



# 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 2018-02-19 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 150 marks hence you should try to score at least 160 marks.

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

### Question 1 :

If  $N = 1 + 11 + 111 + 1111 + \dots + 1111111111$ , then what is the sum of the digit's of N?

Difficulty : Moderate

Average Time : 42 Seconds

### Options :

1. 45
2. 18
3. 36
4. 5

### Solution :

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

$$N = 1 + 11 + 111 + 1111 + \dots + 1111111111$$

$$1 + 11 = 12$$

$$1 + 11 + 111 = 123$$

$$1 + 11 + 111 + 1111 = 1234$$

$$N = 123456789$$

Now, sum of digits of  $N = 9 \times 10/2 = 45$

### Question 2 :



What is the sum of first 40 terms of  $1 + 3 + 4 + 5 + 7 + 7 + 10 + 9 + \dots$ ?

Difficulty : Moderate

Average Time : 35 Seconds

Options :

1. 1010
2. 1115
3. 1030
4. 1031

Solution :

The correct answer is **option 3** i.e. **1030**

$$N = N_1 + N_2$$

$$N_1 = (1 + 4 + 7 + 10 + \dots)$$

$$N_2 = (3 + 5 + 7 + 9 + \dots)$$

$$N_1 = 20/2[2 \times 1 + (20 - 1) \times 3] = 10[2 + 57] = 590$$

$$N_2 = 20/2[2 \times 3 + (20 - 1) \times 2] = 10 \times [6 + 38] = 440$$

$$N = N_1 + N_2 = 440 + 590 = 1030$$

Question 3 :

What is the value of  $1/0.2 + 1/0.02 + 1/0.002 + \dots$  upto 9 terms?

Difficulty : Moderate

Average Time : 40 Seconds

Options :

1. 222222222
2. 111111111
3. 555555555
4. 525252525

Solution :

The correct answer is **option 3** i.e. **555555555**

$1/0.2 + 1/0.02 + 1/0.002 + \dots$  upto 9 terms

$$\begin{aligned} &= 5 + 50 + 500 + \dots \text{upto 9 terms} \\ &= 5 \times (10^9 - 1)/(10 - 1) \text{ [sum of GP]} \\ &= 555555555 \end{aligned}$$

**Question 4 :**

What is the value of  $(3.6 \times 1.62 + 0.48 \times 3.6)/(1.8 \times 0.8 + 10.8 \times 0.3 - 2.16)$  ?

**Difficulty : Moderate****Average Time : 34 Seconds****Options :**

1. 2.4
2. 2
3. 4
4. 3

**Solution :**

The correct answer is option 4, i.e. 3

$$\begin{aligned} &= (3.6 \times 1.62 + 0.48 \times 3.6)/(1.8 \times 0.8 + 10.8 \times 0.3 - 2.16) \\ &= 3.6[1.62 + 0.48]/1.0 \times 0.8 + 3.24 - 2.16 \\ &= 3.6 \times 2.1/1.44 + 1.08 \\ &= 3.6 \times 2.1/2.52 = 3 \end{aligned}$$

**Question 5 :****Difficulty : Moderate****Average Time : 29 Seconds****Options :**

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

**Solution :**

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

$$\frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{x}}}} = \frac{1}{\frac{8}{5}}$$

$$\Rightarrow \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{x}}}} = \frac{1}{1 + \frac{3}{5}} = \frac{1}{1 + \frac{1}{1 + \frac{2}{3}}}$$

$$\Rightarrow \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{x}}}} = \frac{1}{1 + \frac{1}{2}}$$

$$\therefore \boxed{x = 2}$$

**Question 6 :**

If  $(1+1/2)(1+1/4)(1+1/6)(1+1/8)(1-1/3)(1-1/5)(1-1/7) = 1+1/x$ , then what is the value of x ?

Difficulty : Moderate

Average Time : 32 Seconds

**Options :**

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

**Solution :**

The correct answer is option 2, i.e. 8

$$(1+1/2)(1+1/4)(1+1/6)(1+1/8)(1-1/3)(1-1/5)(1-1/7) = 1+1/x$$

$$3/2 \times 5/4 \times 7/6 \times 9/8 \times 2/3 \times 4/5 \times 6/7 = 1 + 1/x$$

$$1/x = 9/8 - 1$$

$$1/x = 1/8$$

$$x = 8$$

**Question 7 :**

What is the value of  $1/3 \times 7 + 1/7 \times 11 + 1/11 \times 15 + \dots + 1/899 \times 903$  ?

Difficulty : Moderate

Average Time : 36 Seconds

**Options :**

1. 21/509

2. 18/403

3. 25/301

4. 29/31

**Solution :**

The correct answer is option 3, i.e. 25/301

$$= 1/3 \times 7 + 1/7 \times 11 + 1/11 \times 15 + \dots + 1/899 \times 903$$

$$= 1/4 [1/3 - 1/7 + 1/7 - 1/11 + \dots + 1/899 - 1/903]$$

$$= 1/4 [1/3 - 1/903]$$

$$= 1/4 [301 - 1/903] = 300/4 \times 903 = 25/301$$

**Question 8 :**

What is the unit digit of  $15 + 25 + 35 + \dots + 205$ ?

Difficulty : Moderate

Average Time : 32 Seconds

**Options :**



0

2. 5

3. 2

4. 4

**Solution :**

The correct answer is **option 1** i.e. **0**

Unit digit of  $1^5 + 2^5 + 3^5 + \dots + 20^5$

$= 1^{4n+1} + 2^{4n+1} + \dots + 20^{4n+1}$  (form)

$= 1^1 + 2^1 + 3^1 + \dots + 20^1$

$= 1 + 2 + 3 + \dots + 20$

$= 20 \times 21/2 = 210$

Unit digit = 0

**Question 9 :**

x, y and z are prime numbers and  $x + y + z = 38$ . What is the maximum value of x?

**Difficulty : Moderate**

**Average Time : 43 Seconds**

**Options :**

1. 19

2. 23

3. 31

4. 29

**Solution :**

The correct answer is **option 3** i.e. **31**

$x + y + z = 38$

Maximum possible value of x can be = 31

so that,

$y + z = 7$



$(y, z) = (2, 5)$

**Question 10 :**

N is the smallest three digit prime number. When N is divided by 13, then what will be the remainder?

**Difficulty : Moderate**

**Average Time : 38 Seconds**

**Options :**

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

**Solution :**

The correct answer is **option 4** i.e. **10**

N is the smallest 3 digit prime number

$$N = 101$$

$$N/13 = 101/13$$

10 is the remainder

**Question 11 :**

How many natural numbers are there between 261 and 45109?

**Difficulty : Moderate**

**Average Time : 34 Seconds**

**Options :**

1. 144
2. 196
3. 168
4. 195

**Solution :**

The correct answer is **option 2** i.e. **196**

$$261 > 16$$



45109 > 212

Natural numbers between 261 and 45109 = 212 - 16 = 196

**Question 12 :**

What is the value of 121 + 12321 + 1234321 + 12345432?

Difficulty : Moderate

Average Time : 34 Seconds

**Options :**

1. 12345
2. 123456
3. 12344
4. 123454

**Solution :**

The correct answer is **option 3** i.e. **12344**

$$121 + 12321 + 1234321 + 123454321$$

$$= 11 + 111 + 1111 + 11111$$

$$= 12344$$

**Question 13 :**

$p^3 + q^3 + r^3 - 3pqr = 4$ , If  $a = q + r$ ,  $b = r + p$  and  $c = p + q$ , then what is the value of  $a^3 + b^3 + c^3 - 3abc$ ?

Difficulty : Moderate

Average Time : 36 Seconds

**Options :**

1. 4
2. 8
3. 2
4. 12

**Solution :**

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

$$p^3 + q^3 + r^3 - 3pqr = 4 \dots(1)$$



Let,  $a = q + r$

$b = r + p$

$c = p + q$

$$a^3 + b^3 + c^3 - 3abc = \frac{1}{2}(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2]$$

$$= \frac{1}{2}[2(p + q + r)][(q - p)^2 + (r - q)^2 + (p - r)^2]$$

$$= 2[p^3 + q^3 + r^3 - 3pqr]$$

$$= 2 \times 4 = 8$$

**Question 14 :**

If  $\alpha$  and  $\beta$  are the roots of the equation  $x^2 + x - 1 = 0$ , then what is the equation whose roots are  $5\alpha$  and  $5\beta$ ?

**Difficulty :** Moderate

**Average Time :** 58 Seconds

**Options :**

1.  $x^2 + 7x - 1 = 0$

2.  $x^2 - 7x - 1 = 0$

3.  $x^2 - 11x - 1 = 0$

4.  $x^2 + 11x - 1 = 0$

**Solution :**

The correct answer is **option 4** i.e.  $x^2 + 11x - 1 = 0$

$$x^2 + x - 1 = 0 ; [ + = -1 ] ; [ = -1 ]$$

When roots are  $5\alpha, 5\beta$

$$\text{Sum of roots} = 5\alpha + 5\beta$$

$$= (5\alpha + 5\beta)(3\alpha + 3\beta) - 22(\alpha + \beta)$$

$$= [(5\alpha + 5\beta)^2 - 2][(5\alpha + 5\beta)^2 - 3] - 22(\alpha + \beta)$$

$$= [(-1)^2 - 2][(-1)^2 - 3] - (-1)^2(-1) = -11 \dots (1)$$

$$\text{Product of roots} = 5\alpha \cdot 5\beta$$

$$= (-1)^5 = (-1)^5 = -1$$

Equation



$$x^2 - (-11)x - 1 = 0$$

$$x^2 + 11x - 1 = 0$$

**Question 15 :**

If  $x$  and  $y$  are natural numbers such that  $x + y = 2017$ , then what is the value of  $(-1)^x + (-1)^y$ ?

