

Quantitative Aptitude Mega Quiz for RRB (Solutions)

S1. Ans.(c)

Sol. Time = $\frac{180}{10} = 18$ sec.

S2. Ans.(c)

Sol.

A $\xrightarrow{330 \text{ km}}$ B

Distance B/w two train at 9 am

= $330 - 60 = 270$ km

They will meet after = $\frac{270}{135} = 2$ hours

They will meet at = 11.00 am

S3. Ans.(b)

Sol. Time taken = $\frac{1200}{10} = 120$ minutes

S4. Ans.(b)

Sol.

$7 \sin^2 \theta + 3 \cos^2 \theta = 4$

$7(1 - \cos^2 \theta) + 3 \cos^2 \theta = 4$

$\cos^2 \theta = \frac{3}{4}$

$\cos \theta = \frac{\sqrt{3}}{2}$

$\theta = 30^\circ$

$\tan \theta = \frac{1}{\sqrt{3}}$

S5. Ans.(a)

Sol.

$\sin^2 1^\circ + \sin^2 5^\circ + \sin^2 9^\circ + \dots + \sin^2 89^\circ$

sum = $\frac{\text{number of terms}}{2} \left[\begin{aligned} &\sin^2 1 + \sin^2 89 \\ &= \sin^2(90 - 89) + \sin^2 89 \\ &= \cos^2 89 + \sin^2 89 \\ &= 1 \end{aligned} \right]$

= $\frac{23}{2}$

= $11 \frac{1}{2}$

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TEST SERIES

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JUNIOR EXECUTIVE

OPERATIONS & BD

30 Total Tests

S6. Ans.(d)

Sol.

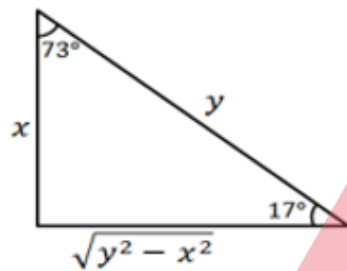
$$\sin^2 5^\circ + \sin^2 10^\circ + \sin^2 15^\circ + \dots + \sin^2 85^\circ + \sin^2 90^\circ$$

$$\begin{aligned}\text{Sum} &= \frac{\text{number of terms}}{2} + \sin^2 90^\circ \\ &= \frac{17}{2} + 1 \\ &= 9\frac{1}{2}\end{aligned}$$

S7. Ans.(b)

Sol.

$$\sin 17^\circ = \frac{x}{y}, \text{ find } (\sec 17^\circ - \sin 73^\circ)$$



$$\begin{aligned}&\frac{y}{\sqrt{y^2 - x^2}} - \frac{\sqrt{y^2 - x^2}}{y} \\ &= \frac{y^2 - (y^2 - x^2)}{y\sqrt{y^2 - x^2}} \\ &= \frac{x^2}{y\sqrt{y^2 - x^2}}\end{aligned}$$

S8. Ans.(d)

Sol.

According to the question,

Work completed by Harveen in 6 days

= Work completed by Deepak in 8 days

Time taken by Deepak to complete the work

$$= \frac{8 \times 18}{6}$$

$$= 24 \text{ days}$$

S9. Ans.(d)

Sol.

A + B → 15 days

Let the efficiency of B = 1

So, efficiency of A = 0.5

According to the question,

$$1.5 \times 15 = 0.5 \times x \text{ days}$$

$$x = 45 \text{ days}$$

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S10. Ans.(b)

Sol.

$$M_1 \times D_1 = M_2 \times D_2$$

$$35 \times 6 = 15 \times x$$

$$x = 14 \text{ days}$$

S11. Ans.(a)

Sol.

Longest pole = Diagonal

$$\text{Diagonal} = \sqrt{100 + 81 + 49}$$

$$= \sqrt{230} \text{ m}$$

S12. Ans.(a)

Sol.

$$\text{Diagonal} = 8\sqrt{3}$$

$$a\sqrt{3} = 8\sqrt{3}$$

$$a = 8 \text{ cm}$$

S13. Ans.(a)

Sol.

$$6a^2 = 726$$

$$a^2 = 121$$

$$a = 11 \text{ cm}$$

$$\text{Volume} = a^3$$

$$= 1331 \text{ cm}^3$$



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S14. Ans.(b)

Sol.

Let length, breadth & height be $4x$, $3x$ and $2x$

Whole surface area

$$= 2(lb + bh + hl)$$

$$\Rightarrow 2(lb + bh + hl) = 8788$$

$$lb + bh + hl = 4394$$

$$(4 \times 3 + 3 \times 2 + 2 \times 4) x^2 = 4394$$

$$26x^2 = 4394$$

$$x^2 = 169$$

$$x = 13 \text{ cm}$$

$$\text{Length} = 4 \times 13 = 52 \text{ cm}$$

S15. Ans.(a)

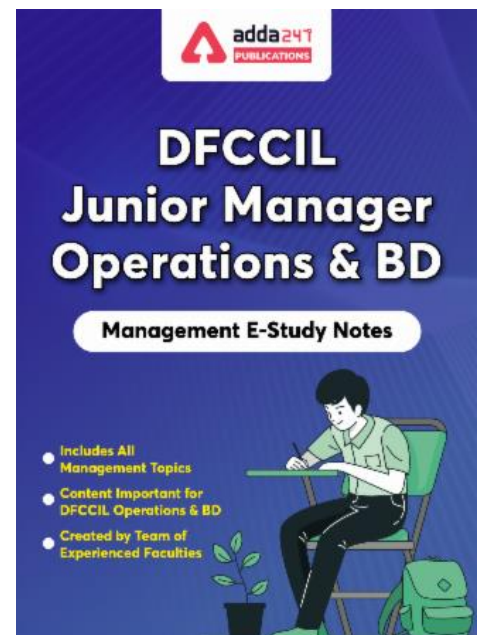
Sol.

