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 2018-02-17 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 :

The selling price of an article is Rs 816 if the discount on it is 15%. What would be the selling price of the article (in Rs) if the discount on it is 25% ?

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

Options :

1. 750
2. 720
3. 800
4. 700

Solution :

The correct answer is option 2 ie 720.

MP - discount = SP

0.85 × MP = SP

MP = 816/0.85 = 960

Discount = 25%

MP - Discount = SP

960 - (0.25 × 960) = SP

SP = Rs 720

Question 2 :

If $x + y + z = 0$, then what is the value of $(3y^2 + x^2 + z^2)/(2y^2 - xy)$?

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

Options :

1. 2
2. 1
3. 3/2
4. 5/3

Solution :

The correct answer is option 1 ie 2.

Let x = 1, y = -1, z = 0

$x + y + z = 0$

$$= \frac{3y^2 + x^2 + z^2}{2y^2 - xz}$$

$$= \frac{3(-1)^2 + 1^2 - 0}{2(-1)^2 - 0}$$

= 4/2

= 2

Question 3 :

The entry ticket at a fun park was increased in the ratio 7 : 9, due to which footfalls fell in the ratio 13 : 11. What is the new daily collection (in Rs), if the daily collection before the price hike was Rs 2,27,500 ?

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

Options :

1. 237500
2. 247500
3. 232500

242500

Solution :

The correct answer is option 2 ie 2,47,500.

Ticket price Number Collection

7 × 13 = 91x = 227500

9 × 11 = 99x = 99 × 2500 = 247500

Question 4 :

The average marks of 50 students in an examination was 65. It was later found that the marks of one student had been wrongly entered as 83 instead of 38. The correct average is ?

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

Options :

1. 63.9
2. 64.5
3. 64.7
4. 64.1

Solution :

The correct answer is option 4 ie 64.1

Sum of scores of all students = 50 × 65 = 3250

After adding and substracting correct and wrong value,

= 3250 + 38 - 83

= 3205

Corrected average = 3205/50 = 64.1

Question 5 :

In a class of 50 students there are 22 girls who scored an average of 35 marks in the test. What is the average marks of the boys if the class average is 42 marks ?

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

Options :

50

2. 52.5
3. 47.5
4. 55

Solution :

The correct answer is option 3 ie 47.5.

Sum of scores of all students = 50 × 42 = 2100

Sum of scores of 22 girls = 35 × 22 = 770

Sum of scores of boys = 2100 - 770 = 1330

Average score of boys = 1330/28 = 47.5

Question 6 :

The average of 41 cosecutive odd numbers is 49. What is the largest number?

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

Options :

1. 89
2. 91
3. 93
4. 95

Solution :

The correct answer is option 1 ie 89.

Average of 41 cosecutive odd numbers = 49

21st odd number = 49

Largest number = 49 + (20 × 2)

= 89

Question 7 :

If 6A = 4B = 9C; what is A : B : C ?

Difficulty : Moderate

Average Time : 48 Seconds

Options :

1. 6 : 4 : 9
2. 9 : 4 : 6
3. 4 : 9 : 6
4. 6 : 9 : 4

Solution :

The correct answer is **option 4** ie **6 : 9 : 4.**

6A = K = 4B = 9C

A = K/6, B = K/4, C = K/9

A : B : C = K/6 : K/4 : K/9

= (6K : 9K : 4K)/36

Ratio = 6 : 9 : 4

Question 8 :

If 50 less had applied and 25 less selected, the ratio of selected to unselected would have bee 9 : 4. So how many candidates had applied if the ratio of selected to unselected was 2 : 1?

Difficulty : Moderate

Average Time : 58 Seconds

Options :

1. 125
2. 250
3. 375
4. 500

Solution :

The correct answer is **option 3** i.e. **375**

Total applied = x

Selected = y

Not selected = x - y

y / (x - y) = 2/1

y = 2x - 2y

3y = 2x

y = (2/3)x

Also,

(y - 25)/(x - y - 25) = 9/4

(2x - 75)/(x - 75) = 9/4

8x - 300 = 9x - 675

x = 375

Question 9 :

What is the fourth proportional to 189, 273 and 153?

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

Options :

1. 117
2. 299
3. 221
4. 187

Solution :

The correct answer is **option 3** i.e. **221**

189 : 273 :: 153 : x

189x = 273 × 153

x = (273 × 153)/189

x = 221

Question 10 :

Rs 11,550 has to be divided between X, Y and Z such that X gets 4/5 of what Y gets and Y gets 2/3 of what Z gets. How much more does Z get over X (in Rs)?

Difficulty : Moderate

Average Time : 52 Seconds

Options :

1. 7200
2. 1800
3. 1170
4. 2450

Solution :

The correct answer is **option 4** i.e. **2450**

X = (4/5)Y (given)

Y = (2/3)Z (given)

So,

Z = (3/2) × (5/4) X

Z = (15/8)X

Now,

X + Y + Z = 11550

X + (5/4)X + (15/8)X = 11550

X = (11550 × 8)/33 = 2800

Z = 15X/8 = (15 × 2800)/8 = 5250

Hence,

Z gets = 5250 - 2800 = 2450 more than X

Question 11 :

Before a battle the ratio of tanks to planes in an army was 5 : 3. During the war 1000 tanks were destroyed and 800 planes were destroyed. The ratio of tanks to planes become 2 : 1. What is the number of tanks after the war?

Difficulty : Moderate

Average Time : 82 Seconds

Options :

1. 2000

1000

3. 3000
4. 4000

Solution :

The correct answer is **option 1** i.e. **2000**.

Let the number of tanks and planes be 5x and 3x.

After war,

Tanks = 5x - 1000

Planes = 3x - 800

(5x - 1000)/(3x - 800) = 2/1

5x - 1000 = 6x - 1600

x = 600

Total tanks (left) = 3000 - 1000 = 2000

Question 12 :

Triangle ABC is similar to triangle PQR and AB : PQ = 2 : 3. AD is the median to the side BC in triangle ABC and PS is the median to the side QR in triangle PQR. What is the value of $(BD/QS)^2$?

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

Options :

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

Solution :

The correct answer is **option 2** i.e. **4/9.**

In the case of similar triangles:

AB/PQ = AC/PR = BC/QR

AB/PQ = 2/3

AB/PQ = BC/QR

AB/PQ = 2BD/2QS = BD/QS

BD/QS = 2/3

$(BD/QS)^2 = (2/3)^2 = 4/9$

Question 13 :

If $a^3 + 3a^2 + 9a = 1$, then what is the value of $a^3 + (3/a)$?

Difficulty : Moderate

Average Time : 58 Seconds

Options :

1. 31
2. 26
3. 28
4. 24

Solution :

The correct answer is option 3 ie 28.

$a^3 + 3a^2 + 9a = 1$

$a(a^2 + 3a + 9) = 1$

$a^2 + 3a + 9 = 1/a$

$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

for b = 3

$a^3 - 3^3 = (a - 3)(a^2 + 3a + 9)$

$a^3 - 27 = (a - 3)(1/a)$

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

$a^3 + (3/a) = 28$

Question 14 :

If P = 7 + 43 and PQ = 1, then what is the value of $(1/P^2) + (1/Q^2)$?

Difficulty : Moderate

Average Time : 65 Seconds

Options :

1. 196
2. 194
3. 206
4. 182

Solution :

The correct answer is option 2 ie 194.

P = 7 + 43, PQ = 1, So, Q = 1 / (7 + 43)

On rationalizing,

Q = 7 - 43

$= (1/P^2) + (1/Q^2)$

$= (P^2 + Q^2) / (PQ)^2$

$= [(P + Q)^2 - 2PQ] / (PQ)^2$

$= [(14)^2 - 2 \times 1] / 1^2$

= 194

Question 15 :

x, y and z are real numbers. If $x^3 + y^3 + z^3 = 13$, x + y + z = 1, and xyz = 1, then what is the value of xy + yz + zx ?

Difficulty : Moderate

Average Time : 65 Seconds

Options :

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

Solution :

The correct answer is option 4 ie -3.

$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - zy - zx)$

$x^3 + y^3 + z^3 - 3xyz = (x + y + z)[(x + y + z)^2 - 3(xy + yz + zx)]$

$13 - 3(1) = 1[(1)^2 - 3(xy + yz + zx)]$

$10 = 1[1 - 3(xy + yz + zx)]$

$xy + yz + zx = -3$

Question 16 :

If (a + b) / c = 6/5, and (b + c) / a = 9/2, then what is the value of (a + c) / b?

Difficulty : Moderate | **Average Time : 61 Seconds**

Options :

1. 9/5
2. 11/7
3. 7/11
4. 7/4

Solution :

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

(a + b)/c = 6/5

5a + 5b = 6c --------- eq1

(b + c)/a = 9/2

2b + 2c = 9a ---------- eq2

9a - 2b = 2c (multiply by 3)

27a - 6b = 6c --------- eq3

from eq1 and eq3

27a - 6b = 5a + 5b

b = 2a

4a + 2c = 9a

c = (5/2)a

(a + c)/b = [a + (5/2)a] / 2a

= (7a/4a)

= 7/4

Question 17 :

If and are the roots of the equation x2 - x + 1 = 0, then which equations will have roots 3 and 3?

