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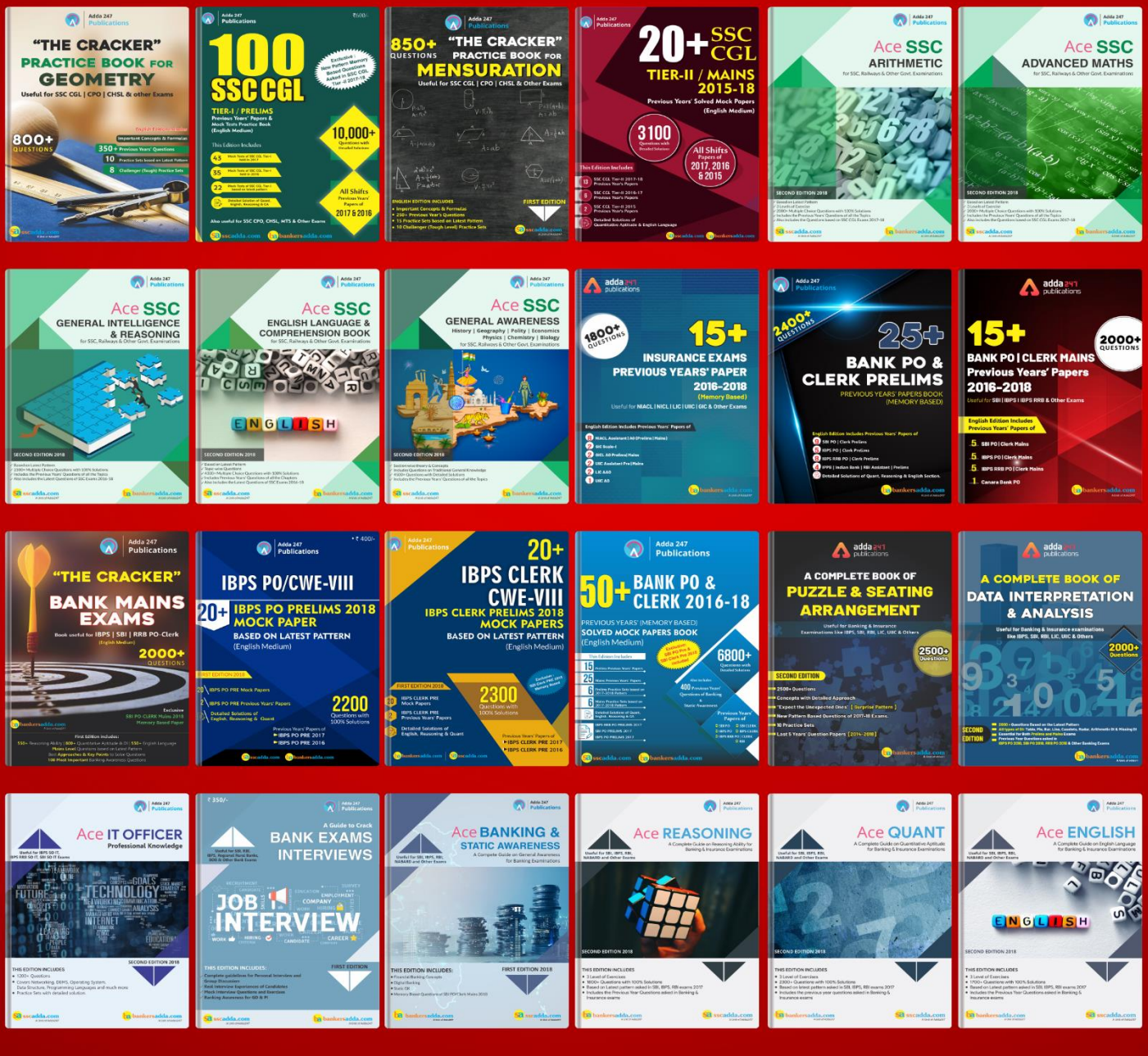

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Solutions

S1. Ans.(a)

Sol. Efficiency ratio of A and B = 2: 1

QUANTITY 1: Time taken by B = $\frac{3}{1} \times \frac{15}{2} = \frac{45}{2}$ days

QUANTITY 2: Efficiency of C = $2 \times \frac{3}{2} = 3$

∴ Time taken by C = $\frac{45}{2} \times \frac{1}{3} = \frac{15}{2}$ days

QUANTITY 1 > QUANTITY 2

S2. Ans.(c)