Surface area

$$= 4\pi r^2$$

$$= 4 \times \pi \times 16$$

$$= 64\pi \text{ cm}^2$$



S16. Ans.(a)

Sol.

$$\begin{aligned}\text{Curved Surface area} &= 2\pi r^2 \\ &= 2 \times \frac{22}{7} \times 14 \times 14 \\ &= 1232 \text{ cm}^2\end{aligned}$$

S17. Ans.(d)

Sol.

$$\begin{aligned}\frac{4}{3}\pi r^3 &= \pi r^2 h \\ h &= \frac{4}{3}r \\ h &= \frac{2}{3} \times 2r \\ \frac{2r}{h} &= \frac{3}{2}\end{aligned}$$

S18. Ans.(a)

Sol.

$$\begin{aligned}\therefore \text{Change} &= 25 + 25 + 6.25 \\ &= 56.25\end{aligned}$$

S19. Ans.(a)

Sol.

$$\begin{aligned}\frac{1}{3}\pi r^2 h &= 100\pi \\ \frac{1}{3} \times r^2 \times 12 &= 100 \\ r^2 &= 25 \\ r &= 5 \\ l &= \sqrt{r^2 + h^2} \\ &= \sqrt{25 + 144} \\ &= \sqrt{169} \\ &= 13 \text{ cm}\end{aligned}$$

S20. Ans.(c)

Sol.

$$\begin{aligned}1 \text{ hectare} &= 10000 \text{ m}^2 \\ \text{Volume of water} &= \text{Base area} \times \text{height} \\ &= 10000 \times \frac{10}{100} \\ &= 1000 \text{ m}^3\end{aligned}$$

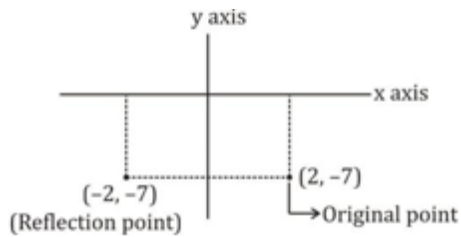


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S21. Ans.(b)

Sol. In reflection to y-axis, only the x-coordinate's sign changes.



S22. Ans.(c)

Sol.

Let the price of the article be 100

∴ Reduced price = 97

% increase to restore to its original

$$\text{Price} = \frac{100 - 97}{97} \times 100$$

$$= 3.09\%$$

S23. Ans.(c)

Sol.

$$CI = P \left[\left(1 + \frac{R}{100} \right)^t - 1 \right]$$

$$= 16000 \left[\left(1 + \frac{10}{100} \right)^2 - 1 \right]$$

$$= \text{Rs. } 3360$$

ATQ,

$$SI = \frac{1}{2} \times \text{Rs. } 3360 = 1680$$

$$1680 = \frac{P \times 8 \times 3}{100}$$

$$P = \text{Rs. } 7000$$

S24. Ans.(a)

Sol.

$$\frac{144 a^3 b^3 c^3}{24 b^2 c}$$

$$= 6a^3 bc^2$$

S25. Ans.(b)

Sol.

$$X = \cos^4 A - \sin^4 A$$

$$= (\cos^2 A + \sin^2 A) (\cos^2 A - \sin^2 A)$$

$$= 1 (\cos^2 A - \sin^2 A)$$

$$= \cos^2 A - (1 - \cos^2 A)$$

$$= 2 \cos^2 A - 1$$

S26. Ans.(b)

Sol. Total amount to be paid without discount = $1600 \times 23 + 1200 \times 10 = 48,800$

ATQ,

10 children can get free ticket with 20 Adult, so all the children will get free tickets

$\therefore$ Total discount = $1200 \times 10 = \text{Rs. } 12000$

$$\begin{aligned}\% \text{ Discount} &= \frac{12000}{48800} \times 100 \\ &= 24.59\%\end{aligned}$$

S27. Ans.(d)

Sol.

$$\begin{aligned}\text{Total curved S. Area} &= 2\pi rh + \pi r\ell \\ &= 2 \times \frac{22}{7} \times 10 \times 5 + \frac{22}{7} \times 10 \times 15 \\ &= \frac{5500}{7}\end{aligned}$$

As 20% extra is required

$\therefore$ Total canvas Required

$$\begin{aligned}&= \frac{5500}{7} \times \frac{120}{100} \\ &= 942.8 \text{ m}^2\end{aligned}$$

S28. Ans.(c)

Sol. ATQ,

Distance travel by Goods train in 11 hours is equal to the distance travel by other train in 18 hours.

$$\therefore 11 \times 54 = 18 \times x$$

$$\Rightarrow x = 33 \text{ km/hr}$$

S29. Ans.(b)

Sol.

ATQ,

$$\frac{112b^3x^2a^4z^3}{7a^3b^2z} = 16bx^2az^2$$

S30. Ans.(c)

Sol.

$$\text{Slope}(m) = 3/4$$

$$\text{Point} = (0, 5)$$

$$\text{Eq}^n \text{ of line} \Rightarrow (y - y_1) = m(x - x_1)$$

$$\Rightarrow (y - 5) = \frac{3}{4}(x - 0)$$

$$\Rightarrow 4y - 20 = 3x$$

$$\Rightarrow 3x - 4y = -20$$

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40 TOTAL TESTS