# Ssc Cgl Tier II Previous Year Question Paper Overview

Here, you can solve all the questions asked in Ssc Cgl Tier II Previous Year Question Paper on 2020-11-18 in the Morning exam. The detailed solutions are also provided for every previous year question and some of these questions can be asked again in your Ssc Cgl Tier II exam. There are 100 questions in the exam and 120 minutes are provided for the Ssc Cgl Tier II exam. The Cutoff of the exam was 140 marks hence you should try to score at least 150 marks.

# Ssc Cgl Tier II Previous Year Question Paper : Questions and Solutions

**Comprehension :**
Study the following pie-chart and table to answer the questions. Total number of students admitted in a university in various fields = 5000 Distribution of the number of students into various fields:

**Question 1 :**
What is the average number of boys in CS, ECE and EEE fields?

**Difficulty : Moderate** | **Average Time : 51 Seconds**

**Options :**

1. 406
2. 516
3. 514
4. 506

**Solution :**
The correct answer is **option 4** i.e. **506**

Number of boys in CS = 44% of (15% of 5000) = 330.

Number of boys in ECE = 72% of (16% of 5000) = 576

Number of boys in EEE = 68% of (18% of 5000) = 612

Required average = (330 + 576 + 612)/3 = 506.

**Comprehension :**

Study the following pie-chart and table to answer the questions Total number of students admitted in a university in various fields = 5000 Distribution of the number of students into various fields:

**Question 2 :**

What is the difference between the number of girls in IT and the number of girls in ECE?

**Difficulty : Moderate** **Average Time : 49 Seconds**

**Options :**

1. 21
2. 30
3. 25
4. 20

**Solution :**

The correct answer is **option 1** i.e. **21**

The number of girls in IT = 35% of (14% of 5000) = 245.

The number of girls in ECE = 28% of (16% of 5000) = 224

Required difference = 245 - 224 = 21.

**Question 3 :**

A, B and C can do a work seperately in 18, 36 and 54 days, respectively. They started the work together, but B and C left 5 days and 10 days, respectively, before the completion of the work. In how many days was the work finished?

**Difficulty : Moderate** **Average Time : 44 Seconds**

**Options :**

1. 15 days
2. 13 days
3. 14 days
4. 12 days

**Solution :**

The correct answer is **option 2** i.e. **13 days.**

Please note that, If someone left the work before the completion of the work then to ease problem-solving one should add

the work done by them in these days to the total work.

Total work = LCM of 18, 36 and 54 = 108 units.

Efficiency of A = 108/18 = 6 units/day

Efficiency of B = 108/36 = 3 units/day.

Efficiency of C = 108/54 = 2 units/day.

Work done by B in 5 days = 5 × 3 = 15 units.

Work done by C in 10 days = 10 × 2 = 20 units.

Total time taken by all of them to complete the work = total work/ total efficiency.

= (108 + 15 + 20)/(6 + 3 + 2) = 143/11 = 13 days.

**Question 4 :**

If (sin + cosec)2 + (cos + sec)2 = k + tan2 + cot2, then the value of k is equal to:

**Difficulty : Moderate** **Average Time : 62 Seconds**

**Options :**

1. 7
2. 2
3. 5
4. 9

**Solution :**

The correct answer is **option 1** i.e. **7**

$(\sin + \text{cosec})^2 + (\cos + \sec)^2 = k + \tan^2 + \cot^2$

$\sin^2 + \text{cosec}^2 + 2\sin \times \text{cosec} + \cos^2 + \sec^2 + 2\cos \times \sec - \tan^2 - \cot^2 = k$

$1 + 2 + 2 + \text{cosec}^2 - \cot^2 + \sec^2 - \tan^2 = k$

$5 + 1 + 1 = 7.$

**Question 5 :**

An athlete runs an 800 m race in 96 seconds. His speed (in km/h) is:

**Difficulty : Moderate**

**Average Time : 56 Seconds**

**Options :**

1. 20 km/h
2. 40 km/h
3. 30 km/h
4. 25 km/h
5. 38 km/h

**Solution :**

The correct answer is **option 3** i.e. **30 km/h**

Speed = 800/96 × 18/5 = 30 km/hr.

**Comprehension :**

Study the following histogram and answer the given question.

**Question 6 :**

What is the ratio of the number of students who scored 30 or more marks, but below 40 marks to the total number of students in the entrance examination?

**Difficulty : Moderate**

**Average Time : 45 Seconds**

**Options :**

1. 1 : 5
2. 3 : 5
3. 2 : 3
4. 2 : 5

**Solution :**

The correct answer is **option 1** i.e. **1 : 5**

The ratio of the number of students who scored 30 or more marks but below 40 marks = 20

Total number of students = 12 + 16 + 20 + 28 + 8 + 12 + 4 = 100

Required ratio = 20 : 100 = 1 : 5.

**Question 7 :**

In a triangle ABC, AB = 63 cm, AC =12 cm and BC = 6 cm. Then measure B is equal to:

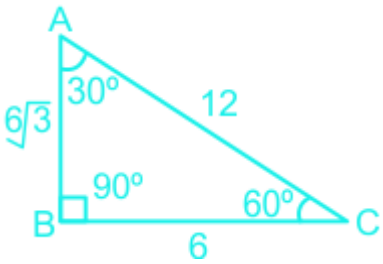
**Difficulty : Moderate** **Average Time : 40 Seconds**

**Options :**

1. 90º
2. 45º
3. 70º
4. 60º

**Solution :**

The correct answer is **option 1** i.e. **90º**




The ratio of the sides of the triangle is,

AB : BC : AC = 63 : 6 : 12 = 3 : 1 : 2

It is only possible if the triangle is 30° : 60: 90.

Sides opposite to the respective angles,

30 : 60 : 90 = 6 : 63 : 12.

\(\angle\)B = 90°.

**Question 8 :**

If A's income is 60% less than B's income, then B's income is what percentage more than that of A's income?

**Difficulty : Moderate** **Average Time : 53 Seconds**

**Options :**

40%

2. 150%
3. 120%
4. 80%

**Solution :**

The correct answer is **option 2** i.e. **150%**

A's income is 60% less than B's income,

B's income = 100x

A's income = 40x

Required % = (100x - 40x)/40x × 100 = 150%.

**Question 9 :**

ABCD is a rhombus with ABC = 52º. The measure of ACD is :

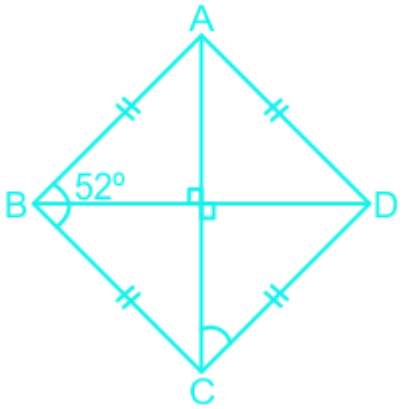
**Difficulty : Moderate** **Average Time : 39 Seconds**

**Options :**

1. 54º
2. 26º
3. 48º
4. 64º

**Solution :**

The correct answer is **option 4** i.e. **64º**




AC and BD are the angle bisectors.

ABC = 52º

In Triangle ABC,

ABC + BAC + BCA = 180

52 + x + x = 180

x = 64°

ACB = ACD = 64° (AC is the angle bisector of A and C)

**Comprehension :**

Study the following bar graph and answer the question given below.

**Question 10 :**

What is the difference between the number of girls in school A and the number of girls in school C?

**Difficulty : Moderate** | **Average Time : 58 Seconds**

**Options :**

1. 20
2. 30
3. 35
4. 25

**Solution :**

The correct answer is **option 4** i.e. **25**

Total number of boys and girls in school A = 1800

a + b = 1800 ( where a = number of boys and b = number of girls).....(1)

The difference in the number of boys and girls in school A = 350

a - b = 350.....(2)

from 1 and 2 we get,

2b = 1450

b = 725.

Total number of boys and girls in school C = 2000

c + d = 2000 ( where c = number of boys and d = number of girls).....(3)

The difference in the number of boys and girls in school C = 500

c - d = 500.....(4)

from 3 and 4 we get,

d = 750

Required difference = 750 - 725 = 25.

**Question 11 :**

A man walks at a speed of 8 km/h. After every km, he takes a rest for 4 minutes. How much time will he take to cover a distance of 6 km?

**Difficulty : Moderate** | **Average Time : 64 Seconds**

**Options :**

1. 70 minutes
2. 60 minutes
3. 69 minutes
4. 65 minutes
5. 75 minutes

**Solution :**

The correct answer is **option 4** i.e. **65 minutes**

Let's distribute the 6 km journey,

1km then rest + 1km then rest + 1 km then rest + 1 km then rest + 1 km then rest + 1 km

6km + 5 × rest.

Total time = (6/8) × 60 + 5 × 4

= 45 + 20= 65 minutes.

**Question 12 :**

The ratio between the present ages of A and B is 3 : 5. If the ratio of their ages five years hence becomes 13 : 20, then the present age of B is:

**Difficulty : Moderate** **Average Time : 49 Seconds**

**Options :**

1. 30 years
2. 32 years
3. 40 years
4. 35 years

**Solution :**

The correct answer is **option 4** i.e. **35 years**

Let the present age of A and B be 3x and 5x.

Their ages after 5 years.

A = 3x + 5, B = 5x + 5.

(3x + 5)/(5x + 5) = 13/20

On solving further we get,

x = 7.

