Quant Mega Quiz for SSC Tier - 1 (Solutions)

S1. Ans.(c)
Sol.
Average income of whole group = \(\frac{4200 \times 40 + 4000 \times 35}{75}\)
\[= \frac{168000 + 140000}{75} = \frac{308000}{75} = \text{Rs.} \ 4106 \frac{2}{3}\]

S2. Ans.(b)
Sol.
required mean = \[\frac{1 + 1 + 2 + 2 + 3 + 3 + 4 + 4 + 5 + 5 + 6 + 6 + 7 + 7}{1 + 2 + 3 + 4 + 5 + 6 + 7 + 7}\]
\[= \frac{1 + 4 + 9 + 16 + 25 + 36 + 49}{28} = \frac{140}{28} \rightarrow 5\]

S3. Ans.(c)
Sol.
Weight of 12th person = \(x\) kg (let).
\[\therefore\text{ Average weight of 12 persons} = \left(\frac{11 + 95 + x}{12}\right)\text{ kg}\]
ATQ,
\[\Rightarrow \frac{11 + 95 + x}{12} + 33 = x\]
\[\Rightarrow 1045 + x + 396 = 12x\]
\[\Rightarrow 1441 = 11x\]
\[\Rightarrow x = 131\text{ kg}\]

S4. Ans.(b)
Sol.
Let the average cost of each book bought (of 64 books) be \(x\).
According to the question,
\[\Rightarrow 64 \times x - 50(x + 1) = 76\]
\[\Rightarrow 64x - 50x - 50 = 76\]
\[\Rightarrow 14x = 76 + 50 = 126\]
\[\Rightarrow x = \frac{126}{14} = 9\]
\[\therefore\text{ Required average price} = 9 + 1 = 10\]
S5. Ans.(d)
Sol.
Average of 7 consecutive odd integers = 37
\[ \therefore \text{Fourth odd number} = 37 \]
\[ \therefore \text{First odd number} = 31 \]

13th odd number = \(31 + 24 = 55\)
\[ \therefore \text{Required average} = \frac{31 + 55}{2} = 43 \]

S6. Ans.(b)
Sol.
Average contribution of 9 students of the class
= Rs. \(x\) (let).
According to the question,
\[ \Rightarrow \frac{7 + 50 + x + 50 + x + 90}{9} = x \]
\[ \Rightarrow 350 + 2x + 140 = 9x \]
\[ \Rightarrow 9x - 2x = 490 \]
\[ \Rightarrow 7x = 490 \]
\[ \Rightarrow x = 70 \]

S7. Ans.(a)
Sol.
Sum of new numbers = \(n \alpha + (2 + 4 + 8 + 16 \ldots \ldots \text{to } n \text{ terms})\)
Now, \(S = 2 + 4 + 8 + 16 + \ldots \ldots \text{to } n \text{ terms}\)
Here, \(a = \text{first term} = 2\)
\(r = \text{common ratio} = \left(\frac{4}{2}\right) = 2\)
It is a geometric progression series.
\[ \therefore S = \frac{a(r^n - 1)}{r - 1} = \frac{2(2^n - 1)}{2 - 1} = 2^{n+1} - 1 \]
\[ \therefore \text{Required average} = \frac{n \alpha + 2^{n+1} - 1}{n} \]
\[ = \alpha + \frac{2^{n+1} - 1}{n} \]

S8. Ans.(d)
Sol.
\[ a + b + c = 18 \times 3 = 54 \]
And, \(b + c + d = 16 \times 3 = 48\)
\[ \therefore a + b + c - b - c - d \]
\[ \Rightarrow 54 - 48 = 6 \]
\[ \Rightarrow a - d = 6 \]
\[ \Rightarrow a - 19 = 6 \]
\[ \Rightarrow a = 19 + 6 = 25 \]
S9. Ans.(a)
Sol.
Let the average monthly income of man be Rs. x.
∴ Man’s annual income = Rs. 12x
∴ Man’s annual expenses = Rs. \( \frac{6x + 12}{8} \) = Rs. 9x
Savings = 12x – 9x = Rs. 3x
∴ 3x = 6000
x = Rs. 2000