**Difficulty : Moderate****Average Time : 92 Seconds****Options :**

1. 2

2. -2

3. 0

4. 1

**Solution :**

The correct answer is **option 3** i.e. **0**

$$x + y = 2017$$

from this, we infer that one no. is even and the other no. is odd

So,

$$= (-1)^x + (-1)^y \text{ [considering } x = \text{even, } y = \text{odd]}$$

$$= 1 - 1 = 0$$

**Question 16 :**

If  $x + (1/x) = (3 + 1)/2$ , then what is the value of  $x^4 + 1/x^4$ ?

**Difficulty : Moderate****Average Time : 41 Seconds****Options :**1.  $(43 - 1)/4$ 2.  $(43 + 1)/2$ 3.  $(-43 - 1)/4$ 4.  $(-43 - 1)/2$ **Solution :**

The correct answer is **option 3** i.e.  $(-43 - 1)/4$

$$x + 1/x = (3 + 1)/4$$

On squaring both sides,

$$x^2 + 1/x^2 + 2 = (4 + 23)/4$$

$$x^2 + 1/x^2 = (2 + 3)/2 - 2 = [3 - 2/2]$$

Again squaring both sides,

$$x^4 + 1/x^4 = (-43 - 1)/4$$

**Question 17 :**

If  $a + a^2 + a^3 - 1 = 0$ , then what is the value of  $a^3 + 1/a$ ?

**Difficulty : Moderate**

**Average Time : 49 Seconds**

**Options :**

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

**Solution :**

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

$$a + a^2 + a^3 - 1 = 0 \dots(1)$$

Multiplying by 'a' on both sides

$$a^2 + a^3 + a^4 - a = 0$$

$$a^2 + a^3 = a - a^4$$

$$\text{from (1) } [a^2 + a^3 = 1 - a]$$

$$1 - a = a - a^4$$

$$a^4 + 1 = 2a$$

$$(a^4 + 1)/a = 2$$

$$a^3 + (1/a) = 2$$

**Question 18 :**

If  $a - (1/a) = b$ ,  $b - (1/b) = c$  and  $c - (1/c) = a$ , then what is the value of  $(1/ab) + (1/bc) + (1/ca)$ ?

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

1. -3
2. -6
3. -1
4. -9

**Solution :**

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

$$a - (1/a) = b, b - (1/b) = c \text{ and } c - (1/c) = a,$$

$$(a^2 - 1)/a = b$$

$$a^2 - 1 = ab \dots(1)$$

$$b^2 - 1 = bc \dots(2)$$

$$c^2 - 1 = ac \dots(3)$$

adding (1) + (2) + (3)

$$a^2 + b^2 + c^2 - 3 = ab + bc + ac \dots(4)$$

$$= (1/ab) + (1/bc) + (1/ca)$$

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

$$= ab - ac - b^2 + bc + bc - ab - c^2 + ac + ac - bc - a^2 + ab$$

$$= -a^2 - b^2 - c^2 + ab + bc + ca$$

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

$$= -3$$

**Question 19 :**

If the roots of the equation  $a(b - c)x^2 + b(c - a)x + c(a - b) = 0$  are equal, then which of the following is true?

**Difficulty : Moderate****Average Time : 76 Seconds**

**Options :**

1.  $b = (a + c)/ac$
2.  $2/b = (1/a) + (1/c)$
3.  $2b = (1/a) + (1/c)$
4.  $abc = ab + bc + ca$

**Solution :**

The correct answer is **option 2** i.e.  $2/b = (1/a) + (1/c)$

$$a(b - c)x^2 + b(c - a)x + c(a - b) = 0$$

On putting  $x = 1$ , the equation is satisfied = 1

Now, since it is given that both roots are equal

$$\text{so, } = 1$$

$$+ = 2$$

$$-b(c - a)/[a(b - c)] = 2$$

$$-bc + ab = 2ab - 2ac$$

$$2ac = ab + bc$$

Dividing both sides by  $abc$

$$2/b = (1/a) + (1/c)$$

**Question 20 :**

If  $[(a^2 + b^2 + ab)] + [(a^2 + b^2 - ab)] = 1$ , then what is the value of  $(1 - a^2)(1 - b^2)$ ?

**Difficulty : Moderate**

**Average Time : 58 Seconds**

**Options :**

1.  $1/4$
2.  $4/7$
3.  $5/4$
4.  $3/4$

**Solution :**



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

$$[(a^2 + b^2 + ab)] + [(a^2 + b^2 - ab)] = 1$$

$$[(a^2 + b^2 + ab)] = 1 - [(a^2 + b^2 - ab)]$$

squaring both sides

$$a^2 + b^2 + ab = 1 + a^2 + b^2 - ab - 2(a^2 + b^2 - ab)$$

$$2ab - 1 = 2(a^2 + b^2 - ab)$$

Again squaring both sides

$$4a^2b^2 + 1 - 4ab = 4a^2 + 4b^2 - 4ab$$

$$4(a^2b^2 - a^2 - b^2 + 1) = 3$$

$$(a^2 - 1)(b^2 - 1) = 3/4$$

$$\text{therefore, } (1 - a^2)(1 - b^2) = 3/4$$

**Question 21 :**

If  $3x + 4y - 11 = 18$  and  $8x - 6y + 12 = 6$ , then what is the value of  $5x - 3y - 9$ ?

**Difficulty : Moderate**

**Average Time : 72 Seconds**

**Options :**

1. 18

2. -9

3. -27

4. -18

**Solution :**

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

$$3x + 4y = 29, 8x - 6y = -6$$

solving for x and y

$$x = 3, y = 5$$

$$5x - 3y - 9 = 5 \times 3 - 3 \times 5 - 9 = -9$$

**Question 22 :**



If  $a + b + c = 7/12$ ,  $3a - 4b + 5c = 3/4$  and  $7a - 11b - 13c = -7/12$ , then what is the value of  $a + c$ ?

Difficulty : Moderate

Average Time : 41 Seconds

Options :

1.  $1/2$
2.  $5/12$
3.  $3/4$
4.  $1/4$

Solution :

The correct answer is **option 2** i.e.  $5/12$

$$a + b + c = 7/12 \dots(1)$$

$$3a - 4b + 5c = 3/4 \dots(2)$$

$$7a - 11b - 3c = -7/12 \dots(3)$$

Multiplying eq(1) by 5 and then subtracting eq(2):

$$2a + 9b = 13/6 \dots(4)$$

Multiplying eq(2) by 13 and then adding 5 times eq(3):

$$74a - 107b = 41/6 \dots(5)$$

Multiplying eq(4) by 37 and then subtracting eq(5):

$$b = 1/6$$

Putting the value of b in eq(1)

$$a + 1/6 + c = 7/12$$

$$a + c = 7/12 - 1/6 = 5/12$$

**Question 23 :**

In the given figure,  $PQ = PS = SR$  and  $QPS = 40^\circ$ , then what is the value of  $QPR$  (in degrees)?

Difficulty : Moderate

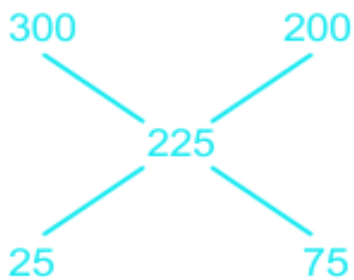
Average Time : 71 Seconds

Options :

- 1.  $45^\circ$
- 2.  $60^\circ$
- 3.  $75^\circ$
- 4.  $50^\circ$

**Solution :**

The correct answer is **option 3** i.e.  $75^\circ$ .



In  $\triangle PQS$ :

$$PS = PQ$$

$$\angle QSP = \angle PQS$$

$$70^\circ + 40^\circ = 180^\circ$$

$$\angle QSP = 70^\circ$$

$$\angle PSR = 180^\circ - 70^\circ = 110^\circ$$

In  $\triangle PSR$ :

$$PS = RS$$

$$\angle PRS = \angle SPR = (let)$$

$$2x + 110 = 180^\circ$$

$$x = 70^\circ / 2 = 35^\circ$$

Hence,

$$\angle QPR = 40^\circ + 35^\circ = 75^\circ$$

**Question 24 :**

In triangle PQR, C is the centroid. PQ = 30 cm, QR = 36 cm and PR = 50 cm. If D is the midpoint of QR, then what is the





length (in cm) of CD?

**Difficulty : Moderate**

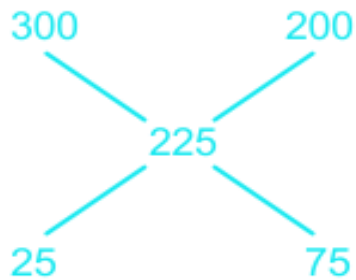
**Average Time : 69 Seconds**

**Options :**

1.  $(486)/3$
2.  $(286)/3$
3.  $(586)/3$
4.  $(586)/2$

**Solution :**

The correct answer is **option 1** i.e.  $(486)/3$



Using apply theorm:

$$2(OD^2 + PD^2) = PQ^2 + PR^2$$

$$2(18^2 + PD^2) = 30^2 + 50^2$$

$$2(324 + PD^2) = 900 + 2500$$

$$2PD^2 = 2752$$

$$PD = 486$$

Hence,

$$CD = PD/3 = 486/3 \text{ cm}$$

**Question 25 :**

In the figure,  $AQ = 42 \text{ cm}$ ,  $QC = 62 \text{ cm}$  and  $AB = 20 \text{ cm}$ . If  $PQ$  is parallel to  $BC$ , then what is the value (in cm) of  $PB$ ?

