









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 2019-09-11 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 value of the expression (cos6 + sin6 - 1)(tan2 + cot2 + 2) is?

Difficulty: Moderate

Average Time : 42 Seconds

Options:

1. 0

2. -1

3. -3

4. 1

Solution:

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

Putting = 45°

$$= (\cos^6 + \sin^6 - 1)(\tan^2 + \cot^2 + 2)$$

$$= (1/8 + 1/8 - 1)(1 + 1 + 2)$$

= (-3/4)(4)

= -3

Question 2:

Page No: 1

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If the diameter of the base of a cone is 42 cm and its curved surface area is 2310 cm², then what wil be its volume (in cm³)?

Difficulty : Moderate Average Time : 60 Seconds

Options:

- 1. 25872
- 2. 19404
- 3. 12936
- 4. 38808

Solution:

The correct answer is option 3 ie 12936.

$$CSA = rI = 2310$$

$$r = 66 [r = 21cm]$$

$$l = 35, h = 28$$

$$V = (1/3)r^2h = 12936 \text{ cm}^3$$

Question 3:

If A is 28% more than B and C is 25% less than the sum of A and B, then by what percent will C be more than A (correct to one decimal place)?

Difficulty: Moderate Average Time: 56 Seconds

Options:

- 1. 32.2%
- 2. 28%
- 3. 43%
- 4. 33.6%

Solution:

The correct answer is option 4 ie 33.6%

A B C

Page No: 2

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128 100 171

= (171-128) / 128

 $= (43 / 128) \times 100$

= 33.6%

Question 4:

A sum of Rs 5000 is divided into two parts such that the simple interest on the first part for years at p.a. is double the simple interest on the second part for years at 4% p.a. What is the difference between the two parts?

Difficulty : Moderate Average Time : 61 Seconds

Options:

1. Rs 680

2. Rs 600

3. Rs 560

4. Rs 620

Solution:

The correct answer is option 2 i.e. Rs 600.

S.I. on 1st part =
$$4\frac{1}{5} \times 6\frac{2}{3}\% = (21/5) \times (20/3) = 28\%$$

I on second part = $(11/4) \times 4 = 11\%$

28% of $x = 2 \times 11\%$ of y

x/y = 22/28 = 11/14

Total parts = 25 = 5000

1 part = 200

Difference = $3 \text{ parts} = 3 \times 200 = 600$

Question 5:

If a cuboid of dimensions 32 cm \times 12 cm \times 9 cm is cut into two cubes of same size, what will be the ratio of the surface area of the cuboid to the total surface area of the two cubes?

Difficulty: Moderate Average Time: 76 Seconds

Page No: 3

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Options:

- 1. 65:72
- 2. 37:48
- 3. 24:35
- 4. 32:39

Solution:

The correct answer is option 1 ie 65:72

Explanation:

 $32 \text{ cm} \times 12 \text{ cm} \times 9 \text{ cm} = 2 \times \text{a}^3$

$$a^3 = (32 \times 12 \times 9) / 2$$

$$a^3 = 12^3$$

a = 12

T.S.A. of the cube = $12 \times a^2$

$$= 12 \times 12 \times 12 = 144$$

T.S.A. of cuboid = $2[(32 \times 9) + (9 \times 12) + (12 \times 32)]$

$$= 2[(32 \times 9) + (9 \times 12) + (12 \times 32)]/12^{3}$$

Question 6:

When x is added to each of 2, 3, 30 and 35, then the numbers obtained in this order, are in proportion. What is the mean proportional between (x + 7) and (x - 2)?

Difficulty: Moderate

Average Time: 85 Seconds

Options:

1. 7

2. 4

3. 6

Page No: 4

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Average Time: 58 Seconds



5

Solution:

The correct answer is option 3 ie 6.

$$\frac{x+2}{x+3} = \frac{x+30}{x+35}$$

$$\frac{5(x+2)}{5(x+3)} = \frac{x+30}{x+35}$$

$$5x + 10 = x + 30$$
 [on comparing]

$$x = 5$$

$$\sqrt{(x+7)(x-2)}$$

$$\sqrt{12 \times 3}$$

$$= 36 = 6$$

Question 7:

If $5\sin - 4\cos = 0$, 0° 90°, then the value of is?

