

SSC CHSL Exam Quantitative Aptitude Question & Answers PDF



1. A certain sum was invested on simple interest. The amount to which it had grown

in five years was $1\frac{1}{4}$ times the amount to which it had grown in three years. The percentage rate of interest was:

- A. 10%
- B. 20%
- C. 25%
- D. 15%

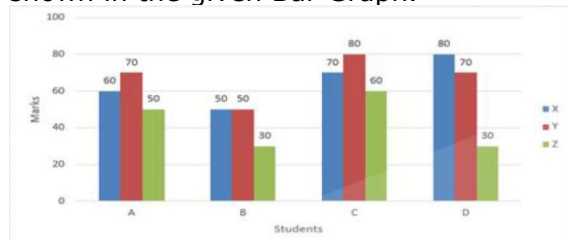
2. O, G, I and H are respectively the circumcenter, centroid, in-center and orthocenter of an equilateral triangle. Which of these points are identical?

- A. O and I only
- B. O and G only
- C. O, G, I and H
- D. O, G and H only

3. The value of $\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$ is:

- A. 12.96
- B. 25
- C. 26
- D. 24.12

Direction: The full marks for a paper is 300. The break-up of the marks into theory (X), practical (Y) and project (Z), which are the three components of evaluation is 6 : 5 : 4. In order to pass one has to score at least 40%, 50% and 50% respectively in X, Y, Z and 60% in aggregate. The marks scored by four students A, B, C and D are shown in the given Bar Graph.



4. How much percentage marks more than B has C scored in practical?

- A. 40
- B. 30

- C. 60
- D. 20

5. If $\frac{10}{7}(1 - 2.43 \times 10^{-3}) = 1.417 + x$, then x is equal to.

- A. 0.0417
- B. 0.417
- C. 0.0081
- D. 0.81

6. A purchased two articles for Rs.200 and Rs.300 respectively and sold at gains of 5% and 10% respectively. What was his overall gain percentage?

- A. 6
- B. 9
- C. 5
- D. 8

7. An article having marked price, Rs. 900. was sold for 648 after two successive discounts. The first discount was 20%. What was the percentage rate of the second discount?

- A. 5
- B. 15
- C. 10
- D. 12 .5

8. The simplified value of

$$\left\{ 1\frac{1}{4} \text{ of } \left(2\frac{1}{3} \div 1\frac{2}{5} \right) - 1\frac{5}{12} \right\} + \frac{1}{9} \div 2\frac{1}{3} + \frac{2}{7} + \frac{1}{6}$$

- is:
- A. $\frac{7}{3}$
 - B. $\frac{3}{2}$
 - C. $\frac{7}{6}$
 - D. 1

9. If $(x+y)^{\frac{1}{3}} + (y+z)^{\frac{1}{3}} = -(z+x)^{\frac{1}{3}}$, then $(x^3 + y^3 + z^3)$ can be expressed as:



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- A. $\frac{1}{8}xyz$
 B. $(x+y)(y+z)(z+x)$
 C. $\frac{3}{8}(x+y)(y+z)(z+x)$
 D. $3xyz$

10. a, b and c are three positive numbers such that $(a + b + c) = 20$, $a^2 + b^2 + c^2 = 152$. The value of $(ab + bc + ca)$ is equal to:

- A. 124
 B. 110
 C. 112
 D. 102

11. For θ being an acute angle.

$$4(2\sin^2\theta + 7\cos^2\theta) = 13$$

What is the value of θ ?