Difficulty : Moderate **Average Time : 89 Seconds**

Options :

1. $x^2 + 2x + 1 = 0$
2. $x^2 - 2x - 1 = 0$
3. $x^2 + 3x - 1 = 0$
4. $x^2 - 3x + 1 = 0$

Solution :

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

$x^2 - x + 1 = 0$

= 1

+ = 1

Cubing on both sides

$^3 + ^3 + 3 (+) = 1$

$^3 + ^3 + 3(1)(1) = 1$

$^3 + ^3 = -2$

$^3 \ ^3 = 1$

Required equation = $x^2 + 2x + 1 = 0$

Question 18 :

If x1x2x3 = 4(4 + x1 + x2 + x3), then what is the value of [1/(2 + x1)] + [1/(2 + x2)] + [1/(2 + x3)] ?

Difficulty : Moderate **Average Time : 79 Seconds**

Options :

1

2. 1/2

3. 2

4. 1/3

Solution :

The correct answer is option 2 ie 1/2.

$x_1x_2x_3 = 4(4 + x_1 + x_2 + x_3)$

Assuming,

$x_1 = 4, x_2 = 4, x_3 = 4$

Therefore, $[1/(2 + x_1)] + [1/(2 + x_2)] + [1/(2 + x_3)]$

$= 3 \times (1/6)$

$= 1/2$

Question 19 :

If x3 + y3 + z3 = 3(1 + xyz), P = y + z - x, Q = z + x - y and R = x + y - z, then what is the value of P3 + Q3 + R3 - 3PQR ?

Difficulty : Moderate

Average Time : 64 Seconds

Options :

1. 9

2. 8

3. 12

4. 6

Solution :

The correct answer is **option 3** i.e. **12.**

Assume y = z = 0

then,

P = -x

Q = +x

R = +x

$P^3 + Q^3 + R^3 - 3PQR = x^3 - 3(-x)^3$

$= x^3 + 3(x)^3$

$= 3 + 3(3)$

$= 12$

Question 20 :

5% of a = b, then b% of 20 is the same as ?

Difficulty : Moderate **Average Time : 77 Seconds**

Options :

1. 20% of a/2
2. 50% of a/20
3. 50% of a/2
4. 20% of a/20

Solution :

The correct answer is **option 4** i.e. **20% of a/20**

(5/100) × a = b

a = 20b

(b/100) × 20 = b/5

b = a/20 = a/100

In fourth option, we have 20% of a/20

= a/100

Hence, 4th option is correct.

Question 21 :

In how many months will Rs 8,000 yield Rs 2,648 as compound interest at 20% per annum compounded semi-annually?

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

Options :

18

2. 24

3. 12

4. 30

Solution :

The correct answer is option1 ie 18.

6 months interest = 10%

P = 8000

I = 2648

2648 2400 + 240 + 8

30% 3% .1%

= 33.1%

Total cycles = 6 + 6 + 6 = 18 months

Question 22 :

The cost price of an article is Rs x. It is marked up by 200%. It is sold at Rs 540 after giving 25% discount. What is the value of x (in Rs)?

Difficulty : Moderate

Average Time : 60 Seconds

Options :

1. 360

2. 250

3. 300

4. 240

Solution :

The correct answer is **option 4** i.e **240**

Given,

CP = x

MP= 3x

Discount = 25%

MP - Discount = 540

(3/4) MP = 540

MP = (540 × 4)/3 = 720

3x = 720

x = 240

Question 23 :

1 packet of biscuit costs Rs16 but the pack of 4 of the same packet of biscuits costs Rs 56. What is the effective discount (in %) on the pack?

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

Options :

1. 8
2. 10
3. 7.5
4. 12.5

Solution :

The correct answer is **option 4** i.e. **12.5**

Cost of 1 pack = Rs 16

Cost of 4 packs = Rs 64

Set of 4 packs = 56

Effective discount = [(64 - 56)/64] × 100

= (8/64) × 100

= 12.5%

Question 24 :

Working together A and B can do a job in 40 days, B and C in 36 days, and all three together in 24 days. In how many days can B alone do the job?

Difficulty : Moderate

Average Time : 66 Seconds

Options :

1. 60
2. 90
3. 72
4. 120

Solution :

The correct answer is **option 2** i.e. **90**

(1/a) + (1/b) + (1/c) = 1/24

Given,

(1/b) + (1/c) = 1/36

(1/a) + (1/36) = 1/24

1/a = 1/72

a = 72 days

1/b = (1/40) - (1/72)

1/b = 4/360 = 1/90

b = 90 days

Question 25 :

A and B invest in a business in the ratio 4 : 5. After 10 months B leaves the business after withdrawing his investment. In the first year, the business made a profit of Rs 49,000. What is the share of B (in Rs) of this profit?

Difficulty : Moderate

Average Time : 64 Seconds

Options :

1. 25000
2. 20000
3. 18000
4. 22000

Solution :

The correct answer is **option 1** i.e. **25000**

Let the investment made by A and B = 4x and 5x

Ratio of their profit = (4x × 12) : (5x × 10)

= 48x : 50x

= 24 : 25

Share of B = (25/49) × 49000

= 25000

Question 26 :

A, B, and C can do a job working alone in 50, 75 and 20 days respectively. They all work together for 4 days, then C quits. How many days will A and B take to finish the rest of the job?

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

Options :

1. 20
2. 30
3. 18
4. 24

Solution :

The correct answer is **option 1** ie **20.**

LCM (50, 75, 20) = 300

A can do = 300/50 = 6 units/day

B can do = 300/75 = 4 units/day

C can do = 300/20 = 15 units/day

Each day work = 15 + 4 + 6 = 25 units/days

A and B's 1 day work = 10 units

Therefore,

200/10 = 20 days

Question 27 :

A and B can together complete a task in 18 hours. After 6 hrs A leaves. B takes 36 hrs to finish rest of the task. How many hours would A have taken to do the task if he worked alone ?

Difficulty : Moderate

Average Time : 66 Seconds

Options :

1. 54
2. 45
3. 21
4. 27

Solution :

The correct answer is **option 4** ie **27.**

Let the total number of units of work = 108

A and B can do in 18 hrs = 108/18 = 6 units

Each hour they both can do 6 units.

For 6 hours, they both worked and so 36 units are done.

108 - 36 = 72 units of work done by B alone in 36 hours.

72/36 = 2 units/day

Therefore,

a + b = 6

a = 6 - 2

a = 4 units/day

If A worked alone, then = 108/4 = 27 hours

Question 28 :

A can do 50% of job in 16 days, B can do 1/4th of the job in 24 days. In how many days can they do 3/4th of the job working together?

Difficulty : Moderate

Average Time : 76 Seconds

Options :

24

2. 9
3. 21
4. 18

Solution :

The correct answer is **option 4** ie **18.**

A can complete the whole work in = 16 × 2 = 32 days

B can complete the whole work in = 24 × 4 = 96 days

They both can complete the whole work in = (96 × 32)/128 = 24 days

They can complete 3/4th work in = 24 × (3/4) = 18 days

Question 29 :

A Rs 750 tin of cheese is offered at 8% discount and a Rs 1,250 tin of butter at 20% discount. If we buy 5 tins of cheese and 3 tins of butter, what is the effective discount we get (in %)?

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

Options :

1. 12
2. 15
3. 14
4. 16

Solution :

The correct answer is **option 3** i.e. **14**

Cheese tin cost = 750

Discount = 8%

Discounted price = (92/100) × 750 = 690

Cost of 5 cheese tins = 3450 eq1

Butter tin cost = 1250

Discount = 20%

Discounted price = 1250 × (80/100) = 1000

Cost of 3 butter tins = 3000 eq2

Total cost = 6450

Total cost without discount = 7500

% = (6450 / 7500) × 100 = 86%

Discount percent = 14%

Question 30 :

What is the unit digit of the sum of first 111 whole numbers ?

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

Options :

1. 4
2. 6
3. 5
4. 0

Solution :

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

Sum of first 111 whole numbers = sum of first 110 natural numbers

So,

$_n$ = [n(n + 1)]/2

= [110(110 + 1)]/2

= 55 × 111

= 6105

Unit digit = 5

Question 31 :

How many 100 digit positive number are there ?

Difficulty : Moderate

Average Time : 64 Seconds

Options :

1. 9×10^{99}
2. 9×10^{100}
3. 10100
4. 11×10^{98}

Solution :

The correct answer is option 1 ie 9×10^{99}.

Digits	Positive numbers
1	$9 = 9 \times 10^{0}$
2	$90 = 9 \times 10^{1}$
3	$900 = 9 \times 10^{2}$
.	
.	
100	$= 9 \times 10^{99}$

Question 32 :

What is the value of ?

Difficulty : Moderate

Average Time : 72 Seconds

Options :

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

Solution :

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

$$\frac{5.6 \times 0.36 + 0.42 \times 3.2}{0.8 \times 2.1}$$

$$\frac{2.016 + 1.344}{1.68}$$

= 3.36/1.68

= 2

Question 33 :

What is the value of ?

