b} + \frac{x}{a-b} = 10 \dots\dots\dots(i)$$

From second condition,

$$\frac{2x}{a+b} = 4$$

$$\Rightarrow \frac{x}{a+b} = 2 \dots\dots\dots(ii)$$

Putting the value in eq. (i), we get

$$2 + \frac{x}{a-b} = 10$$

$$\Rightarrow \frac{x}{a-b} = 8 \dots\dots\dots(iii)$$

On dividing equation (iii) by equation

(ii), we get

$$\frac{a+b}{a-b} = \frac{8}{2} = 4$$

$$\Rightarrow 3a = 5b$$

$$\therefore a : b = 5 : 3$$

**S7. Ans (d)****Sol.** Let speed of boat in still water and speed of current be  $x$  kmph and  $y$  kmph respectively.

ATQ

$$\frac{x}{x+y} = \frac{5}{8}$$

$$\frac{x}{y} = \frac{5}{3}$$

Let  $x=5p$  and  $y=3p$ 

$$\frac{D-21}{5p+3p} = 3$$

$$D - 21 = 24p \dots (i)$$

$$\text{Now, } \frac{D-15}{2p} = 3 \times \frac{D-5}{8p}$$

$$D = 45 \text{ km}$$

From (i)

$$p = \frac{24}{24} = 1$$

So, speed of boat in still water = 5 kmph

**S8. Ans (a)****Sol.** Let no. of failed candidates be x.

ATQ

$$150 \times 50 = x \times 25 + (150 - x) \times 55$$

$$7500 = 25x + 8250 - 55x$$

$$750 = 30x$$

$$x = 25$$

So, passed candidates =  $150 - 25 = 125$ **S9. Ans.(e)****Sol.** Let age of Mr. Manoj =  $10x + y$ Age of his wife =  $10y + x$ 

$$\frac{1}{11}(10x + y + 10y + x) = 10x + y - 10y - x$$

$$11x + 11y = 99x - 99y, \frac{x}{y} = \frac{5}{4}$$

$x = 5, y = 4$  (since age in the form of 2 digit number and only possible number is in the ratio of 5:4 is 5 and 4)

Age of Manoj = 54, wife = 45

Difference = 9 years

**S10. Ans.(c)****Sol.** Three years SI on 15% =  $15 \times 3 = 45\%$ 

$$\text{Equivalent two years CI on } 8\% = 8 + 8 + \frac{8 \times 8}{100} = 16.64\%$$

$$\text{Equivalent two years CI on } 20\% = 20 + 20 + \frac{20 \times 20}{100} = 44\%$$

ATQ -

$$\frac{44(2P+8000)}{100} - \left( \frac{45P}{100} + \frac{16.64(P+8000)}{100} \right) = 5352$$

$$88P + 3520 - .45P - .1664P - 1331.2 = 5352$$

$$2636P = 3163.2$$

$$P = \frac{3163.2}{.2636} = 12000 \text{ Rs.}$$

Suresh borrowed =  $12000 \times 2 + 8000 = 32000$  Rs**S11. Ans.(a)**

$$\text{Sol. } \frac{53}{3} - \frac{41}{5} - \frac{48}{5} + ? = \frac{8}{15}$$

$$? = \frac{8}{15} - \frac{53}{3} + \frac{89}{5}$$

$$? = \frac{2}{3}$$

**S12. Ans.(b)****Sol.**  $13 - 34 + 15 = ?$ 

$$? = -6$$

**S13. Ans.(c)**

$$\text{Sol. } \frac{25}{100} \times 650 - \frac{65}{100} \times 250 = ? - 5$$

$$? = 5$$

**S14. Ans.(c)**

$$\text{Sol. } 36 \times 36 + 144 - 30 = ?$$

$$1296 + 144 - 30 = ?$$

$$? = 1410$$

**S15. Ans.(b)**

$$\text{Sol. } 18 - 12 \times 16 \times \frac{1}{24} + 5 = ?$$

$$18 - 8 + 5 = ?$$

$$? = 15$$

**S16. Ans.(c)**

**Sol.** Lets speed of train P, Q and R be  $S_1$ ,  $S_2$  and  $S_3$  respectively

$$\text{Speed of train P } (S_1) = \frac{180}{\frac{27}{4}} \text{ m/s}$$

$$= \frac{80 \text{ m}}{3 \text{ s}}$$

Speed of train Q ( $S_2$ )