- A. 60°
 B. 45°
 C. 30°
 D. 0°

12. The total cost price of two articles is Rs. 2,000. One of them is sold at a profit of 12% and the other at a loss of 12%. The overall gain in the transaction is 1.2%. The cost price of the article for which there was a profit was:

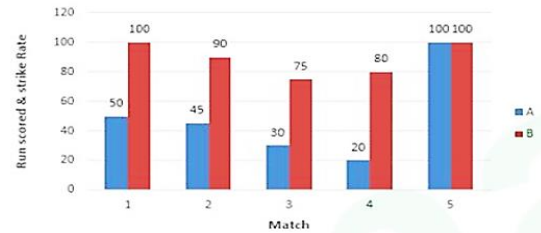
- A. Rs. 1,050
 B. Rs. 1,100
 C. Rs. 1,120
 D. Rs. 1.080

13. In a ΔABC , AD is perpendicular to BC from A. If $\angle BAC = 90^\circ$, then $AB^2 : AC^2$ is equal to:

- A. $BD^2 : CD^2$
 B. $CD : BD$
 C. $CD^2 : BD^2$
 D. $BD : CD$

14. The given Bar Graph presents the runs scored (A) and strike rate (B) of a batsman in five matches. Strike Rate is the number of runs scored per 100 balls faced. The strike rate (B) is taken on record only when

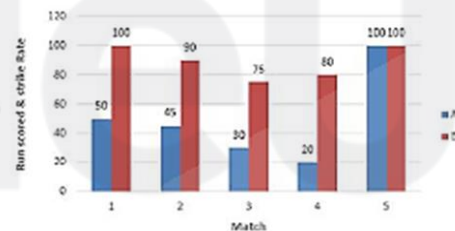
the batsman scores at least 30 runs in a match.



What is the average strike rate of the batsman?

- A. 89
 B. 91.25
 C. 90.75
 D. 95.5

15. The given Bar Graph presents the run scored (A) and strike rate (B) of a batsman in five matches. Strike Rate is the number of runs scored per 100 balls faced. The strike rate (B) is taken on record only when the batsman scores at least 30 runs in a match.



How many balls did the batsman face in the third match?

- A. 60
 B. 30
 C. 40
 D. 50

16. A borrows a sum of Rs. 1,000 from his friend B on 31 December 2015 on the condition that he will return the same after one year with simple interest at 12%. However, A gets into a position of returning the money on 1 May 2016. How much amount he has to return to B?

- A. Rs. 1,331.5
 B. Rs. 1,045
 C. Rs. 1,120
 D. Rs. 1,040



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17. Twelve sticks, each of length one unit, are used to form an equilateral triangle. The area of the triangle is:

- A. $3\sqrt{3}$ sq units
- B. $2\sqrt{3}$ sq units
- C. $4\sqrt{3}$ sq units
- D. $8\sqrt{3}$ sq units

18. If $a + 1/a = 2$, what is the value of

$$\left(a^4 - \frac{1}{a^4}\right)?$$

- A. 0
- B. 1/4
- C. 1
- D. 4

19. A regular hexagon is inscribed in a circle. What is the ratio of the area of the circle to that of its portion not covered by the hexagon?

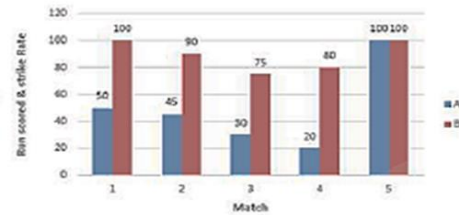
- A. $\frac{2\pi}{2\pi - 3\sqrt{3}}$
- B. $\frac{\pi}{\pi - 3\sqrt{3}}$
- C. $\frac{2\pi}{\sqrt{3}}$
- D. $\frac{\pi}{\sqrt{3}}$

20. Rs. 8,000 is distributed among A, B and C such that they receive notes of Rs.500, Rs.200 and Rs.100 respectively. The amounts received by them are in the ratio 15 : 2 : 3. What was the ratio of the number of notes of Rs.500, Rs.200 and Rs.100?

- A. 3 : 1 : 3
- B. 3 : 3 : 1
- C. 4 : 1 : 2
- D. 3 : 2 : 2

21. The given Bar Graph presents the runs scored (A) and strike rate (B) of a batsman in five matches. Strike Rate is the number

of runs scored per 100 balls faced. The strike rate (B) is taken on record only when the batsman scores at least 30 runs in a match.



