Quant Mega Quiz for SSC CGL Tier-II (Solutions)

S1. Ans.(c)

Sol.

Amount after 3 years = Rs. 12000

So, amount after 4th year

$\Rightarrow 12000 \times \frac{112}{100} = 13440$ Rs.

S2. Ans.(c)

Sol.

Let the Ist part be Rs. x.

Then, 2nd part = Rs. (4350 – x)

$SI_1 = SI_2$

$\frac{x \times 9 \times 1}{100} = \frac{(4350-x) \times 10 \times 2}{100}$

$9x + 20x = 4350 \times 20$

$x = \frac{4350 \times 20}{29}$

= Rs. 3000

Ist part = Rs. 3000

2nd part = Rs. 1350

S3. Ans.(d)

Sol.

The sum be = $\frac{412.50 \times 100}{\left(\frac{9}{2} - \frac{7}{2}\right) \times 11}$

= Rs. 3750

S4. Ans.(a)

Sol.

With reference to question

$P \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100} = 119790$

P = 90000 Rs.

S5. Ans.(d)

Sol.

We know that

$P = \frac{100A}{100+RT}$

& Amount in both case will be same

So,

$2400\left(100 + R \times \frac{7}{12}\right) = 2032\,(100 + R \times 2.5)$

$\Rightarrow 150\left(100+R\times\frac{7}{12}\right)=127\ (100+2.5R)$

$\Rightarrow 15000-12700=R\left(2.5\times127-150\times\frac{7}{12}\right)$

$\Rightarrow R=\frac{23000}{(317.5-87.5)}=10\%$

S6. Ans.(a)

Sol.

$\frac{\text{Amount}}{\text{principle}}=\frac{10648}{8000}=\frac{1331}{1000}\Rightarrow\sqrt[3]{\frac{1331}{1000}}=\frac{11}{10}$

In 3y ears. But it is half yearly so $\frac{3}{2}$ year = 18 months

S7. Ans.(b)

Sol.

R = 16% p.a. $\Rightarrow \frac{16}{4}$% quarterly.

The amount of Rs. 17576, paid at the end of first quarter has its principal equal to

$=17576\times\left(\frac{25}{26}\right)^1=Rs.16900$

Similarly, the principle at the end of 2nd Quarter $=17576\times\left(\frac{25}{26}\right)^2=Rs.16250$

And at the end of 3^{rd} quarter

$=17576\times\left(\frac{25}{26}\right)^3=Rs.15625$

Net principal = Rs. (16900 + 16250 + 15625)
= Rs. 48775

S8. Ans.(a)

Sol.

Amount = $\text{Rs.}\left(400+\frac{400\times5\times2}{100}\right)$
= Rs. 440
Amount returned by Ramu to Arun
= 2% of 440
$=\frac{2}{100}\times440$
$=Rs.8.8$

S9. Ans.(a)

Sol.

CI = 662 P = 2000 Amount = 2662

$2662=2000\left(1+\frac{10}{100}\right)^T$

$\frac{1331}{1000}=\left(\frac{11}{10}\right)^T$

T = 3 year

S10. Ans.(b)

Sol.

P = 80,000 R = 40%

$C.I. = 80,000\left(1+\frac{10}{100}\right)^4 - 80,000$

$= 80,000\times\left(\frac{11}{10}\right)^4 - 80,000$

= 37128 Rs.

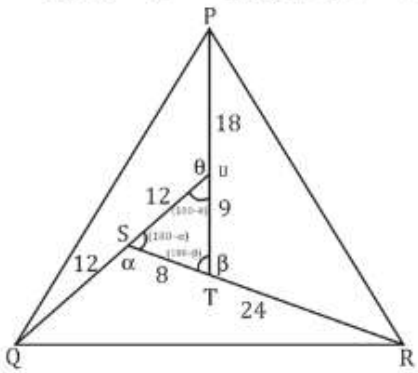
S11. Ans.(a)

