

## Numerical Ability Mega Quiz for SSC MTS (Solutions)

**S1. Ans.(b)**

**Sol.**

MP of the item

$$= 3402 \times \frac{100}{108} \times \frac{100}{90} = \text{Rs. } 3500$$

**S2. Ans.(a)**

**Sol.**

MP of the table

$$= 3200 \times \frac{125}{100} \times \frac{100}{80} = \text{Rs. } 5000$$

**S3. Ans.(d)**

**Sol.**

MP of the article

$$= 210 \times \frac{120}{100} \times \frac{100}{87.5} = \text{Rs. } 288$$

**S4. Ans.(d)**

**Sol.**

CP of radio

$$= \frac{286}{130} \times 100 = \text{Rs. } 220$$

$$\text{SP of radio} = 286 \times \frac{90}{100}$$

$$= \text{Rs. } 257.4$$

$$\text{Profit} = 257.4 - 220 = \text{Rs. } 37.4$$

**S5. Ans.(a)**

**Sol.**

CP of the cycle

$$= 840 \times \frac{90}{100} \times \frac{100}{126} = \text{Rs. } 600$$

**S6. Ans.(d)**

**Sol.**


Let CP of article = Rs. 100

SP of article

$$= 100 \times \frac{110}{100} \times \frac{90}{100} = \text{Rs. } 99$$

$$\text{Loss \%} = \frac{100 - 99}{100} \times 100 = 1\%$$

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**S7. Ans.(c)**

**Sol.**

Let the CP = Rs. 100

SP = Rs. 90

MP =  $90 \times 2 = \text{Rs. } 180$

( $\therefore$  SP will be half of the MP as the discount is also equal to half the MP)

$$\frac{\text{CP}}{\text{MP}} = \frac{100}{180} = \frac{5}{9}$$

$$\text{CP} = \frac{5}{9} \text{ of MP}$$

**S8. Ans.(c)**

**Sol.**

Single discount

$$= 20 + 40 - \frac{20 \times 40}{100}$$

$$= 52\%$$

**S9. Ans.(b)**

**Sol.**

MP of the machine

$$= 2700 \times \frac{100}{90} = \text{Rs. } 3000$$

**S10. Ans.(c)**

**Sol.**

According to questions  
200 (Marked Price)

$$\downarrow 15\%D$$

170

$$\downarrow 4\% \text{ discount}$$

163.2

**S11. Ans.(a)**

**Sol.**

$$(6x - 1) - (8x - 5) = 7$$

$$6x - 1 - 8x + 5 = 7$$

$$-2x = 3$$

$$x = \frac{-3}{2}$$

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**S12. Ans.(d)**

**Sol.**

$$\frac{7}{8} \times \frac{5}{4} \times x = 315$$

$$x = 288$$

$$\frac{5}{9}x = 288 \times \frac{5}{9}$$

$$= 160$$

**S13. Ans.(a)**

**Sol.**

$$\frac{{}^s56}{56} = 60$$

$${}^s56 = 3360$$

$${}^s55 + 92 = 3360$$

$${}^s55 = 3360 - 92 = 3268$$

$${}^s55 + 29 = 3268 + 29$$

$${}^s56 = 3297$$

$$\text{Average} = \frac{3297}{56}$$

$$= 58.875$$

**S14. Ans.(d)**

**Sol.**

$$13x^2 = 17^2 - 9^2$$

$$13x^2 = 289 - 81$$

$$13x^2 = 208$$

$$x^2 = 16$$

$$x = 4$$

**S15. Ans.(a)**

**Sol.**

$$2 + 2x < 3 + 5x$$

$$-1 < 3x$$

$$x > \frac{-1}{3} \quad \dots (i)$$

And,

$$3(x - 2) < 5 - x$$

$$3x - 6 < 5 - x$$

$$4x < 11$$

$$x < \frac{11}{4} \quad \dots (ii)$$

From (i) & (ii)

