SEBI Grade A Quantitative Aptitude (Solutions)

S1. Ans.(e)
Sol. Investment of A in 2003 = 50 lakhs.
Investment of A in 2004 = 70 lakhs
Percentage rise = $\frac{70-50}{50} \times 100$
$= \frac{20}{50} \times 100 = 40\%$

S2. Ans.(e)
Sol. Investment of B for all years
= 50 + 70 + 60 + 80 + 50 + 50 + 60 = 420
Req. % = $\frac{60}{420} \times 100 = 14\frac{2}{7}\%$ = 14% (approx..)

S3. Ans.(a)
Sol. Ratio = $\frac{60+40+50}{50+70+60} = \frac{150}{180} = \frac{5}{6}$

S4. Ans.(d)
Sol. Req.% = $\frac{80-50}{50} \times 100 = 60\%$

S5. Ans.(b)
Sol. Total investment of A and B in 2002 = 40 + 70 = 110
Total investment of A and B in 2005 = 50 + 70 = 120
Req.% = $\frac{120-110}{110} \times 100 = \frac{1000}{110} = 9.09$ % rise

S6. Ans.(a)
Sol. $(13)^2 + (21)^2 - 30 \times 7 \simeq ? - 520 + 150$
$169 + 441 - 210 \simeq ? - 370$
? = 770

S7. Ans.(c)
Sol. $\frac{18}{100} \times 1900 + \frac{?}{100} \times 1150 \simeq 684 - 112$
$\frac{?}{10} \times 115 = \simeq 572 - 342$
$? \simeq 20$

S8. Ans.(d)
Sol. $\frac{440}{?} \simeq 512 - 8 - 484$
$? \simeq \frac{440}{20}$
$? \simeq 22$

S9. Ans.(a)

Sol.

$(?)^2 - 432 \simeq 1240 + 482 - 1313$

$(?)^2 \simeq 409 + 432$

$(?)^2 \simeq 841$

$? \simeq 29$

S10. Ans.(d)

Sol. $(14 + 16 + 14 + 12) + \left(\frac{1}{11} + \frac{3}{11} + \frac{4}{121} + \frac{3}{11}\right) = ?$

$? = 56 + \left(\frac{11 + 33 + 4 + 33}{121}\right)$

$= 56 + \frac{81}{121}$

$= 56\frac{81}{121}$

S11. Ans.(c)

Sol. $4059 + 3312 - 3381$

$= 3990$

S12. Ans.(a)

Sol. $280.5 - 241.5 = ?$

$? = 39$

S13. Ans.(b)

Sol.

$12 \times 15 + 156 = (?)^3 + 120$

$\Rightarrow (?)^3 = 216$

$\therefore ? = 6$

S14. Ans.(a)

Sol. Marks obtained by Pihu in Sociology = $\frac{75}{100} \times 80 \times \frac{120}{100} = 72$

Marks obtained by Shobhit in Science = $\frac{2}{3} \times 72 = 48$

Required average = $\frac{1}{3} \times (48 + 72 + 60) = 60$

S15. Ans.(d)

Sol. Total cost to Mr. Roy = 25 × 30 × 400 = 3,00,000 rupees

Total selling obtained by Mr. Roy = $\frac{2}{5} \times 25 \times 30 \times 450 + \frac{3}{5} \times 25 \times 30 \times 500$

= 1,35,000 + 2,25,000 = 3,60,000

Required profit = 360000 – 300000 = Rs. 60,000

S16. Ans.(c)

Sol. Let the number of students in two groups be x & y

$\therefore 15x + 25y = 22(x + y)$

$\Rightarrow (25 - 22)y = (22 - 15)x$

$\Rightarrow 3y = 7x$

$\Rightarrow x : y = 3 : 7$

S17. Ans.(c)

Sol. Let the investment of B is Rs. p

Then investment of A is Rs. 3p

And time period of B = 2t unit

Then time period of A =$2t \times \frac{7}{2}$

=7t unit

So, profit of B and A will be p× $2t$ and $3p \times 7t$ respectively.

ATQ,

$3p \times 7t = Rs.273000$

pt=Rs.13000

Then $\frac{100}{13}$% of total profit =(2pt+21pt)× $\frac{100}{1300}$

=23× 13000 × $\frac{100}{1300}$ =Rs 23000

S18. Ans.(a)

Sol. Let speed of boat in still water = x kmph

ATQ,

$\frac{x+3}{x-3} = \frac{140}{100}$

x=18 kmph

so, time taken by boat to covers 720 km in still water = $\frac{720}{18}$ hours =40 hours

S19. Ans.(e)

Sol. Let the external radius of path=R cm

And internal radius of path =r cm

So, its width (d)=R-r =2 cm (given that)

ATQ.

Difference between external area and internal area= $32\pi\ cm^2$

$\pi R^2 - \pi r^2 = 32\pi$

(R-r)(R+r)=32

R+r=$\frac{32}{2}$

R+r=16 cm and R-r=2 cm

On solving both

R=9 cm , r=7 cm

So, radius of circular park=7 cm.