Present age of B = 5x = 5 × 7 = 35 years.

**Question 13 :**

At what rate per cent per annum will a sum of Rs 15,625 amount to Rs 21,952 in three years, if the interest is compounded

annually?

**Difficulty : Moderate** **Average Time : 48 Seconds**

**Options :**

1. 12%
2. 8%
3. 9%
4. 10%

**Solution :**

The correct answer is **option 1** i.e. **12%**

Let the rate is 'r%'.

$A = P(1 + r/100)^n$

$21952 = 15625(1 + r/100)^3$

$28/25 = (1 + r/100)$

$3/25 = r/100$

$r = 12\%$.

**Question 14 :**

If x(3 - (rac{2}{x})) = (rac{3}{x}), then the value of x3 - 1/x3 is equal to:

**Difficulty : Moderate** **Average Time : 39 Seconds**

**Options :**

1. \(\frac{8}{27}\)
2. \(\frac{61}{27}\)
3. \(\frac{62}{27}\)
4. \(\frac{52}{27}\)

**Solution :**

The correct answer is **option 3** i.e. \(\frac{62}{27}\)

Here it is given that,

$x(3 - \frac{2}{x}) = \frac{3}{x}$

$3x - 2 = 3/x$

$3x - 3/x = 2$

$x - 1/x = 2/3$

On cubing both sides we get,

$x^3 - 1/x^3 - 3 \times x \times 1/x (x - 1/x) = 8/27$

$x^3 - 1/x^3 - 2 = 8/27$

$x^3 - 1/x^3 = 8/27 + 2$

$x^3 - 1/x^3 = 62/27.$

**Question 15 :**

A cyclic quadrilateral ABCD is such that AB = BC, AD = DC and AC and BD intersect at O. If CAD = 46º, then the measure of AOB is equal to:

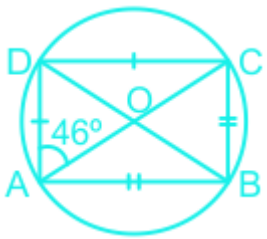
**Difficulty : Moderate** **Average Time : 67 Seconds**

**Options :**

1. 90º
2. 80º
3. 84º
4. 86º

**Solution :**

The correct answer is **option 1** i.e. **90º**




AD = DC then CAD = DCA = 46°

The sum of the opposite angle of a cyclic quadrilateral will be equal to 180.

DAB + DCB = 180

46 + a + 46 + a = 180 (BAC = BCA = a)

2a = 88

a = 44

BAC = BCA = 44°.

In \(\triangle\)ADC,

46 + 46 + ADC = 180

ADC = 88°

So ABC = 180 - 88 = 92

ABD = 92/2 = 46°.

In \(\triangle\)AOB,

AOB + OAB + OBA = 180

AOB = 180 - 44 - 46

AOB = 90°.

**Question 16 :**

The ratio of boys and girls in a school is 27 : 23. If the difference between the number of boys and girls is 200, then find the number of boys.

**Difficulty : Moderate**

**Average Time : 73 Seconds**

**Options :**

1. 1350
2. 1250
3. 1300
4. 1200

**Solution :**

The correct answer is **option 1** i.e. **1350**

Let the number of boys and girls be 27x and 23x.

27x - 23x = 200

4x = 200

x = 50

Number of boys = 27x = 27 × 50 = 1350.

**Question 17 :**
If the surface area of a sphere is 1386 cm2, then its volume is:

**Difficulty : Moderate** **Average Time : 38 Seconds**

**Options :**

1. 8451 $cm^3$
2. 4851 $cm^3$
3. 5418 $cm^3$
4. 4581 $cm^3$

**Solution :**
The correct answer is **option 2** i.e. **4851 $cm^3$**

$4\pi r^2 = 1386$

$r^2 = 110.25$

r = 10.5 cm.

Volume of the sphere = $4/3 \times \pi r^3 = 4/3 \times 22/7 \times 10.5 \times 10.5 \times 10.5$

$= 4851\ cm^3$

**Comprehension :**
Study the following bar graph and answer the questions given below:

**Question 18 :**
The number of boys in school B is what percentage of the total number of students in that school?

**Difficulty : Moderate** **Average Time : 53 Seconds**

**Options :**

40%

2. 50%
3. 60%
4. 55%

**Solution :**

The correct answer is **option 3** i.e. **60%**

Total number of boys and girls in school B = 2600

a + b = 2600 ( where a = number of boys and b = number of girls).....(1)

The difference in the number of boys and girls in school B = 520

a - b = 520.....(2)

From 1 and 2 we get,

a = 1560.

The total number of students in the school B = 2600

Required % = 1560/2600 × 100 = 60%.

**Question 19 :**

In the figure, chords AB and CD of a circle intersect externally at P. If AB = 4 cm, CD = 11 cm, and PD = 15 cm, then the length of PB is:

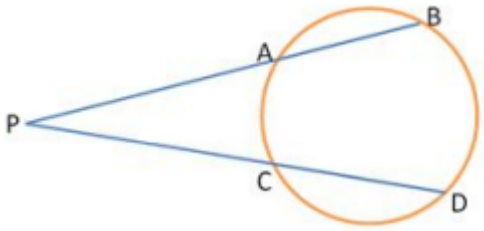
**Difficulty : Moderate** **Average Time : 52 Seconds**

**Options :**

1. 10 cm
2. 8 cm
3. 14 cm
4. 12 cm

**Solution :**

The correct answer is **option 1** i.e. **10 cm**




PD = 15 cm then PC = 15 - 11 = 4 cm

Let PA = x cm.

By using tangent secant theorem we get,

PA × PB = PC × PD

x (x + 4) = 4 × 15

By hit and trial,

6(6 + 4 ) = 60

60 = 60

So x = 6.

PB = x + 4 = 6 + 4 = 10 cm.

**Question 20 :**

The ratio of the height and the diameter of a right circular cone is 6 : 5 and its volume is (rac{2200}{7})cm3. What is its slant height?

**Difficulty : Moderate**

**Average Time : 54 Seconds**

**Options :**

1. 26 cm
2. 13 cm
3. 25 cm
4. 5 cm

**Solution :**

The correct answer is **option 2** i.e. **13 cm**

h : 2r = 6 : 5

Let h = 6x and 2r = 5x.

Volume of cone = 2200/7

1/3 × 22/7 × 5x/2 × 5x/2 × 6x = 2200/7

$x^3 = 8$

x = 2 cm

h = 6 × 2 = 12

r = 5 × 2/1 = 5

Slant height = \(\sqrt{12^2 + 5^2}\) = 13 cm.

**Question 21 :**

A and B together can do a peice of work in 12 days. A alone can do it in 18 days. In how many days B alone can do the work?

**Difficulty : Moderate** **Average Time : 50 Seconds**

**Options :**

1. 36 days
2. 24 days
3. 32 days
4. 30 days

**Solution :**

The correct answer is **option 1** i.e. **36 days**

Let the total work = LCM of 18 and 12 = 36 units.

Efficiency of A = 36/18 = 2units/day.

Efficiency of A + B = 36/12 = 3 units/day.

Efficiency of B = 3 - 2 = 1 unit/day.

Time taken by B to complete the work = 36/1 = 36 days.

**Question 22 :**

If x2 + 1/x2 = 7, then the value of x3 + 1/x3 where x > 0 is equal to:

**Difficulty : Moderate**

**Average Time : 45 Seconds**

**Options :**

1. 18
2. 12
3. 15
4. 16

**Solution :**

The correct answer is **option 1** i.e. **18**

$x^2 + 1/x^2 = 7$

On adding 2 both sides we get

$(x + 1/x)^2 = 9$

$x + 1/x = 3$

On cubing both sides we get,

$x^3 + 1/x^3 + 3(x + 1/x) = 27$

$x^3 + 1/x^3 = 27 - 9 = 18.$

**Question 23 :**

If x - 3/x = 6, x  0, then the value of(rac{x^4 - rac{27}{x^2}}{x^2-3x-3})  is:

**Difficulty : Moderate**

**Average Time : 49 Seconds**

**Options :**

1. 80
2. 270
3. 54
4. 90

**Solution :**

The correct answer is **option 4** i.e. **90**

x - 3/x = 6.....(1)

On cubing both sides we get,

$x^3 - 27/x^3 - 3 \times x \times 3/x(x - 3/x) = 216$

$x^3 - 27/x^3 - 54 = 216$

$x^3 - 27/x^3 = 270$.....(2)

$\frac{x^4 - \frac{27}{x^2}}{x^2-3x-3}$,

On dividing the numerator and denominator by x we get,

$= (x^3 - 27/x^3)/(x - 3/x - 3)$

$= 270/(6 - 3)$

$= 270/3 = 90$.

**Question 24 :**

The numerator of a fraction is 6 less than its denominator. If the numerator is decreased by 1 and the denominator is increased by 5, then its denominator becomes 4 times the numerator. Find the fraction.

**Difficulty : Moderate**

**Average Time : 78 Seconds**

**Options :**

1. $\frac{5}{11}$
2. $\frac{3}{11}$
3. $\frac{4}{11}$
4. $\frac{7}{11}$

**Solution :**

The correct answer is **option 1** i.e. $\frac{5}{11}$

According to the question,

N = D - 6.....(1)

Now, (N - 1)/(D + 5) = 1/4

On solving further we get,

4N - D = 9.....(2)

On solving eq(1) and (2) we get,

N = 5 and D = 11

Required fraction = 5/11.