$$\frac{-1}{3} < x < \frac{11}{4}$$

$$-0.33 < x < 2.75$$

$$x = 1$$

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**S16. Ans.(b)**

**Sol.**

If  $r \uparrow 17\%$

$$\text{Area } \uparrow = 17 + 17 + \frac{17 \times 17}{100}$$

$$= 36.89\%$$

**S17. Ans.(c)**

**Sol.**

$R = 20\%$  p. Half yearly

Principal on 1 jan = Rs 2800

Interest on 1<sup>st</sup> July

$$= 2800 \times \frac{20}{100}$$

$$= 560 \text{ Rs}$$

$$\text{Principal on 1<sup>st</sup> July} = 2800 + 560 + 2800 = 6160$$

Interest at the end of year

$$= 6160 \times \frac{20}{100} = 1232 \text{ Rs}$$

$$\text{Total interest} = 560 + 1232$$

$$= 1792 \text{ Rs}$$

**S18. Ans.(a)**

**Sol.**

Let the speed of goods train be  $x$

Speed of another train = 60 km/hr

Distance b/w two trains =  $4x$

$$8 = \frac{4x}{60 - x}$$

$$480 - 8x = 4x$$

$$x = 40 \text{ km/hr}$$

**S19. Ans.(c)**

**Sol.**

17 Adults & 5 Children

5 children will go free 10 adults

So, discount =  $5 \times 500$

$$= 2500 \text{ Rs}$$


Total cost of money without discount

$$= 17000 + 2500$$

$$= 19500 \text{ Rs}$$

$$\text{Discount \%} = \frac{2500}{19500} \times 100$$

$$= 12.82\%$$



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**S20. Ans.(d)**

**Sol.**

If A, B, C are in arithmetic progression

Than,

$$2B = A + C$$

$$B = x + P$$

$$A = -3x - 11$$

$$C = 5x + 7$$

$$2x + 2p = -3x - 11 + 5x + 7$$

$$2x + 2P = 2x - 4$$

$$2P = -4$$

$$P = -2$$

**S21. Ans.(c)**

**Sol.**

$$\text{Muslim} + \text{Hindu} + \text{Sikh} = 44 + 28 + 10 = 82\%$$

$$\text{Remaining} = 100 - 82 = 18\%$$

Remaining Students

$$= 850 \times \frac{18}{100}$$

$$= 17 \times 9$$

$$= 153$$

**S22. Ans.(c)**

**Sol.**

$$\frac{\text{Sum}}{11} = x$$

$$\text{Sum}_9 + 18 + 20 = 11x$$

$$\text{Sum}_9 + 38 = 11x$$

$$\text{Sum}_9 = 11x - 38 \text{ years}$$

$$\frac{\text{Sum}_{11}}{11} = x + 2 \text{ month}$$

$$\text{Sum}_9 + 2 \text{ new players} = 11x + 22$$

$$11x - 38 \text{ years} + 2 \text{ news player} = 11x + 22 \text{ months}$$

$$\text{Sum of ages of 2 new player} = 38 \text{ years } 22 \text{ months}$$

$$\text{Average of 2 new players} = 19 \text{ years } 11 \text{ months}$$

**S23. Ans.(a)**

**Sol.**

Let there are x no. of coins of each type

$$100x + 50x + 25x = 3500$$

$$175x = 3500$$

$$x = \frac{3500}{175} = 20 \text{ coins}$$

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Validity : 2 Months

**S24. Ans.(a)****Sol.**

Alcohol : Water

$$\begin{array}{l} \text{Vessel I} \quad 25 \quad : \quad 75 \\ \quad \quad \quad 1 \quad \quad : \quad 3 \end{array}$$

$$\text{Alcohol} = 2 \times \frac{1}{4} = \frac{1}{2}$$

$$\text{Water} = 2 \times \frac{3}{4} = \frac{3}{2}$$

Alcohol : Water

$$\begin{array}{l} \text{Vessel II} \quad 40 \quad : \quad 60 \\ \quad \quad \quad 2 \quad \quad : \quad 3 \end{array}$$