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

Options :

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

Solution :

The correct answer is 4 ie 2.

$$\frac{(1.2)^3 + (0.8)^3 + (0.7)^3 - (2.016)}{(1.35)[(1.2)^2 + (0.8)^2 + (0.7)^2 - 0.96 - 0.84 - 0.56]}$$

It is of the form $(a^3 + b^3 + c^3 - abc)$

a = 1.2, b = 0.8, c = 0.7

$$\frac{a^3 + b^3 + c^3 - 3abc}{\left(\frac{a+b+c}{2}\right)(a^2 + b^2 + c^2 - ab - bc - ca)}$$

$$\frac{(a^2 + b^2 + c^2 - ab - bc - ca)(a + b + c)}{\left(\frac{a+b+c}{2}\right)(a^2 + b^2 + c^2 - ab - bc - ca)}$$

= 2

Question 34 :

What is the unit digit of (217)413 × (819)547 × (414)624 × (342)812 ?

Difficulty : Moderate

Average Time : 57 Seconds

Options :

1. 2
2. 4
3. 6
4. 8

Solution :

The correct answer is option 4 ie 8.

$(217)^{413} \times (819)^{547} \times (414)^{624} \times (342)^{812}$

For unit digits, the last two digit of power is considered

$= (7)^{13} \times (9)^{47} \times (4)^{24} \times (2)^{12}$

$= (7)^{1} \times (9)^{1} \times (4)^{2} \times (2)^{4}$ (cyclicity)

$= 7 \times 9 \times 6 \times 6$

3 6

$= 3 \times 6$

$= 18$

8 = unit digit

Question 35 :

Which of the following is true ? a. b. c. d.

Difficulty : Moderate

Average Time : 70 Seconds

Options :

1. Only a
2. Only b
3. Only c
4. Only d

Solution :

The correct answer is option 3 ie Only c.

$= \frac{1}{\sqrt{5}} > \frac{1}{\sqrt[3]{12}} > \frac{1}{\sqrt[4]{29}}$

For comparing,

$= \frac{1}{\sqrt[3]{12}}$ and $\frac{1}{\sqrt[4]{29}}$

$= (29^3)^{1/12}$ and $(12^4)^{1/12}$

$= (21^3)^{1/12} > (12^4)^{1/12}$

$= \frac{1}{(29^3)^{\frac{1}{12}}} < \frac{1}{(12^4)^{\frac{1}{12}}}$

Question 36 :

If S = upto 20 terms, then what is the value of S ?

Difficulty : Moderate **Average Time : 74 Seconds**

Options :

1. 6179/15275
2. 6070/14973
3. 7191/15174
4. 5183/16423

Solution :

The correct answer is option 2 ie 6070/14973.

$S = S_1 + S_2$

$S_1 =$

$= \frac{1}{1 \times 3 \times 5} + \frac{1}{3 \times 5 \times 7} + \cdots + \frac{1}{19 \times 21 \times 23}$

$= \frac{1}{4}\left[\frac{1}{1 \times 3} - \frac{1}{3 \times 5} + \frac{1}{3 \times 5} - \frac{1}{5 \times 7} \cdots\right]$

$= \frac{1}{4}\left[\frac{1}{3} - \frac{1}{21 \times 23}\right]$

$S_2 =$

$$= \frac{1}{1\times 4}+\frac{1}{4\times 7}+\cdots+\frac{1}{28\times 3}$$

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

$$= \frac{1}{3}\left[1-\frac{1}{13}\right]$$

$S = S_1 + S_2$

$$= \frac{1}{4}\left[\frac{1}{3}-\frac{1}{21\times 23}\right]+\frac{1}{3}\left[1-\frac{1}{13}\right]$$

= 6070/14973

Question 37 :

N is the largest two digit number, which when divided by 3, 4 and 6 leaves the remainder 1, 2 and 4 respectively. What is the remainder when N is divided by 5?

Difficulty : Moderate **Average Time : 81 Seconds**

Options :

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

Solution :

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

Negative remainder = 1 - 3 = -2

= 2 - 4 = -2

= 4 - 6 = -2

N = LCM(3, 4, 6) - 2

= 12 × k = -2

= k = 8

12 × 8 - 2 = 99

= 94/5

= 4 (remainder)

Question 38 :

Which of the following is true ? a. b. c. d.

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

Options :

1. Only a
2. Only b
3. Only c
4. Only d

Solution :

The correct answer is option 3 ie Only c.

= $\sqrt[3]{11} > \sqrt{7} > \sqrt[4]{45}$

7 = $\sqrt[4]{49}$

$\sqrt[4]{45}$ $\sqrt[4]{49}$

$(45^3)^{1/12} > (11^9)^{1/12}$

So, the order is

$\sqrt{7} > \sqrt[4]{45} > \sqrt[3]{11}$

Question 39 :

A and B are positive integers. If A + B + AB = 65, then what is the difference between A and B (A, B 15) ?

Difficulty : Moderate **Average Time : 80 Seconds**

Options :

1. 3
2. 4

5

4. 6

Solution :

The correct answer is option 3 ie 5.

A + B + AB = 65

A(1 + B) + B = 65

A = (65 - B)/(1 + B)

as A 15 and B 15

Let, B = 10, A = 55/11 = 5

Therefore, A = 5, B = 10

A - B = 5

Question 40 :

What is the value of $14^3 + 16^3 + 18^3 + ...+ 30^3$?

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

Options :

1. 134576
2. 120212
3. 115624
4. 111672

Solution :

The correct answer is option 4 ie 111672.

$14^3 + 16^3 + 18^3 + ...+ 30^3$

$= 8(7^3 + 8^3 + 9^3 + ...+ 15^3)$

Sum of n cubes = $\left(\frac{n(n+1)}{2}\right)^2$

$n = 6 = [(6 \times 7)/2]^2 = 441$

n = 15 = $[(15 \times 16)/2]^2$ = 14400

Difference = 13959

S = 8 × 13959 = 111672

Question 41 :

What is the value of ?

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

Options :

1. 69
2. 68
3. 70
4. 72

Solution :

The correct answer is option 2 ie 68.

$$\sqrt{4600 + \sqrt{540 + \sqrt{1280 + \sqrt{250 + \sqrt{36}}}}}$$

$$\sqrt{4600 + \sqrt{540 + \sqrt{1280 + \sqrt{256}}}}$$

$$\sqrt{4600 + \sqrt{540 + \sqrt{1296}}}$$

$$\sqrt{4600 + \sqrt{576}}$$

= 4624

= 68

Question 42 :

If 3x + 5y +7z = 49 and 9x + 8y + 21z = 126, then what is the value of y?

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

Options :

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

Solution :

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

3x + 5y +7z = 49

Multiplying by 3 on both the sides

9x + 15y + 21z = 147 eq1

9x + 8y + 21z = 126 eq2

eq1 - eq2

7y = 21

y = 3

Question 43 :

Cost of 4 pens, 6 notebooks and 9 files is Rs 305. Cost of 3 pens, 4 notebooks and 2 files is Rs 145. What is the cost (in Rs.) of 5 pens, 8 notebooks and 16 files ?

Difficulty : Moderate

Average Time : 61 Seconds

Options :

1. 415
2. 465
3. 440
4. Cannot be determined

Solution :

The correct answer is option 2 ie 465.

Let the cost of pen be x.

Cost of notebook be y.

Cost of files be x.

4x + 6y + 9z = 305 eq1

3x + 4y + 2z = 145 eq2

multiplying eq1 by 2

8x + 12y + 18z = 610 eq3

eq3 - eq2

8x + 12y + 18z - (3x + 4y + 2z) = 465

5x + 8y + 16z = 465

Question 44 :

ABC is a right angled triangle. BAC = 90° and ACB = 60°. What is the ratio of the circum radius of the triangle to the side AB?

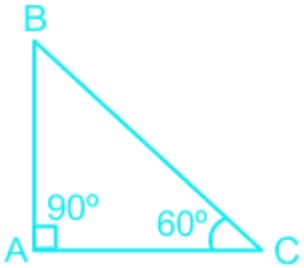
Difficulty : Moderate **Average Time : 72 Seconds**

Options :

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

Solution :

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



Circumradius = hypotenuse/2

sin60° = AB/BC

3/2 = AB/H

3/2 = AB/2R

R = AB/3

R/AB = 1/3

Question 45 :

In the given figure, ABCD is a square whose sides is 4 cm. P is a point on the side AD. What is the minimum value (in cm) of BP + CP ?

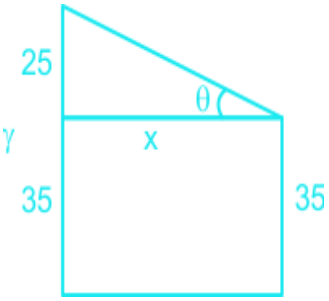
Difficulty : Moderate **Average Time : 82 Seconds**

Options :

1. 45
2. 44
3. 63
4. 46

Solution :

The correct answer is option is 1 ie 45.



CD = 4 cm

It will be minimum when P is the midpoint of DA

AP = PD = 2 cm

So,

CP = (16 + 4) = 20 = 25

And

BP = 25

Hence,

CP + BP = 45

Question 46 :

In the given figure, B and C are the centres of the two circles. AD is the common tangent to the two circles. If the ratio of the radius of both the circles is 3 : 5 and AC = 40, then what is the value of DE ?