$$\frac{80}{3} + S_2 = \frac{240+180}{9}$$

$$S_2 = \frac{420}{9} - \frac{80}{3}$$

$$S_2 = 20 \text{ m/s}$$

Speed of train R ( $S_3$ )

$$\frac{80}{3} - S_3 = \frac{210+180}{39}$$

$$S_3 = \frac{80}{3} - 10$$

$$S_3 = \frac{50}{3} \text{ m/s}$$

Lets required time be T sec

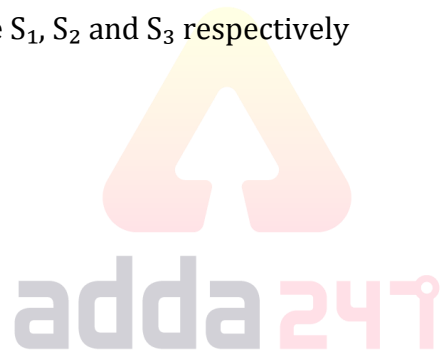
$$\text{Required time} = 20 + \frac{50}{3}$$

$$= \frac{240+210}{T}$$

$$\frac{110}{3} = \frac{450}{T}$$

$$T = \frac{450 \times 3}{110}$$

$$T = 12 \frac{3}{11} \text{ sec}$$



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**S17. Ans.(e)****Sol.** A got 40% of profit

B &amp; C got 30% each

So investment ratio of A, B and C is 4 : 3 : 3

Now,

They earn 10% profit

$$\Rightarrow \frac{10 \times 10}{100} = x$$

If they earn 15% profit

$$= \frac{10 \times 15}{100} = \frac{3}{2}x$$

A got 900 Rs. more

$$\Rightarrow \frac{3}{2}x \times \frac{40}{100} - \frac{x \times 40}{100} = 900$$

$$\Rightarrow x = 4500$$

Total investment = 45000

$$\text{B's investment} = \frac{45000 \times 3}{10} = 13500$$

**S18. Ans (d)****Sol.** Let speed of boat in still water and speed of stream be x kmph and y kmph respectively.

$$\text{So, } 2.5(x - y) = x$$

$$\frac{x}{y} = \frac{5}{3}$$

$$\text{Let } x = 5a \text{ and } y = 3a$$

$$\text{Given that, } x + y = 120$$

$$a = \frac{120}{8} = 15$$

$$\text{So, } x = 75 \text{ kmph and } y = 45 \text{ kmph}$$

Let total distance covered by him be D km

$$\frac{75}{4} = \frac{D}{2 \times (75+45)} + \frac{D}{2 \times (75-45)}$$

$$\frac{75}{2} = \frac{D}{120} + \frac{D}{30}$$

$$D = 900 \text{ km}$$

**S19. Ans.(a)**

$$\text{Sol. Speed of tractor} = \frac{360}{12} = 30 \text{ km/hr}$$

$$\text{Speed of jeep} = \frac{250}{100} \times 75 \text{ km/hr}$$

$$\therefore \text{Ratio of speed of Car, Jeep, and Tractor is } 3 : 5 : 2$$

$$\therefore \text{Speed of car} = 3 \times 15 = 45 \text{ km/hr}$$

$$\text{Required average speed of Car and Jeep} = \frac{75+45}{2} = 60 \text{ km/hr}$$

**S20. Ans (e)****Sol.** We knowPerimeter of a rectangle =  $2(\text{length} + \text{breadth})$ 

$$= 2(26 + 18) = 88 \text{ cm}^2$$

Now, since perimeter of a circle =  $2\pi r$ 

Therefore  $2\pi r = 88$  ie  $r = \frac{44}{\pi}$

Now, the area of the circle =  $\pi r^2$ 

$$\pi \times \frac{44}{\pi} \times \frac{44}{\pi} = \frac{44 \times 44}{22} \times 7 = 616 \text{ cm}^2$$