Sol. Quantity 1: Let roots are a_1, a_2 then $a_1 a_2 = \frac{-5}{2}$

$\Rightarrow a_2 = \frac{-5}{2}$ $(\therefore a_1 = 1)$

Quantity 2: 2.5

∴ Quantity 2 > Quantity 1

S3. Ans.(a)

Sol. Quantity 1:

Favorable cases

= (1, 4), (2, 3), (3, 2), (4, 1), (5, 5), (4, 6), (6, 4)

= 7

∴ Required prob. = $\frac{7}{36}$

Quantity 2: $\frac{1}{6}$

Quantity 1 > Quantity 2

S4. Ans.(a)

Sol. D + h = 28 m.

Quantity 1 : 7x = 28

x = 4

r = 8 m

h = 12 m

Curved surface area of cylinder = 2π × 8 × 12

= 2π ×96 m^2

Quantity 2:

h = 10m

Radius = $\frac{28 - 10}{2}$

= 9 m

Curved surface area of cylinder = 2π ×9×10

= 2π × 90 m^2

Quantity 1 > Quantity 2

S5. Ans.(e)

Sol. There will be two numbers 73 and 37 whose product of digits is 21

So if we take 73 then

Quantity 1 > Quantity 2

And if we take 37 then,

Quantity 2 > Quantity 1

So no relation can be established.

S6. Ans.(c)

Sol. Let initially milk and water in container B is 3x liter and x liter respectively

Now,

$3x + \frac{8}{9} \times 18 - x - \frac{1}{9} \times 18 = 30$

$3x + 16 - x - 2 = 30$

$x = 8$

Initial quantity is container B = 8 (3 + 1) = 32 Liter

S7. Ans.(c)

Sol. Total runs scored by team $B = 30 \times 4.5 + 20 \times 5.5 - 10 = 235$

$\therefore$ Required answer $= \frac{235}{50} = 4.7$

S8. Ans. (b)

Sol. Total balls $= 40$

Red balls $= 18$

Let green balls are x

Then, $\frac{18}{40} \times \frac{x}{39} = \frac{3}{26}$

$\Rightarrow x = 10$

$\therefore$ No. of blue balls $= 40 - 28 = 12$

S9. Ans. (e)

Sol. Ratio of efficiency of A to B is 3 : 2

Let, In 8 days they complete = (3 + 2) × 8 = 40 units

So, total work = $40 \times \frac{12}{5}$ units

Time taken by B alone to complete whole work = $\frac{40 \times 12}{5 \times 2}$ = 48 days

S10. Ans.(d)

Sol. Total employee working in A in year 2000 = $64 \times \frac{100}{32} = 200$

Total employee working in A at the end of 2002 = $(200 - 20 + 102 - 32 + 78 - 24) = 304$

Total employee working in B at the end of 2002 = $(96 - 18 + 72 - 16) = 134$

Required percentage = $\frac{134}{304} \times 100$

$= 44.07 \approx 44\%$

S11. Ans.(b)

Sol. Let total employee who left B and C in the year 2002 be 7a and 9a respectively

ATQ –

$172 + 84 - 36 + 108 - 9a + 124 - 28 = 406$

$9a = 424 - 406$

$9a = 18$

$a = 2$

Employee left B in 2002 = 14

So, total employee working in B at the end of 2002

$= 160 + 96 - 18 + 72 - 14 = 296$

S12. Ans.(a)

Sol. Total employee working in B at the end of 2000 = $220 - 28 + 32 = 224$

Let total employee left B in 2002 & 2003 together be 6x & 7x respectively

ATQ –

$224 + 96 - 18 + 72 - 6x + 144 - 7x = 466$

$13x = 518 - 466$

$13x = 52$

So, total 52 employees left B in 2002 & 2003 together.

S13. Ans.(c)

Sol. Total employee left A in the given three years = $21 \times 3 = 63$

Total employee left A in 2001 & 2003 together = $63 - 24 = 39$

Total employee left A in 2001 = $39 \times \frac{7}{13} = 21$

Total employee working in A at the end of 2002 = $102 - 21 + 78 - 24 = 135$

Required percentage = $\frac{135-108}{108} \times 100$

$= \frac{27}{108} \times 100$

$= 25\%$

S14. Ans.(e)