$$\text{Alcohol} = 6 \times \frac{2}{5} = \frac{12}{5}$$

$$\text{Water} = 6 \times \frac{3}{5} = \frac{18}{5}$$

In 10 litres

$$\text{Alcohol} = \frac{1}{2} + \frac{12}{5} = \frac{5 + 24}{10} = \frac{29}{10}$$

$$\text{Water} = \frac{3}{2} + \frac{18}{5} + 2 = 2 + \frac{15 + 36}{10} = \frac{51 + 20}{10} = \frac{71}{10}$$

$$\text{Concentration of Alcohol} = \frac{29}{10} \times 100 = 29\%$$

**S25. Ans.(a)****Sol.**

$$\begin{aligned} x &= \frac{1}{2 + \sqrt{3}} = \frac{1}{2 + \sqrt{3}} \times \frac{2 - \sqrt{3}}{2 - \sqrt{3}} \\ &= 2 - \sqrt{3} \end{aligned}$$

$$\begin{aligned} y &= \frac{1}{2 - \sqrt{3}} = \frac{1}{2 - \sqrt{3}} \times \frac{2 + \sqrt{3}}{2 + \sqrt{3}} \\ &= 2 + \sqrt{3} \end{aligned}$$

$$\begin{aligned} 8xy(x^2 + y^2) &= 8(2 - \sqrt{3})(2 + \sqrt{3}) [4 + 3 - 4\sqrt{3} + 4 + 3 + 4\sqrt{3}] \\ &= 8(4 - 3)(14) \\ &= 112 \end{aligned}$$

**S26. Ans.(a)****Sol.**

$$\text{C.P of 5 kg Butter} = 300$$

$$\text{S.P of 4 kg Butter} = 300 \times \frac{90}{100} = 270 \text{ Rs.}$$

$$\text{Price/kg} = \frac{270}{4} = 67.5 \text{ Rs.}$$

**S27. Ans.(b)****Sol.**

$$\text{Strength of women} = 311250 \times \frac{43}{83} = 161250$$


$$\text{Literate women} = 161250 \times \frac{24}{100} = 38700$$

$$\text{Strength of men} = 311250 \times \frac{40}{83} = 150000$$

$$\text{Literate man} = 150000 \times \frac{90}{100} = 135000$$

$$\text{Total literate} = 135000 + 38700 = 173700 \text{ Rs}$$

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**S28. Ans.(c)****Sol.**

$$400 = P + \frac{P \times 10 \times T}{100}$$

$$400 = P \left(1 + \frac{T}{10}\right) \quad \dots (i)$$

$$200 = P + \frac{P \times 4 \times T}{100}$$

$$200 = P \left(1 + \frac{T}{25}\right)$$

$$\frac{400}{200} = \frac{P \left(1 + \frac{T}{10}\right)}{P \left(1 + \frac{T}{25}\right)}$$

$$2 + \frac{2T}{25} = 1 + \frac{T}{10}$$

$$1 = \frac{T}{10} - \frac{2T}{25}$$

$$1 = \frac{5T - 4T}{50}$$

$$T = 50 \text{ years}$$

**S29. Ans.(d)****Sol.**

Rate = 10%

$$= \frac{10}{100} = \frac{1}{10}$$

Time = 3 years

Let principle be  $\Rightarrow (10)^3 \Rightarrow 1000$

S. Interest for 3 years =  $\frac{1000 \times 10 \times 3}{100} = 300$

C.I for 1 year =  $\frac{1000}{10} = 100$

C.I for 2<sup>nd</sup> year =  $\frac{1000}{10} + \frac{100}{10} = 100 + 10 = 110$

C.I for 3<sup>rd</sup> year =  $\frac{1000}{10} + \frac{110}{10} + \frac{100}{10} = 111 + 10 = 121$

Total C.I for 3 years =  $100 + 110 + 121 = 331$

Difference =  $331 - 300 = 31$

$31r \Rightarrow 15.50$

$1r \Rightarrow 0.5$

Sum =  $1000 \times 0.5 = 500 \text{ Rs.}$


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

They will cross in

$$= \frac{190 + 210}{40 + 32}$$

$$= \frac{400}{72 \times \frac{5}{18}}$$

$$= 20 \text{ seconds}$$

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