**Difficulty : Moderate**

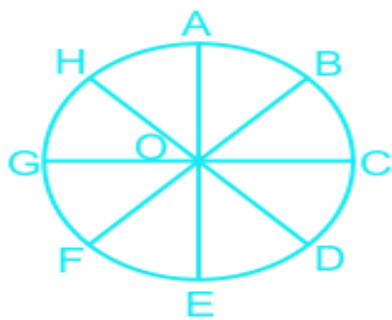
**Average Time : 78 Seconds**

**Options :**

1. 8
2. 12
3. 6
4. 15

**Solution :**

The correct answer is **option 2** i.e. **12**



$PQ \parallel BC$

therefore,  $\angle APQ = \angle ABC$  (corresponding angles)

$\angle AQP = \angle ACB$  (corresponding angles)

$\angle PAQ = \angle BAC$  (common angles)

$\triangle APQ \sim \triangle ABC$

Let  $PB = 'a'$  cm

$AP = (20 - a)$  cm

$AP/AB = AQ/AC$

$$(20 - A)/20 = 42/102 = 2/5$$

$$100 - 5a = 40$$

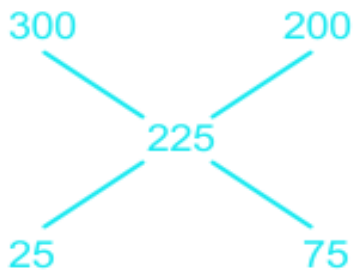
$$a = 12 \text{ cm}$$

**Question 26 :**

In the given figure, if  $AD = 12$  cm,  $AE = 8$  cm and  $EC = 14$  cm, then what is the value (in cm) of  $BD$ ?

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

1. 50/3
2. 15
3. 8/3
4. 44/3

**Solution :**The correct answer is **option 3** i.e. **8/3**Let  $BD = a$  cm $\angle AED = \angle ABC = 70^\circ$  $\angle DAE = \angle BAE$  (common angle)

So, third angle will also be equal.

 $\triangle AED \sim \triangle ABC$  $\frac{AD}{AC} = \frac{AE}{AB}$ 

$$\frac{12}{22} = \frac{8}{12 + a}$$

$$72 + 6a = 88$$

$$a = \frac{8}{3}$$

**Question 27 :**

Two circles are having radii 9 cm and 12 cm. The distance between their centres is 15 cm. What is the length (in cm) of their common chord?

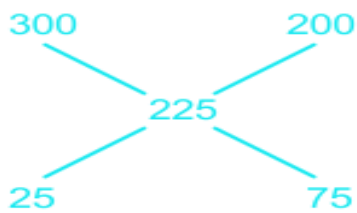
**Difficulty : Moderate****Average Time : 67 Seconds**

**Options :**

1. 6.8
2. 13.6
3. 7.2
4. 14.4

**Solution :**

The correct answer is **option 4** i.e. **14.4**



$$AB^2 + BC^2 = AC^2$$

$$\angle C = 90^\circ$$

Draw perpendicular BD:

$$\text{Area of } \triangle ABC = \frac{1}{2} \times AB \times BC = \frac{1}{2} \times AC \times BD$$

$$9 \times 12 = BD \times 15$$

$$BD = 7.2 \text{ cm}$$

Hence,

$$BE = 2BD = 2 \times 7.2 = 14.4 \text{ cm}$$

**Question 28 :**

Two circles touch each other at point X. Two common tangents of the circles meet at point P and none of the tangents passes through X. These tangents touch the larger circle at points B and C. If the radius of the larger circle is 15 cm and CP = 20 cm, then what is the radius (in cm) of the smaller circle?

Difficulty : Moderate

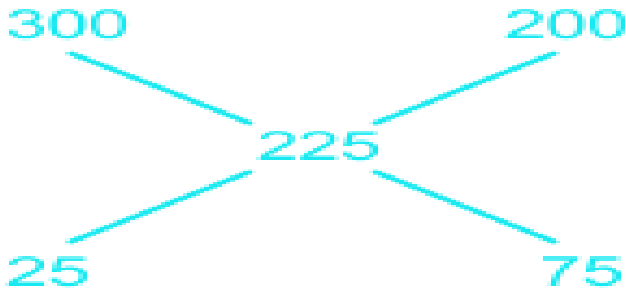
Average Time : 74 Seconds

**Options :**

1. 3.5
2. 3.75

4.25

4. 4.45

**Solution :**The correct answer is **option 2** i.e. **3.75**

$$CP = 20 \text{ cm} = PB, AB = 15 \text{ cm}$$

$$AP = (20^2 + 15^2) = 25 \text{ cm}$$

$$AF = 15 + r$$

$$PF = 25 - (15 + r) = (10 - r) \text{ cm}$$

$$\hat{\Delta}ABP \sim \hat{\Delta}FEP$$

So,

$$AB/FE = AP/FP$$

$$15/r = 25/(10-r)$$

$$5r = 30 - 3r$$

$$r = 30/8 = 15/4 = 3.75 \text{ cm}$$

**Question 29 :**

Two circles touch each other at point X. A common tangent touch them at two distinct points Y and Z. If another tangent passing through X cut YZ at A and XA = 16 cm, then what is the value (in cm) of YZ?

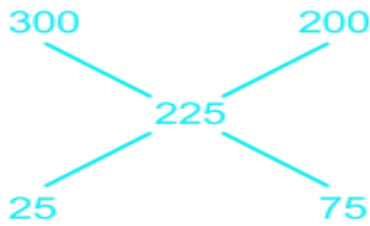
**Difficulty : Moderate****Average Time : 72 Seconds****Options :**

1. 18

24

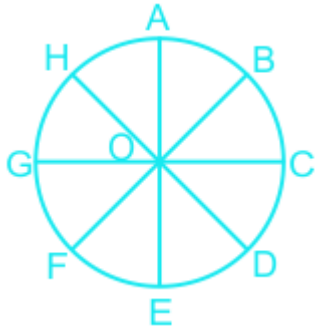
3. 16

4. 32

**Solution :**The correct answer is **option 4** i.e. 32 $AX = AY = AZ = 16 \text{ cm}$  $YZ = 16 + 16 = 32 \text{ cm}$  (since length of tangents from A to X and Y are same)**Question 30 :**

There are 8 equidistant points A, B, C, D, E, F, G and H (in same order) on a circle. What is the value of FDH (in degrees)?

**Difficulty : Moderate****Average Time : 45 Seconds****Options :**1.  $22.5^\circ$ 2.  $45^\circ$ 3.  $30^\circ$ 4.  $42.5^\circ$ **Solution :**The correct answer is **option 2** i.e.  $45^\circ$



Each central angle =  $360^\circ / 8 = 45^\circ$

HOF =  $2 \times 45^\circ = 90^\circ$

FDH =  $90^\circ / 2 = 45^\circ$  [Angle subtended by a chord at centre is double the angle subtended by same chord at a point on the circumference]

**Question 31 :**

In the given figure, O is the centre of the circle and  $\angle QOR = 50^\circ$ , then what is the value of  $\angle RPQ$  (in degrees) ?

**Difficulty : Moderate**

**Average Time : 56 Seconds**

**Options :**

1.  $15^\circ$
2.  $25^\circ$
3.  $20^\circ$
4.  $30^\circ$

**Solution :**

The correct answer is **option 2** i.e.  $25^\circ$

Angle made by an arc at the centre is double the angle formed at the circumference of the circle by the same arc.

Given:  $\angle QOR = 50^\circ$

Hence,

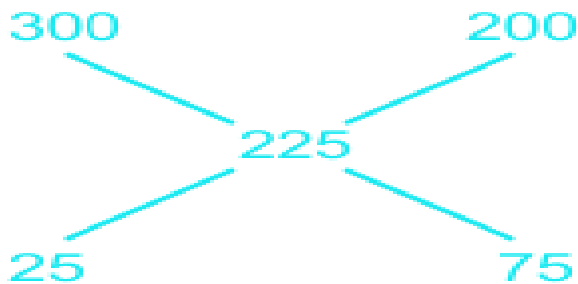
$\angle QPR = 50^\circ / 2 = 25^\circ$

**Question 32 :**

Three circle  $C_1$ ,  $C_2$  and  $C_3$  with radii  $r_1$ ,  $r_2$  and  $r_3$  (where  $r_1 > r_2 > r_3$ ) are placed as shown in the figure. What is the value of

r<sub>2</sub>?**Difficulty : Moderate****Average Time : 49 Seconds****Options :**

1.  $(r_1 r_3)$
2.  $(r_1 + r_3)/2$
3.  $(2r_1 r_2)/(r_1 + r_2)$
4.  $(r_1 + r_3)$

**Solution :**The correct answer is **option 1** i.e.  $(r_1 r_3)$ 

$$r_1/r_2 = (1 - \sin)/(1 + \sin) = r_2/r_3$$

So,

$$r_1/r_2 = r_2/r_3$$

$$r_2^2 = r_1 r_3$$

$$r_2 = \sqrt{r_1 r_3}$$

**Question 33 :**An equilateral triangle of area 300 cm<sup>2</sup> is cut from its three vertices to form a regular hexagon. Area of hexagon is what percent of the area of triangle?**Difficulty : Moderate****Average Time : 67 Seconds****Options :**

1. 66.66%
2. 33.33%

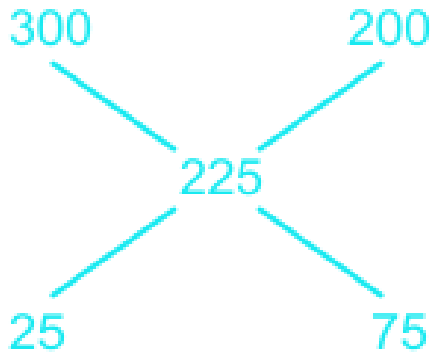


83.33%

4. 56.41%

**Solution :**

The correct answer is option 1, i.e. 66.66%



Let the side of the triangle be a

Side of the hexagon = b

therefore,  $a = 3b$

$b = a/3$

Now,

$$3/4 a^2 = 300$$

$$a^2 = 4003$$

$$b^2 = a^2/9 = 4003/9$$

$$\text{Area of hexagon} = 6 \times 3/4 b^2 = 6 \times 3/4 \times 4003/9 = 200$$

Hence,

$$\text{Required percentage} = 200/300 \times 100 = 66.67\%$$

**Question 34 :**

In the given figure, PQR is an equilateral triangle with side as 12 cm. S and T are the mid points of the sides PQ and PR respectively. What is the area (in cm<sup>2</sup>) of the shaded region?