**Question 25 :**

The volume of a hemisphere is 2425½cm3. Find its radius. (Take  = 22/7)

**Difficulty : Moderate** **Average Time : 49 Seconds**

**Options :**

1. 12 cm
2. 10 cm
3. 10.5 cm
4. 9.5 cm

**Solution :**

The correct answer is **option 3** i.e. **10.5 cm**

The volume of hemisphere = 2425.5

2/3 ×  × $r^3$ = 2425.5

$r^3$ = 1157.625

r = 10.5 cm.

**Question 26 :**

The radius and height of a cylinder are in the ratio 4 : 7 and its volume is 2816 cm3. Find its radius. (Take  = 22/7)

**Difficulty : Moderate** **Average Time : 41 Seconds**

**Options :**

1. 5 cm
2. 7 cm
3. 8 cm
4. 6 cm

**Solution :**

The correct answer is **option 3** i.e. **8 cm**

Volume of the cylinder = $r^2h$

22/7 × 4x × 4x × 7x = 2816.

$x^3 = 8$

x = 2.

Radius = 4x = 4 × 2 = 8 cm.

**Question 27 :**

The exteriour angle obtained on producing the base of a triangle both the ways are 121º and 104º. What is the measure of the largest angle of the traingle?

**Difficulty : Moderate** **Average Time : 44 Seconds**

**Options :**

1. 75º
2. 76º
3. 74º
4. 66º

**Solution :**

The correct answer is **option 2** i.e. **76º**

The interior angles corresponding to their interior angles be , (180 - 121) and (180 - 104)

The two interior angles of the triangles are 59 and 76.

Third interior angle = 180 - 59 - 76 = 45°.

The largest interior angle will be 76°.

**Question 28 :**

Find the sum of 6 + 8 + 10 + 12 + 14 ..... + 40.

**Difficulty : Moderate** **Average Time : 40 Seconds**

**Options :**

1. 414

424

3. 1600
4. 400

**Solution :**

The correct answer is **option 1** i.e. **414**

Sn = n/2 × (a + l)

40 = 6 + (n - 1) × 2

34 = (n - 1) × 2

n = 18.

$S_{18}$ = 18/2 × (6 + 40)

= 9 × 46 = 414.

**Question 29 :**

In the given figure, DBC = 65º, BAC = 35º and AB = BC, then the measure of ECD is equal to:

**Difficulty : Moderate** **Average Time : 41 Seconds**

**Options :**

1. 65º
2. 50º
3. 55º
4. 45º

**Solution :**

The correct answer is **option 4** i.e. **45º**

Here it is given that,

AB = BC

BAC = BCA = 35°

ABC = 180 - 35 - 35 = 110°.

ABD = 110 - 65 = 45°

ABD = ACD = 45° (Angle on the same segment)

ACD = ECD = 45°.

**Question 30 :**

A person travels 42 km in 5 hours. He covered some part by walking with the speed of 6 km/hr and some part by cycle with the speed of 10 km/hr. Find the total distance traveled by man.

**Difficulty : Moderate** **Average Time : 52 Seconds**

**Options :**

1. 18 km
2. 15 km
3. 10 km
4. 12 km
5. 14 km

**Solution :**

The correct answer is **option 4** i.e. **12 km**

Let the distance traveled on foot be 'x' km.

$x/6 + (42 - x)/10 = 5$

$5x + 126 - 3x = 5 \times 30$

$2x = 150 - 126$

$2x = 24$

$x = 12$ km.

**Question 31 :**

Find the least number which when divided by 12, 18, 24 and 30 leaves 4 as remainder in each case, but when divided by 7 leaves no remainder.

**Difficulty : Moderate** **Average Time : 44 Seconds**

**Options :**

1. 366
2. 364

384

4. 364

**Solution :**
The correct answer is **option 2** i.e. **364**

According to the question,

Least number must be = LCM (12, 18, 24, 30)k + 4.

=360k + 4

At k = 1

360 + 4 = 364.

364 is also a multiple of 7.

No condition violates.

**Question 32 :**
A conical tent has to accommodate 25 people. Each person must have 4 m2 of space on the ground and 80 m3 of air to breathe. Find the height of the tent.

**Difficulty : Moderate** | **Average Time : 44 Seconds**

**Options :**
1. 60 m
2. 50 m
3. 40 m
4. 45 m

**Solution :**
The correct answer is **option 1** i.e. **60 m**

We know that,

Volume = Area × height

25 × 80 = 1/3 × 4 × 25 × h

h = 60m.

**Question 33 :**

The graphs of the linear equations 4x - 2y = 10 and 4x + ky = 2 intersect at a point (a, 4). The value of k is equal to:

**Difficulty : Moderate** **Average Time : 40 Seconds**

**Options :**

1. 4
2. -3
3. 3
4. -4

**Solution :**

The correct answer is **option 4** i.e. **-4**

(a, 4) is the intersection point of the given lines.

It implies that this point satisfies both the lines.

$4 \times a - 2 \times 4 = 10$

$4a - 8 = 10$

$4a = 18$

$a = 4.5$

$4x + ky = 2$

$4 \times a + k \times 4 = 2$

$4 \times 4.5 + 4k = 2$

$4k = -16$

$k = -4$.

**Question 34 :**

At what rate of interest will a sum of Rs 4,500 amount to Rs 6,525 at simple interest for 5 years?

**Difficulty : Moderate** **Average Time : 48 Seconds**

**Options :**

1. 10%
2. 9%

8%

4. 12%

**Solution :**

The correct answer is **option 2** i.e. **9%**

5 years interest = 6525 - 4500 = 2025

Interest earned for 1st year = 2025/5 = 405

Rate of interest = 405/4500 × 100 = 9%

**Question 35 :**

The average of five positive numbers is 56. If the first number is three-fourth of the sum of the last four numbers, then the average of the last four numbers is:

**Difficulty : Moderate** **Average Time : 39 Seconds**

**Options :**

1. 35
2. 40
3. 30
4. 50

**Solution :**

The correct answer is **option 2** i.e. **40**

Let the five numbers are a, b, c, d and e.

a + b + c + d + e = 56 × 5

a + b + c + d + e = 280.....(1)

According to the question,

a = 3/4(b + c + d + e).....(2)

3/4(b + c + d + e) + b + c + d + e = 280

7/4(b + c + d + e) = 280

( b + c + d + e) = 160

Average of these four number = 160/4 = 40.

**Question 36 :**

The sum of three numbers is 280. If the ratio between the first and second numbers is 2 : 3 and the ratio between second and third numbers is 4 : 5, then find the second number.

**Difficulty : Moderate** **Average Time : 55 Seconds**

**Options :**

1. 80
2. 90
3. 86
4. 96

**Solution :**

The correct answer is **option 4** i.e. **96**

Let the three numbers be a, b and c.

a : b = 2 : 3.

b : c = 4 : 5.

On solving both the ratios we get a : b : c = 8 : 12 : 15.

a + b + c = 280

8x + 12x + 15x = 280

35x = 280

x = 8.

Second number = 12x = 12 × 8 = 96.

**Question 37 :**

If (rac{secÎ¸ + tanÎ¸}{secÎ¸ - tanÎ¸})= 2(rac{51}{79}), then the value of sin is equal to:

**Difficulty : Moderate**

**Average Time : 46 Seconds**

**Options :**

1. \(\frac{35}{72}\)
2. \(\frac{39}{72}\)
3. \(\frac{91}{144}\)
4. \(\frac{65}{144}\)

**Solution :**

The correct answer is **option 4** i.e. \(\frac{65}{144}\)

\(\frac{secÎ¸ + tanÎ¸}{secÎ¸ - tanÎ¸}\)= 2\(\frac{51}{79}\)

(sec\(\theta\) + tan\(\theta\))/(sec\(\theta\) - tan\(\theta\)) = 209/79.

By using componendo and dividendo we get,

(2sec\(\theta\))(2tan\(\theta\)) = 288/130

1/sin\(\theta\) = 144/65

sin\(\theta\) = 65/144.

**Question 38 :**

In a triangle ABC, P and Q are points on AB and AC, respectively, such that AP = 1 cm, PB = 3 cm, AQ = 1.5 cm, and CQ = 4.5 cm. If the area of â–³APQ is 12 cm2, then find the area of BPQC.

**Difficulty : Moderate**

**Average Time : 68 Seconds**

**Options :**

1. 192 $cm^2$
2. 182 $cm^2$
3. 190 $cm^2$
4. 180 $cm^2$

**Solution :**

The correct answer is **option 4** i.e. **180 $cm^2$**

In a triangle ABC,

AP/AB = 1/4 , AQ/AC = 1.5/6 = 1/4.

So one can say that, PQ || BC.

\(\triangle\)APQ is similar to \(\triangle\)ABC.

Area of \(\triangle\)APQ : Area of \(\triangle\)ABC = $(1/4)^2$

12/ Area of \(\triangle\)ABC = 1/16

Area of \(\triangle\)ABC = 192

Area of BPQC = 192 - 12 = 180 $cm^2$

**Question 39 :**

If (rac{8 + 2sqrt3}{3sqrt3 + 5} ={asqrt3 - b}), then the value of a + b is equal to:

**Difficulty : Moderate** **Average Time : 59 Seconds**

**Options :**

1. 18
2. 15
3. 24
4. 16

**Solution :**

The correct answer is **option 1** i.e. **18**

It is given that,

\(\frac{8 + 2\sqrt3}{3\sqrt3 + 5} ={a\sqrt3 - b}\)

On solving the LHS part first we get,

\(\frac{8 + 2\sqrt3}{3\sqrt3 + 5} \times \frac{3\sqrt3 - 5}{3\sqrt3 - 5}\) = \(\frac{24 \sqrt3 - 40 + 18 - 10\sqrt3}{2}\)

= \(7\sqrt3 - 11\)

On comparing LHS and RHS we get,

a = 7 and b = 11

a + b = 7 + 11 = 18.