S10. Ans.(c)
Sol.
Let Mahendra singh Dhoni’s average of runs for his 64 innings be x runs.
∴ Total number of runs in 64 innings = 64x
According to the question,
\[ \frac{64x + 0}{65} = x - 2 \]
\[ 64x = 65x - 130 \]
\[ x = 130 \]
∴ New average of runs = x – 2
= 130 – 2 = 128

S11. Ans.(a)
Sol.
CP of 12 chocolates = Rs. 9
CP of 1 chocolate = \( \frac{9}{12} \) = Rs. 0.75
Now SP = Re. 1, profit = Rs. 0.25
Profit % = \( \frac{0.25}{0.75} \times 100 = 33 \frac{1}{3} % \)

S12. Ans.(b)
Sol.
Let the cost price be x Rs. and printed price be y Rs.
Hence, price after giving a discount of 12.5%

\[ y - y \times \frac{12.5}{100} = x + x \times \frac{5}{100} \]
\[ y \times \frac{87.5}{100} = x \times \frac{105}{100} \]
∴ \[ y = \frac{105}{87.5} x \]
\[ y - x = \frac{105}{87.5} x - x = \frac{17.5}{87.5} x \]
Required percentage

\[ \frac{y - x}{x} \times 100 = \frac{17.5}{87.5} \times 100 = 20\% \]
S13. Ans. (a)
Sol.
Let the cost price be x Rs. per kg.
Then cost price of 900 gm = \( \frac{9}{10} x \)
Hence % profit
\[ \frac{x - \frac{9}{10}x}{\frac{9}{10}x} \times 100 = \frac{100}{9} \% = 11.11\% \]

S14. Ans. (c)
Sol.
Loss = (C.P. – S.P.) \( \Rightarrow \frac{1}{11} \) C.P. = C.P. – 10
\[ \Rightarrow \frac{10}{11} \text{ C.P.} = 10 \]
\[ \therefore \text{C.P.} = \left( \frac{11 \times 10}{10} \right) = \text{Rs. 11} \]

S15. Ans. (b);
Sol.
Mean price = Rs. \( \left( \frac{100}{120} \times 96 \right) = \text{Rs. 80/kg.} \)
By the rule of allegation:

\[
\begin{align*}
\text{C.P. of 1 kg Ghee} & \quad 100 \\
\text{Mean Price} & \quad 80 \\
\text{C.P. of 1 kg oil} & \quad 50 \\
\end{align*}
\]
\[ \therefore \text{Required ratio} = 30: 20 = 3: 2. \]

S16. Ans. (a)
Sol.
C.P. of 3 toffees = Re. 1
S.P. of 3 toffees = 150% of Re 1 = Rs. \( \frac{3}{2} \)
For Rs. \( \frac{3}{2} \) toffees sold = 3.
For Re 1, toffees sold = \( \left( 3 \times \frac{2}{3} \right) = 2. \)

S17. Ans. (c)
Sol.
Let original S.P. be Rs. x,
New S.P. = \( \frac{2}{3} x \), loss = 10%
\[ \therefore \text{C.P.} = \left( \frac{100}{90} \times \frac{2}{3} x \right) = \frac{20x}{27} \]
C.P. = \( \frac{20x}{27} \), S.P. = Rs. x,
Gain = \( \left( x - \frac{20x}{27} \right) = \frac{7x}{27} \)
\[ \therefore \text{Gain}\% = \left( \frac{\frac{7x}{27} \times \frac{27}{20x} \times 100}{x} \right) \% = 35\% . \]
S18. Ans.(a)
Sol.
They will collide after, \( \frac{20}{5+10} \) hrs, i.e. 80 minutes.
and in each minute they approach \( \frac{15}{60} \) km i.e. \( \frac{1}{4} \) km

S19. Ans.(d)
Sol.
From given information
\[ V_1t + V_2t = d \]
\[ 40t + 52t = 115 \]
\[ t = \frac{115}{92} = \frac{5}{4} \]
Hence, the meeting point is \( 40 \times \frac{5}{4} \) away from ‘p’
and \( 52 \times \frac{5}{4} \) away from Q.
= 50 km from P, 65 km from Q.