Difficulty : Moderate

Average Time : 66 Seconds

Options :



103

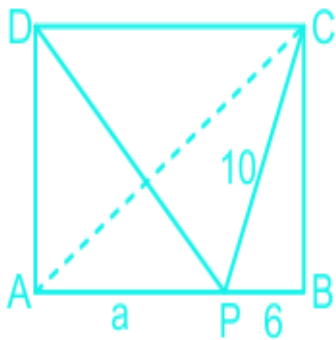
2. 123

3. 93

4. 143

**Solution :**

The correct answer is **option 2** i.e. **123**



Median,  $PV = (12^2 - 6^2) = 63$  cm

So,

$UV = PV/3 = 23$  cm

Hence,

Area of  $\triangle QUR = 1/2 \times UV \times QR = 1/2 \times 23 \times 12 = 123$  cm<sup>2</sup>

**Question 35 :**

ABCD is a rectangle. P is a point on the side AB as shown in the figure. If DP = 13, CP = 10 and BP = 6, then what is the value of AP?

Difficulty : Moderate

Average Time : 53 Seconds

**Options :**

1. 105

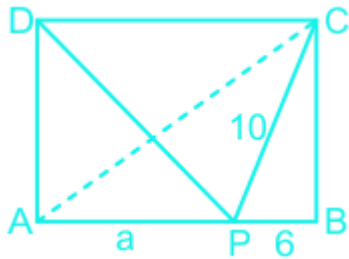
2. 133

3. 12

4. 10

**Solution :**

The correct answer is **option 1** i.e. **105**



DP = 13, CP = 10 and BP = 6

So,

$$BC = (10^2 - 6^2) = 8 \text{ cm}$$

Let AP = a cm

In  $\triangle ADP$

$$AD^2 + AP^2 = DP^2$$

$$64 + a^2 = 169$$

$$a^2 = 105$$

$$a = 105$$

**Question 36 :**

In the given figure, PQRSTU is a regular hexagon of side 12 cm. What is the area (in cm<sup>2</sup>) of triangle SQU?

**Difficulty : Moderate**

**Average Time : 58 Seconds**

**Options :**

1. 1623
2. 2163
3. 1083
4. 543

**Solution :**

The correct answer is **option 3** i.e. **1083**

Side of hexagon = 12 cm

Each internal angle =  $180^\circ - 360^\circ/6 = 120^\circ$

Hence,

Area of  $\triangle SQU = AR(\text{hexagon}) - (AR\triangle PQU + AR\triangle STU + AR\triangle SRQ)$

$= 6 \times \frac{3}{4} \times 12^2 - 3 \times \frac{1}{2} \times 12 \times 12 \times \sin 120^\circ$

$= 2163 - 1083$

$= 1083 \text{ cm}^2$

**Question 37 :**

In the given figure, ABCD is a square, BCXYZ is a regular pentagon and ABE is an equilateral triangle. What is the value (in degrees) of EBZ?

Difficulty : Moderate

Average Time : 54 Seconds

**Options :**

1.  $102^\circ$
2.  $98^\circ$
3.  $78^\circ$
4.  $64^\circ$

**Solution :**

The correct answer is **option 1** i.e.  $102^\circ$

Each internal angle of regular pentagon =  $180^\circ - 360^\circ/5 = 108^\circ$

Each internal angle of Square =  $90^\circ$

Each internal angle of Equilateral Triangle =  $60^\circ$

Hence,

$EBZ = 360^\circ - EBA - ABC - ZBC$

$= 360^\circ - 60^\circ - 90^\circ - 108^\circ$

$= 102^\circ$

**Question 38 :**

In the given figure, 3 semicircles are drawn on three sides of triangle ABC. AB = 21 cm, BC = 28 cm and AC = 35 cm.



What is the area (in cm<sup>2</sup>) of the shaded part ?

Difficulty : Moderate

Average Time : 58 Seconds

Options :

1. 588
2. 324
3. 294
4. 286

Solution :

The correct answer is **option 3** i.e. **294**

Shaded area = [Area of ABC + area of semicircle on AB + Area of semicircle on BC] - Area of Semicircle on AC

$$= \text{Area of ABC} + \frac{AB^2}{2} + \frac{BC^2}{2} - \frac{AC^2}{2}$$

$$= \text{Area of ABC} + \frac{1}{2}[AB^2 + BC^2 - AC^2]$$

$$= \text{Area of ABC [Since } AB^2 + BC^2 = AC^2 \text{ pythagorean triplets]}$$

$$= \frac{1}{2} \times 28 \times 21$$

$$= 294 \text{ cm}^2$$

Question 39 :

The sum of radii of the two circles is 91 cm and the difference between their areas is 2002 cm<sup>2</sup> . What is the radius (in cm) of the larger circle?

Difficulty : Moderate

Average Time : 91 Seconds

Options :

1. 56
2. 42
3. 63
4. 49

Solution :

The correct answer is option 4 i.e. 49 cm



$$r_1 + r_2 = 91 \dots(1)$$

$$r_1^2 - r_2^2 = 2002$$

$$r_1^2 - r_2^2 = 2002 \times 7/22 = 637$$

$$(r_1 - r_2)(r_1 + r_2) = 637$$

$$r_1 - r_2 = 637/91 = 7 \dots(2)$$

From (1) and (2):

$$r_1 = (91 + 7)/2 = 49 \text{ cm}$$

**Question 40 :**

A prism has equilateral triangle as its base. Side of the triangle is 15 cm. Height of the prism is 203 cm. What is the volume (in cm<sup>3</sup>) of the prism?

Difficulty : Moderate

Average Time : 58 Seconds

**Options :**

1. 1125
2. 6750
3. 4500
4. 3375

**Solution :**

The correct answer is **option 4** i.e. **3375**

$$\text{Volume of prism} = \text{Base Area} \times \text{Height} = \frac{3}{4} \times 15^2 \times 203 = 3375 \text{ cm}^3$$

**Question 41 :**

The height of a cone is 45 cm. It is cut at a height of 15 cm from its base by a plane parallel to its base. If the volume of the smaller cone is 18480 cm<sup>3</sup>, then what is the volume (in cm<sup>3</sup>) of the original cone?

Difficulty : Moderate

Average Time : 45 Seconds

**Options :**

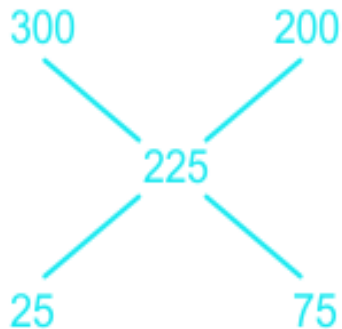
1. 34650
2. 61600

36960

4. 62370

**Solution :**

The correct answer is option 4 , i.e. 62370



Height of original cone = 45 cm

Height of smaller cone = 30 cm

Let the radius of bigger and smaller cone be R and r respectively

$$\triangle ABC \sim \triangle ADF$$

$$AB/AD = BC/DE$$

$$h/H = r/R$$

$$30/45 = r/R$$

$$r/R = 2/3$$

$$\text{Volume of smaller cone/ Volume of bigger cone} = 18480/V$$

$$[1/3 r^2 h]/[1/3 R^2 h] = 18480/V$$

$$V = 62370 \text{ cm}^3$$

**Question 42 :**The ratio of the curved surface area and total surface area of a cylinder is 2 : 5. If the total surface area is 3080 cm<sup>2</sup>, then what is the volume (in cm<sup>3</sup>) of the cylinder?

Difficulty : Moderate

Average Time : 62 Seconds

**Options :**

43126

2. 38226

3. 45226

4. 46426

**Solution :**The correct answer is **option 1** i.e. **43126**

$$CSA/TSA = 2/5$$

$$2rh/2(r + h) = 2/5$$

$$5h = 2r + 2h$$

$$3h = 2r$$

$$h = 2r/3$$

$$TSA = 3080 \text{ cm}^2$$

$$2(r + h) = 3080$$

$$2 \times 22/7 \times 5r^2/3 = 3080$$

$$r^2 = 294$$

$$r = 76$$

$$h = 2 \times 76/3 = 146/3$$

$$\text{Volume} = r^2h = 22/7 \times 294 \times 146/3 = 43126 \text{ cm}^3$$

**Question 43 :**

The radius and height of a solid cylinder are increased by 2% each. What will be the approximate percentage increase in volume?

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

1. 6.76

2. 5.88

3. 6.12



**3.34****Solution :**

The correct answer is **option 3** i.e. **6.12**

Let radius and height be 100 cm and 100 cm respectively

$$\text{Volume of cylinder} = \pi \times 100^2 \times 100 = \pi \times 100^3$$

After 2% increase in height and radius

$$h = 102, r = 102$$

$$\text{New volume} = \pi \times 102^2 \times 102$$

$$\% \text{ increase} = (\pi \times 102^2 \times 102 - \pi \times 100^3) / \pi \times 100^3 = 6.12\%$$

**Alternative method :**

Ratio of volume of two cylinders depends on  $r^2h$

Let the radius and height be 10

$$\text{Required ratio} = 1000 : 1061.208$$

$$\text{Required percentage} = ((1061.208 - 1000)/1000) \times 100$$

$$= 6.12 \%$$

**Question 44 :**

A sphere of radius 21 cm is cut into 8 identical parts by 3 cuts (1 cut along each axis). What will be the total surface area (in  $\text{cm}^2$ ) of each part?

**Difficulty : Moderate****Average Time : 65 Seconds****Options :**

1. 844.5
2. 1732.5
3. 1039.5
4. 1115.6

**Solution :**



The correct answer is option 2, i.e. 1732.5

$$\text{TSA of sphere} = 4r^2$$

$$\text{TSA of sphere when it is divided into 8 identical pieces} = 10r^2$$

$$\text{Surface area of each part} = 10r^2/8 = (10 \times 22/7 \times 21 \times 21)/8 = 1732.5 \text{ cm}^2$$

**Question 45 :**

Two identical hemispheres of maximum possible size are cut from a solid cube of side 14 cm. The bases of the hemispheres are part of the two opposite faces of cube. What is the total volume (in cm<sup>3</sup>) of the remaining part of the cube?

