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Solutions

S1. Ans.(c)
Sol. The pattern is

\[
\begin{align*}
&190 \quad 166 \quad 145 \quad 128 \quad 117 \quad 112 \quad 100 \quad 91 \\
\end{align*}
\]
\[
\begin{align*}
-24 &-21 &-18 &-15 &-12 &-9
\end{align*}
\]
\[
\therefore \text{Wrong term} = 128
\]

S2. Ans.(d)
Sol. The pattern is
\[
21^3, 19^3, 17^3, 15^3, 13^3, 11^3
\]
\[
\therefore \text{Wrong term} = 3376
\]

S3. Ans.(e)
Sol. Pattern is
\[
\times1 + 1, \times1.5 + 1, \times2+1, \times2.5+1, \times3+1, \times3.5 + 1
\]
\[
\therefore \text{Wrong term} = 945
\]

S4. Ans.(d)
Sol. Pattern is

\[
\begin{align*}
&20 \quad 35 \quad 60 \quad 105 \quad 190 \quad 355 \\
\end{align*}
\]
\[
\begin{align*}
+15 &+25 &+45 &+85 &+165
\end{align*}
\]
\[
\therefore \text{Wrong term} = 106
\]

S5. Ans.(b)
Sol. Pattern is
\[
\times2.5, \times2.5, \times2.5, \times2.5
\]
\[
\therefore \text{Wrong term} = 340
\]

S6. Ans.(a)
Sol. In the time that A takes to run 300m, S runs 270m and N runs 250m
So in the time that S takes to run 300m,
\[
N \text{ runs } 300 \times \frac{250}{270} = 277.77 \text{ m}
\]
Or ‘N’ is beaten by 22.22 m
In 200 metre race N is beaten by \[
22.22 \times \frac{200}{300} = 14.81 \text{ m} \approx 15 \text{ m}
\]
S7. Ans.(d)
Sol. Let amount of water, milk and acid in containers A, B and C respectively = 100x
Water remaining after 10% content of A taken out = 90x(water)
Now milk and water in 'B' = 100x (milk) and 10x (water)
10% content of B = 10x (milk) and x(water)
After pouring 10% content of B into ‘C’ the content of C = 100x (Acid), 10x (Milk) and x(water)
10% content of ‘C’ includes = 10x (acid), x (milk) and \( \frac{x}{10} \) (water)
Now after pouring 10% content of ‘C’ into A, the content of A
\[ = \left(90x + \frac{x}{10}\right) \text{ (water)}, x \text{ (milk) and } 10x \text{ (acid)}\]
Proportion of milk in container ‘A’ \( = \frac{x}{1011x} = \frac{10}{1011} \)

S8. Ans.(a)
Sol. Profit on half of the stock = 20%
Loss of another \( \frac{1}{4} \)th of stock = 4%
Apply allegation,
\[
\begin{array}{ccc}
\frac{1}{2} \text{ of stock} & 1/4 \text{ of stock} & \text{profit on } \frac{3}{4} \text{ stock} \\
+20\% & -4\% & \\
\frac{24}{3} \times 2 & \frac{24}{3} & \\
\end{array}
\]
20—?= 8
?= +12% (profit)
Loss on another \( \frac{1}{4} \)th stock = 20 - 40 - \( \frac{20\times40}{100} \) = -28%
Use again allegation
\[
\begin{array}{ccc}
\frac{3}{4} \text{ of stock} & 1/4 \text{ of stock} & \text{overall profit} \\
+12\% & -28\% & \\
\frac{40}{4} \times 3 & \frac{40}{4} & \\
\end{array}
\]
12—?= 10
Or, ? = 2%
S9. Ans.(e)
Sol. Let sum is Rs. P
∴ Sum for compound interest
= P + \frac{P \times 12 \times 10}{100}
= 2.2 P
∴ 7,095 = 2.2 P \left(1 + \frac{15}{100}\right)^2 - 2.2 P
= 2.2 P \times \frac{129}{400}
⇒ P = Rs. 10,000

S10. Ans.(b)
Sol. Let cost price = Rs. x
∴ \frac{500}{3} \times \frac{75}{100} \times \frac{468}{500} = x \times \frac{117}{100}
⇒ x = Rs. 100

S11. Ans.(c)
Sol. Let total men = x
Total women = y
∴ \frac{52}{100} \times x = \frac{28}{100} \times y
⇒ \frac{x}{y} = \frac{7}{13}
∴ Required percentage = \frac{7 \times 52 + 13 \times 28}{20} \times 100
= 36.4%

S12. Ans.(b)
Sol. Bill for (620 – 540) I.e. 80 units = 2040 – 1800
= 240
∴ Bill for 1 unit = \frac{240}{80} = Rs. 3
i.e. If 1 unit electricity varies, the bill varies as Rs.3 per unit.
∴ Bill for (540 – 500) I.e. 40 units = 40 \times 3 = Rs. 120
∴ Required bill = 1800 – 120
= 1680
S13. Ans.(d)
Sol.