**Question 40 :**

In a two-digit, its unit digit exceeds its ten-digit by 2, and that the product of the given number and the sum of its digit is equal to 460. The number is :

**Difficulty : Moderate**

**Average Time : 56 Seconds**

**Options :**

1. 48
2. 64
3. 46
4. 36

**Solution :**

The correct answer is **option 3** i.e. **46**

Let the ten's digit number be 10x + y.

y = x + 2

According to the question,

(10x + y)(x + y) = 460

(10x + x + 2)(x + x + 2) = 460

(11x + 2)(2x + 2) = 460

(11x + 2)(x + 1) = 230

At x = 4 given condition satisfies,

(44 + 2)(4 + 1) = 230

46 × 5 = 230

230 = 230

y = 4 + 2 = 6.

Required number = 10 × 4 + 6 = 46.

**Question 41 :**

An article is listed at Rs 7,600 and the discount offered unit is 10%. What additional discount must be given to bring the net selling price to Rs 5,814?

**Difficulty : Moderate**

**Average Time : 50 Seconds**

**Options :**

1. 8%
2. 10%
3. 12%
4. 15%

**Solution :**

The correct answer is **option 4** i.e. **15%**

Initial MP = 7600

SP after the discount of 10% = 7600 × .9 = 6840

Another discount offered = (6840 - 5814)/6840 × 100 = 15%

**Question 42 :**

A and B can do a piece of work in 18 days. B and C together can do it in 30 days. If A is twice as good a workman as C, find in how many days B alone can do the work?

**Difficulty : Moderate**

**Average Time : 42 Seconds**

**Options :**

1. 90 days
2. 100 days
3. 80 days
4. 75 days

**Solution :**

The correct answer is **option 1** i.e. **90 days.**

A + B can complete work in 18 days.

B + C can complete work in 30 days.

The efficiency of A: C = 2: 1.

Let the efficiency of A = 2x units/day and C = x unit/day.

Total work = LCM of 18 and 30 = 90 units.

A + B = 90/18 = 5

2x + B = 5

B = 5 - 2x.....(1)

C + B = 90/30 = 3

x + B = 3

B = 3 - x.....(2)

3 - x = 5 - 2x

x = 2

Efficiency of B = 3 - 2 = 1 unit/day.

Time taken by B to complete the work = 90/1 = 90 days.

**Question 43 :**

Anil bought two articles A and B at a total cost of Rs 10,000. He sold the article A at 15% profit and the article B at 10% loss. In the whole deal, he made no profit or no loss. Find the selling price of the article A.

**Difficulty : Moderate** | **Average Time : 67 Seconds**

**Options :**

1. Rs 4,500
2. Rs 5,400
3. Rs 4,600
4. Rs 4,200

**Solution :**

The correct answer is **option 3** i.e. **Rs 4,600**

Let the CP of article A and article B be 100x and 100y.

SP of A = 100x × 1.15 = 115x.

SP of B = 100y × .9 = 90y.

Total CP = Total SP

100x + 100y = 115x + 90y

10y = 15x

x/y = 2/3

100x + 100y = 10000

500 units = 10000

1 units = 20.

SP of A = 115x = 115 × 2 × 20 = 4600.

**Question 44 :**

ABC is an equilateral triangle with a side of 12 cm and AD is the median. Find the length of GD if G is the centroid of â–³ABC.

**Difficulty : Moderate**

**Average Time : 53 Seconds**

**Options :**

1. 63 cm
2. 33 cm
3. 43 cm
4. 23 cm

**Solution :**

The correct answer is **option 4** i.e. **23 cm**

GD = 1/3 × the height of the equilateral triangle.

Height of the triangle = 3/2 × 12 = 63.

GD = 1/3 × 63 = 23.

**Question 45 :**

A, B and C together invest Rs 53,000 in a business. A invests Rs 5,000 more than B and B invests Rs 6,000 more than C. Out of the total profit of Rs 31,800, find the share of A.

**Difficulty : Moderate**

**Average Time : 45 Seconds**

**Options :**

1. Rs 12,800

Rs 12,500

3. Rs 13,500
4. Rs 13,800

**Solution :**

The correct answer is **option 4** i.e. **Rs 13,800**

Let the amount invested by C in the business = x.

B = x + 6000

A = x + 6000 + 5000 = x + 11000.

A + B + C = 53000.

x + x + 6000 + x + 11000 = 53000

3x = 36000

x = 12000.

C = 12000, B = 18000 and A = 23000.

Ratio of their profit share = 23000 : 18000 : 12000

A : B : C = 23 : 18 : 12

Share of A = 23/53 × 31800 = 13800.

**Question 46 :**

Rahul invested an equal sum of money at compound interest under two schemes A and B. Under scheme A, the interest rate was 10% per annum and under scheme B, the interest rate was 12% p.a. The compound interest after two years on the sum invested in scheme A was Rs 1,050. How much is the interest earned under scheme B after two years, if the interest is compounded annually in both schemes?

**Difficulty : Moderate** | **Average Time : 63 Seconds**

**Options :**

1. Rs 1,722
2. Rs 1,270
3. Rs 1,272
4. Rs 1,372

**Solution :**

The correct answer is **option 3** i.e. **Rs 1,272**

Let the principal be 'p'.

$A = P(1 + r/100)^n$

For scheme A

$A = P(1 + 10/100)^2$

$A = 1.21P$

$1.21P - P = 1050$

$P = 1050/.21$

$P = 5000.$

Interest earned of 5000 in scheme B.

$A = 5000 \times (1 + 12/100)^2$

$A = 5000 \times 1.2544$

$A = 6272$

Interest earned on the same sum in scheme B = 6272 - 5000 = 1272.

**Question 47 :**

If sec  + tan  = 3, then the value of sec  is :

**Difficulty : Moderate**

**Average Time : 51 Seconds**

**Options :**

1. $\frac{4}{3}$
2. $\frac{3}{4}$
3. $\frac{3}{5}$
4. $\frac{5}{3}$

**Solution :**

The correct answer is **option 4** i.e. $\frac{5}{3}$

We know that,

sec + tan = 3.....(1)

sec + tan = x then sec - tan = 1/x.

sec - tan = 1/3.....(2)

On adding eq(1) and (2) we get,

2 sec = 10/3

sec = 5/3.

**Comprehension :**

Study the following pie chart and table to answer the questions Total number of students admitted to a university in various fields = 5000 Distribution of the number of students in various fields:

**Question 48 :**

The ratio of the number of boys in Economics to the number of students in Economics is:

**Difficulty : Moderate** **Average Time : 62 Seconds**

**Options :**

1. 14 : 25
2. 12 : 25
3. 13 : 25
4. 17 : 25

**Solution :**

The correct answer is **option 1** i.e. **14 : 25**

Total number of student in Economics = 12% of 5000 = 600.

Total number of boys in economics = 5% of 600 = 336

Required ratio = 336 : 600

= 14 : 25.

**Question 49 :**

A divisor is 15 times the quotient and 3 times the remainder. If the remainder is 40, find the dividend.

**Difficulty : Moderate** **Average Time : 38 Seconds**

**Options :**

900

2. 750
3. 1000
4. 600

**Solution :**

The correct answer is **option 3** i.e. **1000**

D = 15 × Q.

D = 3 × R

Let Q = q then D = 15q and R = 5q.

R = 5q = 40

q = 8.

Dividend = Divisor × quotient + Rem

Dividend = 15 × 8 × 8 + 40

= 960 + 40

= 1000.

**Question 50 :**

If x + (rac{16}{x})= 8, then the value of x2 + 32/x2 is:

**Difficulty : Moderate** | **Average Time : 41 Seconds**

**Options :**

1. 20
2. 24
3. 16
4. 18

**Solution :**

The correct answer is **option 4** i.e. **18**

x + \(\frac{16}{x}\)= 8

$x^2 + 16 = 8x$

$x^2 - 8x + 16 = 0$

$(x - 4)^2 = 0$

$x = 4$.

$x^2 + 32/x^2 = 16 + 32/16 = 18$.

**Question 51 :**

A sum of Rs 1,50,000 is distributed among three persons - A, B and C - so that they receive 20%, 30% and 50%, respectively. A receives the same amount from another sum of money which is distributed among them so that they receive 50%, 30% and 20%, respectively. Find the total amount received from both sums of money, by B.

**Difficulty : Moderate**

**Average Time : 53 Seconds**

**Options :**

1. Rs 58,000
2. Rs 60,000
3. Rs 55,000
4. Rs 63,000

**Solution :**

The correct answer is **option 4** i.e. **Rs 63,000**

The amount received by A = 20% of 150000 = 30000.

The amount received by B = 30% of 150000 = 45000

The amount received by C = 50% of 150000 = 75000.

A receive the same amount of money which is 50% of the total money.

50% of x = 30000

x = 60000

Amount received by B from the second amount = 30% of 60000 = 18000

Total amount received by B = 45000 + 18000 = 63000.