Sol. Total employee left C in the year 2002 = $24 \times \frac{4}{3} = 32$

Total employee left B in the year 2002 = $32 \times \frac{5}{8} = 20$

Total employee working in A at the end of 2002 = $102 - 22 + 78 - 24 = 134$

Total employee working in B at the end of 2002 = $96 - 18 + 72 - 20 = 130$

Total employee working in C at the end of 2002 = $84 - 36 + 108 - 32 = 124$

Required ratio = 130 : 124 : 134 = 65 : 62 : 67

S15. Ans.(a)

Sol. Total employee left A in year 2001 = $36 \times \frac{1}{3} = 12$

Total employee left C in year 2002 = $(36 - 12) \times \frac{2}{3} = 16$

Total employee working in A at the end of 2002 = $102 - 12 + 78 - 24 = 144$

Total employee working in C at the end of 2003 = $84 - 36 + 108 - 16 + 124 - 28 = 236$

Required difference = $236 - 144 = 92$

S16. Ans. (a)

Sol. I. $2x^2 + 11x + 15 = 0$

$\Rightarrow 2x^2 + 6x + 5x + 15 = 0$

$\Rightarrow 2x(x + 3) + 5(x + 3) = 0$

$\Rightarrow (x + 3)(2x + 5) = 0$

$\Rightarrow x = -3, -5/2$

II. $4y^2 + 13y + 9 = 0$

$\Rightarrow 4y^2 + 4y + 9y + 9 = 0$

$(y + 1)\ (4y + 9) = 0$

$\Rightarrow y = -1, -9/4$

$y > x$

S17. Ans. (e)

Sol. I. $x^2 - 36x + 324 = 0$

$\Rightarrow x^2 - 18x - 18x + 324 = 0$

$\Rightarrow (x - 18)^2 = 0$

$\Rightarrow x = 18, 18$

II. $y^2 - 35y + 216 = 0$

$\Rightarrow\ y^2 - 27y - 8y + 216 = 0$

$\Rightarrow (y - 27)(y - 8) = 0$

$\Rightarrow\ y = 27, 8$

No relation

S18. Ans. (c)

Sol. I. $x = (216)^{1/3}$

$\Rightarrow x = 6$

II. $y^2 = 6$

$\Rightarrow y = \pm\sqrt{6}$

$x > y$

S19. Ans.(a)

Sol. I. $2x^2 + 17x + 35 = 0$

$2x^2 + 10x + 7x + 35 = 0$

$2x\ (x + 5) + 7\ (x + 5) = 0$

$(2x + 7)\ (x + 5) = 0$

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

II. $3y^2 + 17y + 24 = 0$
$3y^2 + 9y + 8y + 24 = 0$
$3y (y + 3) + 8 (y+ 3) = 0$
$(y+ 3) (3y + 8) = 0$
$y = -3, -\frac{8}{3}$
y > x

S20. Ans.(d)
Sol. I. $x^2 + 72 = 108$
$x^2 = 108 - 72 = 36$
$x = \pm 6$
II. $y^3 + 581 = 365$
$y^3 = -216$
$y = -6$
$x \geq y$

S21. Ans.(b)
Sol. I. $8x^2 + 58x + 39 = 0$
$8x^2 + 52x + 6x + 39 = 0$
$4x (2x + 13) + 3 (2x + 13) = 0$
$x = (-13)/2, (-3)/4$
II. $8y^2 - 14y - 15 = 0$
$8y^2 - 20y + 6y - 15 = 0$
$4y (2y - 5) + 3(2y - 5) = 0$
$y = 5/2, (-3)/4$
$y \geq x$

S22. Ans.(b)
Sol. Total unsubscribed viewers from B = $3000 \times \frac{15}{100} - 250 = 200$
Total unsubscribed viewers from E = $3000 \times \frac{20}{100} - 180 = 420$
Total unsubscribed viewers from C = $3000 \times \frac{28}{100} - 440 = 400$
Required percentage = $\frac{(200+420)-400}{400} \times 100$
$= \frac{220}{400} \times 100 = 55\%$

S23. Ans.(b)
Sol. Let total female unsubscribed viewers in D be 3x
So, total male unsubscribed viewers in D will be 5x
Total male unsubscribed viewers in D = $(3000 \times \frac{25}{100} - 350) \times \frac{5x}{8x} = 250$
Total unsubscribed viewers in A & C = $(3000 \times \frac{12}{100} - 220) + (3000 \times \frac{28}{100} - 440)$
= 140 + 400 = 540
Required ratio = $\frac{250}{540} = 25 : 54$

S24. Ans.(e)

Sol. Total unsubscribed viewers from B = $3000 \times \frac{15}{100} - 250 = 200$