Sol. From the following figure

Let $\angle PUQ = \theta$ SO, $\angle TUS = 180 - \theta$

$\angle RSQ = \alpha$ SO, $\angle TSU = 180 - \alpha$

$\angle PTR = \beta$ SO, $\angle UTS = 180 - \beta$



$$\frac{\text{Area (PUQ)}}{\text{Area of (SUT)}} = \frac{\frac{1}{2}\times 18\times 24\times \sin\theta}{\frac{1}{2}\times 9\times 12\times \sin(180-\theta)}$$

$$\frac{\text{Area (PUQ)}}{\text{Area (SUT)}} = \frac{4}{1} \quad \ldots(1)$$

Similarly

$$\frac{\text{Area (PTR)}}{\text{Area (SUT)}} = \frac{\frac{1}{2}\times 27\times 24\times \sin\beta}{\frac{1}{2}\times 9\times 8\times \sin(180-\beta)} = \frac{9}{1} \quad \ldots(2)$$

fromeq (1) & (2)

$$\boxed{\frac{\text{Area of PUQ}}{\text{Area of PTR}} = \frac{4}{9}}$$

S12. Ans.(d)

Sol. Cost to carry 20 ton coal by train = 760 for 480 kms.

So, cost to carry 360 ton coal by 200 trucks for 600 kms

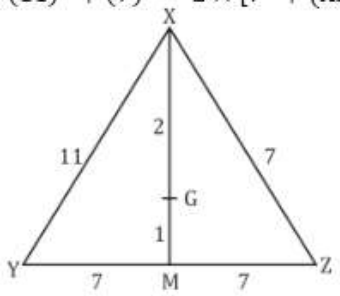
$$= \frac{760\times 360\times 200}{20\times 480}\times\frac{3}{19}\times 600$$

= Rs. 5,40,000

S13. Ans.(c)

Sol. By Apollonius theorem

$(11)^2 + (7)^2 = 2 \times [7^2 + (XM)^2]$



$(XM)^2 = \frac{1}{2}[11^2 - 7^2] = 36$

$\boxed{XM = 6}$

IF G is centroid, it divides the altitude XM always in 2:1 ratio as shown in the figure

$GM = \frac{1}{3} \times (XM)$

$GM = \frac{1}{3} \times 6 = \boxed{2\text{ cm}}$

S14. Ans.(d)

Sol. So, about boys we are uncertain and extra data needed.

S15. Ans.(a)

Sol. S.I. of 2 year = 2000 + 2000

C.I. of 2 year = 4160

Difference = 160

S16. Ans.(a)

Sol. Let total voters = x

Vote casted = $\frac{80}{100}x$

Valid votes = $\frac{80}{100}x - 120$

ATQ,

$\frac{41}{100}x = \left(\frac{80}{100}x - 120\right) - \frac{41}{100}x + 200$

$\frac{82}{100}x = \frac{80}{100}x + 80$

$\frac{2}{100}x = 80 \Rightarrow x = 4000$

Votes of winner candidate

$= \frac{41}{100} \times 4000$

$= 1640$

Votes of defeated candidate

$= 1640 - 200$

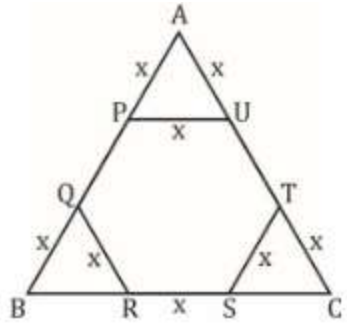
$= 1440$

% votes of defeated candidate

$= \frac{1440}{\frac{80}{100} \times 4000} \times 100 = 45\%$

S17. Ans.(a)

Sol. let ABC is an equilateral triangle inside which a hexagon of side x is drawn



Area of ΔABC

$= \frac{\sqrt{3}}{4} \times 3x \times 3x$

Area of hexagon

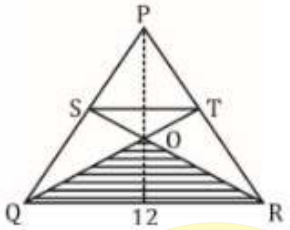
$= 6 \times \frac{\sqrt{3}}{4} \times x \times x$

Ratio of

$$\frac{\text{area of ABC}}{\text{area of PQRSTU}} = \frac{6}{9} \times 100 = 66.66\%$$