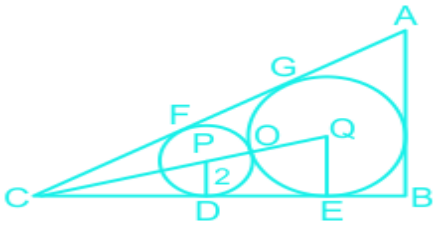
Difficulty : Moderate **Average Time : 85 Seconds**

Options :

1. 315
2. 515
3. 615
4. 415

Solution :

The correct answer is **option 4** i.e. **415**



Since the ratio of the radius of both the circles is 3 : 5, let DB = 3x and EC = 5x;

Since triangle ABD and ACE are similar, AB : AC = 3 : 5;

AB : BC = 3 : 2

Since AC = 40, BC = 2/5 × 40 = 16

BC = 3x + 5x = 16

x = 2

BD = 3x = 6 and EC = 5x = 10.

Triangle AEC is the right angle triangle;

â€‹â€‹â€‹â€‹â€‹$AE^2 = AC^2 – EC^2$

$AE^2 = 1600 – 100 = 1500$

AE = 1015

Since AD : DE = 3 : 2

DE = 2/5 × 1015 = 415

Question 47 :

In the given figure, AB = 30 cm and CD = 24 cm. What is the value (in cm) of MN ?

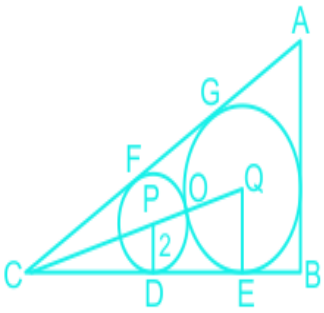
Difficulty : Moderate **Average Time : 113 Seconds**

Options :

1. 18
2. 9
3. 12
4. 5

Solution :

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



In the figure we can see;

$x^2 = r^2 – 12^2$

And $x^2 = R^2 - 15^2$

$r^2 – 12^2 = R^2 - 15^2$

$R^2 - r^2 = 225 – 144 = 81$

In triangle POM;

$R^2 - r^2 = PM^2$

$PM^2 = 81$

PM = 9

MN = 2 × PM = 18 cm.

Question 48 :

AB and AC are two tangents to a circle whose radius is 6 cm. If BAC = 60°, then what is the value (in cm) of ($AB^2 + AC^2$) ?

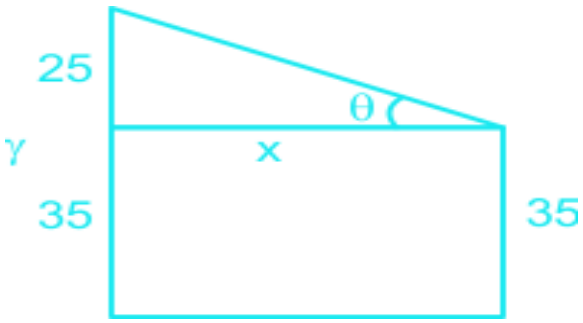
Difficulty : Moderate **Average Time : 101 Seconds**

Options :

1. 66
2. 46
3. 93
4. 83

Solution :

The correct answer is **option 1** i.e. **66.**



tan60° = AB/BO

3 = AB/6

AB = 63 = AC

Hence,

($AB^2 + AC^2$) = [$(63)^2 + (63)^2$] = 66 cm

Question 49 :

In the given figure, ABC is a right angled triangle. ABC = 90° and ACB = 60°. If the radius of the smaller circle is 2 cm, then

what is the radius (in cm) of the larger circle ?

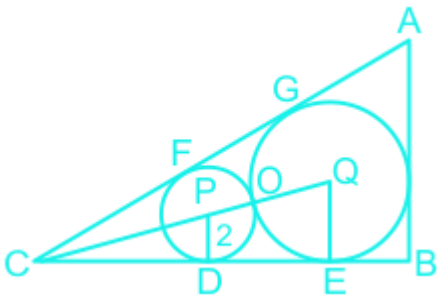
Difficulty : Moderate | **Average Time : 77 Seconds**

Options :

1. 4
2. 6
3. 4.5
4. 7.5

Solution :

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



ACB = 60°, ACP = PCB = 30°.

In triangle CPD;

Sin30 = PD/CP

CP = 4 cm

In triangle CQE;

Sin30 = QE/CQ

QC = 2QE

Let radius of larger circle = QE = QO = R cm

QC = 2R

QC = QO + OP + PC

2R = R + 2 + 4

R = 6 cm

Radius of larger circle = 6 cm

Question 50 :

In the given figure, O is the centre of the circle. Circle has 3 tangents. If QPR = 45°, then what is the value (in degrees) of QOR ?

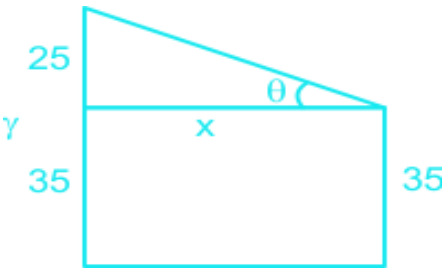
Difficulty : Moderate **Average Time : 159 Seconds**

Options :

1. 67.5
2. 72
3. 78.5
4. 65

Solution :

The correct answer is **option 1** i.e. **67.5.**



QPR = 45°

QOR = 90° - QPR/2

= 90° - (45/2)

= 67.5°

Question 51 :

In the given figure, two identical circles of radius 4 cm touch each other. A and B are the centres of two circles. If RQ is a tangent to the circle, then what is the length (in cm) of RQ?

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

Options :

1. 33

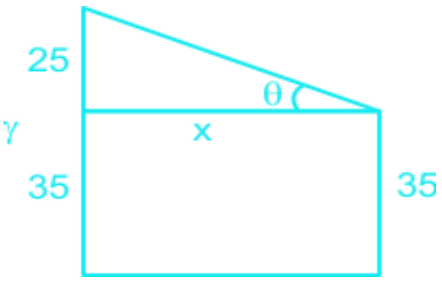
26

3. 42

4. 62

Solution :

The correct answer is **option 3** i.e **42**



In the figure,

AP = AO + OP = 4 + 8 = 12 cm and AS = 4 cm

$PS^2 = 12^2 - 4^2$

PS = 82 cm

Now triangles ASP and RQP are similar;

AS/RQ = SP/QP

4/RQ = 82/16

RQ = 64/82

RQ = 42 cm

Question 52 :

The radius of two circles is 3 cm and 4 cm. The distance between the centres of the circles is 10 cm. What is the ratio of the length of direct common tangent to the length of the transverse common tangent ?

Difficulty : Moderate

Average Time : 118 Seconds

Options :

1. 51 : 68

2. 33 : 17

66 : 51

4. 28 : 17

Solution :

The correct answer is option 2 ie 33 : 17.

Direct common tangent = $\sqrt{\partial^2 - (r1 - r2)^2}$

Transverse common tangent = $\sqrt{\partial^2 - (r1 + r2)^2}$

DCT/TCT = $\frac{\sqrt{[\partial^2 - (r1 - r2)^2]}}{\sqrt{[\partial^2 - (r1 + r2)^2]}}$

= $\frac{\sqrt{100 - 1}}{\sqrt{51}}$

= 91/51

= 33/17

Question 53 :

ABC is a triangle. AB = 5 cm, AC = 41 cm and BC = 8 cm. AD is perpendicular to BC. What is the area (in cm2) of triangle ABD ?

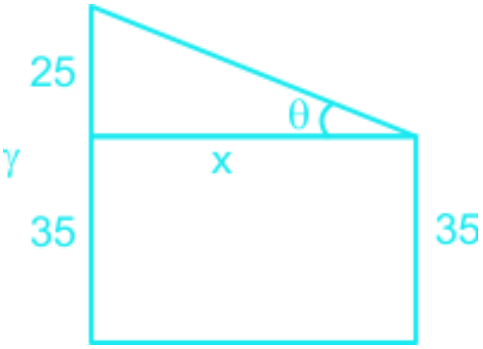
Difficulty : Moderate **Average Time : 78 Seconds**

Options :

1. 12
2. 6
3. 10
4. 20

Solution :

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



AB = 5 cm, AC = 41 cm and BC = 8 cm

Applying cos theorem;

CosB = $(5^2 + 8^2 – 41)/(2 \times 5 \times 8) = 3/5$

Now in triangle ABD;

AB = 5 cm & CosB = 3/5

BD = 5 × 3/5 = 3 cm

AD = 4 cm (Pythagoras theorem)

Area of triangle ABD = ½ × 4 × 3 = 6 cm^2

Question 54 :

In the given figure, PQR is the triangle and quadrilateral ABCD is inscribed in it. QD = 2 cm, QC = 5 cm, CR = 3 cm, BR = 4 cm, PB = 6 cm, PA = 5 cm and AD = 3 cm. What is the area (in cm^2) of the quadrilateral ABCD ?