How many runs the batsman should have scored in the fifth match in as many balls he had faced in that match so that the average strike rate of the second and the fifth match becomes 120?

- A. 150
- B. 240
- C. 160
- D. 120

22. Price of tea has increased by 20% but I have decided to increase my expenditure towards tea by 15% only. By What percentage should I reduce my consumption (correct to one place of decimal) in order to be able to maintain the same level of expenses towards tea?

- A. 5.4
- B. 4.2
- C. 5.6
- D. 4.8

23. If $\frac{\cos \alpha}{\sin \alpha + \cos \beta} + \frac{\cos \beta}{\sin \beta - \cos \alpha} = \frac{x}{\sin \alpha - \cos \beta} + \frac{\cos \beta}{\sin \beta + \cos \alpha}$ then find the

value of x?

- A. $\cos \beta$
- B. $\cos \alpha$
- C. $\sin \beta$
- D. $\sin \alpha$

24. The point A of a triangle ABC moves parallel to the straight-line BC. Which one among the following also moves along a straight line parallel to BC?

- (a) The circumcentre (b) The centroid (c) The incentre (d) The orthocentre.



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- A. (d)
- B. (b)
- C. (c)
- D. (a)

25. The simplified value of

$$\left[1\frac{1}{5} \left\{ \frac{3}{7} - \left(1\frac{4}{15} - \frac{13}{15} \right) \times \frac{5}{7} \right\} \right] \div \left(\frac{6}{7} \div 5 \right)$$
 is:

- A. $\frac{2}{15}$

- B. $\frac{1}{5}$
- C. 1
- D. $\frac{4}{15}$

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###ANSWERS###

1. Ans. B.

Let the Principal amount in 3-years changes to 4A amount.

According to ques;

The Principal amount will change in 5 years

$\frac{5}{4}$ times of 4A = 5A

Amount increase in 2 yrs. = 5A - 4A = A

∴ Amount increase or interest in 1 year will

be = $\frac{1}{2} A$

Simple interest:

$$4A - P = 3A/2$$

$$P = 5A/2$$

$$\frac{\text{Interest}}{\text{Principal}} \times 100 = \frac{\frac{A}{2}}{\frac{5A}{2}} \times 100 = \frac{1}{5} \times 100 = 20\%$$

2. Ans. C.

We know in equilateral triangle all the sides are same so all circumcenter, centroid, In-center and orthocenter coincide with each other. Hence these all are identical.

3. Ans. B.

The value :

$$\frac{18.43 \times 18.43 - 6.57 \times 6.57}{11.86}$$

$$= \frac{(18.43)^2 - (6.57)^2}{11.86}$$

$$= \frac{(25)(11.86)}{11.86}$$

$$= 25$$

4. Ans. C.

Firstly, we will find the value of practical, theory and project respectively.

$$\text{Theory} = \frac{6}{15} \times 300 = 120$$

$$\text{Practical} = \frac{5}{15} \times 300 = 100$$

$$\text{Project} = \frac{4}{15} \times 300 = 80$$

Marks scored by B in Practical = 50

Marks scored by C in Practical = 80

$$\text{Percentage} = \frac{30}{50} \times 100 = 60\%$$

5. Ans. C.

We have :

