

Mathematics RRB NTPC 24th November (Solutions)

S1. Ans.(b);

Sol.

**Proper Fraction:** Where the numerator is less than the denominator

Example  $\frac{2}{3}, \frac{3}{4}, \frac{1}{4}$  etc.

We have,  $x + \frac{1}{x} = \frac{130}{63}$

Or,  $63(x^2 + 1) = 130x$

Or,  $63x^2 - 67x + 63 = 0$

$\Rightarrow x = \frac{7}{9}, \frac{9}{7}$

Since, fraction is proper then,  $x = \frac{7}{9}$

S2. Ans.(b);

Sol.

Let the four consecutive odd numbers are

$x, x + 2, x + 4, x + 6$

ATQ,

$x + (x + 2) + (x + 4) + (x + 6) = 416$

Or,  $4x + 12 = 416$

$4x = 404$

$x = 51$

$\therefore$  Largest number =  $x + 6 = 51 + 6 = 57$

S3. Ans.(b);

Sol.

$\frac{-7x}{4} + 5 = x - 6$

Or,  $-11x + 20 = -24$

$x = 4$

S4. Ans.(c);

Sol.


We have

$K + P = 68$

$K - P = 26$

$\therefore D = 47$

TEST SERIES  
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**RRB NTPC  
PREMIUM**

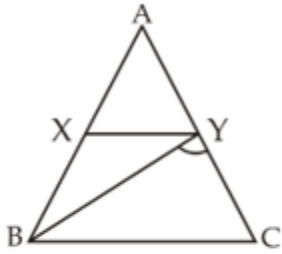
**100+ TOTAL TESTS**

Validity : 12 Months

S5. Ans.(b);

Sol.

Since,



$XY \parallel BC$

We have

$$\angle XYB = \angle YBC$$

{Alternate interior angles}

But,

$$\angle XYB = \angle BYC$$

{Given by bisects angles XYC}

$$\text{Hence, } \angle BYC = \angle YBC$$

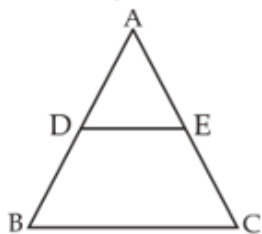
$$\Rightarrow BC = CY$$

{Opposite angles at equal sides are equal in d triangles}

S6. Ans.(d);

Sol.

We have,



$$AD = 3 \text{ cm, } BD = 4 \text{ cm}$$

$$\& AE = 4.4 \text{ cm, } DE = 6 \text{ cm}$$

Since,  $\Delta ABC \sim \Delta ADE$

$$\therefore \frac{AD}{AB} = \frac{DE}{BC}$$

$$\Rightarrow \frac{3}{7} = \frac{6}{BC} \Rightarrow BC = 14 \text{ cm}$$

S7. Ans.(b);

Sol.

We have

$$21.25\% = \frac{17}{80} \& 36\% = \frac{9}{25}$$

Let third number = 400

$$\therefore 1^{\text{st}} \text{ number} = 485$$

$$\& 2^{\text{nd}} \text{ number} = 544$$

$$\text{Required } \% = \frac{485}{544} \times 100 = 89.15\%$$

S8. Ans.(b);

Sol.

We have,

$$\frac{a}{b} = \frac{b}{c}$$

$$b^2 = ac$$

$$b^4 = a^2c^2 \text{ .....equ. 1}$$

required  $a^4:b^4$

$$= a^4: a^2c^2$$

$$= a^2: c^2$$

S9. Ans.(c);

Sol.

Investment ratio = Profit ratio ( $\because$  Time is constant)

$$1, 53,000: 1,95,000 = \text{Profit ratio}$$

$$\text{Profit ratio} = 153: 195$$

We have 153 unit = 17000

$$\therefore \text{Total profit} = 348 \text{ unit} = \frac{17000}{153} \times 348$$

$$= \text{Rs } 38666.67$$

S10. Ans.(a);

Sol.

Average of 17 numbers = 69

Sum of 17 numbers = 1173

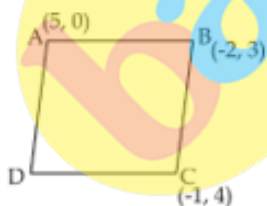
Sum of 4 removed numbers =  $68 + 57 + 71 + 85 = 281$

Sum of remaining 8 numbers =  $1173 - 281 = 892$

Average of 8 numbers =  $\frac{892}{11} = 81.09$

S11. Ans. (d);

Sol.



$\because AD \parallel BC$

Slope of line AD = slope of line BC

$$= \frac{4-0}{-1-5} = 1$$

$$\text{Eqn of AD} \Rightarrow (y - 0) = 1 (x - 5)$$

$$y = x - 5$$

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**CRACKER SERIES**  
**NTPC CBT-I**

**10 Full-Length Mocks**

Validity : 12 Months

S12. Ans.(b);

Sol.