Difficulty: Moderate

Options:

1. 3/8

2. 3/7

3. 2/7

4. 5/8

Solution:

The correct answer is option 3 ie 2/7.

 $5\sin - 4\cos = 0$

 $(\sin/\cos) = 4/5$

tan = 4/5

5 tan = 4

Page No: 5

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6

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Now,

$$5sin\theta - 2cos\theta$$

$$5sin\theta + 3cos\theta$$

$$5tan\theta - 2$$

$$5tan\theta + 3$$

$$= (4 - 2) / (4 + 3)$$

$$= 2/7$$

Question 8:

If the radius of the base of a cone is doubled and the volume of the new cone is three times the volume of the original cone, then what will be the ratio of the height of the original cone to that of the new cone?

Difficulty: Moderate

Average Time: 67 Seconds

Options:

1. 1:3

2. 4:3

3. 2:9

4.9:4

Solution:

The correct answer is option 2 ie 4:3

$$\frac{V_1}{V_2} = \left(\frac{r_1}{r_2}\right)^2 \times \frac{h_1}{h_2}$$

$$\frac{h_1}{h_2} = \frac{1}{3} \times \frac{4}{1}$$

$$\frac{h_1}{h_2} = \frac{4}{3}$$

Question 9:

Abhi rows upstream a distance of 28 km in 4 hrs and rows downstream a distance of 50 km in 2hrs. To row a distance of 44.8 km in still water, he will take how much time?

Difficulty: Moderate

Average Time: 48 Seconds

Options:

Page No: 6

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- 2.8 hrs
- 2. 3.2 hrs
- 3. 2.4 hrs
- 4. 2.2 hrs

Solution:

The correct answer is **option 1** i.e. **2.8 hrs**.

Upstream speed $(S_u) = 7 \text{ km/hr}$

Downstream speed $(S_d) = 25 \text{ km/hr}$

Speed of the boat = $(S_u + S_d) / 2$

= (7 + 25) / 2

= 16 km/hr

Time = 44.8/16 = 2.8 hrs



Question 10:

A train travelling at the speed of x km/hr, crossed a 200 m long platform in 30 seconds and overtook a man walking in the same direction at the speed of 6 km/hr in 20 seconds. What is the value of x?

Difficulty: Moderate

Average Time: 65 Seconds

Options:

- 1. 50
- 2. 54
- 3. 56
- 4. 60

Solution:

The correct answer is option 4 i.e. 60.

Explanation:

Length of train = I

Page No: 7

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$$(5/18) \times x = (1 + 200)/30$$
 eq 1

$$(5/18)(x-6) = I/20$$

$$I = (100/18) (x - 6)$$
 eq 2

$$30 \times (5/18) \times x = (100/18)x - (100/3) + 200$$

$$(50/18)x = 500/3$$

$$x = 180/3 = 60$$

Question 11:

A and B started their journey from X to Y and Y to X, respectively. After crossing each other, A and B completed the remaining parts of their journey in and 8 hrs respectively. If the speed of B is 28 km/hrs, then the speed (in km/hrs) of A is ?

Difficulty: Moderate Average Time: 76 Seconds

Options:

1. 40

2. 42

3. 32

4. 36

Solution:

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

$$\frac{a}{b} = \left(\sqrt{\frac{tb}{ta}}\right)$$

$$\frac{A}{28} = \left(\sqrt{\frac{8}{49}}\right)$$

$$\frac{A}{29} = \frac{8}{7}$$

Page No: 8

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A = 32

Question 12:

The given pie chart shows the breakup of total no. of employees of a company working in different offices (A, B, C, D and E) Total no. of employees = 2400 If 40% of number of employees in office A are shifted equally to office B and E, then what is the difference between the number of employees in B and that in C?

Difficulty: Moderate

Average Time: 58 Seconds

Options:

- 1. 72
- 2. 120
- 3. 82
- 4. 130

Solution:

The correct answer is option 1 ie 72.