Difficulty : Moderate

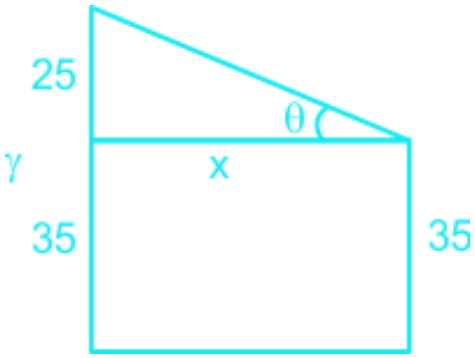
Average Time : 113 Seconds

Options :

1. (2321) / 4
2. (1521) / 4
3. (1721) / 5
4. (2321) / 5

Solution :

The correct answer is **option 3** i.e. **(1721) / 4.**



Area PQR = (QR/4) (4PQ² - QR²)

= (8/4) (400 - 64)

= 2 × 421 = 821 cm²

Area of PAB in ratio to Area of PQR

= (5 × 6)/(10 × 30) = 3/10

Area of QDC ratio to area of PQR

= (2 × 5)/(10 × 8) = 10/80 = 1/8

BCR ratio to PQR

= (4 × 3)/(10 × 8) = 12/80 = 3/20

Area (ABCD) = Area of triangle PQR - (Ar PAB + DQC +BCR)

= 821 - [3/10 + 1/8 + 3/20] × 821

= 821 - (46/80) 821

= (1721) / 5 cm²

Question 55 :

In the given figure, ABCDEF is a regular hexagon whose side is 6 cm. APF, QAB, DCR, and DES are equilateral triangles. What is the area (in cm²) of the shaded region?

Difficulty : Moderate

Average Time : 111 Seconds

Options :

1. 243
2. 183

723

4. 363

Solution :

The correct answer is **option 3** i.e. **723.**

Area of an equilateral triangle of side 6 cm = 3/4 × 36 = 93

Hence,

Area of the shaded region = 8 × Area of 1 equilateral triangle

= 8 × 93

= 723

Question 56 :

In the given figure, ABCD is a square of side 14 cm. E and F are mid points of sides AB and DC, respectively. EPF is a semicircle whose diameter is EF. LMNO is a square. What is the area (in cm^2) of the shaded region ?

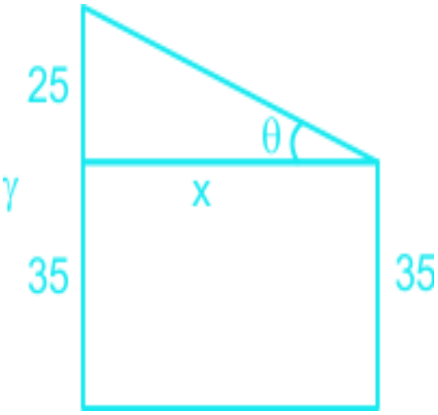
Difficulty : Moderate **Average Time : 63 Seconds**

Options :

1. 108.5
2. 94.5
3. 70
4. 120

Solution :

The correct answer is **option 2** i.e. **94.5**



Area of square ABCD = 14 × 14 = 196 cm^2

Area of semicircle = (× 7^2)/2 = 77 cm^2

Diaognal LN = 14/2 = 7 cm

So, Side of square LMNO = 7/2 cm

So, Area of square LMNO = $(7/2)^2$ = 49/2 = 24.5

Hence,

Area of shaded region = 196 - (77 + 24.5) = 94.5

Question 57 :

Length and breadth of a rectangle are 8 cm and 6 cm respectively. The rectangle is cut on its four vertices such that the resulting figure is a regular octagon. What is the side (in cm) of the octagon ?

Difficulty : Moderate | **Average Time : 78 Seconds**

Options :

1. 311 - 7
2. 513 - 8
3. 47 - 11
4. 611 - 9

Solution :

The correct answer is **option 1** i.e. **311 - 7.**

Let ABCD be the rectangle such that AB = CD = 8 cm and BC = DA = 6 cm.

Let the side of the regular octagon = s

Let the 4 verticles be trimmed such that x is on sides BC and DA and y is on sides AB and CD.

So, at 4 verticles we are cutting off right angled triangles of sides x and y while their hypotenuse is s.

$2y + s = 8$ eq1

$2x + s = 6$ eq2

$x^2 + y^2 = s^2$ eq3

From eq1, $y = (8 - s)/2$

From eq2, $x = (6 - s)/2$

Now, eq3 becomes

$[(6 - s)/2]^2 + [(8 - s)/2]^2 = s^2$

$[(6 - s)/2]^2 + [(8 - s)/2]^2 = 4 s^2$

$36 - 12s + s^2 + 64 - 16s + s^2 = 4 s^2$

$100 - 28s - 2s^2 = 0$

$s^2 + 14s - 50 = 0$

$s = [-14 \pm (14^2 + 200)]/2$

$s = [-14 \pm 611]/2$

$s = 311 - 7$

So, the sides of the regular octagon are (311 - 7) cm

Question 58 :

In the given figure, radius of a circle is 142 cm. PQRS is a square. EFGH, ABCD, WXYZ and LMNO are four identical squares. What is the total area (in cm^2) of all the small squares ?

Difficulty : Moderate **Average Time : 179 Seconds**

Options :

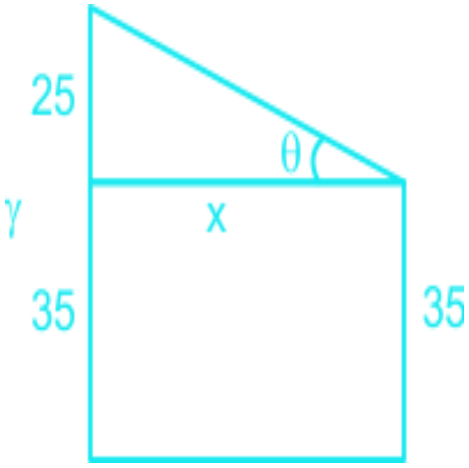
1. 31.36
2. 125.44

62.72

4. 156.8

Solution :

The correct answer is **option 2** i.e. **125.44**



Radius of the circle = 142 cm

So,

Diameter of the circle = 282 cm

And

Side of the larger square = 282/2 = 28 cm

Let the side of smaller square be x.

x = (Length of diameter - length of a side)/2

= (282 - 28)/2

= 142 - 14

= 14(2 - 1)

= 14 × 0.4 = 5.6

Area = x^2 = 31.36

Hence,

Area of 4 squares = 31.36 × 4 = 125.44

Question 59 :

In the given figure, AB, AE, EF, FG and GB are semicircles. AB = 56 cm and AE = EF = FG = GB. What is the area (in cm^2) of the shded region ?

Difficulty : Moderate

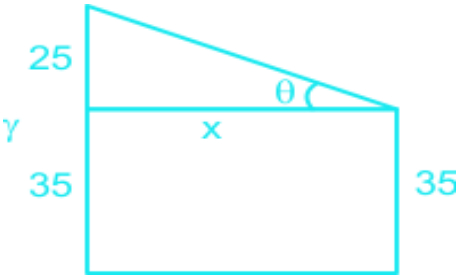
Average Time : 91 Seconds

Options :

1. 414.46
2. 382.82
3. 406.48
4. 394.24

Solution :

The correct answer is **option 4** i.e. **394.24**



Let OD = x = radius of circle

OF = (28 - x)

OM = (x + 7)

Now, applying pythogoras theorem

$(7 + x)^2 = 7^2 + (28 - x)^2$

$x^2 + 14x + 49 = 49 + 784 + x^2 - 56x$

$70x = 784$

$x = 11.2$

Area of circle = $r^2 =$ $\times (11.2)^2$

$= 394.24\ cm^2$

Question 60 :

A right prism has a square base with side of base 4 cm and the height of the prism is 9 cm. The prism is cut into threeparts of equal heights by two planes parallel to its base. What is the ratio of the volume of the top, middle and bottom part respectively ?

Difficulty : Moderate

Average Time : 93 Seconds

Options :

1. 1 : 1 : 1
2. 1 : 7 : 19
3. 1 : 8 : 20
4. 1 : 7 : 20

Solution :

The correct answer is option 1 ie 1 : 1 : 1.

Ratio of the volume = 1 : 1 : 1 as the height is same, base is same.

Therefore, the volume is also same.

Question 61 :

Radius of base of a hollow cone is 8 cm and its height is 15 cm. A sphere of largest radius is put inside the cone. What is the ratio of the radius of base of cone to the radius of shpere ?

Difficulty : Moderate

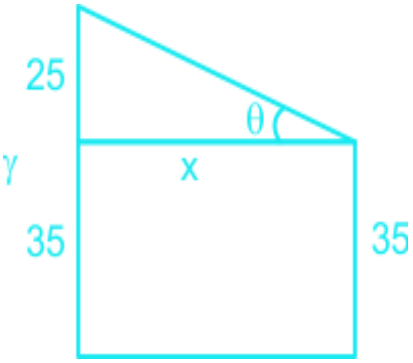
Average Time : 50 Seconds

Options :

1. 5 : 3
2. 4 : 1
3. 2 : 1
4. 7 : 3

Solution :

The correct answer is option 1 ie 5 : 3.



Radius of base of cone = 8 cm

Height = 15 cm

AM = 15

Let OM = r [radius of sphere]

In AOD and AMC

D = M = 90°

A = common

So, AOD ~ AMC

Now, 17/(15 - r) = 8/r ; r = 24/5

Radius of cone/Radius of sphere = (8 × 5)/24

= 5 : 3

Question 62 :

The ratio of curved surface area of a right circular cylinder to the total area of its two bases is 2 : 1. If the total surface area of cylinder is 23100 cm2, then what is the volume (in cm3) of cylinder ?