S18. Ans.(b)

Sol. PQR is an equilateral triangle



In equilateral triangle

Area of PQR

= Area of POR + Area of QOP + Area of QOR

Area of POR

= Area of QOP = Area of QOR

So, Area of Δ QOR

$= \frac{1}{3} \times$ Area of PQR

$= \frac{1}{3} \times \frac{\sqrt{3}}{4} \times 12 \times 12$

Area of QOR$\Rightarrow 12\sqrt{3}\ \text{cm}^2$

S19. Ans.(a)

Sol. Actual work done by a typist in 10 min

$= 20 \times \frac{92}{100} = \frac{92}{5}$ lines

Total work $= 23 \times 40 \times \frac{90}{100} = 828$ lines

Time required $= 828 \times \frac{5}{92} \times \frac{10}{60}$

$= 7\frac{1}{2}$ hours

S20. Ans.(d)

Sol.

4% = 1/25

So,

Principal	Amount	
$25_{\times 625}$	$26_{\times 625}$ =	16250
$625_{\times 25}$	$676_{\times 25}$ =	16900
15625	17576 =	17576

16250 + 16900 + 17576 = Rs. 50726

S21. Ans.(b)

Sol.

$P = \frac{96}{95 \times 97}$, $Q = \frac{97}{96 \times 98}$, $R = \frac{1}{97}$

Let 95 = 1, 96 = 2, 97 = 3, 98 = 4

$P = \frac{2}{1 \times 3} Q = \frac{3}{2 \times 4}$ $R = \frac{1}{3}$

P = 0.667 Q = 0.375 R = 0.33

So, $\boxed{P > Q > R}$

S22. Ans.(a)

Sol.

$999\frac{998}{999} \times 999 - 99 = 998999 - 99 = 998900$

S23. Ans.(a)

Sol.

I

$11\frac{1}{2} + 17\frac{3}{4} - 5\frac{1}{5} - 2\frac{1}{10} = \frac{439}{20}$

$11 + 17 - 5 - 2 + \left(\frac{1}{2} + \frac{3}{4} - \frac{1}{5} - \frac{1}{10}\right)$

$21 + \frac{(10 + 15 - 4 - 2)}{20}$

$21 + \frac{19}{20} = \frac{439}{20}$

LHS = RHS

II

$\frac{9}{1078} > \frac{11}{1127} > \frac{12}{1219}$

Method – I

By cross multiply check for first two terms

$9 \times 1127 > 11 \times 1078$

$10143 \not> 11858$

Hence this series is wrong no need to check further

Method – II

Reciprocal the term

$\frac{1078}{9} < \frac{1127}{11} < \frac{1219}{12}$

$118 \not< 102 \not< 101$

III

$\frac{149}{151} > \frac{153}{155} > \frac{157}{159}$

By cross multiply for first two terms

$149 \times 155 > 153 \times 151$

$23095 \not> 23103$

this series is also wrong hence no need to check further

Hence,

Only I is right

S24. Ans.(a)

Sol.

Let $\sqrt{5} = 2.2$; $\sqrt{3} = 1.7$

I. $\frac{2}{3\sqrt{5}} < \frac{3}{2\sqrt{5}} < \frac{5}{4\sqrt{3}}$

Take 1st two term series and check by cross multiply

$\Rightarrow \frac{2}{3\sqrt{5}} < \frac{3}{2\sqrt{5}}$

$\Rightarrow 4\sqrt{5} < 9\sqrt{5}$

Now again take last two term and check by cross multiply

$\Rightarrow \frac{3}{2\sqrt{5}} < \frac{5}{4\sqrt{3}}$

$\Rightarrow 12\sqrt{3} < 10\sqrt{5}$

$12 \times 1.7 < 10 \times 2.2$

$20.4 < 22$

hence series is right

II. $\frac{3}{2\sqrt{5}} < \frac{2}{3\sqrt{3}} < \frac{7}{4\sqrt{5}}$

Take 1st two term series and check by cross multiply

$\Rightarrow \frac{3}{2\sqrt{5}} < \frac{2}{3\sqrt{3}}$

$\Rightarrow 9\sqrt{3} < 4\sqrt{5}$

$\Rightarrow 9 \times 1.7 < 4 \times 2.2$

$\Rightarrow 15.3 \not< 8.8$

this series is wrong so no need to check further

So, only I is correct

S25. Ans.(a)