$$\frac{10}{7} (1 - 2.43 \times 10^{-3}) = 1.417 + x$$

$$\Rightarrow \frac{10}{7} (1 - 0.00243) = 1.417 + x$$

$$\frac{10}{7} (0.99757) = 1.417 + x$$

$$\frac{9.9757}{7} = 1.417 + x$$

$$1.4251 = 1.417 + x$$

$$\Rightarrow x = 0.0081$$

6. Ans. D.

Here CP of first article = Rs 200

Profit % of first article = 5%

$$SP = 200 + \frac{5}{100} \times 200 = Rs\ 210$$

CP of second article = Rs 300

Profit % = 10%

$$SP = 300 + \frac{10}{100} \times 300 = 330\ Rs$$

Total CP = Rs 200 + 300 = Rs 500

Total SP = 210 + 330 = Rs 540

$$\text{Profit}\% = \frac{40}{540} \times 100 = 8\%$$

7. Ans. C.

Marked price = Rs. 900

Selling Price = Rs. 648

Discount Price = 900 - 648 = Rs. 252

$$\text{Effective Discount}\% = \frac{252}{900} \times 100 = 28\%$$

First discount = 20%

Let second discount = x%

$$\therefore \text{net discount} = 20 + x - \frac{20 \times x}{100} = 28$$

$$\frac{80x}{100} = 8$$

$$x = 10\%$$

The other discount = 10%

8. Ans. C.

$$\left\{ 1\frac{1}{4} \text{ of } \left(2\frac{1}{3} \div 1\frac{2}{5} \right) - 1\frac{5}{12} \right\} + \frac{1}{9} \div 2\frac{1}{3} + \frac{2}{7} + \frac{1}{6}$$



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$$\left\{1\frac{1}{4} \text{ of } \left(\frac{5}{3}\right) - 1\frac{5}{12}\right\} + \frac{1}{9} \div 2\frac{1}{3} + \frac{2}{7} + \frac{1}{6}$$

$$\left\{\frac{25}{12} - \frac{17}{12}\right\} + \frac{1}{9} \div 2\frac{1}{3} + \frac{2}{7} + \frac{1}{6}$$

$$\left\{\frac{8}{12}\right\} + \frac{1}{9} \div 2\frac{1}{3} + \frac{2}{7} + \frac{1}{6}$$

$$= \frac{2}{3} + \frac{1}{21} + \frac{2}{7} + \frac{1}{6}$$

$$= \frac{21}{21} + \frac{1}{21} + \frac{7}{21} = \frac{29}{21}$$

9. Ans. C.

$$(x+y)^{\frac{1}{3}} + (y+z)^{\frac{1}{3}} = -(z+x)^{\frac{1}{3}}$$

If $a+b+c=0$ then $a^3+b^3+c^3=3abc$

Let $a=(x+y)^{\frac{1}{3}}$, $b=(y+z)^{\frac{1}{3}}$, $c=(z+x)^{\frac{1}{3}}$

$$a+b+c=0$$

Then $a^3+b^3+c^3=3abc$

Or

$$(x+y)^{\frac{1}{3} \times 3} + (y+z)^{\frac{1}{3} \times 3} + (z+x)^{\frac{1}{3} \times 3} = 3 \left[(x+y)^{\frac{1}{3}} (y+z)^{\frac{1}{3}} (z+x)^{\frac{1}{3}} \right]$$

$$2(x+y+z) = 3 \left[(x+y)^{\frac{1}{3}} (y+z)^{\frac{1}{3}} (z+x)^{\frac{1}{3}} \right]$$

Cubing both sides-

$$[2(x+y+z)]^3 = 27[(x+y)(y+z)(z+x)]$$

$$8(x+y+z)^3 = 27[(x+y)(y+z)(z+x)]$$

$$8(x^3+y^3+z^3) + 24(x+y)(y+z)(z+x) = 27(x+y)(y+z)(z+x)$$

$$8(x^3+y^3+z^3) = 3(x+y)(y+z)(z+x)$$

$$(x^3+y^3+z^3) = \frac{3}{8}(x+y)(y+z)(z+x)$$

10. Ans. A.

$$(a+b+c) = 20, \quad a^2+b^2+c^2 = 152$$

$$(ab+bc+ca) = ?$$

$$(a+b+c)_2 =$$

$$(a^2+b^2+c^2+2(ab+bc+ca))$$

$$400 = 152 + 2(ab+bc+ca)$$

$$248 = 2(ab+bc+ca)$$

$$(ab+bc+ca) = \frac{248}{2} = 124$$

Or,

11. Ans. A.

$$4(2\sin^2\theta + 7\cos^2\theta) = 13$$

$$4[2\sin^2\theta + 7(1-\sin^2\theta)] = 13$$

$$4[2\sin^2\theta + 7 - 7\sin^2\theta] = 13$$

$$8\sin^2\theta + 28 - 28\sin^2\theta = 13$$

$$20\sin^2\theta = 15$$

$$\sin^2\theta = \frac{15}{20} = \frac{3}{4}$$

$$\sin\theta = \frac{\sqrt{3}}{2} = \sin 60^\circ$$

$$\theta = 60^\circ$$

12. Ans. B.

Let the cost of one article be .