20% of A (35%)

= 7%

Difference between B and C = 15% - 5%

= 10%

After employee transfer

C - B = 10 - 7

= 3%

 $(3/100) \times 2400 = 72$

Question 13:

The volume of a right pyramid is 453cm³ and its base is an equilateral triangle with side 6 cm. What is the height (in cm) of the pyramid?

Difficulty: Moderate

Average Time: 58 Seconds

Options : 1. 15

Page No: 9

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18

3. 12

4. 20

Solution:

The correct answer is option 1 ie 15.

 $V = (1/3) \times B \times H$

 $V = (1/3) \times 93 \times H$

453 = 33 (H)

H = 15

Question 14:

A certain number of persons can complete a work in 34 days, working 9hrs a day. If the number of persons is decresed by 40%, then how many hours a day should the remaining persons work to complete the work in 51 days?

Difficulty: Moderate

Average Time: 53 Seconds

Options:

1. 9

2. 8

3. 12

4. 10

Solution:

The correct answer is option 4 ie 10.

 $x \times 34 \times 9 = 0.6x \times h \times 51$

 $h = \frac{x \times 34 \times 9}{0.6x \times 51}$

h = 10

Question 15:

The bar graph shows the exports of cars of type A and B (in Rsmillions). The total export of cars of type A in 2014 to 2017 is approximately what percentage less than the total exports of cars of type B in 2015 to 2018?

Page No: 10

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Difficulty: Moderate

Average Time: 56 Seconds

Options:

- 1. 31.3
- 2. 30.4
- 3. 14.3
- 4. 23.8

Solution:

The correct answer is option 4 ie 23.8

Exports of A (2014 to 2017) = 800

Exports of B (2015 to 2018) = 1050

% decrease = $(250 / 1050) \times 100$

= 23.8%

Question 16:

If the radius of the sphere is increased by 4 cm, its surface area is increased by 464 cm². What is the volume (in cm³) of the original sphere?

Difficulty: Moderate

Average Time: 50 Seconds

Options:

- 1. (15625/6)
- 2. (35937/8)
- 3. (11979/2)
- 4. (15625/8)

Solution:

The correct answer is option 1 i.e. (15625/6)

Surface Area = $4r^2$ (where r is radius of sphere)

Difference = $4[(r + 4)^2 - r^2] = 464$

 $(r + 4)^2 - r^2 = 116$

Page No: 11

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$$(2r + 4) (4) = 116$$

$$r = 25/2$$

Hence,

Volume =
$$(4/3)$$
 $(25/2)^3$ = $(15625/6)$ cm³

Question 17:

The sum of the digits of a two digit number is (1/7) of the number. The units digit is 4 less than the tens digit. If the number obtained on reversing its digit is divided by 7, the remainder will be ?

Average Time: 74 Seconds

Difficulty: Moderate

-

- Options:
 - 2. 5
 - 3. 1
 - 4. 6

Solution:

The correct answer is option 4 ie 6.

$$(a + b) = 1/7 [10a + b]$$

$$7a + b = 10a + b$$

3a = 6b

a:b=2:1

a = 8, b = 4

No. = 84

Reverse = 48

$$48/7 = \left(6\frac{6}{7}\right)$$

Remainder = 6

Question 18:

The graph of the equation x - 7y = -42, intersects the y-axis at P (,) and the graph of 6x + y - 15 = 0, intersects the x-axis

Page No: 12

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at Q (,). What is the value of + + + ?

Difficulty: Moderate Average Time: 69 Seconds

Options:

- 1. 17/2
- 2. 6
- 3. 9/2
- 4. 5

Solution:

The correct answer is option 1 i.e. 17/2

$$x - 7y = -42$$
 eq1

$$6x + y - 15 = 0$$
 eq2

eq1 intersects at y-axis, ie x coordinate = 0

$$(,) = 0, = -6$$

eq2 intersects at x-axis, ie y coordinate = 0

$$(,) = 0, = 5/2$$

Value of + + + = 0 + 6 + 0 + 5/2

$$= 6 + 5/2$$

= 17/2

Question 19:

In quadrilateral ABCD, the bisectors of A and B meet at O and AOB = 64°. C + D is equal to?