**S21. Ans.(b)****Sol.**

**I.**  $2x^2 - 25x + 72 = 0$

$$2x^2 - 16x - 9x + 72 = 0$$

$$2x(x - 8) - 9(x - 8) = 0$$

$$x = 8, \frac{9}{2}$$

**II.**  $4y^2 - 12y - 27 = 0$

$$4y^2 + 6y - 18y - 27 = 0$$

$$2y(2y + 3) - 9(2y + 3) = 0$$

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

$$x \geq y$$

**S22. Ans.(e)****Sol.**

**I.**  $8x^2 - 26x + 21 = 0$

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

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

$$x = \frac{7}{4}, \frac{3}{2}$$

**II.**  $10y^2 - 43y + 28 = 0$

$$10y^2 - 35y - 8y + 28 = 0$$

$$5y(2y - 7) - 4(2y - 7) = 0$$

$$y = \frac{7}{2}, \frac{4}{5}$$

No relation

**S23. Ans.(b)****Sol.**

**I.**  $x^2 - 18x + 65 = 0$

$$x^2 - 13x - 5x + 65 = 0$$

$$(x - 13)(x - 5) = 0$$

$$x = 13, 5$$

$$\text{II. } 2y^2 - 17y + 35 = 0$$

$$2y^2 - 10y - 7y + 35 = 0$$

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

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

$$x \geq y$$

**S24. Ans.(c)**

**Sol.**

$$\text{I. } 14x^2 + 21x - 10x - 15 = 0$$

$$7x(2x + 3) - 5(2x + 3) = 0$$

$$x = \frac{-3}{2}, \frac{5}{7}$$

$$\text{II. } 20y^2 - 15y - 16y + 12 = 0$$

$$5y(4y - 3) - 4(4y - 3) = 0$$

$$y = \frac{4}{5}, \frac{3}{4}$$

$$y > x$$

**S25. Ans.(c)**

**Sol.**

$$\text{(i) } 3x + 7y = 18$$

$$\text{(ii) } 9x - 2y = 8$$

Solving (i) and (ii)

$$x = 4/3, y = 2$$

$$y > x$$



**S26. Ans.(b)**

**Sol.**

$$35\% \text{ of } 1579 + 29\% \text{ of } 4516 = ? \times 41 + 468 + 773.98 - 199.53$$

$$\frac{35}{100} \times 1600 + \frac{30}{100} \times 4500 \approx ? \times 40 + 470 + 770 - 200$$

$$560 + 1350 \approx ? \times 40 + 1240 - 200$$

$$= 1910 \approx ? \times 40 + 1040$$

$$? \times 40 \approx 1910 - 1040$$

$$\therefore ? \approx \frac{870}{40} = 21.75 \approx 20$$

**S27. Ans.(c)**

**Sol.**

$$(36 + ?) \times 9 = 49.05 \times 19.95 - 24.99 \times 14.12$$

$$\text{or, } 324 + 9 \times ? \approx 50 \times 20 - 25 \times 14$$

$$\text{or, } 9 \times ? \approx 1000 - 350 - 324 = 326$$

$$\therefore ? \approx \frac{326}{9} \approx 36$$

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**S28. Ans.(a)****Sol.**

$$?\% \text{ of } (4991.92) + 732.85 + 14434.86 = 5\frac{1}{5} \text{ of } 195.95 + 6\frac{1}{4} \text{ of } 2309.49$$

$$\text{or, } \frac{? \times (5000)}{100} \approx \frac{26}{5} \times 195 + \frac{25}{4} \times 2300 - 730 - 14430$$