Total unsubscribed viewers from C = $3000 \times \frac{28}{100} - 440 = 400$

Total unsubscribed viewers in B & C and subscribed viewers in E = 200 + 400 + 180 = 780

Required central angle = $\frac{780}{3000} \times 360 = 93.6°$

S25. Ans.(d)

Sol. Total female viewers in village C = $3000 \times \frac{28}{100} \times \frac{325}{7} \times \frac{1}{100} = 390$

Total female unsubscribed viewers in village C = $390 \times \frac{7}{13} = 210$

Total male unsubscribed viewers in village C = $(3000 \times \frac{28}{100} - 440) - 210 = 190$

S26. Ans.(b)

Sol. Total subscribed viewers from village F = $(3000 \times \frac{12}{100} - 220) \times \frac{120}{100} = 168$

Total unsubscribed viewers from village F = $168 \times \frac{4}{3} = 224$

Total unsubscribed viewers from C = $3000 \times \frac{28}{100} - 440 = 400$

Required percentage = $\frac{400 - 224}{400} \times 100$

= $\frac{176}{400} \times 100 = 44\%$

S27. Ans.(c)

Sol. Total viewers from all the five village in 2018 = $3000 \times \frac{140}{100} = 4200$

Total subscribed viewers from A in 2018 = $220 \times 1.25 = 275$

Total subscribed viewers from B in 2018 = $250 \times 1.2 = 300$

Total subscribed viewers from D in 2018 = $350 \times 1.14 = 399$

Total subscribed viewers from E in 2018 = $180 \times 1.1 = 198$

Total subscribed viewers from C in 2018 = $1400 - (275 + 300 + 399 + 198) = 228$

Total unsubscribed viewers from C in 2018 = $4200 \times \frac{28}{100} - 228 = 948$

S28. Ans.(c)

Sol. Let rate of interest for both scheme be R%

So,

Amount after 3 years =$8000 + \frac{8000 \times 3R}{100} = 8000\ (1 + \frac{3R}{100}) = 80\ (100 + 3R)$

And

$80\ (100+3R) = 9000\ (1 + \frac{R}{100})^2$

(from this R can be calculated)

We don't have to solve complete question

We can see that R can be calculated from

$80\ (100+3R) = 9000 \left(1 + \frac{R}{100}\right)^2$

Both the statements taken together are necessary to answer the questions

S29. Ans.(d)

Sol. From A –

One man = $\frac{3}{2}$ *women*

Total work = $\left(\frac{3}{2} \times 4 + 18\right) \times 2.5 = 60$ *units*

So, 12 women can complete the work = $\frac{60}{12}$ = 5 days

From B –

(4m + 18w) × 2.5 = (6*m* + 6*w*)4

14m = 21w

One man = 1.5 woman

Total work = (4 × 1.5 + 18) × 2.5 = 60 *units*

So, 12 women can complete the work = $\frac{60}{12}$ = 5 days

So, Either statement A or statement B alone is sufficient to give answer of the question.

S30. Ans.(d)

Sol. From A –

Let speed of stream be 'y' km/hr

$\frac{120}{22.5-y} = 4 + \frac{120}{22.5+y}$

y = 7.5 km/hr

From B –

Let speed of stream be 'a' km/hr

$\frac{150}{22.5+a} + \frac{150}{22.5-a} = 15$

y = 7.5 km/hr

So. Either statement A or statement B alone is sufficient to give answer of the question.

S31. Ans.(e)

Sol. Form A –

Given, X & Y both are integer and both are multiple of 24 and X is 50% more than Y

So, X & Y can be (72, 48) , (216 , 144) and so on .....

So, data A alone not sufficient to give answer of the question

From B –

Given, . $\frac{X}{30}$ & $\frac{Y}{40}$ both are natural number

But, we can not calculate the value of X & Y

From A & B –

X & Y can be (720, 480) , (2160 , 1440) and so on ----------

So, Statements **A** and **B** taken together are not sufficient to answer the question

S32. Ans.(a)

Sol. Let students who take art and science be 4b & b respectively

Total students who take commerce = $(2a + 16) - (4b + b) = (2a + 16 - 5b)$

From A –

$4b - (2a + 16 - 5b) = 8$

$-2a + 9b = 24$ --------- (i)

Also, $\frac{b}{(2a+16)} = \frac{1}{8}$

$-2a + 8b = 16$ ---------- (ii)

$b = 8$

Total students in class = 64

From B –

$(2a + 16 - 5b) \times \frac{75}{100} = 4b$ ---------- (i)

$6a + 48 - 15b = 16\ b$

$31b = 6a + 48$

$b = \frac{6a+48}{31}$

So, from statement I only.