Sol. We know that

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

Atq,

$$x + \frac{1}{x} = 5, x^2 + \frac{1}{x^2} = 23, x^3 + \frac{1}{x^3} = 110$$

$$x^5 + \frac{1}{x^5} = 110 \times 23 - 5$$

$= 2525$

S26. Ans.(d)

Sol. The required number must be a factor of (11284 – 7655) or 3629.

Now, 3629 = 19 × 191

So, 191 is the required number.

S27. Ans.(d)

Sol.

GIVEN

$A = \frac{1}{1\times2} + \frac{1}{1\times4} + \frac{1}{2\times3} + \frac{1}{4\times7} \ldots$. 20 terms

Break above series in two parts $A = A_1 + A_2$

$A_1 = \frac{1}{1\times2} + \frac{1}{2\times3} + \frac{1}{3\times4} + \cdots + \frac{1}{10\times11}(10^{TH}\text{ term})$

$A_1 = \left[1 - \frac{1}{2} + \frac{1}{2} - \frac{1}{3} + \frac{1}{3} - \frac{1}{4} + \ldots + \frac{1}{10} - \frac{1}{11}\right]$

$A_1 = \left[1 - \frac{1}{11}\right] = \frac{10}{11}$

&

$A_2 = \frac{1}{1\times4} + \frac{1}{4\times7} + \frac{1}{7\times10} + \ldots + \frac{1}{28\times31}$

$A_2 = \frac{1}{3}\left[1 - \frac{1}{4} + \frac{1}{4} - \frac{1}{7} + \frac{1}{7} - \frac{1}{10} + \ldots + \frac{1}{28} - \frac{1}{31}\right]$

$[S_{10} = a + (n-1)d = 1 + (10-1) \times 3 = 28]$

$A_2 = \frac{1}{3}\left[1 - \frac{1}{31}\right] = \frac{10}{31}$

$\therefore A = A_1 + A_2$

$A = \frac{10}{11} + \frac{10}{31} = \frac{420}{341}$

S28. Ans.(b)

Sol.

GIVEN EQUATION

$56 \times 75 \times 60 \times 84 \times 210 = 2^p \times 3^q \times 5^4 \times 7^s$

$2^8 \times 3^4 \times 5^7 \times 7^3 = 2^p \times 3^q \times 5^r \times 7^s$

On comparing both side

$p = 8,\ \ q = 4,\ \ r = 7,\ \ s = 3$

The value of $\left[\frac{(p+q)}{s}\right] + r$

$\Rightarrow \left[\frac{8+4}{3}\right] + 4 \Rightarrow 8$

S29. Ans.(d)

Sol.

GIVEN

$A = 3\frac{1}{4} \times 4\frac{1}{4} \div 34 - \frac{47}{32} + \frac{47}{16}$

$A \Rightarrow \frac{13}{4} \times \frac{17}{4} \times \frac{1}{34} - \frac{47}{32} + \frac{47}{16}$

$= \frac{13}{32} + \frac{47}{32} = \frac{60}{32} = \frac{30}{16}$

&

$B = 2\frac{1}{2} + 5\frac{1}{2} \div 55 - \frac{11}{10}$

$= \frac{25+1-11}{10}$

$= \frac{15}{10}$

SO,

$A - B = \frac{30}{16} - \frac{15}{10} = \frac{60}{160} = \frac{3}{8}$

S30. Ans.(b)

Sol. Since each Iron rod must be cut into parts of equal length and each part must be as long as possible, so HCF should be taken.

HCF of 78, 104, 117 and 169 = 13.

No. of parts from 78cm. rod = 78 /13=6

No. of parts from 104 cm. rod =104/13=8

No. of parts from 117 cm. rod =117/ 13=9

No. of parts from 169 cm. rod =169 /13=13

Maximum no. of pieces = 6 + 8 + 9 + 13 = 36