$$\text{or, } ? \times 50 \approx 1014 + 14375 - 730 - 14430$$

$$= 15389 - 15160 = 229$$

$$\therefore ? \approx \frac{229}{50} \approx 5$$

**S29. Ans.(c)****Sol.**

$$(74.1)^{2.01} + (39)^{1.95} - (57)^? = 3750$$

$$\text{or, } (57)^? \approx (74)^2 + (39)^2 - 3750$$

$$= 5476 + 1521 - 3750$$

$$= 6997 - 3750 = 3247 \approx 3249 = (57)^2$$

$$\therefore ? \approx 2$$

**S30. Ans.(a)****Sol.**

$$\frac{(36.54)^2 - (16.74)^2}{?} = 21$$

$$? \approx 50$$

**S31. Ans.(b)****Sol.**

Quantity I -

$$\text{1st year amount} = 21000 \times \frac{8}{7}$$

$$= 24000 \text{ Rs.}$$

$$\text{2nd year amount} = 24000 \times \frac{9}{8}$$

$$= 27000 \text{ Rs.}$$

$$\text{3rd year amount} = 27000 \times \frac{10}{9}$$

$$= 30000 \text{ Rs.}$$

$$\text{Interest} = 30000 - 21000 = 9000 \text{ Rs.}$$

Quantity II - A Investment = 100P Rs.

B Investment = 80P Rs.

$$\text{C investment} = 80P + 80P \times \frac{1}{10}$$

$$= 88P \text{ Rs.}$$

$$\text{2 year CI on 12\%} = \left(12 + 12 + \frac{12 \times 12}{100}\right) = 25.44\%$$

$$\text{2 year CI on 15\%} = \left(15 + 15 + \frac{15 \times 15}{100}\right) = 32.25\%$$

$$\text{2 year CI on 20\%} = \left(20 + 20 + \frac{20 \times 20}{100}\right) = 44\%$$





ATQ—

$$\frac{100P \times 25.44}{100} + \frac{32.25 \times 80P}{100} + \frac{44 \times 88P}{100} = 9445.8$$

$$2544P + 2580P + 3872P = 944580$$

$$P = \frac{944580}{8996} \times 100$$

$$P = 105 \text{ Rs.}$$

Amount invested by A = Rs 10500

So, Quantity I < Quantity II

### S32. Ans.(a)

**Sol.**

Quantity I – Let marked price of article A = 100x

Marked price of article B = 120x

$$\text{S. P. of article A} = 100x \times \frac{3}{4} = 75x$$

$$\text{S. P. of article B} = 120 \times \frac{4}{5} = 96x$$

$$\text{C. P. of article A} = 75 \times \frac{5}{4} = 93.75x$$

$$\text{C. P. of article B} = 96x \times \frac{15}{16} = 90x$$

ATQ—

$$(93.75x + 90x) - (75x + 96x) = 765$$

$$183.75x - 171x = 765$$

$$12.75x = 765$$

$$x = 60$$

$$\text{M.P. of article B} = 60 \times 120$$

$$= 7200 \text{ Rs.}$$

Quantity II – MP of shirt = 100x Rs

$$\text{SP of shirt} = 100 \times \frac{76}{100} = 76x \text{ Rs}$$

$$\text{Cost price of jeans} = 76x \times \frac{5}{4}$$

$$= 95x \text{ Rs}$$

$$\text{Selling price of jeans} = 95x \times \frac{110}{100}$$

$$= 104.5x \text{ Rs}$$

ATQ –

$$104.5x - 76x = 1140 \text{ Rs}$$

$$28.5x = 1140 \text{ Rs.}$$

$$x = 40 \text{ Rs.}$$

$$\text{Cost price of jeans} = 95 \times 40 = 3800 \text{ Rs.}$$

So, Quantity I > Quantity II



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**S33. Ans.(b)****Sol. Quantity I -**