**Question 52 :**

An umbrella is marked for Rs 150 and sold for Rs 138. The rate of discount is:

**Difficulty : Moderate**

**Average Time : 48 Seconds**

**Options :**

1. 5%
2. 8%
3. 6%
4. 9%

**Solution :**

The correct answer is **option 2** i.e. **8%**

MP = 150

SP = 138

Discount% = 12/150 × 100 = 8%.

**Question 53 :**

The sum of length, breadth and height of a cuboid is 20 cm. If the length of the diagonal is 12 cm, then find the total surface area of cuboid.

**Difficulty : Moderate**

**Average Time : 36 Seconds**

**Options :**

1. 364 $cm^2$
2. 256 $cm^2$
3. 356 $cm^2$
4. 264 $cm^2$

**Solution :**

The correct answer is **option 2** i.e. **256$cm^2$**

Let the length, breadth and height of a cuboid 'l' , 'b' and 'h'.

Length of the diagonal = 12.

$\sqrt{l^2 + b^2 + h^2}$ = 12

$l^2 + b^2 + h^2$ = 144.....(1)

l + b + h = 20 cm.

On squaring both sides we get,

$l^2 + b^2 + h^2 + 2(lb + bh + hl) = 400$

144 + 2(lb + bh + hl) = 400

$2(lb + bh + hl) = 400 - 144 = 256cm^2$.

**Question 54 :**

The interior angle of a regular polygon exceeds its exterior angle by 90º. The number of sides of the polygon is:

**Difficulty : Moderate** **Average Time : 58 Seconds**

**Options :**

1. 8
2. 6
3. 10
4. 12

**Solution :**

The correct answer is **option 1** i.e. **8**

Let the exterior angle be x.

Interior angle = x + 90.

x + x + 90 = 180

2x = 90

x = 45°

The number of sides of a regular polygon = 360/45 = 8.

**Question 55 :**

A and B can do a work together in 18 days. A is three times as efficient as B. In how many days can B alone complete the work?

**Difficulty : Moderate** **Average Time : 43 Seconds**

**Options :**

60 days

2. 72 days
3. 54 days
4. 64 days

**Solution :**

The correct answer is **option 2** i.e. **72 days**

The ratio of the efficiency of A and B = 3 : 1

let the efficiency of of A and B be 3x and x

A and B complete the whole work in 18 days.

Total work = 4x × 18 = 72x units.

Time taken by B to complete the work = 72x/x = 72 days.

**Question 56 :**

The curved surface area of a cylinder is five times the area of its base. Find the ratio of the radius and height of the cylinder.

**Difficulty : Moderate** | **Average Time : 49 Seconds**

**Options :**

1. 2 : 3
2. 3 : 5
3. 2 : 5
4. 3 : 4

**Solution :**

The correct answer is **option 3** i.e. **2 : 5**

Let the radius and height be 'r' and 'h'.

CSA of cylinder = Area of the base of the cylinder.

$2\pi rh = 5\pi r^2$

h/r = 5/2.

r : h = 2 : 5.

**Question 57 :**

The value of 5 - (rac{8 + 2sqrt{15}}{4}) - (rac{1}{8 + 2sqrt{15}}) is equal to:

**Difficulty : Moderate** **Average Time : 45 Seconds**

**Options :**

1. \(\frac{1}{4}\)
2. 1
3. \(\frac{2}{3}\)
4. \(\frac{1}{2}\)

**Solution :**

The correct answer is **option 2** i.e. **1**

5 - \(\frac{8 + 2\sqrt{15}}{4}\) - \(\frac{1}{8 + 2\sqrt{15}}\)

\(\frac{1}{8 + 2\sqrt{15}}\) on rationalizing we get,

= \(\frac{8 - 2\sqrt{15}}{4}\)

5 - \(\frac{8 + 2\sqrt{15}}{4}\)- \(\frac{8 - 2\sqrt{15}}{4}\)

4/4 = 1

**Question 58 :**

In an examination, 92% of the students passed and 480 students failed. If so, how many students appeared in the examination?

**Difficulty : Moderate** **Average Time : 53 Seconds**

**Options :**

1. 5800
2. 6200
3. 6000

5000

**Solution :**
The correct answer is **option 3** i.e. **6000**

92% passed means 8% failed in the examination.

8% = 480

100% = 480/8 × 100 = 6000.

**Question 59 :**
The sum of weights of A and B is 80 kg. 50% of A's weight is (rac{5}{6})times the weight of B. Find the dfference between their weights.

**Difficulty : Moderate**

**Average Time : 37 Seconds**

**Options :**

1. 20 kg
2. 10 kg
3. 25 kg
4. 15 kg

**Solution :**
The correct answer is **option 1** i.e. **20kg**

Let the weight of A and B be 'a' and 'b'.

50% of a = 5/6 of b

a/b = 5/3.

5x + 3x = 80 kg

8x = 80 kg

x = 10 kg.

Difference between them = 5x - 3x = 2x

2x = 2 × 10 = 20 kg.

**Question 60 :**
If (rac{b}{a})=0.7, find the value of (rac{a-b}{a+b})+(rac{11}{34})

**Difficulty : Moderate**

**Average Time : 45 Seconds**

**Options :**

1. 0.2
2. 1
3. 0.5
4. 0.3

**Solution :**

The correct answer is **option 3** i.e. **0.5**

b/a = 7/10

a/b = 10/7

By using componendo and dividendo we get,

(a + b)/(a - b) = (10 + 7)/(10 - 7)

(a - b)/(a + b) = 3/17

\(\frac{a-b}{a+b}\)+\(\frac{11}{34}\) = 3/17 + 11/34= 17/34 = 1/2

= 0.5

**Question 61 :**

If (cos2)/(cot2-cos2) =3, where 0º  90º then the value of  is:

**Difficulty : Moderate**

**Average Time : 47 Seconds**

**Options :**

1. 45º
2. 50º
3. 60º
4. 30º

**Solution :**

The correct answer is **option 3** i.e. **60º**

$\cos^2/(\cot^2 - \cos^2) = 3$

$\cos^2 = 3\cot^2 - 3\cos^2$

$4\cos^2 = 3\cos^2/\sin^2$

$\sin^2 = 3/4$

sin = \(\sqrt3\)/2

sin = sin60

= 60°

**Question 62 :**

The price of a variety of a commodity is Rs 7/kg and that of another is Rs 12/kg. Find the ratio in which two varities should be mixed so that the price of the mixture is Rs 10/kg.

**Difficulty : Moderate**

**Average Time : 56 Seconds**

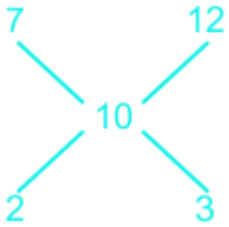
**Options :**

1. 3 : 4
2. 2 : 3
3. 4 : 5
4. 2 : 5

**Solution :**

The correct answer is **option 2** i.e. **2 : 3**

It is a direct question based on the concept of alligation,




Required ratio = 2 : 3

**Question 63 :**

A dealer sold an article at a loss of 2%. Had he sold it for Rs 44 more, he would have gained 20%. Find the cost price of the article.

**Difficulty : Moderate**

**Average Time : 44 Seconds**

**Options :**

1. Rs 250
2. Rs 300
3. Rs 400
4. Rs 200

**Solution :**

The correct answer is **option 4** i.e. **Rs 200**

Let the CP of an article be 100x

SP of an article at the loss of 2% = 100x × 0.98 = 98x.

If he sold it for Rs 44 more, he would have gained 20%.

SP of an article at the gain of 20% = 100x × 1.2 = 120x.

120x - 98x = 22x

22x = 44

x = 2

CP of an article = 100x = 100 × 2 = 200.

**Question 64 :**

If 2 = x + (rac{1}{1 + rac{1}{5 + rac{1}{2}}}) , then the value of x is equal to:

**Difficulty : Moderate**

**Average Time : 50 Seconds**

**Options :**

1. 14/13
2. 1
3. 13/15
4. 15/13

**Solution :**

The correct answer is **option 4** i.e. **15/13**

2 = x + \(\frac{1}{1 + \frac{1}{5 + \frac{1}{2}}}\)

2 = x + \(\frac{1}{1 + \frac{1}{\frac{10 + 1}{2}}}\)

2 = x + \(\frac{1}{1 + \frac{2}{11}}\)

2 = x + \(\frac{1}{\frac{11+ 2}{11}}\)

2 = x + \(\frac{11}{13}\)

x = 2 - 11/13 = 15/13

**Question 65 :**

Evaluate the following: 5 - [96 ÷ 4 of 3 - (16 - 55 ÷ 5)]

**Difficulty : Moderate**

**Average Time : 46 Seconds**

**Options :**

1. 0
2. 4
3. 3
4. 2

**Solution :**

The correct answer is **option 4** i.e. **2**

5 - [96 ÷ 4 of 3 - (16 - 55 ÷ 5)]

5 - [96 ÷ 4 of 3 - 5]

5 - [96 ÷ 12 - 5]

5 - [8 - 5]

5 - [3]

= 2.

