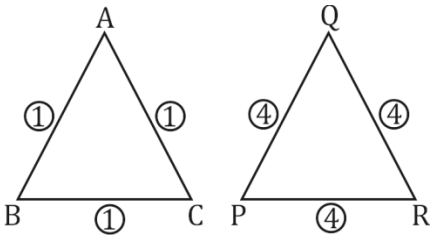
Matheamtics Quiz for RRB NTPC – Advanced Level (Solutions)

S1. Ans.(b)
Sol.

$\frac{12\times8\times10}{100} = \frac{18\times D\times7}{70}$

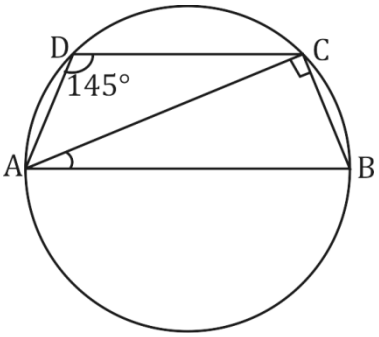
D = $\frac{16}{3}$ days = $5\frac{1}{3}$ days

S2. Ans.(a)
Sol.



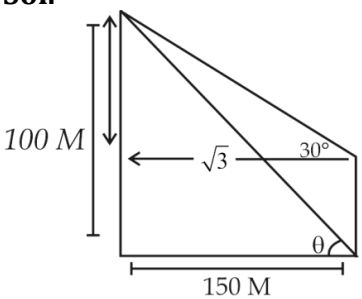
1 ------ 3
4 ---------12

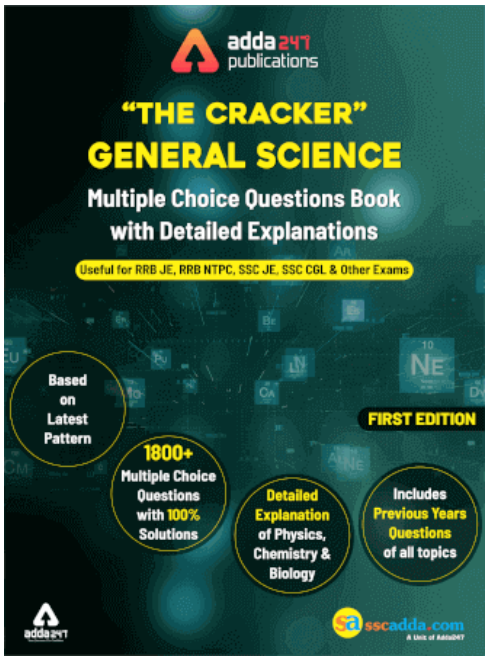
S3. Ans.(d)
Sol.



∠ABC = 180° – 145° = 35°
∠BAC = 180° – (90 + 35°)
∠BAC = 180° – 125°
∠BAC = 55°

S4. Ans.(a)
Sol.





$\tan\theta = \frac{2}{3}$

2 ------ 100

3 --------- 150

$\sqrt{3} - - - 150$

$1 - \frac{150}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = 50\sqrt{3}$

Required height of pole = $100 - 50\sqrt{3}$

$= 50(2 - \sqrt{3})$m

S5. Ans.(d)

Sol.

Mean proportion = $\sqrt{\frac{49\times169}{100}} = \frac{7\times13}{10} = 9.1$

Third proportion $\frac{3}{7} = \frac{7}{x}$

$x = \frac{49}{3}$

$\therefore 9.1 : \frac{49}{3} = 27.3 : 49 = 39 : 70$

S6. Ans.(c)

Sol.

$x + \frac{1}{x} = 3$

$x^2 + \frac{1}{x^2} = 7$

$x^3 + \frac{1}{x^3} = 27 - 9 = 18$

$\left(x^2 + \frac{1}{x^2}\right)\left(x^3 + \frac{1}{x^3}\right) = x^5 + \frac{1}{x} + x + \frac{1}{x^5}$

$(7)(18) = x^5 + \frac{1}{x^5} + \left(x + \frac{1}{x}\right)$

$126 = x^5 + \frac{1}{x^5} + 3$

$x^5 + \frac{1}{x^5} = 123$

S7. Ans.(c)

Sol. Cosec (90° – 3x) = cosec (4x – 35°)

90° – 3x = 4x – 35°

125° = 7x

x = 17.8

S8. Ans.(a)

Sol.

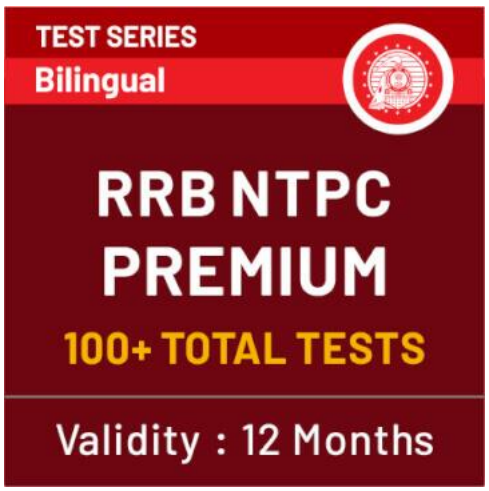
$\frac{32 \times 8 \times 6}{64} = x$

x = 24

total surface area of cube=$6a^2$

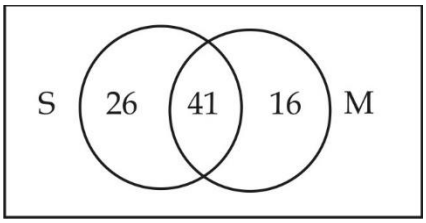
total surface area of all 24 cuboid is

6 × 4 × 4 × 24=2304



S09. Ans.(b)
Sol.
$a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$
$((a + b)^2 - ab = a^2 + b^2 + ab)$
$4104 = 6((a + b)^2 - ab)$
$(a+b)^2 - ab = 684$

S10. Ans.(c)
Sol.