Difficulty : Moderate

Average Time : 48 Seconds

**Options :**

1. 1556.33
2. 898.5
3. 1467.33
4. 1306.67

**Solution :**

The correct answer is **option 4** i.e. **1306.67**

$$\text{Radius of each hemisphere} = 14/2 = 7 \text{ cm}$$

$$\text{Side of the cube} = 14 \text{ cm}$$

$$\text{Volume of cube} = 14^3 = 2744 \text{ cm}^3$$

$$\text{Volume of both hemisphere} = 2 \times \frac{2}{5} \times \pi \times 7^3 = 1437.33 \text{ cm}^3$$

$$\text{Volume of remaining part of the cube} = (2744 - 1437.33) \text{ cm}^3 = 1306.67 \text{ cm}^3$$

**Question 46 :**

Identical cubes of largest possible size are cut from a solid cuboid of size 65 cm × 26 cm × 3.9 cm. What is the total surface area (in cm<sup>2</sup>) of all the small cubes taken together?

Difficulty : Moderate

Average Time : 51 Seconds

**Options :**

1. 30420

15210

3. 20280

4. 16440

**Solution :**

The correct answer is **option 1** i.e. **30420**

Side of cube =  $HCF(65, 26 \text{ and } 3.9) = 1.3 \text{ cm}$

Number of cubes =  $(65 \times 26 \times 3.9)/(1.3 \times 1.3 \times 1.3) = 3000$

TSA of all smaller cube =  $3000 \times 6 \times (1.3)^2 = 30420 \text{ cm}^2$

**Question 47 :**

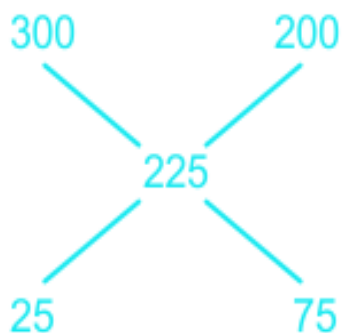
A regular triangular pyramid is cut by 2 planes which are parallel to its base. The planes trisect the altitude of the pyramid. Volume of top, middle and bottom part is  $V_1$ ,  $V_2$  and  $V_3$  respectively. What is the value of  $V_1 : V_2 : V_3$ ?

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

1. 1 : 8 : 27
2. 1 : 8 : 19
3. 2 : 9 : 27
4. 1 : 7 : 19

**Solution :**

The correct answer is option 4, i.e. 1 : 7 : 19



Height of the biggest cone = H



Radius of the biggest cone = R

AB = BD = DF = H/3

Using similarity,

Therefore, AB/BC = AD/DE = AF/FG

$(H/3)/BC = H/R$

$BC = R/3$  [AD/DE = AE/FG]

$(2H/3)/DE = H/R$

$DE = 2R/3$

$V_1 = 1/3 \times \pi \times (BC)^2 \times AB = R^2H/81$

$V_2 = 8R^2H/81 - R^2H/81 = 7R^2H/81$

$V_3 = 1/3 \times \pi \times R^2H - 8R^2H/81 = 19R^2H/81$

**Question 48 :**

What is the value of  $[(\cos 7A + \cos 5A) \div (\sin 7A - \sin 5A)]$ ?

**Difficulty :** Moderate

**Average Time :** 69 Seconds

**Options :**

1.  $\tan A$
2.  $\tan 4A$
3.  $\cot 4A$
4.  $\cot A$

**Solution :**

The correct answer is **option 4** i.e. **cot A**

$[(\cos 7A + \cos 5A) \div (\sin 7A - \sin 5A)]$

$= (2 \cos 6A \cos A) / (2 \cos 6A \sin A)$

$= \cos A / \sin A = \cot A$

**Question 49 :**

What is the value of  $[1 - \sin(90^\circ - 2A)] / [1 + \sin(90^\circ + 2A)]$ ?

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

1.  $\sin A \cos A$
2.  $\cot 2A$
3.  $\tan^2 A$
4.  $\sin 2A \cos 2A$

**Solution :**The correct answer is **option 3** i.e.  $\tan^2 A$ 

$$[1 - \sin(90^\circ - 2A)]/[1 + \sin(90^\circ + 2A)]$$

$$= (1 - \cos 2A)/(1 + \cos 2A)$$

$$= 1 - (1 - 2\sin^2 A)/(1 + 2\cos^2 A - 1)$$

$$= 2\sin^2 A/2\cos^2 A = \tan^2 A$$

**Question 50 :**What is the value of  $\sin 75^\circ + \sin 15^\circ$ ?**Difficulty : Moderate****Average Time : 44 Seconds****Options :**

1. 3
2. 23
3.  $(3/2)$
4.  $3/2$

**Solution :**The correct answer is **option 3** i.e.  $(3/2)$ 

We know that,

$$\sin A + \sin B = 2\sin[(A + B)/2]\cos[(A - B)/2]$$

So,

$$\sin 75^\circ + \sin 15^\circ = 2 \sin 45^\circ \cos 30^\circ$$



$$= 2 \times \frac{1}{2} \times \frac{3}{2} = \frac{3}{2}$$

**Question 51 :**

What is the value of  $[(\cos 3 + 2\cos 5 + \cos 7) \div (\cos + 2\cos 3 + \cos 5)] + \sin 2 \tan 3$ ?

**Difficulty :** Moderate

**Average Time :** 48 Seconds

**Options :**

1.  $\cos 2$
2.  $\sin 2$
3.  $\tan 2$
4.  $\cot \sin 2$

**Solution :**

The correct answer is **option1** i.e. **cos 2**

$$\begin{aligned} & [(\cos 3 + 2\cos 5 + \cos 7) \div (\cos + 2\cos 3 + \cos 5)] + \sin 2 \tan 3 \\ &= [(\cos 3 + \cos 7) + 2\cos 5] \div [(\cos + \cos 5) + 2\cos 3] + \sin 2 \tan 3 \\ &= (2\cos 5 \cos 2 + 2\cos 5) / 2\cos 3 \cos 2 + 2\cos 3 + \sin 2 \tan 3 \\ &= (2\cos 5 / 2\cos 3) (\cos 2 + 1/\cos 2 + 1) + \sin 2 \tan 3 \\ &= \cos 5 / \cos 3 + \sin 2 \tan 3 / \cos 3 \\ &= 2\cos 5 - \cos 5 + \cos / 2\cos 3 = (\cos 5 + \cos) / 2\cos 3 \\ &= 2\cos 3 \cos 2 / 2\cos 3 = \cos 2 \end{aligned}$$

**Question 52 :**

What is the value of  $[2 \sin (45^\circ + ) \sin (45^\circ - )] / \cos 2$ ?

**Difficulty :** Moderate

**Average Time :** 63 Seconds

**Options :**

1. 0
2.  $\tan 2$
3.  $\cot 2$
4. 1

**Solution :**

The correct answer is **option 4** i.e. **1**

$$\begin{aligned} & [2 \sin (45^\circ + ) \sin (45^\circ - )] / \cos 2 = -(\cos 90^\circ - \cos 2) / \cos 2 \\ & = (0 + \cos 2) / \cos 2 = 1 \end{aligned}$$

**Question 53 :**

What is the value of  $\sin (90^\circ + 2A)[4 - \cos 2 (90^\circ - 2A)]$ ?

**Difficulty :** Moderate

**Average Time :** 38 Seconds

**Options :**

1.  $2(\cos^3 A - \sin^3 A)$
2.  $2(\cos^3 A + \sin^3 A)$
3.  $4(\cos^6 A + \sin^6 A)$
4.  $4(\cos^6 A - \sin^6 A)$

**Solution :**

The correct answer is **option 4** i.e.  $4(\cos^6 A - \sin^6 A)$

$$\begin{aligned} & \sin (90^\circ + 2A)[4 - \cos^2 (90^\circ - 2A)] \\ & = \cos 2A[4 - \sin^2 2A] \\ & = 4(\cos^2 A - \sin^2 A)(\cos^4 A + \sin^4 A + \cos^2 A \sin^2 A) \\ & = 4(\cos^6 A - \sin^6 A) \end{aligned}$$

**Question 54 :**

What is the value of  $[\cos (90^\circ + A) \div \sec (270^\circ - A)] + [\sin (270^\circ + A) \div \operatorname{cosec} (630^\circ - A)]$ ?

**Difficulty :** Moderate

**Average Time :** 59 Seconds

**Options :**

1.  $3 \sec A$
2.  $\tan A \sec A$
3.  $0$
4.  $1$

**Solution :**

The correct answer is **option 4** i.e. **1**

$$\begin{aligned} & [\cos (90^\circ + A) \div \sec (270^\circ - A)] + [\sin (270^\circ + A) \div \operatorname{cosec} (630^\circ - A)] \\ &= -\sin A / -\operatorname{cosec} A + (-\cos A) / -\sec A \\ &= \sin^2 A + \cos^2 A = 1 \end{aligned}$$

**Question 55 :**

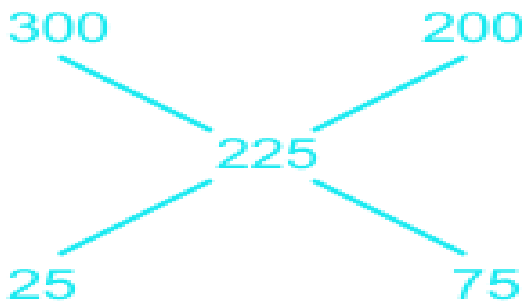
On walking 100 metres towards a building in a horizontal line, the angle of elevation of its top changes from  $45^\circ$  to  $60^\circ$ . What will be the height (in metres) of the building?

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

1.  $50(3 + 3)$
2.  $100(3 + 1)$
3. 150
4. 1003

**Solution :**

The correct answer is **option 1** i.e.  **$50(3 + 3)$**



Let  $AB$  be the height  $h$  of the building

In  $\triangle ABC$

$$\tan 60^\circ = h/x$$

$$x = h/3$$

In  $\triangle ABD$

$$\tan 45^\circ = h/x + 100$$



$$h/3 + 100 = h$$

$$h = 1003/(3 - 1) = 50(3 + 3)$$

**Question 56 :**

The upper part of a tree broken over by the wind make an angle of  $60^\circ$  with the ground. The distance between the root and the point where top of the tree touches the ground is 25 metres. What was the height (in metres) of the tree?