Then the cost of other article = $(2000-x)$

A.T.Q.

$$x \times \frac{112}{100} + (2000-x) \times \frac{88}{100} = 2000 \times \frac{101.2}{100}$$

$$112x - 88x + 176000 = 202400$$

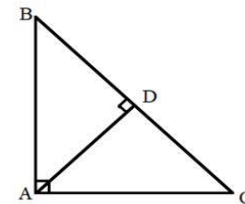
$$24x = 202400 - 176000$$

$$24x = 26400$$

$$x = 1100$$

The cost price of article for which there was a profit = 1100.

13. Ans. D.



In ΔABC and ΔADC

$$\angle BAC = \angle ADC = 90^\circ$$

$$\angle ACB = \angle ACD \text{ (common angle)}$$

Then $\angle BAC = \angle DAC$

Hence, $\Delta BAC \sim \Delta ADC$



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$$\frac{AC}{CD} = \frac{BC}{AC}$$

Or $AC^2 = BC \times CD$

Similarly, $AB^2 = BD \times BC$

$$\frac{AB^2}{AC^2} = \frac{BD \times BC}{BC \times CD} = \frac{BD}{CD}$$

Or, $AB^2 : AC^2 = BD : CD$

14. Ans. B.

We will not consider the 4th match as he has not scored 30 or more than 30 runs.

Total strike rate = $100 + 90 + 75 + 100 = 365$

Total no. of match = 4

Average strike rate = $\frac{365}{4} = 91.25\%$.

15. Ans. C.

Let ball faced in third match be x.

Strike rate = 75

Runs = 30

$$\text{Strike rate} = \frac{\text{Total Runs}}{\text{Total ball}} \times 100$$

$$75 = \frac{30}{x} \times 100$$

$$x = \frac{30}{75} \times 100 = 40 \text{ balls.}$$

16. Ans. D.

Total time between 31 December 2015 and 1 May 2016

$$= 4 \text{ Months} = \frac{1}{3} \text{ year.}$$

$$\text{Total interest} = \frac{P \times R \times T}{100}$$

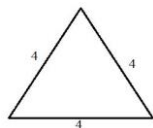
$$= \frac{1000 \times 12 \times 1}{100 \times 3}$$

$$= 40$$

Therefore, he will return = $1000 + 40 = \text{Rs. } 1040$.

17. Ans. C.

Each side contains 4 sticks.



Length of each side = 4 unit

$$\text{Area} = \frac{\sqrt{3}}{4} a^2$$

$$= \frac{\sqrt{3}}{4} \times 16$$

$$= 4\sqrt{3} \text{ sq. unit.}$$

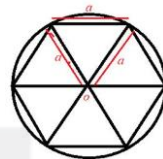
18. Ans. A.

$$a + \frac{1}{a} = 2$$

, It satisfy only when $a = 1$

Put $a = 1$, then $a^4 - \frac{1}{a^4} = 0$

19. Ans. A.



Let the side of hexagon be a.