Difficulty : Moderate | **Average Time : 82 Seconds**

Options :

1. 247200
2. 269500
3. 312500
4. 341800

Solution :

The correct answer is **option 2** i.e. **269500.**

C.S.A = 2rh

Total area of two bases = $2r^2$

Ratio = $2rh/2r^2 = h/r = 2/1$ (given)

h = 2r

T.S.A = 23100

2r(r + h) = 23100

$6r^2 = 23100$

r = 35

Volume = $r^2h = 2r^3 = 269500$

Question 63 :

A solid cylinder has radius of base 14 cm and height 15 cm. 4 identical cylinders are cut from each base as shown in the given figure. Height of small cylinder is 5 cm. What is the total surface area (in cm^2) of the remaining part ?

Difficulty : Moderate

Average Time : 73 Seconds

Options :

1. 3740
2. 3432
3. 3124
4. 2816

Solution :

The correct answer is option 2 ie 3432.

Remaining T.S.A = T.S.A(initial) + 8 × C.S.A (small cylinder)

= 2r(r + h) + 8 × 2r'h

= 2 × 14 × 29 + 8 × 2 (7/2) × 5

= 2(14 × 29 + 20 × 7)

= 2 (546)

= 3432

Question 64 :

10 identical solid spherical balls of radius 3 cm are melted to form a single sphere. In this process 20% of solid is wasted. What is the radius (in cm) of the bigger sphere ?

Difficulty : Moderate **Average Time : 80 Seconds**

Options :

1. 24
2. 12
3. 8
4. 6

Solution :

The correct answer is option 4 ie 6.

Volume of 10 balls = 10 × (4/3) × × 3^3

= 10 × 4 × 9 × = 1131.42

Remaining volume = 0.8 × 1131.42 = 905.14

905.14 = (4/3) × × $(R)^3$

R^3 = (905.14 × 3 × 7)/88 = 216

R = 6

Question 65 :

The radius of base of solid cylinder is 7 cm and its height is 21 cm. It is melted and converted into small bullets. Each bullet is of same size. Each bullet consisted of two parts viz. a cylinder and a hemisphere on one of its base. The total height of bullet is 3.5 cm and radius of base is 2.1 cm. Approximately how many complete bullets can be obtained ?

Difficulty : Moderate **Average Time : 75 Seconds**

Options :

1. 83
2. 89

74

4. 79

Solution :

The correct answer is option 1 ie 83.

Volume of solid cylinder = $r^2h = (22/7) \times (7^2) \times 21$

$= 22 \times 7 \times 21 = 3234$

Volume of 1 bullet = $r^2_1h + (2/3)\ r^3_1$

$= r^2_1\ [h + (2/3) \times r_1]$

$= (22/7) \times (2.1)^2\ [1.4 + (2/3) \times 2.1]$

$= 22 \times 0.3 \times 2.1\ (1.4 + 1.4)$

$= 22 \times 0.3 \times 2.1 \times 2.8$

$= 38.808$

No. of bullets = 3234/38.80 = 83.33 83

Question 66 :

A cuboid of size 50 cm × 40 cm × 30 cm is cut into 8 identical parts by 3 cuts. What is the total surface area (in cm^2) of all the 8 parts ?

Difficulty : Moderate | **Average Time : 97 Seconds**

Options :

1. 11750
2. 14100
3. 18800
4. 23500

Solution :

The correct answer is option 3 ie 18,800.

T.S.A = 8 × (T.S.A of 1 part)

$= 8 \times 2(lb + bh + lh)$

= 8 × 2(20 × 25 + 25 × 15 + 15 × 20)

= 8 × 2(1175)

= 18,800

Question 67 :

A right triangular pyramid XYZB is cut from cube as shown in figure. The side of cube is 16 cm. X, Y and Z are mid points of the edges of the cube . What is the total surface area (in cm^2) of the pyramid ?

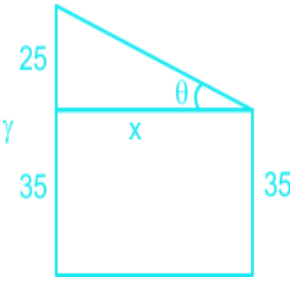
Difficulty : Moderate **Average Time : 62 Seconds**

Options :

1. 48(3 + 1)
2. 24(4 + 3)
3. 28(6 + 3)
4. 32(3 + 3)

Solution :

The correct answer is option 4 ie 32(3 + 3).



T.S.A = Base triangle area + face triangle area

= (3/4) × $(82)^2$ + 3 × (1/2) × 8 × 8

= 151.4256

= 32(3 + 3)

Question 68 :

What is the value of [(sin x + sin y)(sin x - sin y)] / [(cos x + cos y)(cos y - cos x)] ?

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

Options :

0

2. 1
3. -1
4. 2

Solution :

The correct answer is option 2 ie 1.

Putting x = 10°, y = 0°

= [(sin x + sin y)(sin x - sin y)] / [(cos x + cos y)(cos y - cos x)]

= (1 × 1)/(1 × 1)

= 1

Question 69 :

What is the value of [(tan 5 + tan 3)/{4 cos 4(tan 5 - tan 3)}]?

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

Options :

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

Solution :

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

[(tan 5 + tan 3)/{4 cos 4(tan 5 - tan 3)}]

Put = 15°

= [(tan 75° + tan 45°)] / [4 cos 60°(tan 75° - tan 45°)]

= [2 + 3 + 1] / [4 × (1/2)(1 + 3)]

= [3 + 3] / [2(1 + 3)]

= [3(1 + 3)] / [2(1 + 3)]

= **3/2**

Going through option

Sin 2 = Sin 30° = 1/2

Cos 2 = Cos 30° = **3/2**

Tan 4 = Tan 60° = 3

Cot 2 = Cot 30° = 3

Question 70 :

What is the value of (4/3) cot² (/6) + 3 cos² (150°) - 4 cosec² 45° + 8 sin (/2) ?

Difficulty : Moderate **Average Time : 78 Seconds**

Options :

1. 25/4
2. 1
3. -7/2
4. 13/2

Solution :

The correct answer is **option 1** i.e. **25/4**.

= (4/3) cot² (/6) + 3 cos² (150°) - 4 cosec² 45° + 8 sin (/2)

= (4/3) × 3 + 3 × (-3/2)² - 4 × (2)² + 8 × 1

= 4 + 3 × 3/2 - 4 × 2 + 8 × 1

= 4 + (9/4)

= 25/4

Question 71 :

What is the value of sin(B - C) cos(A - D) + sin (A - B) cos(C - D) + sin(C - A) cos (B - D)?

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

Options :

1. 3/2

-3

3. 1

4. 0

Solution :

The correct answer is **Option 4** i.e **0**

Put A = B = C = D

= sin(B - C) cos(A - D) + sin (A - B) cos(C - D) + sin(C - A) cos (B - D)

= 0 + 0 + 0

= 0

Question 72 :

What is the value of ?

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

Options :

1. 1

2. -1

3. 0

4. 2

Solution :

The correct answer is option is 2 ie -1.

$$= \frac{[4\cos(90-A)\sin^3(90+A)] - [4\sin(90+A)\cos^3(90-A)]}{\cos\left(\frac{180+8A}{2}\right)}$$

$$= \frac{4\,sinAcosA[\cos^2 A - \sin^2 A]}{\cos(90+4A)}$$

$$= \frac{2 \times 2sinAcosA \times cos2A}{-sin4A}$$

= (+sin4A)/(-sin4A)

= -1

Question 73 :

What is the value of cos[(180 -)/2] cos[(180 - 9)/2] + sin[(180 - 3)/2] sin[(180 - 13)/2] ?

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

Options :

1. sin2 sin4
2. cos2 cos6
3. sin2 sin6
4. cos2 cos4

Solution :

The correct answer is option 2 ie cos2 cos6.

$= \cos\left(90-\frac{\theta}{2}\right)\cos\left(90-\frac{9\theta}{2}\right)+\sin\left(90-\frac{3\theta}{2}\right)\sin\left(90-\frac{13\theta}{2}\right)$

$= \sin\left(\frac{\theta}{2}\right)\sin\left(\frac{9\theta}{2}\right)+\cos\left(\frac{3\theta}{2}\right)\cos\left(\frac{13\theta}{2}\right)$

$= \frac{1}{2}[cos4\theta - cos5\theta]+\frac{1}{2}[cos8\theta + cos5\theta]$

= 1/2 [cos4 - cos5 + cos8 + cos5]

= 1/2 [cos4 + cos8]

= cos2 cos6

Question 74 :

What is the value of [tan²(90 -) - sin²(90 -)] cosec²(90 -) cot²(90 -) ?

Difficulty : Moderate **Average Time : 73 Seconds**

Options :

1. 0
2. 1

-1

4. 2

Solution :

The correct answer is option 2 ie 1.

Put = 45°

= [tan²45° - sin²45°] (cosec²45°)(cot²45°)

= (1 - 1/2) (2)(1)

= 1

Question 75 :

Two points P and Q are at the distance of x and y (where y > x) respectively from the base of a building and on a straight line. If the angles of elevation of the top of the building from points P and Q are complementary, then what is the height of the building ?