Difficulty: Moderate Average Time: 80 Seconds

Options:

- 1. 136°
- 2. 128°
- 3. 116°
- 4. 148°

Page No: 13

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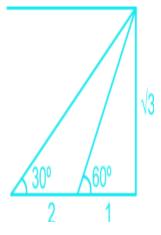






Solution:

The correct answer is option 2 i.e. 128°.



$$(A/2) + (B/2) + 64^{\circ} = 180^{\circ}$$

$$(A + B)/2 = 116^{\circ}$$

$$A + B = 232^{\circ}$$

Now,

$$C + D = 360^{\circ} - (A + B)$$

$$C + D = 360^{\circ} - 232^{\circ} = 128^{\circ}$$

Question 20:

'A' started a business with a capital of Rs 54,000 and admitted 'B' and 'C' after 4 months and 6 months, respectively. At the end of the year, the profit was divided in the ratio 1:4:5. What is the difference between the capitals invested by 'B' and 'C'?

Difficulty: Moderate

Average Time: 78 Seconds

Options:

1. Rs 1,08,000

2. Rs 1,62,000

3. Rs 2,16,000

4. Rs 3,24,000

Solution:

Page No: 14

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The correct answer is option 3 i.e. Rs 2,16,000.

Difference B and
$$C = 4 \times 54000$$

$$= 216000$$

Question 21:

Let x = (633)24 - (277)38 + (266)54. What is the unit digit of x?

Difficulty: Moderate

Average Time: 86 Seconds

Options:

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

Solution:

The correct answer is option 4 i.e. 8.

$$x = (633)^{24} - (277)^{38} + (266)^{54}$$

is of the form

$$x = 3^{4x} - 7^{4x+2} + 6$$

$$x = 1 - 9 + 6$$

$$x = 7 - 9$$
 [17 - 9] for unit digit

x = 8

Question 22:

Page No: 15

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If each interior angle of a regular polygon is , then what is the sum of the number of its diagonals and the number of its sides?

Difficulty : Moderate

Average Time: 60 Seconds

Options:

- 1. 15
- 2. 19
- 3. 17
- 4. 21

Solution:

The correct answer is option 4 i.e. 21

Interior angle =
$$\left(128\frac{4}{7}\right)^{\circ}$$
 = $(900/7)^{\circ}$

$$(n \ 2)/n \times 180 = (900/7)$$

$$(n \ 2) = 5n/7$$

$$7n - 14 = 5n$$

$$n = 7$$
 [No. of sides]

Hence,â€⟨â€⟨â€⟨â€⟨

No. of diagonals = $[n(n \ 3)]/2 = [(7 \times 4)]/2 = 14$

Hence,

Sum of the number of diagonals and number of sides = 14 + 7 = 21

Question 23:

An article is sold at a certain price. If it is sold at of this price, there is a loss of . What is the percentage profit when it is sold at 60% of the original price?

Difficulty: Moderate

Average Time: 92 Seconds

Options:

1. 20%

Page No: 16

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Average Time: 56 Seconds



30%

3.
$$33\frac{1}{3}\%$$

4.
$$17\frac{1}{3}\%$$

Solution:

The correct answer is option 1 i.e. 20%

$$SP/3 = (2/3) CP$$

$$SP = 2 CP$$

$$= 1CP + (20/100)CP = 20\%$$

Question 24:

If $a^3 + b^3 = 218$ and a + b = 2, then the value of ab is ?

Difficulty : Moderate

Options:

1. 34

2. -35

3. -31

4. 32

Solution:

The correct answer is option 2 ie -35

 $a^3 + b^3 = 218$ [value putting]

a + b = 2

7 - 5 = 2

a = 7, b = -5

Page No: 17

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$$ab = 7(-5) = -35$$

Question 25:

If , then the value of A2 + B2 - C2 is?