S20. Ans.(b)

Sol. Let the capacity of tank = lcm of (20,35) =140 liters

Then efficiency of pipe A = $\frac{140}{20}$ =7 liters/min

And efficiency of pipe B =$\frac{140}{35}$ = 4 $liters$/min

So, efficiency of pipe A and B together=7+4=11 liters/min

Time taken by B to fill the rest of tank =$\frac{140-6\times11}{4}$

=$\frac{74}{4}$

=18.5 min

So, total time taken by A and B to fill the tank=6+18.5=24.5 min

S21. Ans.(a)

Sol. Wrong no. is 59

$5 + (2)^2 = 9$

$9 + (4)^2 = 25$

$25 + (6)^2 = \boxed{61}$

$61 + (8)^2 = 125$

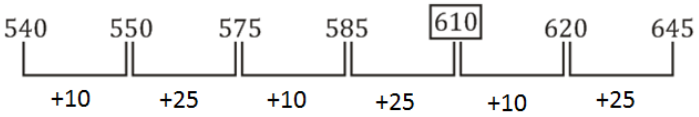
$125 + (10)^2 = 225$

$225 + (12)^2 = 369$

So, there should be 61 in place of 59.

S22. Ans.(c)

Sol. Wrong no. is 615



So, there should be 610 in place of 615

S23. Ans.(b)

Sol. Wrong no. is 221

$(1)^3 + 3 = 4$

$(2)^3 + 3 = 11$

$(3)^3 + 3 = 30$

$(4)^3 + 3 = 67$

$(5)^3 + 3 = 128$

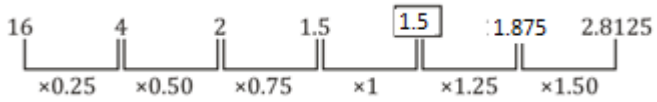
$(6)^3 + 3 = \boxed{219}$

$(7)^3 + 3 = 346$

So, there should be 219 in place or 221

S24. Ans.(d)

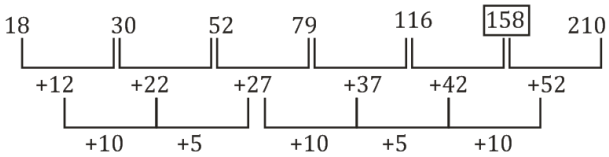
Sol. Wrong no. is 1.75



So, there should be 1.5 in place of 1.75

S25. Ans.(a)

Sol. Wrong no. is 148



So, there should be 158 in place of 148.

S26. Ans.(b)

Sol.

I. $x^2 - 5x - 14 = 0$

$\Rightarrow x^2 - 7x + 2x - 14 = 0$

$\Rightarrow x(x - 7) + 2(x - 7) = 0$

$\Rightarrow (x - 7)(x + 2) = 0$

$\Rightarrow x = 7, -2$

II. $y^2 - 16y + 64 = 0$

$\Rightarrow (y - 8)^2 = 0$

$\Rightarrow y = 8, 8$

$\Rightarrow y > x$

S27. Ans.(c)

Sol.

I. $x^2 - 9x + 20 = 0$

$\Rightarrow x^2 - 5x - 4x + 20 = 0$

$\Rightarrow (x - 5)(x - 4) = 0$

$\Rightarrow x = 5, 4$

II. $y^2 - 7y + 12 = 0$

$\Rightarrow y^2 - 4y - 3y + 12 = 0$

$\Rightarrow (y - 4)(y - 3) = 0$

$\Rightarrow y = 4, 3$

$x \geq y$

S28. Ans.(e)

Sol.

I. $2x^2 + 11x + 12 = 0$

$\Rightarrow 2x^2 + 8x + 3x + 12 = 0$

$\Rightarrow (x + 4)(2x + 3) = 0$

$\Rightarrow x = -4, -\frac{3}{2}$

II. $4y^2 + 13y + 10 = 0$

$\Rightarrow 4y^2 + 8y + 5y + 10 = 0$

$\Rightarrow (y + 2)(4y + 5) = 0$

$\Rightarrow y = -2, -\frac{5}{4}$

No relation

S29. Ans.(a)

Sol.

I. $2x + 3y = 4$

II. $3x + 2y = 6$

Multiplying equation (i) by 2 and Equation (ii) by 3 and then subtracting,

$$\begin{array}{r} 4x + 6y = 8 \\ -\quad 9x + 6y = 18 \\ \hline -5x = -10 \end{array}$$

$\Rightarrow x = 2$

x= 2 in (I)

$4 + 3y = 4$

$\Rightarrow y = 0$

$\therefore x > y$

S30. Ans.(e)

Sol.

I. $6x^2 - x - 1 = 0$

$6x^2 - 3x + 2x - 1 = 0$

$\Rightarrow (2x - 1)(3x + 1) = 0$

$\Rightarrow x = \frac{1}{2}, -\frac{1}{3}$

II. $8y^2 - 2y - 1 = 0$

$\Rightarrow 8y^2 - 4y + 2y - 1 = 0$

$\Rightarrow (2y - 1)(4y + 1) = 0$

$\Rightarrow y = \frac{1}{2}, -\frac{1}{4}$

No relation

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