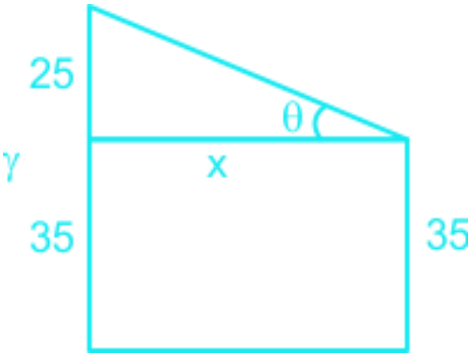
Difficulty : Moderate **Average Time : 59 Seconds**

Options :

1. xy
2. (y/x)
3. (x/y)
4. (xy)

Solution :

The correct answer is option 4 ie (xy).



tan(P°) = h/x eq1

tan(90 - P°) = h/y

tan(Q°) = h/y eq2

from eq1 and eq2

h = (xy)

Question 76 :

A navy captain going away from a lighthouse at the speed of 4[3 - 1]m/s. He observes that it takes him 1 minute to change the angle of elevation of the top of the lighthouse from 60° to 45°. What is the height (in meters) of the lighthouse?

Difficulty : Moderate

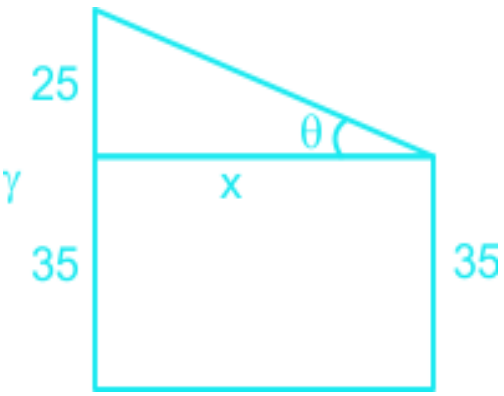
Average Time : 74 Seconds

Options :

1. 2403
2. 480[3 - 1]
3. 3603
4. 2802

Solution :

The correct answer is option 1 ie 2403.



Time taken is 1 min

Speed = 4 (3 - 1)m/s

Distance = 60 × 4 (3 - 1)

= 240(3 - 1)

x = 240

height = x × 3

= 2403

Question 77 :

The tops of two poles of height 60 m and 35 m are connected by a rope. If the rope makes an angle with the horizontal whose tangent is 5/9 m, then what is the distance (in meters) between the two poles?

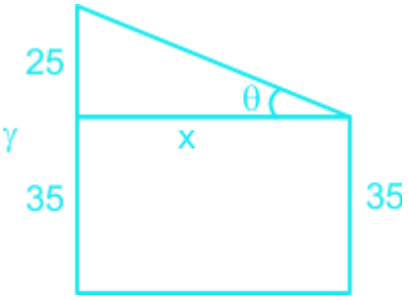
Difficulty : Moderate **Average Time : 74 Seconds**

Options :

1. 63
2. 30
3. 25
4. 45

Solution :

The correct answer is option 4 ie 45.



tan = 5/9

25/x = 5/9

x = 45

Question 78 :

The table given below shows the number of applicants who have applied for exam at various centres as percentage of total number of applicants. The table also shows the number of online applicants and absent applicants as a percentage of total applicants of each centre. Total number of applicants is 12,00,000. Exam Centre Total Applicants Online Applicants Absent Applicants F 15% 30% 36% G 25% 44% 25% H 20% 52% 32% J 24% 46% 18% K 16% 38% 20% If A equals to 15% of total applicants who are present at exam centre F and B equals to present applicants at exam centre K , then A is what percent of B?

Difficulty : Moderate

Average Time : 100 Seconds

Options :

1. 18.18
2. 15.18
3. 13.33
4. 14.28

Solution :

The correct answer is option 2 ie 15.18

A= 15% of 81%

B = 80%

(A/B) × 100 = (15 × 81) / 80

= 1215/80 × 100

= 15.18 %

Question 79 :

The table given below shows the number of applicants who have applied for exam at various centres as percentage of total number of applicants. The table also shows the number of online applicants and absent applicants as a percentage of total applicants of each centre. Total number of applicants is 12,00,000. Exam Centre Total Applicants Online Applicants Absent Applicants F 15% 30% 36% G 25% 44% 25% H 20% 52% 32% J 24% 46% 18% K 16% 38% 20%

Total number of offline applicants from exam centre H, K and F are how much less than the total number of present applicants from exam centre G and J ?

Difficulty : Moderate

Average Time : 104 Seconds

Options :

1. 111420
2. 100920
3. 127370
4. 109990

Solution :

The correct answer is option 2 ie 100920.

Offline applicants of (H + F + K)

= (9.6% + 9.92% + 10.5%)

= 30.02%

Present applicants of (G + J)

= (18.75% + 19.68%)

= 38.43%

Difference = 8.41%

= 8.41% × 12,00,000

= 1,00,920

Question 80 :

The table given below shows the number of applicants who have applied for exam at various centres as percentage of total number of applicants. The table also shows the number of online applicants and absent applicants as a percentage of total applicants of each centre. Total number of applicants is 12,00,000.

Exam Centre	Total Applicants	Online Applicants	Absent Applicants
F	15%	30%	36%
G	25%	44%	25%
H	20%	52%	32%
J	24%	46%	18%
K	16%	38%	20%

What are the total number of offline applicants from the exam centre F, H, J and G ?

Difficulty : Moderate

Average Time : 110 Seconds

Options :

1. 393720
2. 963000
3. 564720
4. 428540

Solution :

The correct answer is option 3 ie 564720.

Offline applicants (F, H, J and G)

= (10.5% + 9.6% + 12.96% + 14%)

= 47.06%

= 47.06% × 12,00,000

= 564720

Question 81 :

The table given below shows the number of applicants who have applied for exam at various centres as percentage of total number of applicants. The table also shows the number of online applicants and absent applicants as a percentage of total applicants of each centre. Total number of applicants is 12,00,000. Exam Centre Total Applicants Online Applicants Absent Applicants F 15% 30% 36% G 25% 44% 25% H 20% 52% 32% J 24% 46% 18% K 16% 38% 20%

What is the ratio of total number of present applicants from exam centre K to total number of offline applicants from exam centre J?

Difficulty : Moderate **Average Time : 99 Seconds**

Options :

1. 40 : 41
2. 80 : 81
3. 10 : 9
4. 7 : 11

Solution :

The correct answer is option 2 ie 80 : 81.

Total number of present applicants from K = 16% × 80% × 12,00,000

Offline applicants from J = 54% of 24% of 12,00,000

Ratio = (16% × 80% × 12,00,000) / (54% × 24% × 12,00,000)

= 80/81

Question 82 :

The table given below shows the number of applicants who have applied for exam at various centres as percentage of total number of applicants. The table also shows the number of online applicants and absent applicants as a percentage of total applicants of each centre. Total number of applicants is 12,00,000. Exam Centre Total Applicants Online Applicants Absent Applicants F 15% 30% 36% G 25% 44% 25% H 20% 52% 32% J 24% 46% 18% K 16% 38% 20%

What are the total number of present applicants from exam centre H and G together ?

Difficulty : Moderate **Average Time : 98 Seconds**

Options :

1. 2,38,200
2. 1,51,800
3. 3,88,200
4. 4,42,650

Solution :

The correct answer is option 3 ie 3,88,200.

Applicants present from H = (1/4) × (3/4) × 12,00,000

= 2,25,000

Applicants present from G = (1/5) × (68/100) × 12,00,000

= 1,63,200

Sum = 2,25,000 + 1,63,200 = 3,88,200

Question 83 :

Solution A contains 10% acid and solution B contains 30% acid. In what ratio should solution A be mixed with solution B to obtain a mixture with 25% acid ?

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

Options :

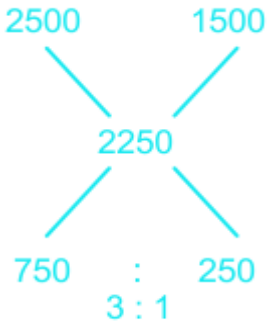
1. 1 : 2
2. 3 : 1
3. 1 : 3
4. 2 : 1

Solution :

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

Acid present in solution A = 10%

Acid present in solution B = 30%



3 : 1

B : A

So, A : B = 1 : 3

Question 84 :

In what ratio should coffee powder costing Rs 2500/kg be mixed with coffee powder costing Rs 1500/kg so that the cost of the mixture is Rs 2250/kg ?

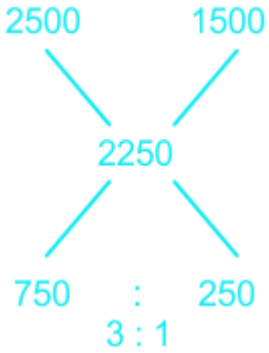
Difficulty : Moderate **Average Time : 65 Seconds**

Options :

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

Solution :

The correct answer is option 3 ie 3 : 1.



Question 85 :

A and B started a partnership business investing in the ratio of 3 : 8. C joined them after 4 months with an amount equal to 3/4th of B . What was their profit (in Rs) at the end of the year if C got Rs 24,000 as his share ?

Difficulty : Moderate

Average Time : 49 Seconds

Options :

1. 1,20,000
2. 1,50,000
3. 90,000
4. 1,80,000

Solution :

The correct answer is option 3 ie 90,000.

Let investment of A and B be 3x and 8x.

Investment of C = (3/4) × 8x = 6x

Ratio of their profits = 3 : 8 : 4

Share of C = 24000

(4/15) × x = 24000

x = 90000

Question 86 :

A batsman scores 87 runs in the 21st match of his career. His average runs per match increase by 2. What was his average before the 21st match ?