Difficulty: Moderate

Average Time: 49 Seconds

Options:

- 1. 11
- 2. 7
- 3. 19
- 4. 10

Solution:

The correct answer is option 2 i.e. 7.

$$2\sqrt{2}x^3 - 3\sqrt{3}y^3 = (\sqrt{2}x - \sqrt{3}y)(Ax^2 + By^2 + Cxy)$$

$$\frac{(\sqrt{2}x)^3 - (\sqrt{3}y)^3}{(\sqrt{2}x - \sqrt{3}y)} = (Ax^2 + By^2 + Cxy)$$

$$2x^2 + 3y^2 + 6xy$$

$$A = 2$$
, $B = 3$, $C = 6$

$$A^2 + B^2 - C^2 = 4 + 9 - 6$$

= 7

Question 26:

A circle is inscribed in triangle ABC, touching AB, BC and AC at the points P, Q and R, respectively. If AB - BC = 4 cm, AB - AC = 2 cm and the perimeter of triangle ABC = 32 cm, then PB + AR is equal to:

Difficulty: Moderate

Average Time: 72 Seconds

Options:

- 1. 12 cm
- 2. 13 cm
- 3. (33/5) cm

Page No: 18

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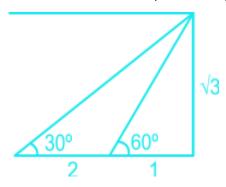




(38/3) cm

Solution:

The correct answer is option 4 i.e. (38/3) cm.



Given: AB - BC = 4 cm, AB - AC = 2 cm and perimeter = 32 cm

We can write:

$$a + b + c = 32 \dots (1)$$

$$c - b = 2$$
(2)

$$c - a = 4$$
(3)

Adding all 3 equations:

3c = 38

c = 38/3

Question 27:

Three solid metallic spheres whose radii are 1 cm, x cm, and 8 cm, are melted and recast into a single solid sphere of diameter 18 cm. The surface area (in cm²) of the sphere with radius x cm is?

Difficulty: Moderate

Average Time: 84 Seconds

Options:

1. 144

2. 72

3. 64

4. 100

Solution:

Page No: 19

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The correct answer is option 1 ie 144.

$$V = (4/3) R^3 = (4/3) (r_1^3 + r_2^3 + r_3^3)$$

$$9^3 = 1^3 + x^3 + 8^3$$

$$x^3 = 729 - 513$$

$$x = 6$$

$$S.A. = 4r^2$$

$$= 4 \times 36$$

Question 28:

Chord AB of a circle is produced to a point P and C is a point on the circle such that PC is a tangent to the circle. If PC = 18 cm and BP = 15 cm, then AB is equal to:

Difficulty: Moderate

Average Time: 70 Seconds

Options:

1. 5.8 cm

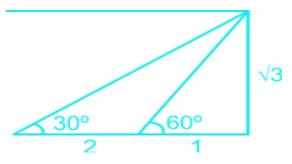
2. 6.2 cm

3. 6.6 cm

4. 8.5 cm

Solution:

The correct answer is option 3 i.e. 6.6 cm



We can write:

 $PA \times PB = PC^2$

Page No: 20

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 $PA = (18 \times 18)/15$

PA = 21.6

Hence,

AB = PA - PB = 21.6 - 15 = 6.6 cm

Question 29:

A and B can do a piece of work in 6 days and 8 days respectively. With the help of C, they complete the work in 3 days and earned Rs1848. What was the share of C?

Difficulty: Moderate

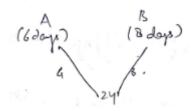
Average Time: 76 Seconds

Options:

- 1. Rs 231
- 2. Rs 924
- 3. Rs 462
- 4. Rs 693

Solution:

The correct ans is option 1 ie Rs 231.



A = 4 units/day

B = 3 units/day

Time to complete the work with the help of C = 24/x = 3

x = 8

A + B + C's work = 8

4 + 3 + C's = 8

C's = 8 - 7

Page No: 21



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C = 1

Share of $C = (1/8) \times 1848 = 231$

Question 30:

If (a + b): (b + c): (c + a) = 7: 6:5 and a + b + c = 27, then what will be the value of (1/a): (1/b): (1/c)?

Difficulty : Moderate Average Time : 71 Seconds

Options:

1. 3:6:4

2. 3:2:4

3. 4:3:6

4. 3:4:2

Solution:

The correct answer is option 3 ie 4:3:6.