S33. Ans.(b)

Sol. Total boys take admission in college B & D together= $(10.5 \times \frac{64}{100} + 18 \times \frac{68}{100}) \times 1000$

$= 6720 + 12240 = 18960$

Total boys take admission in E = $16 \times \frac{60}{100} \times 1000 = 9600$

Required percentage = $\frac{18960-9600}{9600} \times 100$

$= \frac{9360}{9600} \times 100 = 97.5\%$

S34. Ans.(a)

Sol. Total girls appeared in exam from A = $12000 \times \frac{44}{100} \times \frac{75}{100} = 3960$

Total girls appeared in exam from C = $9000 \times \frac{48}{100} \times \frac{80}{100} = 3456$

Total boys appeared in exam from A & C together = $17910 - (3960 + 3456) = 10494$

Total boys appeared in exam from C = $10494 - 6048 = 4446$

Total boys who did not appear in exam from A = $12000 \times \frac{56}{100} - 6048 = 672$

Total boys did not appear in exam from C = $9000 \times \frac{52}{100} - 4446 = 234$

Required difference = $672 - 234 = 438$

S35. Ans.(d)

Sol. Total boys taken admission in college A & B = $12000 \times \frac{56}{100} + 10500 \times \frac{64}{100}$

$= 6720 + 6720 = 13440$

Total girls taken admission in D & E together = $18000 \times \frac{32}{100} + 16000 \times \frac{40}{100}$

$= 5760 + 6400 = 12160$

Required ratio = 13440 : 12160 = 21 : 19

S36. Ans.(c)

Sol. Total girls taken admission in F = $9000 \times \frac{48}{100} \times \frac{13}{8} = 7020$

Total boys taken admission in college F = $20580 - 16000 \times \frac{60}{100}$

= $20580 - 9600 = 10980$

Required percentage = $\frac{7020}{(7020+10980)} \times 100$

= $\frac{7020}{18000} \times 100 = 39\%$

S37. Ans.(c)

Sol. Students taken admission in science stream from B = $10500 \times \frac{2}{7} = 3000$

Students taken admission in commerce stream from B = $10500 \times \frac{1}{7} = 1500$

Students taken admission in art stream from B = $10500 \times \frac{4}{7} = 6000$

Total boys taken admission in art stream from college B

= $6000 - 10500 \times \frac{36}{100} \times \frac{35}{100} = 4677$

Total boys taken admission in science stream from college B

= $3000 - 10500 \times \frac{36}{100} \times \frac{40}{100} = 1488$

Required difference = $4677 - 1488 = 3189$

S38. Ans.(a)

Sol. Total boys taken admission in college A = $12000 \times \frac{56}{100} = 6720$

Total boys taken admission in college B = $10500 \times \frac{64}{100} = 6720$

Total boys taken admission in college C = $9000 \times \frac{52}{100} = 4680$

Total boys taken admission in college D = $18000 \times \frac{68}{100} = 12240$

Total boys taken admission in college E = $16000 \times \frac{60}{100} = 9600$

Required ratio = $\frac{6720 + 6720 + 4680 + 12240 + 9600}{5} = \frac{39960}{5} = 7992$

S39. Ans.(d)

Sol. Volume of the cylindrical ditch = $\pi r^2 h$

= $\frac{22}{7} \times 7 \times 7 \times 2$

= $308\ m^2$

Area of remaining field = $(X - \pi r^2)\ m^2$

= $(X - 154)\ m^2$

ATQ –

$(X - 154) \times 0.77 = 308$

$(X - 154) = 400$

$X = 554\ m^2$

S40. Ans.(a)

Sol. Let man invested Rs. A

And, after two years amount invested = $(A + \frac{A}{2}) = \frac{3A}{2}\ Rs.$

Equivalent CI of two year at 10% p.a. = $10 + 10 + \frac{10\times10}{2} = 21\%$

ATQ –

$A \times \frac{21}{100} + (A + \frac{21A}{100} + \frac{A}{2}) \times \frac{10}{100} = 457.2$

$0.210A + 0.171A = 457.2$

$0.381A = 457.2$

$A = 1200$ Rs.

Required amount $=1200 + 1200 \times \frac{15\times3}{100} = 1740$ Rs.