Difficulty : Moderate

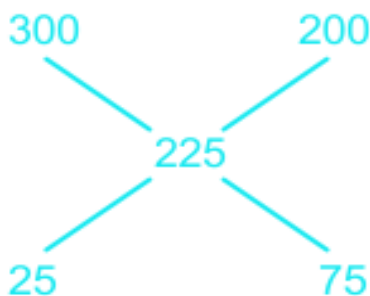
Average Time : 60 Seconds

**Options :**

1. 84.14
2. 93.3
3. 98.25
4. 120.24

**Solution :**

The correct answer is option 2, i.e. 93.3



In  $\triangle BCD$

$$\cos 60^\circ = CD/BD$$

$$1/2 = 25/BD$$

$$BD = 50$$

$$\tan 60^\circ = BC/CD$$

$$3 = BC/25$$

$$BC = 253 \text{ m}$$

$$\text{Height} = BC + BD = 50 + 253 = 93.3$$

**Question 57 :**

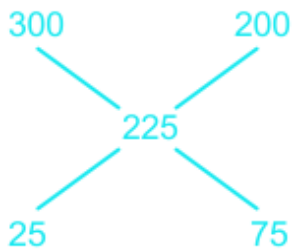
The height of a tower is 300 meters. When its top is seen from top of another tower, then the angle of elevation is  $60^\circ$ . The horizontal distance between the bases of the two towers is 120 metres. What is the height (in metres) of the small tower?

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

1. 88.24
2. 106.71
3. 92.15
4. 112.64

**Solution :**

The correct answer is **option 3** i.e. **92.15**



In  $\triangle AEC$

$$\tan 60^\circ = \frac{AE}{120}$$

$$AE = 120 \times \sqrt{3} = 207.85 \text{ m}$$

$$\text{Height of second tower, } CD = 300 - 207.85 = 92.15 \text{ m}$$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 : 3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 58 :**

How many employees of department A and C together are living in city Z?

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

**Options :**

1. 9000
2. 9200
3. 8800
4. 8200

**Solution :**

The correct answer is option 3, i.e. 8800

Required no. of employees =  $(10\% \times 1/10 + 12\% \times 5/6) \times 80000$

$= (1\% + 10\%) \times 80000 = 11\% \times 80000 = 8800$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 : 3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 59 :**

Male employees of department E is what percent of the employees living in city Z from department A?

Difficulty : Moderate

Average Time : 53 Seconds

**Options :**

1. 1600
2. 2400
3. 3200
4. 4200

**Solution :**

The correct answer is option 3, i.e. 3200

Required % =  $(36\% \times 8/9) / [(10\% \times 1/10) \times 10] = 3200\%$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 :



3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 60 :**

What is the ratio of male employee working in department B and D together to female employee working in department A and E together?

Difficulty : Moderate

Average Time : 52 Seconds

**Options :**

1. 13 : 8
2. 25 : 7
3. 23 : 9
4. 7 : 9

**Solution :**

The correct answer is option 2, i.e. 25 : 7

Required ratio =  $[(22\% \times 13/22 + 20\% \times 3/5) \times 80000] / [(10\% \times 3/10 + 36\% \times 1/9) \times 80000] = 25/7$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 : 3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 61 :**

On an average how many residents of city Y are working in each department?

Difficulty : Moderate

Average Time : 51 Seconds

**Options :**

1. 11360
2. 12420
3. 9130
4. 10940

**Solution :**

The correct answer is option 1, i.e. 11360



No. of residents of city Y marking in each department

$$= (10\% \times 9/10 + 22\% \times 19/22 + 12\% \times 1/6 + 20\% \times 3/4 + 36\% \times 13/18) \times 80000$$

$$= (9\% + 19\% + 2\% + 15\% + 26\%) \times 80000$$

$$= 71\% \times 80000$$

$$\text{Required average} = (71\% \times 80000)/5 = 11360$$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 : 3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 62 :**

What are the total number of employee in department A and E together?

Difficulty : Moderate

Average Time : 56 Seconds

**Options :**

1. 29400
2. 17600
3. 46400
4. 36800

**Solution :**

The correct answer is option 4, i.e. 36800

$$\text{Required no of employees} = (10\% + 36\%) \times 80000 = 46\% \times 80000 = 36800$$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 : 3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 63 :**

If a dairy mixes cow's milk which contains 10% fat with buffalo's milk which contains 20% fat, then the resulting mixture has fat (120/7)% of fat. What ratio was the cow's milk mixed with buffalo's milk?

Difficulty : Moderate

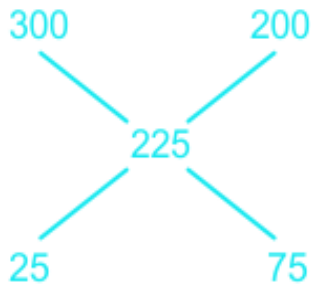
Average Time : 56 Seconds

Options :

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

Solution :

The correct answer is option 1, i.e. 2 : 5



$$\text{Ratio} = (20/7)/(50/7) = 2 : 5$$

Question 64 :

In what ratio should tea costing Rs 300/kg be mixed with tea costing Rs 200/kg so that the cost of the mixture is Rs 225/kg?

Difficulty : Moderate

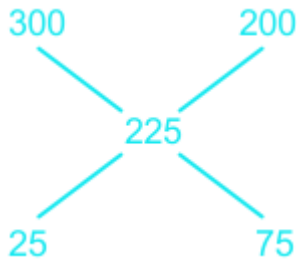
Average Time : 39 Seconds

Options :

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

Solution :

The correct answer is option 2 i.e. 1 : 3



$$\text{Ratio} = 25 : 75 = 1 : 3$$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 : 3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 65 :**

A and B started a partnership business investing some amount in the ratio of 5 : 6. C joined then after 6 months with an amount equal to 2/3rd of B. What was their profit (in Rs) at the end of the year if C got Rs 21,600 as his share?

**Difficulty : Moderate****Average Time : 65 Seconds****Options :**

1. 46800
2. 56160
3. 70200
4. 1,40,400

**Solution :**

The correct answer is option 4, i.e. 1,40,400

A : B : C

Investment =  $5 \times 15 : 6 \times 12 : 6 \times \frac{2}{3} \times 6 = 60 : 72 : 24 = 5 : 6 : 2$

Share of C = Rs 21,600

Total profit =  $21600/2 \times 13 = 140400$

**Comprehension :**

The given table shows the number (in percent) of employees working in departments of an organization. The table also



shows the ratio of males and females and the ratio of employees living in city Z and employees living in city Y. The total number of employees in the organization are 80000. Department Number of employees Gender City M : F Z : Y A 10% 7 : 3 1 : 9 B 22% 13 : 9 3 : 19 C 12% 1 : 2 5 : 1 D 20% 3 : 2 1 : 3 E 36% 8 : 1 5 : 13

**Question 66 :**

A and B invest in a business in the ratio 2 : 5. If 50% of the total profit goes to charity and A's share is Rs 3.6 lakhs, the total profit is Rs \_\_\_\_\_ lakhs.

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

1. 12.6
2. 25.2
3. 37.8
4. 16.8

**Solution :**

The correct answer is option 2, i.e. 25.2

Ratio of investment = 2 : 5

Ratio of profit = 2 : 5

Let total profit be Rs. x

share of A = 3.6 lakh

$x \times \frac{50}{100} \times \frac{2}{7} = 3.6$

$x = 25.2$  lakhs

**Question 67 :**

A is thrice as productive as C. Together they can complete a job in 22.5 days. If B joins them after they have worked for 15 days then in how many days can they finish the rest of the job if B alone can do the job in 15 days?

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

1. 6
2. 3





9

4. 2

**Solution :**

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

A's efficiency/C's efficiency = 3/1

Total work =  $4 \times 22.5 = 90$

Efficiency of B = (Total work)/(number of days taken by B) =  $(90)/(15) = 6$

A and C work for 15 days, then B joins them

remaining work =  $4 \times 7.5 = 30$

Time taken by A, B and C = (total work)/efficiency =  $30/(3 + 6 + 1) = 3$

**Question 68 :**

If A, B and C can do a job working alone in 12, 18 and 36 days respectively. They all work together for 2 day, then B quits. How many days will A and C take to finish rest of the job?

**Difficulty : Moderate**

**Average Time : 51 Seconds**

**Options :**

1. 9

2. 6

3. 3

4. 4

**Solution :**

The correct answer is **option 2** i.e. **6**

Total work = LCM(12, 18, 36) = 36 units

A : (12) -> 3 days to complete 36 units

B : (18) -> 2 days to complete the work

C : (36) -> 1 day to complete the work

Work done by A, B and C in 2 days =  $2 \times 6 = 12$  units



Remaining work =  $36 - 12 = 24$  units

Time taken by A and C to finish the work =  $24/4 = 6$  days

**Question 69 :**

If A, B and C together do a job in 4 days, A and C together do the job in 4.5 days and B and C together do the job in 12 days then in how many days can C alone do the job?

Difficulty : Moderate

Average Time : 55 Seconds

**Options :**

1. 36
2. 6
3. 18
4. 12

**Solution :**

The correct answer is **option 3** i.e. **18**

Let the total work be 36 units

(A + B + C) can do 9 units/day .....(1)

(A + C) can do 8 units/day .....(2)

(B + C) can do 3 units/day .....(3)

from (1), (2) and (3), we get

B does 1unit/day and C does 2 units/day

So, C alone will do the work in time =  $(36/2) = 18$  days

**Question 70 :**

If A alone can do a job in 40 days then, in how many days can B alone do the job if together they can do the job in 8 days?