S20. Ans.(b)
Sol.
Train stop for a time which is equal to time
taken to travel a distance of 10 km with a speed of
50 km/hr.
\[ \therefore \text{ because in an hour train travels 10 km less.} \]
Time = \( \frac{10}{50} \times 60 = 12 \) min

S21. Ans.(b)
Sol.
Let time travel by A and B = t hour
Then required ratio = \( \frac{900/t}{700/t} = 8 : 7 \)

S22. Ans.(d)
Sol. Average = \( \frac{550 + 650 + 900}{3} = 700 \)

S23. Ans.(c)
Sol. Distance travel by C all over days
= 740 + 250 + 1150 + 700 + 660 = 3500 km
Distance travel by all vehicle on Wednesday
= 700 + 850 + 1150 + 250 + 525 = 3475 km
Difference = 25 km
S24. Ans. (d)
Sol. 
\[
\text{Ratio} = \frac{650 + 100 + 250}{525 + 440 + 900} = \frac{1000}{1865} = \frac{200}{373}
\]

S25. Ans. (a)
Sol.
Distance travel by D and E on Friday = 1400 km
Distance travel by A, B and C on Tuesday = 1750
Required percentage = \(\frac{350}{1750} \times 100 = 20\%\)

S26. Ans. (d)
Sol.
Growth rate = \(\frac{\text{Final value} - \text{Initial value}}{\text{Initial value}} \times 100\)
Nokia = \(\frac{105 - 69}{69} \times 100 = \frac{36}{69} \times 100 = 52\%\)
Samsung = \(\frac{122 - 91}{91} \times 100 = \frac{31}{91} \times 100 = 34.06\%\)
MI = \(\frac{71 - 25}{25} \times 100 = \frac{46}{25} \times 100 = 45\%\)
Moto = \(\frac{15}{100} \times 100 = \frac{15}{100} \times 100 = 66.67\%\)
Lenovo = \(\frac{163 - 100}{100} \times 100 = \frac{63}{100} \times 100 = 63\%\)
Hence, Moto witnessed highest growth rate in production from 2006 to 2012.

S27. Ans. (a)
Sol.
Total Nokia phones = 620 thousand
Total MI phones = 605 thousand
required percentage = \(\frac{620}{605} \times 100 \approx 102\%\)

S28. Ans. (b)
Sol.
Total production of the company Nokia.
= 69 + 75 + 81 + 98 + 93 + 99 + 105
= 620 (in thousands)
Total production of company Lenovo
= 100 + 120 + 131 + 143 + 154 + 163
= 913 (in thousands)
\(\therefore\) Ratio = \(\frac{620}{913} = 620 : 913\)

S29. Ans. (a)
Sol. Total phones produced in 2008 = 380 thousand
Total phones produced in 2011 = 486 thousand
Required ratio = 190:243
S30. Ans.(c)
Sol.
Growth rate in production of company from nokia 2006 to 2010

\[
Nokia = \frac{93 - 69}{69} \times 100 = \frac{24}{69} \times 100 = 34.78\% \\
Samsung = \frac{92 - 71}{71} \times 100 = \frac{21}{71} \times 100 = 29.577\% \\
MI = \frac{94 - 72}{72} \times 100 = \frac{22}{72} \times 100 = 30.555\% \\
Moto = \frac{95 - 45}{45} \times 100 = \frac{50}{45} \times 100 = 111.11\% \\
Lenovo = \frac{142 - 100}{100} \times 100 = \frac{42}{100} \times 100 = 42\% \\
\]
From above, samsung has witnessed minimum growth rate.