**Question 66 :**

In a triangle, ABC, D is a point on BC such that (rac{AB}{AC})=(rac{BD}{DC}). If B = 68º and C = 52º, then the measure of BAD is equal to:

**Difficulty : Moderate**

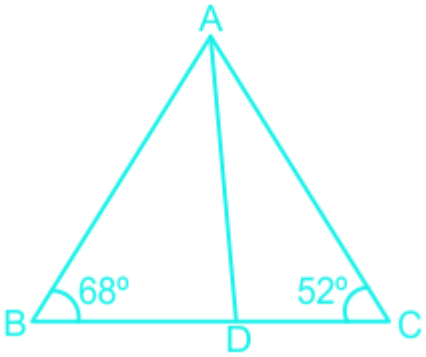
**Average Time : 48 Seconds**

**Options :**

1. 50º
2. 40º
3. 60º
4. 30º

**Solution :**

The correct answer is **option 4** i.e. **30º**




In triangle ABC,

\(\frac{AB}{AC}\)=\(\frac{BD}{DC}\).

It is possible only if AD act as an angle bisector of \(\angle\)A.

\(\angle\)A + \(\angle\)B + \(\angle\)C = 180

\(\angle\)A = 180 - 68 - 52

\(\angle\)A = 60

\(\angle\)BAD = 1/2 of 60 = 30°.

**Question 67 :**

If (rac{1}{4.263})= 0.2346, find the value of (rac{1}{0.0004263})

**Difficulty : Moderate**

**Average Time : 61 Seconds**

**Options :**

2346

2. 4.263
3. 2.346
4. 4263

**Solution :**

The correct answer is **option 1** i.e. **2346**

It is given that \(\frac{1}{4.263}\)= 0.2346

4.263 = 1/0.2346

On dividing LHS and RHS by 10000 we get,

0.0004263 = (1/0.2346)/10000

0.0004263 = 1/2346

2346 = 1/0.0004263.

**Question 68 :**

The length of the shadow of a vertical tower on level ground increases by 10 m when the angle of elevation of the sun changes from 45º to 30º. The height of the tower is:

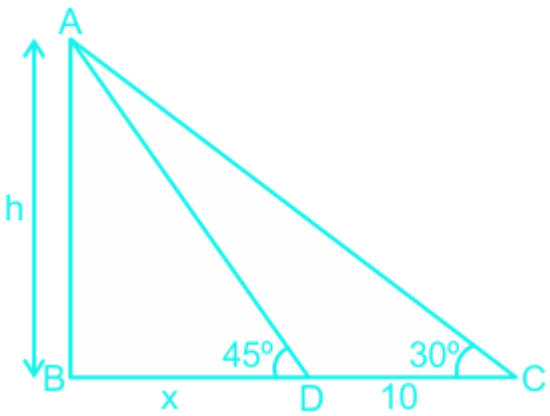
**Difficulty : Moderate** | **Average Time : 44 Seconds**

**Options :**

1. 103 m
2. 53 m
3. 5(3 + 1)m
4. 10(3 +1)m

**Solution :**

The correct answer is **option 3** i.e. **5(3 + 1)m**




In \(\triangle\)ABD,

Tan45 = AB/BD

AB = BD

h = x.....(1)

In \(\triangle\)ABC,

Tan30 = AB/BC

1/\(\sqrt{3}\) = h/(x + 10)

\(\sqrt{3}\)h = h + 10

h = 10/(\(\sqrt{3}\) - 1)

h = 5(\(\sqrt{3}\) + 1).

**Question 69 :**

Find the number of prime factors in the product (30)5 × (24)5.

**Difficulty : Moderate** **Average Time : 58 Seconds**

**Options :**

1. 35
2. 30
3. 45
4. 10

**Solution :**

The correct answer is**option 1** i.e. **35**

$(30)^5 \times (24)^5 = 5^5 \times 6^5 \times 6^5 \times 4^5 = 5^5 \times 2^{10} \times 3^{10} \times 2^{10}$

$= 5^5 \times 2^{20} \times 3^{10}$

Number of prime factors = 5 + 20 + 10 = 35.

**Question 70 :**

Ramesh started a business by investing a sum of Rs 40,000. Six months later, Kevin joined by investing Rs 20,000. If they make a profit of Rs 10,000 at the end of the year, how much is the share of Kevin?

**Difficulty : Moderate** **Average Time : 50 Seconds**

**Options :**

1. Rs 2,000
2. Rs 4,000
3. Rs 3,000
4. Rs 2,500

**Solution :**

The correct answer is **option 1** i.e. **Rs 2,000**

We know that the profit share = Investment × time period.

Ramesh's Profit share : Kevin's profit share = 40000 × 12 : 20000 × 6 = 4 : 1

Share of Kevin = 1/5 × 10000 = 2000.

**Question 71 :**

If 3 sin x + 4 cos x = 2, then the value of 3 cos x - 4 sin x is equal to:

**Difficulty : Moderate** **Average Time : 40 Seconds**

**Options :**

1. 23
2. 21
3. 29
4. 21

**Solution :**

The correct answer is**option 2** i.e. **21**

3 sin x + 4 cos x = 2

On squaring both sides we get,

$9\sin^2x + 16\cos^2x + 24 \sin x \cos x = 4$.....(1)

3 cos x - 4 sin x = a

On squaring both sides we get,

$9\cos^2x + 16\sin^2x - 24\sin x \cos x = a^2$ .....(2)

On adding 1 and 2 we get,

$25(\sin^2x + \cos^2x) = 4 + a^2$

$a^2 = 21$

$a = 21$.

**Question 72 :**

If cos = (rac{5}{13}), then the value of tan2 + sec2 is equal to:

**Difficulty : Moderate** **Average Time : 56 Seconds**

**Options :**

1. \(\frac{303}{25}\)
2. \(\frac{313}{25}\)
3. \(\frac{233}{25}\)
4. \(\frac{323}{25}\)

**Solution :**

The correct answer is **option 2** i.e. \(\frac{313}{25}\)

cos = \(\frac{5}{13}\) = B/H

P = \(\sqrt{13^2 - 5^2}\) = 12 cm.

Tan = P/B = 12/5

Sec = 13/5

$\tan^2 + \sec^2 = 144/25 + 169/25 = 313/25$.

**Question 73 :**

In the given figure, ABCD is a rectangle and P is a point on DC such that BC = 24 cm, DP = 10cm, and CD = 15 cm. If AP produced intersects BC produced at Q, then find the length of AQ.

**Difficulty : Moderate**

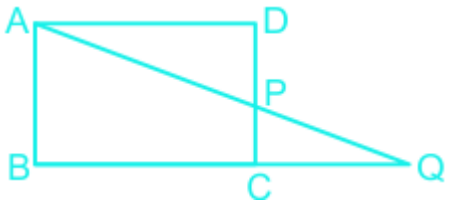
**Average Time : 58 Seconds**

**Options :**

1. 24 cm
2. 26 cm
3. 39 cm
4. 35 cm

**Solution :**

The correct answer is **option 3** i.e. **39 cm**




In the given figure one can see that,

CP || AB.

So one can say that \(\triangle\)ABQ and \(\triangle\)PCQ are similar,

PC/AB = CQ/BQ = PQ/AQ

Let CQ = x cm.

PC/AB = CQ/BQ

5/15 = x/(24 + x)

3x = x + 24

2x = 24

x = 12.

In \(\triangle\)PCQ

PC = 5 and CQ = 12 then hypotenuse PQ = \(\sqrt{5^2 + 12^2}\) = 13

PQ = 13

PC/AB = PQ/AQ

1/3 = 13/AQ

AQ = 39 cm.

**Question 74 :**

In a triangle, ABC, AB = AC and the perimeter of â–³ABC is 8(2 +2) cm. If the length of BC is 2 times the length of AB, then find the area of â–³ABC.

**Difficulty : Moderate**

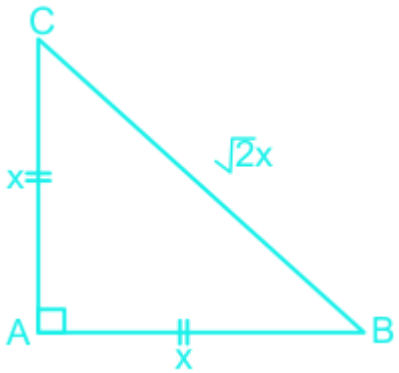
**Average Time : 73 Seconds**

**Options :**

1. 32 $cm^2$
2. 28 $cm^2$
3. 16 $cm^2$
4. 36 $cm^2$

**Solution :**

The correct answer is **option 1** i.e. **32 $cm^2$**




Let AB = x cm, then

AB = AC = x and BC = 2x.

Ratio of the sides of the triangle = x : x : 2x

= 1 : 1 : 2

Now one can directly say that it is a 45 : 45 : 90 triangle.

Perimeter = x + x + 2x = 8(2 +2)

x + x + x = 8 + 8 + 82

x = 8.

Area of triangle ABC = 1/2 × 8 × 8 = 32 $cm^2$.

**Question 75 :**

The radii of two cylinders are in the ratio 3 : 4 and their heights are in the ratio 8 : 5. The ratio of their volumes is equal to:

**Difficulty : Moderate** **Average Time : 63 Seconds**

**Options :**

1. 9 : 10
2. 8 : 9
3. 9 : 11
4. 7 : 10

**Solution :**

The correct answer is **option 1** i.e. **9 : 10**

r1 = 3x and r2 = 4x

h1 = 8y and h2 = 5y.