Let O be the centre and 'a' is the radius of the circle.

$$= 6 \frac{\sqrt{3}}{4} a^2$$

Area of hexagon

$$\text{Area of circle} = \pi a^2$$

The area of portion that is not covered by hexagon

$$= \pi a^2 - 6 \frac{\sqrt{3}}{4} a^2$$

$$= \frac{\pi a^2}{\pi a^2 - \frac{3}{2} \sqrt{3} a^2}$$

Required ratio

$$= \frac{2\pi a^2}{2\pi a^2 - 3\sqrt{3} a^2}$$

$$= \frac{2\pi}{2\pi - 3\sqrt{3}}$$

20. Ans. A.

Amount Received by them in the ratio = 15 : 2 : 3

A.T.Q.

$$15x + 2x + 3x = 8000$$

$$20x = 8000$$



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$$\begin{aligned} x &= 400 \\ 15x &= 6000 \\ 2x &= 800 \\ 3x &= 1200 \end{aligned}$$

$$\text{No. of Rs. 500 notes} = \frac{6000}{500} = 12$$

$$\text{No. of ` 200 notes} = \frac{800}{200} = 4$$

$$\text{No. of Rs. 100 notes} = \frac{1200}{100} = 12$$

$$\begin{aligned} \text{Required Ratio} &= 12 : 4 : 12 \\ &= 3 : 1 : 3. \end{aligned}$$

21. Ans. A.

Strike rate in 2nd match = 90

Let the strike rate of 5th match be x.

A.T.Q.

$$\frac{90+x}{2} = 120$$

$$x = 150$$

His strike rate should be 150. So, he has to make 150 runs.

22. Ans. B.

Expenditure = Price × consumption

Let initial price be 5.

Therefore, Final price = 6

Let initial expenditure be 20.

Therefore, Final expenditure = 23

Now,

$$\text{Initial consumption} = \frac{20}{5}$$

$$\text{Final consumption} = \frac{23}{6}$$

$$\frac{\frac{20}{5} - \frac{23}{6}}{\frac{20}{5}} \times 100$$

$$\% \text{ reduction} = \frac{5}{24}$$

$$= \frac{30}{20} \times 100$$

$$= \frac{1}{24} \times 100 \approx 4.2\%$$

23. Ans. B.

$$\frac{\cos \alpha}{\sin \alpha + \cos \beta} + \frac{\cos \beta}{\sin \beta - \cos \alpha} = \frac{x}{\sin \alpha - \cos \beta} + \frac{\cos \beta}{\sin \beta + \cos \alpha}$$

Let $\beta = 90^\circ$, then

$$\frac{\cos \alpha}{\sin \alpha + \cos 90^\circ} + \frac{\cos 90^\circ}{\sin 90^\circ - \cos \alpha} = \frac{x}{\sin \alpha - \cos 90^\circ} + \frac{\cos 90^\circ}{\sin 90^\circ + \cos \alpha}$$

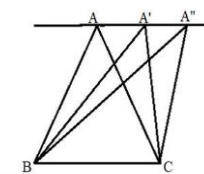
$$\cos 90^\circ = 0$$

$$\frac{\cos \alpha}{\sin \alpha} + 0 = \frac{x}{\sin \alpha}$$

$$\frac{\cos \alpha}{\sin \alpha} = \frac{x}{\sin \alpha}$$

Or, $x = \cos \alpha$.

24. Ans. B.



Area Of ABC = Area of A'BC = Area of A''BC
Since the triangle formed between two parallel lines the area of triangles is always same.

Similarly, If point A moves parallel to the straight line BC, the centroid will move along with BC.

25. Ans. C.

$$\left[1 - \frac{1}{5} \left\{ \frac{3}{7} - \left(1 - \frac{4}{15} - \frac{13}{15} \right) \times \frac{5}{7} \right\} \right] \div \left(\frac{6}{7} \div 5 \right)$$

$$= \left[\frac{6}{5} \left\{ \frac{3}{7} - \frac{6}{15} \times \frac{5}{7} \right\} \right] \div \frac{6}{35}$$

$$= \left[\frac{6}{5} \left\{ \frac{3}{7} - \frac{2}{7} \right\} \right] \div \frac{6}{35}$$

$$= \left[\frac{6}{5} \times \frac{1}{7} \right] \div \frac{6}{35}$$

$$= \left[\frac{6}{35} \right] \div \frac{6}{35}$$

$$= \frac{6}{35} \div \frac{6}{35}$$

$$= 1.$$



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