Difficulty : Moderate

Average Time : 50 Seconds

**Options :**

1. 15
2. 10

20

4. 25

**Solution :**

The correct answer is **option 2** i.e. **10**

$$1/A + 1/B = 1/(A + B)$$

$$1/40 + 1/x = 1/8$$

$$1/x = 1/8 - 1/40$$

$$1/x = 4/40$$

$$x = 10 \text{ days}$$

Time taken by B to complete the work = 10 days

**Question 71 :**

1 bottle of honey costs Rs 240 but a pack of 4 of the same bottles costs Rs 768. What is the effective discount (in %) on the pack?

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

1. 16

2. 25

3. 10

4. 20

**Solution :**

The correct answer is **option 4** i.e. **20**

$$\text{Cost of 4 bottles of honey} = 4 \times 240 = \text{Rs } 960$$

$$\text{SP of 4 bottles of honey} = \text{Rs } 768$$

$$\text{Effective discount \%} = (960 - 768)/960 \times 100 = 20\%$$

**Question 72 :**

If the cost price of an article is Rs x. It is marked up by 100%. It is sold at Rs 1,200 after giving 20% discount. What is value of x?



Difficulty : Moderate

Average Time : 40 Seconds

Options :

1. 750
2. 1500
3. 1000
4. 2000

Solution :

The correct answer is **option 1** i.e. **750**

CP of an article = x

MP of an article = Rs 2x

Discount = 20%

SP of an article =  $2x \times 80/100$

$1200 = 2x \times 80/100$

x = 750

Question 73 :

A Rs 1000 box of cookies is offered at 10% discount and a Rs 400 bar of chocolate at 8% discount. If we buy 2 boxes of cookies and 3 bars of chocolate, what is the effective discount we get (in %)?

Difficulty : Moderate

Average Time : 44 Seconds

Options :

1. 9
2. 9.25
3. 8.75
4. 8.5

Solution :

The correct answer is **option 2** i.e. **9.25**

Cost of 2 box of cookies and 3 bars of chocolate =  $2 \times 1000 + 3 \times 400 = \text{Rs } 3200$



SP of 2 box of cookies and 3 bars of chocolate =  $2 \times 1000 \times 90/100 + 3 \times 400 \times 92/100 = 1800 + 1104 = \text{Rs } 2904$

Effective discount % =  $3200 - 2904/3200 \times 100 = 9.25\%$

**Question 74 :**

A shopkeeper either offers two successive discounts of 10% and 20% or 15% and 15%. If the difference between the two selling prices is Rs. 2 then what is the marked price?

Difficulty : Moderate

Average Time : 43 Seconds

**Options :**

1. Rs.400
2. Rs.2000
3. Rs.4000
4. Rs.800

**Solution :**

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

Let the marked price be  $100x$

First scenario,

$$20 + 10 - (20 \times 10)/100$$

28% discount

$$\text{Selling price} = 100x \times 72/100$$

$$72x$$

Second scenario,

$$15 + 15 - (15 \times 15)/100$$

$$27.75$$

$$\text{Selling price} = 100x \times 72.25/100$$

$$72.25x$$

$$72.25x - 72x = 2$$

$$x/4 = 2 \quad x = 8$$



$100(8) = \text{Rs. } 800$

**Question 75 :**

The price of a movie ticket was increased in the ratio 9 : 10. What is the increase in the revenue (in Rs.) of the cinema hall, if the original fare was Rs 180 and 2200 tickets were sold.

**Difficulty : Moderate**

**Average Time : 55 Seconds**

**Options :**

1. 44000
2. 440000
3. 39600
4. 396000

**Solution :**

The correct answer is **option 1** i.e. **44000**

Original price = Rs 180

No. of tickets sold = 2200

Revenue =  $2200 \times 180$

New Revenue =  $180 \times 2200 \times \frac{10}{9} = 200 \times 2200$

Increase in revenue =  $200 \times 2200 - 180 \times 2200 = 20 \times 2200 = \text{Rs } 44000$

**Question 76 :**

If  $2A = 3B = 8C$ ; What is A : B : C?

**Difficulty : Moderate**

**Average Time : 37 Seconds**

**Options :**

1. 8 : 3 : 2
2. 8 : 4 : 2
3. 2 : 3 : 8
4. 12 : 8 : 3

**Solution :**

The correct answer is **option 4** i.e. **12 : 8 : 3**



$$2A = 3B = 8C$$

$$2A/24 = 3B/24 = 8C/24$$

$$A/12 = B/8 = C/3$$

$$A : B : C = 12 : 8 : 3$$

**Question 77 :**

What is the Number of candidates who had applied if the ratio of selected to unselected was 14 : 25. If 35 less had applied and 10 less selected, the ratio of selected to unselected would have been 3 : 5?

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

1. 195
2. 205
3. 185
4. 175

**Solution :**

The correct answer is **option 1** i.e. **195**

Let the selected and unselected candidates be  $14x$  and  $25x$  respectively

$$\text{Total candidates applied} = 14x + 25x = 39x$$

According to the question,

$$(39x - 35)/(14x - 10) = 8/3$$

$$117x - 105 = 112x - 80$$

$$5x = 25$$

$$x = 5$$

$$\text{No. of candidates who applied} = 39 \times 5 = 195$$

**Question 78 :**

What is the fourth proportional to 6, 24 and 83?

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



249

2. 332

3. 166

4. 498

**Solution :**

The correct answer is **option 2** i.e. **332**

Let the fourth proportional be x

$$6/24 = 83/x$$

$$x = 332$$

**Question 79 :**

Rs 10,200 has to be divided between A, B & C so that A gets  $\frac{2}{3}$  of what B gets and B gets  $\frac{1}{4}$  of what C gets. How much more does C get over A (in Rs)?

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

1. 6000

2. 7200

3. 1800

4. 1200

**Solution :**

The correct answer is **option 1** i.e. **6000**

ATQ

$$A = \frac{2B}{3} \text{ and } B = \frac{C}{4}$$

$$A/2 = B/3 = C/12$$

$$A : B : C = 2 : 3 : 12$$

$$\text{Amount that C gets over A} = \frac{(12 - 2)}{(2 + 3 + 12)} \times 10200 = \text{Rs } 6000$$

**Question 80 :**

Before a battle there were the ratio of captains to soldiers was 2 : 7. During the war 25 captains and 100 soldiers were



martyred. The new ratio of captains to soldiers became 3 : 10. What is the number of soldiers after the war?

**Difficulty : Moderate**

**Average Time : 44 Seconds**

**Options :**

1. 250
2. 200
3. 150
4. 100

**Solution :**

The correct answer is **option 1** i.e. **250**

Let the no. of captains and soldiers be  $2x$  and  $7x$

ATQ

$$(2x - 25)/(7x - 100) = 3/10$$

$$x = 50$$

$$\text{No. of soldiers after the war} = 7 \times 50 - 100 = 250$$

**Question 81 :**

The average marks of 18 students in an examination was 60. It was later found that the marks of one student had been wrongly entered as 63 instead of 36. The correct average is:

**Difficulty : Moderate**

**Average Time : 43 Seconds**

**Options :**

1. 59
2. 59.5
3. 58
4. 58.5

**Solution :**

The correct answer is **option 4** i.e. **58.5**

$$\text{Correct average} = 60 + (36 - 63/18) = 58.5$$

**Question 82 :**



In a class of 60 students there are 20 girls who scored an average of 40 marks in the test, what is the average marks of the boys if the class average is 60 marks?

**Difficulty : Moderate**

**Average Time : 36 Seconds**

**Options :**

1. 60
2. 70
3. 50
4. 80

**Solution :**

The correct answer is **option 2** i.e. **70**

Total marks of 60 students =  $60 \times 60$

Total marks of 20 girls =  $20 \times 40$

Average marks of boys =  $(60 \times 60 - 20 \times 40) / (60 - 20) = 70$

**Question 83 :**

The average of 44 consecutive odd numbers is 144. What is the largest number?

**Difficulty : Moderate**

**Average Time : 36 Seconds**

**Options :**

1. 189
2. 191
3. 187
4. 193

**Solution :**

The correct answer is **option 3** i.e. **187**

Let the numbers be  $(a, a + 2, \dots, a + 86)$

Avg. of 44 numbers = 144

$44 \times (a + a + 86) / (2 \times 44) = 144$



$$a + 43 = 144$$

$$a = 101$$

$$\text{Largest no.} = a + 86 = 101 + 86 = 187$$

**Question 84 :**

A batsman makes 100 runs in the 25th match of his career. His average runs per match increases by 1.4. Find his average before the 25th match.

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

1. 65

2. 55

3. 75

4. 45

**Solution :**

The correct answer is **option 1** i.e. **65**

Let the average before 25<sup>th</sup> match be  $x$

ATQ

$$(24x + 100)/25 = x + 1.4$$

$$24x + 100 = 25x + 35$$

$$x = 65$$

**Question 85 :**

An oil refinery buys oil at Rs 3600 per barrel. There is a 10% wastage of oil in the process. If the refinery wants to earn a 5% profit then at what price should it sell including an 8% tax on the selling price? (in Rs per barrel)

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

1. 3674

2. 3711

3. 4219



4536

**Solution :**

The correct answer is **option a** i.e. **3674**

cost of 1 barrel = Rs 3600

SP of 1 barrel =  $3600 \times 105/100 \times 108/100$

Since 10% is wasted

SP of remaining barrel =  $3600 \times 105/100 \times 108/100 \times 90/100 = \text{Rs } 3674$

**Question 86 :**

A vendor sells a coconut at Rs 24 and suffers 24% loss. If he wants to make 14% profit, then at what price (in Rs) should he sell?

Difficulty : Moderate

Average Time : 42 Seconds

**Options :**

1. 32

2. 30

3. 36

4. 28

**Solution :**

The correct answer is **option 3** i.e. **36**

SP of a coconut = Rs 24

CP of coconut =  $24/76 \times 100$

New SP of coconut =  $24/76 \times 100 \times 114/100 = \text{Rs } 36$

**Question 87 :**

A villager buys a goat and a sheep together for Rs 14,250. He sold the sheep at a profit of 10% and the goat at a loss of 20%. If he sold both the animals at the same price, then what was the cost price of the cheaper animal?