V1 : V2 = \(\pi\) × $r1^2$ × h1 : \(\pi\) × $r2^2$ × h2

V1 : V2 = 72xy : 80xy

V1 : V2 = 9 : 10

**Question 76 :**

If sin (x + y) = cos(x - y), then the value of cos2x is :

**Difficulty : Moderate** **Average Time : 46 Seconds**

**Options :**

1. \(\frac{1}{2}\)

3

3. 5
4. $\frac{1}{4}$

**Solution :**

The correct answer is **option 1** i.e. $\frac{1}{2}$

sin (x + y) = cos(x - y)

sin(x + y) = sin(90 - x + y)

x + y = 90 - x + y

2x = 90

x = 45

$\cos^2 x = \cos^2 45 = 1/2$.

**Question 77 :**

If sin  + sin2 = 1, then the value of cos2 + cos4 is equal to:

**Difficulty : Moderate** **Average Time : 46 Seconds**

**Options :**

1. 5
2. $\frac{1}{2}$
3. 1
4. 0

**Solution :**

The correct answer is **option 3** i.e. **1**

sin  + $\sin^2$ = 1

sin  = 1 - $\sin^2$

sin  = $\cos^2$ .....(1)

$\cos^2$ + $\cos^4$ can be written as,

sin + $\sin^2$

1.

**Question 78 :**

The number of lead balls, each 3 cm in diameter , that can be made from a solid lead sphere of diameter 42 cm is:

**Difficulty : Moderate** | **Average Time : 50 Seconds**

**Options :**

1. 2744
2. 4722
3. 7244
4. 2742

**Solution :**

The correct answer is **option 1** i.e. **2744**

Radius of sphere = 42/2 = 21cm.

The radius of a lead ball = 3/2

In this case, volume remains the same,

The volume of the sphere = volume of n lead balls

4/3 × \(\pi\) × 21 × 21 × 21 = n × 4/3 × \(\pi\) × 3/2 × 3/2 × 3/2

n = 2744.

**Question 79 :**

A delivery boy started from his office at 10 a.m. to deliver an article. He rode his scooter at a speed of 32 km/h. He delivered the article and waited for 15 minutes to get the payment. After the payment was made, he reached his office at 11.25 a.m., traveling at a speed of 24 km/h. Find the total distance traveled by the boy.

**Difficulty : Moderate** | **Average Time : 60 Seconds**

**Options :**

1. 35 km
2. 40 km
3. 32 km
4. 30 km

**Solution :**

The correct answer is **option 3** i.e. **32 km**

In this case, distance is constant.

Total time = d/32 + d/24 + 15 min = 85 min

7d/96 = 70/60 hours

d = 16

Total distance traveled by the boy = 16 + 16 = 32 km.

**Question 80 :**

If x =(sqrt{-sqrt3 + sqrt{3 + 8sqrt{7 + 4sqrt3}}}) where x > 0, then the value of x is equal to:

**Difficulty : Moderate** **Average Time : 44 Seconds**

**Options :**

1. 3
2. 4
3. 1
4. 2

**Solution :**

The correct answer is **option 4** i.e. **2**

7 + 4$\sqrt3$ = 4 + 3 + 2 × 2 × $\sqrt3$ = (2 + $\sqrt3$)$^2$

$\sqrt{-\sqrt3 + \sqrt{3 + 8\sqrt{7 + 4\sqrt3}}}$ can be written as,

$\sqrt{-\sqrt3 + \sqrt{3 + 8(2 + \sqrt3)}}$

$\sqrt{-\sqrt3 + \sqrt{3 +16 + 8\sqrt3}}$

$\sqrt{-\sqrt3 + \sqrt{(4+\sqrt3)^2}}$

= $\sqrt4$

= 2.

**Question 81 :**

If the perimeter of an isosceles right triangle is 8(2+1) cm, then the length of the hypotenuse of the triangle is:

**Difficulty : Moderate** **Average Time : 57 Seconds**

**Options :**

1. 8 cm
2. 12 cm
3. 10 cm
4. 24 cm

**Solution :**

The correct answer is **option 1** i.e. **8 cm**

In an isosceles right-angle triangle, two perpendicular sides are equal.

Let the length of two perpendicular sides be 'a' and hypotenuse be 'a2'.

a + a + a2 = 8(2+1)

2a + a2= 8(2+1).

a2(2 + 1) = 8(2+1)

a = 42.

Hypotenuse = 2a

= 2 × 42 = 8.

**Question 82 :**

The base of a pyramid is an equilateral triangle of side 10 m. If the height of the pyramid is 403 m, then the volume of the pyramid is:

**Difficulty : Moderate** **Average Time : 53 Seconds**

**Options :**

1. 1000 $m^3$

1200 $m^3$

3. 900 $m^3$
4. 800 $m^3$

**Solution :**

The correct answer is **option 1** i.e. **1000 $m^3$**

The volume of the pyramid = 1/3 × Area of the base × height

= 1/3 × 3/4 × 10 × 10 × 403

= 1000$m^3$.

**Question 83 :**

What is to be added to 15% of 180 so that the sum is equal to 20% of 360?

**Difficulty : Moderate** **Average Time : 42 Seconds**

**Options :**

1. 45
2. 40
3. 60
4. 50

**Solution :**

The correct answer is **option 1** i.e. **45**

Let the value to be added be x.

15% of 180 + x = 20% of 360

27 + x = 72

x = 45.

**Question 84 :**

On selling 38 balls at Rs 2,240, there is a loss equal to the cost price of 6 balls. The cost price of a ball is equal to:

**Difficulty : Moderate** **Average Time : 39 Seconds**

**Options :**

Rs 80

2. Rs 70
3. Rs 60
4. Rs 50

**Solution :**
The correct answer is **option 2** i.e. **Rs 70**

Loss = CP - SP

6CP = 38CP - 38SP

38SP = 32CP

32CP = 2240

CP = â‚¹70.

**Question 85 :**
The sum of two positive numbers is 240 and their HCF is 15. Find the number of pairs of numbers satisfying the given condition.

**Difficulty : Moderate**

**Average Time : 42 Seconds**

**Options :**

1. 5
2. 2
3. 8
4. 4

**Solution :**
The correct answer is **option 4** i.e. **4.**

Let the two numbers are 15a and 15b ( where a and b are co-prime numbers)

15a + 15b = 240

a + b = 16.

possible values of a and b will be,

(1, 15)(3, 13)(5, 11)(7,9).

4 such cases are possible.

**Question 86 :**

In the given figure, the measure of A is:

**Difficulty : Moderate** **Average Time : 41 Seconds**

**Options :**

1. 50º
2. 40º
3. 20º
4. 60º

**Solution :**

The correct answer is **option 2** i.e. **40º**

In \(\triangle\)ABC and \(\triangle\)PQR,

AB = PQ, BC = QR and B = Q = 70°.

So one can say that,

\(\triangle\)ABC and \(\triangle\)PQR are congruent to each other.

A = P

2x = x + 20

x = 20.

A = 2x = 2 × 20 = 40°.

**Question 87 :**

What is the reflection of the point (5, -3) in the line y = 3?

**Difficulty : Moderate** **Average Time : 53 Seconds**

**Options :**

1. (5, 3)
2. (5, 9)
3. (5, -6)
4. (-5, 3)

**Solution :**

The correct answer is **option 2** i.e. **(5, 9).**

If a point (x, y) is reflected by a line y = a, one can find the relation between the actual point and the coordinate of image points.

(x, y)  [x, (2a - y)]

So one can say that the reflection of (5, -3) is (5, 2 × 3 - (-3))

= (5, 9).

**Question 88 :**

If x  + (rac{1}{âˆšx})= 3, then the value of x3 + 1/x3 is:

**Difficulty : Moderate** **Average Time : 46 Seconds**

**Options :**

1. 326
2. 322
3. 324
4. 422

**Solution :**

The correct answer is **option 2** i.e. **322.**

x  + \(\frac{1}{âˆšx}\)= 3.

On squaring both sides we get,

$x + 1/x + 2 = 9$

$x + 1/x = 7$

On cubing both side we get,

$x^3 + 1/x^3 + 3(x + 1/x) = 343$

$x^3 + 1/x^3 = 343 - 21$

$x^3 + 1/x^3 = 322.$

**Question 89 :**

The average ages of Kishore, his wife and their child 6 years ago was 38 years and that of his wife and their child 8 years ago was 32 years. Find the present age of Kishore.

**Difficulty : Moderate**

**Average Time : 53 Seconds**

**Options :**

1. 48 years
2. 52 years
3. 55 years
4. 50 years

**Solution :**

The correct answer is **option 2** i.e. **52 years**

Let the age of Kishore, his wife and his son be 'k', 'w' and 's', 8 years ago.

Sum of the age of his child and his wife = 2 × 32 = 64 years.

Sum of the age of his child and his wife after next two years = 64 + 2 + 2 = 68.

The sum of the age of Kishore, his wife and his son = 3 × 38

k + 2 + 68 = 114

k = 44 years.

Present age of kishore = 44 + 8 = 52 years.

**Question 90 :**

The selling price of one article after allowing a discount of 15% on its cost price, is the same as the selling price of another article after allowing a discount of 25% on its cost price. If the sum of the cost prices of both the articles is Rs 640, then

find the selling price of the first article.

**Difficulty : Moderate** **Average Time : 63 Seconds**

**Options :**

1. Rs 250
2. Rs 340
3. Rs 280
4. Rs 255

**Solution :**

The correct answer is **option 4** i.e. **Rs 255**

Let the CP of both the articles be 100x and 100y.

SP of the first article = 85% × 100x

SP of the second article = 75% × 100y.