S14. Ans.(a)
Sol. Let speed of current = x m/min
\[
\Rightarrow \frac{250}{45-x} + \frac{250}{45+x} = 20
\]
\[
\Rightarrow \frac{250(45+x+45-x)}{45^2-x^2} = 2
\]
\[
\Rightarrow x^2 = 45^2 - 25 \times \frac{90}{2}
\]
\[
\Rightarrow x^2 = 45(45-25)
\]
\[
\Rightarrow x^2 = 900
\]
\[
\Rightarrow x = 30 \text{ m/min}
\]

S15. Ans.(c)
Sol. Remaining dettol = \(1 \left(1 - \frac{1}{3}\right)^4 = \frac{16}{81}\) part
So, required answer = 16 : 65

S16. Ans.(c)
Sol. Now, Avg of all aspirants = \(\frac{93000}{6} = 15500\)
Total vacancies = 4464
Desired value = \(\frac{15500}{4464} \approx 4\) times

S17. Ans.(b)
Sol. Vacancy reduced by PGCIL = \(\frac{2}{5} \times 1625 = 650\)
Hence, total vacancy will be reduced by \(\frac{650}{4464} \times 100 = 14.56\%\)
S18. Ans.(c)
Sol.
ONGC : \(\frac{24 \times 930}{989} \approx 22\)
NTPC : \(\frac{28 \times 930}{950} \approx 27\)
 Difference = 27 - 22 = 5

S19. Ans.(a)
Sol. As per given statement, clearly For one post, 4 will be selected for Interview
No. of posts/ vacancies in NTPC now = 950 + 95 = 1045
∴ No. of aspirants qualifies for NTPC interview = 1045 \times 4 = 4180
No. of aspirants qualifies for BHEL and GAIL interviews = (280 + 70) \times 4 = 1400
Desired value = \(\frac{4180}{1400} \approx 3\) times

S20. Ans.(c)
Sol. Total aspirants who didn’t join = \(4464 \times \frac{15}{100} = 669.6 \approx 670\)
Vacancies remained void/unfilled for NTPC and PGCIL = \(950 \times \frac{8}{100} + 1625 \times \frac{10}{100}\)
= 76 + 162.5 \approx 238
Desired ratio = \(\frac{238}{670 - 238} = \frac{238}{432} \times 100 = 55\% (approx)\)

S21. Ans.(d)
Sol. Let initial quantity of mixture was 15x litre
Initial quantity of grape Juice = 4x
Initial quantity of pineapple Juice = 6x
Initial quantity of Banana Juice = 5x
Final quantity of grape Juice
\[= \left( 4x - \frac{4}{15} \times 15 + 8 \right)\]
\[= (4x + 4) li\]
Final quantity of pineapple juice
\[= \left( 6x - \frac{6}{15} \times 15 + 2 \right)\]
\[= (6x - 4)\]
ATQ,
\[6x - 4 - 4x - 4 = 10\]
\[\Rightarrow x = 9 \text{ Litre}\]
∴ Initial quantity of mixture = 15 \times 9 = 135 \text{ Litre}
S22. Ans.(a)
Sol. Let initial milk = x

\[100 \left(1 - \frac{5}{x}\right)^2 = 81\]

\[\therefore 1 - \frac{5}{x} = \frac{9}{10}\]

\[\therefore \frac{1}{x} = \frac{1}{10}\]

x = 50 litres

S23. Ans.(a)
Sol. Work completed by 27 Men

\[= \frac{24 \times 18}{27} = 16 \text{ days}\]

Work done by 27 Men in 8 days

\[= \frac{8}{16} = \frac{1}{2}\]

\[\therefore 14 \text{ women can complete the same work in}\]

\[= \frac{12 \times 28}{14} = 24 \text{ days}\]

\[\therefore \frac{1}{2} \text{ work will be completed by 14 women in}\]

\[= 24 \times \frac{1}{2} = 12 \text{ days}\]

S24. Ans.(b)
Sol. Weight of first box = 200 kg

Weight of second box

\[= 200 \times \frac{125}{100} \times \frac{120}{100}\]

= 300 kg

Weight of third box

\[= 200 \times \frac{125}{100}\]

= 250 kg

Weight of fourth box = 350 kg

Weight of fifth box

\[= 350 \times \frac{100}{70}\]

= 500 kg

Required difference

\[= \frac{1}{4} \times (500 + 350 + 300 + 250) - \frac{1}{4} \times (200 + 250 + 300 + 350)\]

\[= \frac{1}{4} \times 1400 - \frac{1}{4} \times 1100\]