Difficulty : Moderate

Average Time : 45 Seconds

**Options :**

1. 8250



6600

3. 7500

4. 6000

**Solution :**

The correct answer is **option 4** i.e. **6000**

Let the cost of goat be Rs x

Cost of sheep = (14250 - x)

ATQ

SP of goat = SP of Sheep

$(14250 - x) \times 110/100 = x \times 80/100$

x = Rs 8250

Cost of goat = 8250

Cost of sheep = 6000

Sheep is cheaper at the cost of Rs 6000

**Question 88 :**

On a certain item profit is 120%. If the cost price increases by 10% then what will be the new profit margin (in %) if selling price remains the same?

**Difficulty :** Moderate

**Average Time :** 49 Seconds

**Options :**

1. 50

2. 60

3. 100

4. 90

**Solution :**

The correct answer is **option 3** i.e. **100**

Let CP of an item be Rs x



SP of an item = Rs  $2.2x$

Now, CP of an item = Rs  $1.1x$

profit % =  $(2.2x - 1.1x)/1.1x \times 100 = 100\%$

**Question 89 :**

If 35% are the passing marks in the examination. A student gets 200 marks yet fails by 24 marks. What are the maximum marks in the examination?

Difficulty : Moderate

Average Time : 42 Seconds

**Options :**

1. 820
2. 550
3. 640
4. 680

**Solution :**

The correct answer is **option 3** i.e. **640**

Marks obtained by student = 200

passing marks =  $200 + 24 = 224$

35% of marks marks = 224

Maximum marks =  $224 \times 100/35 = 640$

**Comprehension :****Question 90 :**

A student gets 22 marks more in French than what she got in German. Her German marks are 28% of the sum of her French and German marks. What are her French marks?

Difficulty : Moderate

Average Time : 41 Seconds

**Options :**

1. 14
2. 36

18

4. 42

**Solution :**

The correct answer is **option 2** i.e **36**

Let the marks in french be x

Marks in German = (x - 22)

ATQ:

$$x - 22 = 28/100 \times (x + x - 22)$$

$$100x - 2200 = 56x - 616$$

$$44x = 1584$$

$$x = 36$$

So,

Marks in French = 36

**Question 91 :**

2% of a = b, then b% of 10 is the same as:

**Difficulty : Moderate**

**Average Time : 56 Seconds**

**Options :**

1. 200% of a
2. 20% of a/100
3. 20% of a/10
4. 200% of a/10

**Solution :**

The correct answer is **option 2** i.e. **20% of a/100**

$$20\% \text{ of } a = b$$

$$b = 2a/100$$

$$b\% \text{ of } 10 = b/100 \times 10 = 2a/1000 = 20\% \text{ of } a/100$$

**Question 92 :**

A man's annual income has increased by Rs 1.2 lakhs but the tax on income that he has to pay has reduced from 12% to 10%. He now pays the same amount of tax as before. What is his increased income (in Rs lakhs)?

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

1. 8.4
2. 7.2
3. 9.6
4. 6

**Solution :**

The correct answer is **option 2** i.e. **7.2**

Let the increased income be Rs x lakhs

Previous income = Rs (x - 1.2) lakh

ATQ

$$(x - 1.2) \times 12/100 = x \times 10/100$$

$$2x = 14.4$$

$$x = 7.2$$

Hence,

Increased income = Rs. 7.2 lakhs

**Question 93 :**

A car travelling at an average speed of 72 km/hr takes 9 minutes to travel a certain distance. By how much should it increase its speed (in km/hr) to travel the same distance in 8 minutes?

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

1. 8
2. 9





7

4. 6

**Solution :**the correct answer is **option 2** i.e. **9**

Distance travelled will be the same in both the cases

$$72 \times 9/60 = x \times 8/60$$

$$x = 81$$

$$\text{Increase} = 81 - 72 = 9 \text{ km/hr}$$

**Question 94 :**

Train A takes 1 hour more than train B to travel a distance of 720 km. Due to engine trouble speed of train B falls by a third, so it takes 3 hours more than Train A to complete the same journey? What is the speed of Train A (in km/hr)?

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

1. 80

2. 90

3. 60

4. 70

**Solution :**The correct answer is **option 1** i.e. **80**Let the train A's speed be  $x$  km/hrLet train B's speed be  $y$  km/hr

$$720/x - 720/y = 1 \dots\dots(1)$$

$$720/(2y/3) - 720/x = 3 \dots\dots(2)$$

adding (1) and (2), we get

$$360/y = 4$$

$$y = 90$$



putting  $y = 90$  in (1)

$$720/x - 720/90 = 1$$

$$x = 80$$

**Question 95 :**

Two cars A and B travel from one city to another city, at speeds of 60 km/hr and 108 km/hr, respectively. If car B takes 2 hours lesser time than car A for the journey, then what is the distance (in km) between the two cities?

**Difficulty : Moderate**

**Average Time : 53 Seconds**

**Options :**

1. 240
2. 270
3. 300
4. 330

**Solution :**

The correct answer is **option 2** i.e. **270**

Let A take 't' hrs

then, B takes (t - 2) hrs

ATQ,

$$60t = 108(t - 2)$$

$$216 = 48t$$

$$t = 9/2 \text{ hrs}$$

$$\text{Distance between two cities} = 60 \times 9/2 = 270 \text{ km}$$

**Question 96 :**

B starts 4.5 minutes after A from the same point, for a place at a distance of 3.5 miles from the starting point. A on reaching the destination turns back and walk a mile where he meets B. If A's speed is a mile in 6 minutes then B's speed is a mile in \_\_\_\_ minutes?

**Difficulty : Moderate**

**Average Time : 51 Seconds**

**Options :**



8

2. 10

3. 12

4. 9

**Solution :**

The correct answer is **option 4** i.e. **9**

Distance covered by A = 3.5 mile + 1 mile = 4.5 mile

Distance covered by B = 3.5 mile - 1 mile = 2.5 mile

Speed of A = 1 mile/6 min

1 mile -> 6 min

4.5 mile ->  $6 \times 4.5 = 27$  min

Time taken by B to reach point P =  $(27 - 4.5) = 22.5$  min

Speed of B = 2.5 mile/ 22.5 min = 1 mile/9 min

B's speed is 1 mile in 9 minutes

**Question 97 :**

If compound interest received on a certain amount in the 3rd year is Rs. 12,100, what will be the compound interest (in Rs) for the 4th year on the same amount if rate of interest is 9%?

**Difficulty : Moderate**

**Average Time : 54 Seconds**

**Options :**

1. 17080

2. 15669

3. 13189

4. 14376

**Solution :**

The correct answer is **option 3** i.e. **13189**

Let the principal be = Rs 100



$$\text{Amount after 3 years} = 100(1 + 9/100)^3 = 100(1.09)^3 = 129.5 \dots\dots(1)$$

$$\text{Amount after 2 years} = 100(1.09)^2 = 118.8 \dots\dots(2)$$

$$\text{Interest for 3rd year} = (1) - (2) = 129.5 - 118.8 = 10.70$$

$$\text{3rd year interest for principal amount 100} = 10.7$$

So, for 12100 interest

$$\text{Principal} = 12100 \times 100/10.7 = 113159.2$$

Now, we calculate amount after 3 years and 4 years

$$A = 113159(1 + 9/100)^3 = 113159 \times (1.09)^3$$

Amount after 4 years

$$A = 113159(1.09)^4$$

Difference

$$= 113159[(1.09)^4 - (1.09)^3] = 13189 \text{ approx}$$

**Question 98 :**

The amount received at 10% per annum compound interest after 3 yrs is Rs 10,648. What was the principal (in Rs)?

**Difficulty : Moderate**

**Average Time : 56 Seconds**

**Options :**

1. 8000
2. 9000
3. 8500
4. 7500

**Solution :**

The correct answer is **option 1** i.e. **8000**

$$A = 10648$$

$$T = 3 \text{ years}$$

$$R = 10\%$$

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



$$10648 = P(1 + 10/100)^3$$

$$P = 10648/(1.1)^3$$

$$P = \text{Rs } 8000$$

**Question 99 :**

In how many years will Rs 25,000 yield Rs 8,275 as compound interest at 10% per annum compounded annually?

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

1. 2

2. 4

3. 3

4. 5

**Solution :**

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

$$CI = 8275$$

$$P = 25000$$

$$A = 25000 + 8275 = \text{Rs } 33,275$$

$$R = 10\%$$

$$33,275 = 25,000(1 + 10/100)^n$$

$$1331/1000 = (11/10)^n$$

$$(11/10)^3 = (11/10)^n$$

$$n = 3$$

**Question 100 :**

What is the rate of interest if the simple interest earned on a certain sum for the 3rd year is Rs. 1,750 and compound interest earned for 2 years is Rs. 3622.5?

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

8

2. 9

3. 10

4. 7

**Solution :**

The correct answer is **option 4** i.e. 7

SI for 3rd year = SI for 1st year = Rs 1750

CI for 2nd year =  $3622.5 - 1750 = \text{Rs } 1872.5$

Rate of interest =  $(1872.5 - 1750/1750) \times 100 = 7\%$

## Ssc Cgl Tier II Previous Year Question Paper Analysis

The analysis of Ssc Cgl Tier II Previous Year Question Paper held on 2018-02-19 in the Morning exam is as follows:

1. 100 questions were moderate.
2. The safe score is 150 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 - 4
2. Average - 4
3. Percentage - 4
4. Data Interpretation - 3
5. Time And Work - 4
6. Time Speed And Distance - 4
7. Interest - 4
8. Ratios And Proportion - 8

- Geometry - 12
- 10. Trigonometry - 10
- 11. Mensuration - 13
- 12. Algebra - 11
- 13. Number System - 8
- 14. Profit And Loss - 11

## 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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Exam Results  
Exam Cutoff  
Exam Eligibility  
Exam Pattern  
Answer Key  
Important Days



## Further Guidance on Ssc Cgl Tier II Previous Year Question Paper

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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.