85x = 75y

x/y = 15/17

Let x = 15a and y = 17a.

100x + 100y = 640

x + y = 6.4

15a + 17a = 6.4

32a = 6.4

a = 0.2

SP of the first article = 85x = 85 × 15 × 0.2 = 255

**Question 91 :**

In how much time will the simple interest on a certain sum of money be (rac{6}{5})times of the sum at 20% per annum?

**Difficulty : Moderate** **Average Time : 54 Seconds**

**Options :**

1. 7 years

8 years

3. 5 years

4. 6 years

**Solution :**

The correct answer is **option 4** i.e. **6 years**

Let the principal be P.

= (P × 20 × t)/100 = 6/5 × P

= Pt/5 = 6P/5

= t = 6 years.

**Comprehension :**

Study the following bar graph and answer the questions given below.

**Question 92 :**

What is the ratio of number of boys to the number of girls in school E?

**Difficulty : Moderate** **Average Time : 42 Seconds**

**Options :**

1. 5 : 3

2. 7 : 4

3. 4 : 3

4. 5 : 4

**Solution :**

The correct answer is **option 1** i.e. **5 : 3**

B + G = 2800.....(1)

B - G = 700

2B = 3500

B = 1750

G = 2800 - 1750 = 1050

Required ratio = 1750 : 1050

= 5 : 3.

**Question 93 :**

If the radius of a cylinder is decreased by 20% and the height is increased by 20% to form a new cylinder, then the volume will be decreased by:

**Difficulty : Moderate** **Average Time : 40 Seconds**

**Options :**

1. 23.2%
2. 22.3%
3. 32.2%
4. 20.5%

**Solution :**

The correct answer is **option 1** i.e. **23.2%**

Let the initial radius be 'r' and height be 'h'.

Initial volume = \(\pi r^2h\)

New radius = r × .8 = .8r

New height = h × 1.2 = 1.2h

New volume = \(\pi\) × .8r × .8r × 1.2h = 0.768\(\pi r^2h\)

% decrease = (0.232)/1 × 100 = 23.2%.

**Question 94 :**

The train ticket fare from places A to B in 2nd class AC and 3rd class AC is Rs 2,500 and Rs 2,000.respectively. If the fares of 2nd class AC and 3rd class AC are increased by 20% and 10% respectively, then find the ratio of the new fares of 2nd class AC and 3rd class AC.

**Difficulty : Moderate** **Average Time : 59 Seconds**

**Options :**

1. 15 : 11
2. 12 : 11

13 : 11

4. 15 : 13

**Solution :**

The correct answer is **option 1** i.e. **15 : 11**

It is given that the train ticket fare from places A to B in $2^{nd}$ class AC and $3^{rd}$ class AC is Rs 2,500 and Rs 2,000 respectively.

Increased fare of $2^{nd}$ class AC = 2500 × 120% = 3000

Increased fare of $3^{rd}$ class AC = 2000 × 110% = 2200

Required ratio = 3000 : 2200

= 15 : 11.

**Question 95 :**

The base of a right prism is a square having a side of 15 cm. If its height is 8 cm, then find the total surface area.

**Difficulty : Moderate** **Average Time : 50 Seconds**

**Options :**

1. 940 $cm^2$
2. 920 $cm^2$
3. 900 $cm^2$
4. 930 $cm^2$

**Solution :**

The correct answer is **option 4** i.e. **930 $cm^2$**

We know that A prism having square and rectangular bases is known as a cuboid.

It is a cuboid of L = 15, B = 15 and H = 8.

TSA = 2(lb + bh + hl)

= 2(225 + 120 + 120)

= 2(225 + 240)

= 930 $cm^2$

**Question 96 :**

If cosec39° = x, then the value of 1/cosec251° + sin239° + tan251° - 1/sin251 sec239 is:

**Difficulty : Moderate** **Average Time : 46 Seconds**

**Options :**

1. $x^2 - 1$
2. $x^2 - 1$
3. $1 - x^2$
4. $1 - x^2$

**Solution :**

The correct answer is **option 1** i.e. $\mathbf{x^2 - 1}$

$1/\text{cosec}^2 51° + \sin^2 39° + \tan^2 51° - 1/\sin^2 51 \sec^2 39$

$\sin^2 51° + \sin^2 39° + \tan^2 51° - \cos^2 39°/\sin^2 51.$

$\sin^2 51° + \cos^2 51° + \tan^2 51° - \cos^2 39°/\cos^2 39°.$

$1 - 1 + \tan^2 51°$

$\tan^2 51°$

$\cot^2 39°$

$\text{cosec}^2 39° - 1$

$x^2 - 1.$

**Question 97 :**

A container contains 20 L mixture in which there is 10% sulphuric acid. Find the quality of sulphuric acid to be added in it to make the solution to contain 25% sulphuric acid.

**Difficulty : Moderate** **Average Time : 69 Seconds**

**Options :**

1. 2 L
2. 3 L
3. 4 L
4. 5 L

**Solution :**

The correct answer is **option 3** i.e. **4 L.**

Concentration of sulphuric acid in 20L = 10% of 20 = 2L.

Let the amount of sulphuric acid to be mixed be x.

= (2L + x)/(20 + x) = 1/4

On solving we get,

x = 4L

**Question 98 :**

Evaluate: (rac{1}{15})+(rac{1}{35})+(rac{1}{63})+(rac{1}{99})+(rac{1}{143})

**Difficulty : Moderate** **Average Time : 39 Seconds**

**Options :**

1. \(\frac{4}{39}\)
2. \(\frac{5}{39}\)
3. \(\frac{10}{39}\)
4. \(\frac{7}{39}\)

**Solution :**

The correct answer is **option 2** i.e. \(\frac{5}{39}\)

\(\frac{1}{15}\)+\(\frac{1}{35}\)+\(\frac{1}{63}\)+\(\frac{1}{99}\)+\(\frac{1}{143}\)

15 = 3 × 5

35 = 5 × 7

63 = 9 × 7

99 = 9 × 11

143 = 13 × 11

= (1/15 + 1/35) + (1/63 + 1/99 + 1/143)

= (7+3)/(5 × 3 × 7) + (143 + 91 + 63)/(9 × 7 × 11 × 13)

= 2/(3 × 7) + 3/(7 × 13)

= (26 + 9)/(3 × 7 × 13) = 5/39.

**Question 99 :**

If  +  = 90º and  =  2, then the value of 3 cos2 - 2 sin2  is equal to:

**Difficulty : Moderate**

**Average Time : 55 Seconds**

**Options :**

1. \(\frac{3}{4}\)
2. \(\frac{3}{2}\)
3. \(\frac{1}{4}\)
4. \(\frac{4}{3}\)

**Solution :**

The correct answer is **option 3** i.e. \(\frac{1}{4}\)

Here it is given that,

 +  = 90º and  =  2

2 +  = 90

 = 30°.

 = 60°

3 $\cos^2$ - 2 $\sin^2$  = 3 $\cos^2$60 - 2 $\sin^2$ 30

= 3 × 1/4 - 2 × 1/4 = 1/4.

**Question 100 :**

A man sells two articles at Rs 9,975 each. He gains 5% on one article and loses 5% on the other. Find his overall gain or loss.

**Difficulty : Moderate**

**Average Time : 54 Seconds**

**Options :**

1. Loss Rs 60
2. Profit Rs 50
3. Profit Rs 60

Loss Rs 50

**Solution :**
The correct answer is **option 4** i.e. **Loss of Rs 50.**

CP of the article on which a man gains 5%.

CP = 9975 × 100/105 = 9500.

CP of the article on which a man loses 5%

CP = 9975 × 100/95 = 10500

Total SP = 2 × 9975 = 19950

Total CP = 9500 + 10500 = 20000

Loss = 20000 - 19950 = â‚¹50.

# Ssc Cgl Tier II Previous Year Question Paper Analysis

The analysis of Ssc Cgl Tier II Previous Year Question Paper held on 2020-11-18 in the Morning exam is as follows:

1. 100 questions were moderate.
2. The safe score is 140 marks.
3. 100 questions were asked from Quantitative Aptitude and 100 questions were asked from Quantitative Aptitude
4. 0 questions should have been skipped if you were short of time.

# Ssc Cgl Tier II Previous Year Question Paper Topic Wise Weightage

## Quantitative Aptitude

1. Simplification - 2
2. Average - 1
3. Percentage - 5
4. Data Interpretation - 7
5. Time And Work - 4
6. Time Speed And Distance - 4
7. Interest - 4

Ratios And Proportion - 6
9. Geometry - 14
10. Trigonometry - 11
11. Mensuration - 12
12. Algebra - 11
13. Number System - 7
14. Coordinate Geometry - 2
15. MIxtures And Alligations - 2
16. Partnership - 1
17. Profit And Loss - 7

# Ssc Cgl Tier II Previous Year Question Paper Tips and Tricks


1. Try to solve Ssc Cgl Tier II Previous Year Question Paper without taking any help from the solutions.
2. Ssc Cgl Tier II Previous Year Question Paper require proper usage of concept so firstly read the question thoroughly and then use the right concept.
3. In case you're not able to solve the question in less than 30 seconds in the exam then you should skip the question and move to the next question.

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## About Neetu Mam

Neetu Mam is primarily passionate for the English language and teaching from the last 20 years however for the Ssc Cgl Tier II Previous Year Question Paper. She has guided her team to provide the best explanation for the question.