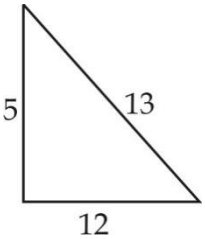


Passed = 100 – (41 + 26 + 16)
Passed = 17%

S11. Ans.(b)
Sol. Let t be the right time
78(t + 25) = 91(t + 10)
6(t + 25) = 7(t + 10)
150 – 70 = t
t = 80 min

S12. Ans.(b)
Sol.
$\frac{135\times22}{9} \times \frac{65}{100} = 214\frac{1}{2}$ days

S13. Ans.(d)
Sol.



12 ---------- 36
5 ----------15

S14. Ans.(b)
Sol.
$\frac{3x6249y}{88 = 11 \times 8}$
$\frac{49y}{8} \Rightarrow \boxed{y = 6}$
$\frac{(3 + 6 + 4 + 6) - (x + 3 + 9)}{11} = \frac{7 - x}{11}$
$\boxed{x = 7}$

S15. Ans.(a)

Sol.

$(x-4)^3+(3x-7)^3+(x-2)^3-3(x-4)(3x-7)(x-2)=0$

X–4 +3x – 7 + x – 2 = 0

5x – 13 = 0

$x=\frac{13}{5}=2.6$

S16. Ans.(a)

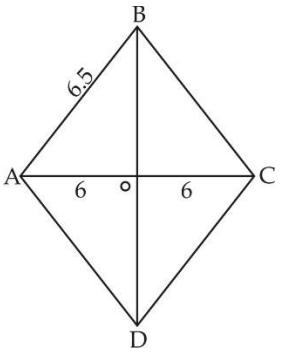
Sol.

$100\left(\frac{(72.5)^3+(27.5)^3}{(72.5)^2+(27.5)^2-(72.5)(27.5)}\right)$

$100\ (100) \Rightarrow 10{,}000$

S17. Ans.(b)

Sol.



$OB=\sqrt{(6.5)^2-(6)^2}$

OB = 2.5 cm

BD = 5cm

$\text{Area}=\frac{1}{2}\times 12\times 5=30cm^2$

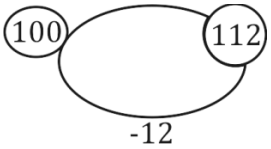
S18. Ans.(b)

Sol.

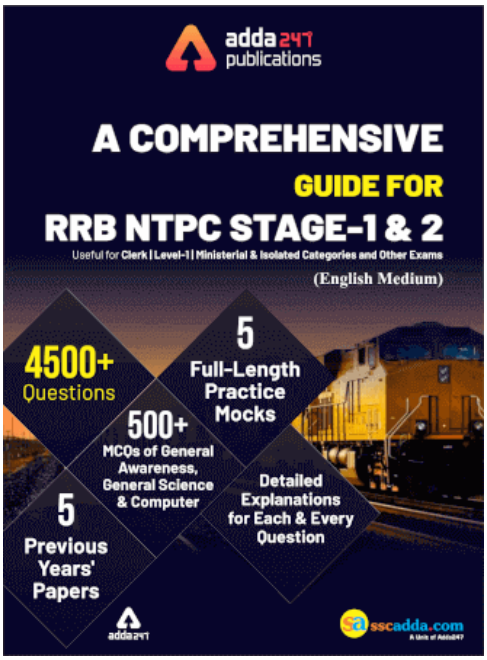
$\frac{27}{73}\times 100=36.98\%$

S19. Ans.(a)

Sol.



$\frac{12}{112}\times 100=10.7\%$

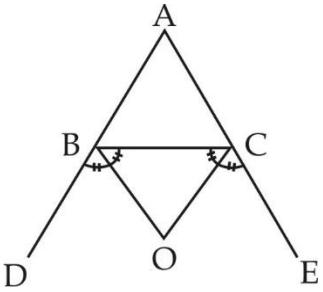


S20. Ans.(a)

Sol.

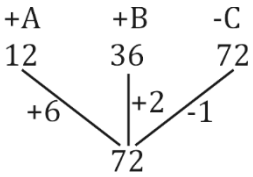
$\angle BOC = 90 - \frac{1}{2}\angle A$

$= 90 - 17.5 = 72.5°$



S21. Ans.(b)

Sol.



T.W = 72

Remaining work=72-42

Remaining work done by (b+c)

$\therefore \frac{30}{1} = 30$

S22. Ans.(c)

Sol.

Loss% = $\frac{xy}{100} = 1.21\%$

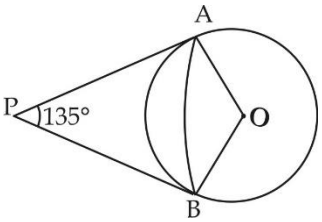
S23. Ans.(d)

Sol.

$$\frac{\frac{1}{4}+\frac{3}{4}-1}{\frac{1}{3}+3} = 0$$

S24. Ans.(c)

Sol.

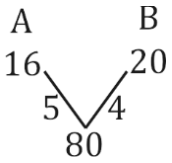


$\because \angle OAB = \angle OBA$

$\angle OAB = \frac{180°-45°}{2} = 67.5°$

S25. Ans.(c)

Sol.



One cycle work done (4+5) in two hours

In 8 cycle work done =9×8

Remaining work 80-72=8

Remaining work 1st done by A in one hour =8-4

Now remaining work done by B = $\frac{4}{5}$hours

Total time to complete the work =16+1+ $\frac{4}{5}$=17 $\frac{4}{5}$hours