= 350 - 275

= 75 kg
S25. Ans.(a)
Sol. Let expenditure per head per day originally was Rs. x and new expenditure per head was Rs. y.
According to first condition
\[55y - 42x = 30 \quad \ldots (i)\]
According to second condition
\[y = x - 3 \quad \ldots (ii)\]
Solving eqn. (i) and (ii), we get
\[x = Rs. 15\]
\[\therefore \text{Original expenditure of the mess} = 42 \times 15 = Rs. 630\]

S26. Ans.(a)
Sol. Let present ages of A and B are x and y years respectively.
According to first condition,
\[\frac{1}{2}(x - 4) = \frac{5}{4(y - 4)} = \frac{5}{12}\]
\[\Rightarrow 3x - 10y = -28 \quad \ldots (i)\]
According to second condition
\[\frac{1}{2}(x + 8) = (y + 8) - 2 \Rightarrow x - 2y = 4 \quad \ldots (ii)\]
solving (i) and (ii), we get
\[x = 24 \text{ years, } y = 10 \text{ years}\]
\[\therefore \text{Present age of B} = 10 \text{ years}\]

S27. Ans.(b)
Sol. Let value of machine at the start of first year was Rs. x
ATQ,
\[\frac{90}{100} \times \frac{95}{100} \times \frac{90}{100} \times \frac{95}{100} = 1,46,205\]
\[\Rightarrow x = \frac{1,46,205 \times 10,00,000}{81 \times 95 \times 95}\]
\[\Rightarrow x = Rs. 2,00,000\]

S28. Ans.(d)
Sol. Price paid by customer
\[= 600 \times \frac{90}{100} \times \frac{95}{100} \times \frac{105}{100} = Rs. 538.65\]
S29. Ans.(d)
Sol. Let initial no. of boys = 29x
& no. of girls =33x
ATQ,
\[
\frac{29x + 142}{33x} = \frac{21}{19}
\]
\[
2698 = 142x
\]
\[
x = 19
\]
∴ Required no. of girls
= 29×19 + 142 - 33×19
= 693 - 627
= 66

S30. Ans.(a)
Sol. Let no. of skilled workers, unskilled workers and clerks are 8x, 5x and x respectively.
∴ 5x = 20
⇒ x = 4
Let their wages are 5y, 2y and 3y respectively
∴ 32×5×1.5, 20×2×1.5, 12×1.5
= 240, 60, 18

S31. Ans. (b)
Sol. Required difference = \[
\frac{24}{100} \times 15180000 \times \frac{50}{100} - \frac{21}{100} \times 15180000 \times \frac{30}{100}
\]
= 1821600 - 956340 = 8,65,260

S32. Ans. (a)
Sol. Required percentage = \[
\frac{9 \times 55}{13 \times 80} \times 100
\]
= 48% (approximately)

S33. Ans. (e)
Sol. Total no. of easy questions asked from allegation and profit and loss sections together
= \[
\frac{9}{100} \times 15180000 \times \frac{45}{100} + \frac{12}{100} \times 15180000 \times \frac{35}{100}
\]
= 614790 + 637560 = 12,52,350.
Total no of easy questions asked from Percentage and time and work sections.
= \[
\frac{14}{100} \times 15180000 \times \frac{40}{100} + \frac{7}{100} \times 15180000 \times \frac{25}{100}
\]
= 850080 + 265650 = 11,15,730
∴ Required ratio = \[
\frac{12,52,350}{11,15,730} = 1\frac{3915}{12397}
\]
S34. Ans. (c)
Sol. Total no. of difficult questions asked from series section.
\[ \frac{21}{100} \times 15180000 \times \frac{30}{100} = 9,56,340 \]
Total questions asked from percentage section
\[ \frac{14}{100} \times 15180000 = 21,25,200 \]
Required percentage \[ \frac{2125200 - 956340}{2125200} \times 100 = 55\% \]

S35. Ans. (d)
Sol. Required average
\[ \frac{1}{3} \times (24 \times 1518 \times 50 + 13 \times 1518 \times 80 + 9 \times 1518 \times 55) \]
\[ \frac{1}{3} \times 4151730 = 13,83,910 \]

S36. Ans.(b)
Sol.
\[ ? \approx \frac{823200 \times 100}{80000} \]
\[ \approx 1030 \]

S37. Ans.(a)
Sol. \[ \sqrt{676} + 4^2 \approx \frac{?}{7} \]
\[ \Rightarrow 26 + 16 \approx ? \times 7 \]
\[ ? \approx \frac{42}{7} \]
\[ ? \approx 6 \]

S38. Ans.(e)
Sol. \[ ? \approx 875 + 94 \times 35 - 1245 \]
\[ \approx 2920 \]

S39. Ans.(d)
Sol.
\[ ? \approx \frac{45\% \times 1440 - 16\% \times 2250}{36} \]
\[ \approx \frac{288}{36} \]
\[ \approx 8 \]

S40. Ans.(e)
Sol. \[ ? \approx \frac{409810}{500} \]
\[ \approx 819.62 \]
\[ \approx 820 \]
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