S41. Ans.(d)

Sol. Investment ratio of A, B & C = $(4000 \times 6 + 3000 \times 9): (5500 \times 6 + 4000 \times 9): 4x \times 9$

$= 51000: 69000 : 36x$

$= 8500 : 11500 : 6x$

ATQ –

$$\frac{6x}{(20000 + 6x)} \times 12250 = 2250$$

$x=750$

investment of C= Rs 3000

S42. Ans.(c)

Sol. Let length of train A be 'L' m and speed be 'V' m/s

ATQ –

$V = \frac{L}{8}$ ---------- (i)

And, $V = \frac{L+180}{17}$ ---------- (ii)

From (i) & (ii)

$\frac{L}{8} = \frac{L+180}{17}$

$17L - 8L = 1440$

$L = 160$ m

And $V = 20$ m/s

Let length of train B be 'S'

So, $\frac{108}{18} \times 5 + 20 = \frac{160+S}{8}$

$S = 400 - 160$

$S = 240$ m

Let time taken by train B to cross platform P be t sec

So, $\frac{108}{18} \times 5 = \frac{240+180}{t}$

$t = \frac{420}{30} = 14\ sec$

S43. Ans.(a)

Sol. Let the selling price for each of the shopkeeper be Rs 100x

For 1st shopkeeper

SP= Rs 100x

CP=$100x \times \frac{75}{100} = Rs\ 75x$

For 2nd shopkeeper

SP= Rs 100x

CP=$100x \times \frac{100}{125} = Rs\ 80x$

ATQ,

$\Rightarrow\ 25x - 20x = Rs.175$

$\Rightarrow x = 35$

Sum of cost price= Rs 5425

S44. Ans.(b)

Sol. Let the present age of Ayush be x yr.

Present age of his son = $\frac{x-6}{4}$ yr

Present age of his daughter= $\left(\frac{x-6}{4} + 7\right)\ yr$

Present age of his wife=$(x + 10) - \left\{\left(\frac{x-6}{4} + 7\right)\right\} = \frac{3x+18}{4} yr$

ATQ

$x + \frac{x-6}{4} + \left(\frac{x-6}{4} + 7\right) + \frac{3x+18}{4}$=121

$x = 50\ yr$

S45. Ans.(d)

Sol. Let cost price of each bread packet = a Rs.

So, marked price of each bread packet = 2.5a

And selling price of each bread packet = 2.5a $\times \frac{60}{100}$ = 1.5a

Given, 1.5a – $a = 30$

a = 60 Rs.

New selling price = 2.5a $\times \frac{5}{8} = 1.5625a$

Selling price of one bread packet = $1.5625 \times 60 = 93.75$

Required profit on selling 80 bread packets = $(93.75 - 60) \times 80$ = 2700 Rs.

Solutions (46-50):

Given, Commission received by the distributor = 7000 Rs.

So, the number of bottles sold by distributor = $\frac{7000}{1000} \times 50 = 350$

Total number of bottles received by him in the whole stock to sell = 350 + 40 = 390

Production cost of each bottle = $\frac{780000}{390}$ = 2000 Rs.

Marked price of each bottle = $2000 \times 1.3 = 2600\ Rs.$

Total selling price of 350 bottles = 350 × 2000 + 140000 = 840000 Rs.

Selling price of each bottles = $\frac{840000}{350}$ = 2400 Rs.

Discount allow by employee (y) = $\frac{2600-2400}{2600} \times 100$

$= \frac{200}{2600} \times 100 = 7\frac{9}{13}\%$

S46. Ans.(b)

Sol. Y = $7\frac{9}{13}\%$

S47. Ans.(d)

Sol. Required ratio

$= \frac{\frac{100}{13}}{390} = \frac{100}{13 \times 390} = 10 : 507$

S48. Ans.(a)

Sol. New selling price of one bottle = $2600 \times \frac{90}{100} = 2340$

Required profit % = $\frac{2340-2000}{2000} \times 100 = 17\%$

S49. Ans.(b)

Sol. Total stock which another distributor sold = (350 + 450) = 800

Total commission received by another distributor = $\frac{800}{50} \times 1000 = 16000$ Rs.

New cost price of one bottle = 2000 + $\frac{16000}{800}$ = 2020 Rs.

S50. Ans.(a)

Sol. Selling price = $2600 \times \frac{95}{100} \times \frac{7}{8} = 2161.25$ Rs.

Required profit = $2161.25 - 2000 = 161.25\ Rs$.