Required cases = (1 green, 1 red, 1 blue) or (2 green, 1 blue) or (1 green, 2 blue)

$$= \frac{{}^4C_1 \times {}^3C_1 \times {}^5C_1}{{}^{12}C_3} + \frac{{}^4C_2 \times {}^5C_1}{{}^{12}C_3} + \frac{{}^4C_1 \times {}^5C_2}{{}^{12}C_3}$$

$$= \frac{3}{11} + \frac{3}{22} + \frac{2}{11}$$

$$= \frac{13}{22}$$

**Quantity II -** Favorable case = (2G, 2R) or (3G, 1R) or 4G

∴ Probability

$$= \frac{{}^6C_2 \times {}^5C_2}{{}^{11}C_4} + \frac{{}^6C_3 \times {}^5C_1}{{}^{11}C_4} + \frac{{}^6C_4}{{}^{11}C_4}$$

$$= \frac{15 \times 10}{330} + \frac{20 \times 5}{330} + \frac{15}{330}$$

$$= \frac{265}{330}$$

$$= \frac{53}{66}$$

So, Quantity I < Quantity II

**S34. Ans.(e)**

**Sol. Quantity I -** Let age of Rohit and Prakash six years ago be 7x years and 8x years respectively

ATQ -

$$\frac{\frac{7x+12}{6}}{\frac{8x+12}{3}} = \frac{9}{20}$$

$$140x + 240 = 144x + 216$$

$$x = 6 \text{ years}$$

Age of Rohit two years hence will be = (7 × 6 + 8) = 50 years

**Quantity II -** Let age of A, B and C be 16y, 9y and 7y respectively.

ATQ -

$$(16y + 9y + 7y) = 35 \times 3 - 3 \times 3$$

$$32y = 96$$

$$y = 3 \text{ years}$$

Age of A two years hence = 3 × 16 + 2 = 50 years

So, Quantity I = Quantity II

**S35. Ans.(a)**

**Sol.** Suresh : Ramesh = 100 : 60 = 5 : 3

$$\text{Total work} = 8 \times 22.5 = 180$$

$$\text{Raj efficiency} = \frac{5}{6} \times 5 = \frac{25}{6} \text{ w/d}$$

$$\text{Raj alone can complete work in} = \frac{180 \times 6}{25}$$

$$= \frac{216}{5} = 43 \frac{1}{5} \text{ days}$$

**S36. Ans.(b)**

$$\text{Sol. Administration} = \frac{24}{100} \times 20000 - \frac{22}{100} \times 18000 = 4800 - 3960 = 840$$

$$\text{Operations} = \frac{26}{100} \times 20000 - \frac{23}{100} \times 18000 = 5200 - 4140 = 1060$$

$$\text{Sales \& marketing} = \frac{20}{100} \times 20000 - \frac{18}{100} \times 18000 = 4000 - 3240 = 760$$

$$\text{Financial \& account} = \frac{29}{100} \times 18000 - \frac{20}{100} \times 20000 = 5220 - 4000 = 1220$$

$$\text{Corporate HQ} = \frac{10}{100} \times 20000 - \frac{8}{100} \times 18000 = 2000 - 1440 = 560$$

So, max variation is in Financial & Account

**S37. Ans.(c)**

$$\text{Sol. Required no. of employee} = \frac{26}{100} \times 20000 - \frac{23}{100} \times 18000 + 300$$

$$= 5200 - 4140 + 300 = 1360$$

**S38. Ans.(d)**

$$\text{Sol. No. of employee in sales \& marketing in 2005} = \frac{18}{100} \times 18000 = 3240$$

$$\text{No. of employee in sales \& marketing in 2006} = \frac{20}{100} \times 20000 = 4000$$

$$\text{So, required \%} = \frac{4000-3240}{3240} \times 100 = \frac{760}{3240} \times 100$$

$$= 23.46\%$$

**S39. Ans.(d)**

$$\text{Sol. Required expense} = \frac{22}{100} \times 18000 \times 12000 = \text{Rs } 47520000$$

**S40. Ans.(e)**

**Sol.** Total no. of employee in 2005 from operations and corporate HQ together

$$= \frac{23}{100} \times 18000 + \frac{8}{100} \times 18000 = 4140 + 1440 = 5580$$

Total no. of employee in 2005 from operations and corporate HQ together

$$= \frac{20}{100} \times 20000 \times 2 = 8000$$

$$\text{So, required \%} = \frac{5580}{8000} \times 100 = 69.75\%$$

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