ATQ,

$$\frac{42483}{30000} = \left(1 + \frac{R}{100}\right)^2$$

$$\sqrt{\frac{14161}{10000}} = \left(1 + \frac{R}{100}\right)$$

$$\frac{119}{100} - 1 = \frac{R}{100} \Rightarrow R = 19\%$$

S13. Ans.(c);

Sol.

Let the no. of 1 rupee, 50 paise and 10 paise coins be  $7x$ ,  $5x$  &  $3x$

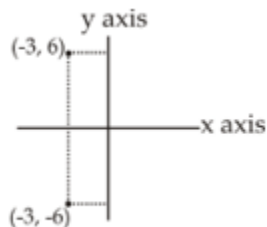
ATQ,

$$7x + \frac{5x}{2} + \frac{3x}{10} = 29.4 \Rightarrow x = 3$$

No. of 50 paise coins =  $3 \times 5 = 15$

S14. Ans.(c);

Sol.



Only y coordinate's sign changes in reflection with x-axis.

S15. Ans.(c);

Sol.

$$\frac{(b^3 x^3 a^2 z^5)(b^5 x^2 a^4 z^6)}{(a^5 b^2 z^9)} = b^3 x^5 a z^2$$

S16. Ans.(a);

Sol.

Let the marks scored by them are  $x$  &  $(x + 39)$

ATQ,

$$(x + 39) = \frac{52}{100} (x + x + 39) \Rightarrow x = 468$$

So, the marks obtained by two students are 468 and 507.

S17. Ans.(a);

Sol. 5642 is the nearest multiple of 31 to 5632. Hence 10 is the least no. to be added to 5632 to make the sum completely divisible by 31.

**S18. Ans.(b);**

**Sol.**

Let the MP be  $100x$

SP at 12% discount =  $88x$

CP at 12% loss =  $\frac{88}{88} \times 100x$

New SP at 6% discount =  $94x$

Loss =  $\frac{100x-94x}{100x} \times 100 = 6\%$

**S19. Ans.(a);**

**Sol.**

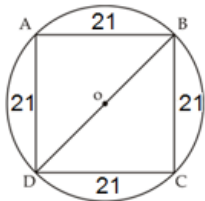
Let the angle be  $x$ ,

Then its supplementary angle be  $(x + 50)$ ,

ATQ  $\Rightarrow x + (x + 50) = 180 \Rightarrow x = 65^\circ$

**S20. Ans. (c);**

**Sol.**



Diameter of circle = Diagonal of square

=  $21\sqrt{2}$  cm

Area of circle =  $\pi \left(\frac{21\sqrt{2}}{2}\right)^2 = 693 \text{ cm}^2$

**S21. Ans.(a);**

**Sol.**

Smallest 6-digit number = 100000

Now let us divide 100000 by 1331

$$= \frac{100000}{1331} = 75 + \frac{175}{1331}$$

Required number =  $100000 + 1331 - 175 = 101156$

Method-2

The number which is exactly divisible by 1331 should also be divisible by  $11 \times 11 \times 11$ .

Only option (a) is divisible by 11

**S22. Ans.(d);**

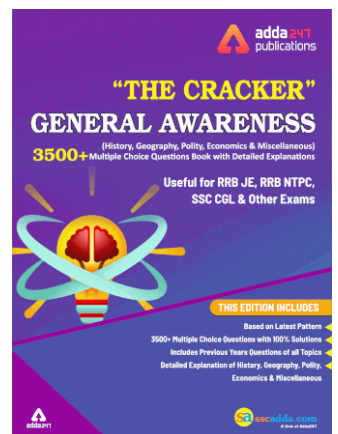
**Sol.**

Let  $N$  be the such number which when divided by 76 gives 69 as remainder

$$\Rightarrow N = 76 \times x + 69$$

Now,  $N$  is divided by 19

$$\Rightarrow \frac{76x+69}{19}, \text{ Rem} = 12.$$



S23. Ans.(a);

Sol.

$$\frac{12\sqrt{2}}{4\sqrt{15}}(\sqrt{3} + \sqrt{15})$$
$$= \frac{3\sqrt{2}}{\sqrt{5}}(\sqrt{1} + \sqrt{5}) = \frac{3\sqrt{2} + 3\sqrt{10}}{\sqrt{5}}$$

S24. Ans.(b);

Sol.

$$\sqrt[16]{y^{48}} = 2197$$
$$\Rightarrow y^3 = 2197$$
$$\Rightarrow y = 13$$

S25. Ans.(b);

Sol.

As we know that

In an equilateral triangle

Inradius: Circum radius = 1: 2

We have 1 unit = 17.53

∴ Circumradius = 2 unit = 35.06 cm