Difficulty : Moderate

Average Time : 57 Seconds

Options :

1. 45
2. 46
3. 44
4. 43

Solution :

The correct answer is option 1 ie 45.

Sum of scores till 20 matches = x

Average of 20 matches = y

x = 20y

(x + 87)/21 = y + 2

20y + 87 = 21y + 42

y = 45

Question 87 :

Oil equals to 20% of weight of groundnut is extracted in a mill. The matter left after extraction is sold as cattle feed at the rate of Rs 12.5/kg. The groundnuts are bought at Rs 20/kg. The processing cost is Rs 5/kg. At what price (Rs per kg) should the oil be sold to earn 20% profit on the total cost. (Total cost = Cost of groundnuts and processing cost) ?

Difficulty : Moderate

Average Time : 64 Seconds

Options :

1. 250
2. 150
3. 200
4. 100
5. 300

Solution :

The correct answer is **option 4** i.e. **100**.

For 5 kg,

Cost = 100 + 25 = 125 Rs

SP = (20/100) × 125 + 125 = 150 Rs

SP = 1 kg oil + 4 kg cattle feed

150 = 1 kg oil + (4 × 12.5)

1 kg oil = 150 - 50

= 100 Rs /kg

Question 88 :

If a vendor sells a coconut at Rs 14.4 he makes 10% loss. If he wants to make 25% profit, then at what price (in Rs)should he sell the coconut?

Difficulty : Moderate **Average Time : 61 Seconds**

Options :

1. 18
2. 20
3. 16
4. 22

Solution :

The correct answer is **option 2** i.e. **20**

SP = 14.4

Loss % = 10%

0.9 × CP = 14.4

CP = 14.4/0.9 = 16

Required profit = 25%

So,

SP = 1.25 × 16 = Rs. 20

Question 89 :

At a village trade fair a man buys a horse and a camel together for Rs 51,250. He sold the horse at a profit of 25% and the camel at a loss of 20%. If he sold both the animals at the same price, then the cost price of the cheaper animal was ?

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

Options :

1. 6600
2. 7500
3. 25000
4. 20000

Solution :

The correct answer is option 4 ie 20000.

Price of horse = x

Price of camel = y

x+ y = 51250

SP of horse = (1/4)x + x = 5x/4

SP of camel = y - y/5 = 4y/5

SP = 5x/4 = 4y/5

25x = 16y

Now, cheaper animal is horse as SP has to be same.

Putting the value of x = 20000, the equations are satisfied.

Question 90 :

On a certain item, profit is 150%. If the cost price increases by 25%, what will be the new profit margin (in %)?

Difficulty : Moderate **Average Time : 66 Seconds**

Options :

1. 25
2. 50
3. 100
4. 75

Solution :

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

CP = x

SP = 2.5x

Now,

CP = 1.25x

SP = 2.5x

Profit = (2.5x - 1.25x)/(1.25x) × 100

= 100

Question 91 :

40% are the passing marks. A student gets 250 marks yet fails by 38 marks. What is the maximum marks?

Difficulty : Moderate **Average Time : 47 Seconds**

Options :

1. 720
2. 750
3. 800
4. 840

Solution :

The correct answer is **option 1** i.e. **720**.

Let the total marks be x

Passing marks = 0.4x

Given,

250 + 38 = 0.4x

0.4x = 288

x = (288 × 10)/4

x = 720

Question 92 :

Ravi is 12 years younger than Surya. Ravi's age is 40% of the sum of his and Surya's age. What will be Surya's age 9 years hence ?

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

Options :

1. 36
2. 24

33

4. 45

Solution :

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

Let Surya's age be s

Ravi's age be r

s - r = 12 ---(1)

r = 0.4(r + s)

0.6r = 0.4s

0.6(s - 12) = 0.4s (From equation 1)

0.6s - 7.2 = 0.4s

0.2s = 7.2

s = 36 years

9 years from now the age will be = 36 + 9 = 45

Question 93 :

A man's annual income has increased by Rs 5 lakhs but the tax on income that he has to pay has reduced from 12% to 10%. He now pay Rs 10,000 more income tax. What is his increased income (in Rs lakhs)?

Difficulty : Moderate **Average Time : 73 Seconds**

Options :

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

Solution :

The correct answer is option 2 ie 25.

Starting income = x

New income = x + 5,00,000

Income tax at starting income = 0.12x

Income tax now = (x + 5,00,000)(0.1)

Difference = 10,000

0.1x + 5,00,000 - 0.12x = 10,000

x = 20,00,000

New salary = 25 lakhs

Question 94 :

A racing car going at an average speed of 108 km/hr takes 15 minutes to complete a lap on a racing track. By how much should it increase its speed (in km/hr) to complete the lap in 12 minutes?

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

Options :

1. 24
2. 21
3. 27
4. 30
5. 23

Solution :

The correct answer is **option 3** ie **27**

Distance of the lap = 108 × (1/4) = 27 km

Time to complete the lap = 12 min = 1/5 hour

Speed = 27/(1/5) = 135 km/hr

Increase = 135 - 108 = 27 km/hr

Question 95 :

Train A takes 45 minutes more than Train B to travel a distance of 450 km. Due to engine trouble speed of Train B falls by a quarter, so it takes 30 minutes more than Train A to complete the same journey. What is the speed of Train A (in

km/hr)?

Difficulty : Moderate **Average Time : 61 Seconds**

Options :

1. 90
2. 120
3. 100
4. 110

Solution :

The correct answer is option 3 ie 100.

Let the speed of Train A be x.

Speed of Train B = y

x.t = y.[t - (3/4)] - eq1

Given,

x.t = y.[t + (1/2)] - eq2

On solving equation,

1 part = 75 minutes [time difference]

Time by A = 4.5 hrs, distance = 450km

Speed = 450/4.5 = 100km/hr

Question 96 :

Two cars A and B travel from one city to another city, at speed of 72 km/hr and 90 km/hr respectively. If car B takes 1 hour lesser than car A for the journey, then what is the distance (in km) between the two cities?

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

Options :

1. 270
2. 360
3. 240

400

Solution :

The correct answer is **option 2** i.e. **360**

Distance = speed × time

Time taken by B is 't' hours

72(t + 1) = 90t

72t + 72 = 90t

72 = 18t

t = 4 hrs

Distance = 90 × 4 = 360 km

Question 97 :

B starts 4 minutes after A from the same point, for a place at a distance of 7 miles from the starting point. A on reaching the destination turns back and walks a mile where he meets B. If A's speed is a mile in 8 minutes then B's speed is a mile in how many minutes?

Difficulty : Moderate

Average Time : 57 Seconds

Options :

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

Solution :

The correct answer is **option 3** i.e. **10**

Speed of A = 1 mile/8 minutes

= 7.5 miles/hrs

Speed of B = x miles/hrs

Total distance covered by A = 8 miles

Time taken by A = 64 minutes

B starts 4 minutes later,

Time taken by B = 60 minutes

Distance covered = 6 miles

Speed = 60/6 = 10 minutes/mile

Question 98 :

If the amount on a certain principal in 3 years at a 12% rate of interest compounded annually is Rs 12,000, then what will be the amount (in Rs) after the 4th year?

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

Options :

1. 14330
2. 15440
3. 13440
4. 14550

Solution :

The correct answer is **Option 3** i.e. **13440.**

Amount = Principal + Interest

Amount in 4th year at the rate of 12% will be

Amount = 12000 + (12/100) × 12000

Amount = (12000 + 1440)

Amount = Rs.13440

Question 99 :

The amount (in Rs) received at 10% per annum compound interest after 3 years is Rs 1,19,790. What was the principal ?

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

Options :

1. 90,000
2. 1,00,000

80,000

4. 75,000

Solution :

The correct answer is **option 1** ie **90,000.**

$P(1 + R/100)^3 = 119790$

$P(1 + 1/10)^3 = 119790$

$P(11/10)^3 = 119790$

$P = (119790 \times 10 \times 10 \times 10) / (11 \times 11 \times 11)$

$P = 90,000$

Question 100 :

If the simple interest earned on a certain sum for the 1 year is Rs 2,000 and compound interest earned in 2 years is Rs 4,160 then, what will be the rate of interest?

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

Options :

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

Solution :

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

Simple interest:

$S.I. = (P \times R \times T)/100$

$(P \times R \times T)/100 = 2000$

$P \times R = 200000.....(1)$

Compound interest:

$C.I. = P(1 + (R/100)^2) - P$

$P(1 + (R/100)^2 - 1) = 4160$

$P(1 + (R/100)^2) = 4160$

$P[(200 + R)(R)]/100^2 = 4160$

$P[(200 + R)(R)] = 41600000$.....(2)

Dividing both equations, we have

$1/(R + 200) = 20/4160$

$R + 200 = 208$

$R = 8\%$

Ssc Cgl Tier II Previous Year Question Paper Analysis

The analysis of Ssc Cgl Tier II Previous Year Question Paper held on 2018-02-17 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. 2 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 - 12
2. Percentage - 2
3. Data Interpretation - 5
4. Time Speed And Distance - 5
5. Interest - 4
6. Ratios And Proportion - 10
7. Geometry - 17
8. Trigonometry - 7
9. Mensuration - 9
10. Algebra - 1

Number System - 8

12. Number Series - 1
13. Quadratic Equation - 8
14. Partnership - 5
15. Profit And Loss - 6

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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Know Your State
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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.