(a + b) : (b + c) : (c + a) = 7 : 6 : 5

2(a + b + c) = 18

a + b + c = 9

a : b : c

3:4:2

(1/a): (1/b): (1/c) = (1/3): (1/4): (1/2)

= 4 : 3 : 6

Question 31:

A shopkeeper bought 120 quintals of wheat. 20% of it was sold at 25% loss. At what percent shopkeeper should sell the rest to gain 25% on the whole transcation?

Difficulty: Moderate Average Time: 61 Seconds

Options:

1. 36.5

2. 40

Page No: 22

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37.5

4. 35

Solution:

The correct answer is option 3 ie 37.5

120 quintals in 5 parts = 24 quintals each

$$x = (50/4) = 12.5\%$$

$$25 + x = 37.5\%$$

Question 32:

The ratio of investment by A to that by B in a business is 14: 15 and the ratio of their respective profits at the end of a year is 2:5. If A invested the money for 3 months, then for how much time (in months) B invested his money?

Difficulty: Moderate

Average Time: 52 Seconds

Options:

1. 7

2. 6

3. 5

4. 9

Solution:

The correct anwer is option 1 ie 7.

Investment ratio = 14:15

Time ratio = 3: y = 7

Profit ratio = 2:5 [multiply by 21]

 $14 \times 3 = 42$

42/2 = 21

y = 7

Question 33:

Page No: 23

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The value of ($(2dfrac{6}{7} ext{of} 4dfrac{1}{5} div dfrac{2}{3})$ imes $1dfrac{1}{9}div (dfrac{3}{4} imes <math>2dfrac{2}{3} ext{of} dfrac{1}{2})$ div $dfrac{1}{4})$ is?

Difficulty: Moderate Average Time: 54 Seconds

Options:

- 1. 5
- 2.8
- 3. 1/8
- 4. 1/5

Solution:

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

 $$$ (2^{6}_7) \det(0) \ \dfrac(1)_{5} \ \dfrac(2)_{3}) \ \dfrac(1)_{9} \ (\dfrac(3)_{4} \times 2^{2}_{3}) \ \dfrac(1)_{2}) \div \dfrac(1)_{4}))$

\((\dfrac{20}{7} \ \text{of} \ \dfrac{21}{5} \div \dfrac{2}{3}\) \times \dfrac{10}{9}\div (\dfrac{3}{4} \times \dfrac{8}{3} \ \text{of} \ \dfrac{1}{2}\) \div \dfrac{1}{4}\)

\((12 \div \dfrac{2}{3}) \times \dfrac{10}{9}\div (\dfrac{3}{4} \times \dfrac{4}{3}) \div \dfrac{1}{4}\)\)

\((18 \times \dfrac{10}{9}\\ div \dfrac{1}{4})\)

 $(18 \times (10){36}) = 5$

Question 34:

A sum of Rs 8400 amounts to Rs 11046 at 8.75% p.a. simple interest in certain time. What is the simple interest on the sum of Rs 9600 at the same rate for the same time?

Difficulty: Moderate Average Time: 65 Seconds

Options:

- 1. Rs 2990
- 2. Rs 3012
- 3. Rs 2686
- 4. Rs 3024

Solution:

Page No: 24

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Average Time: 55 Seconds



The correct answer is option 4 i.e. Rs 3024.

 $11046 = (8400 \times 8.75 \times t) / 100$

 $t = 11046 / 84 \times 8.75$

= 15.02

 $A = (9600 \times 8.75 \times 15.02) / 100$

= 12624

I = A - P

= 12624 - 9600

= Rs 3024

Question 35:

The value of?

Difficulty : Moderate

Options:

- 1. 7.8
- 2. 4.6
- 3. 8.7
- 4. 6.4

Solution:

The correct answer is option 4 ie 6.4

$$\frac{7+8\times8\div8\,of\,8+8\div8\times4\,of\,4}{4\div4\,of\,4+4\times4\div4-4\div4\,of\,2} \quad \text{[Applying BODMAS]}$$

$$= \frac{7+1+6}{\frac{1}{4}+4-\frac{1}{2}}$$

$$=\frac{24}{4-\frac{1}{4}}$$

= 96/15

Page No: 25

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= 6.4

Question 36:

The bar graph shows the exports of Cars of type A and B (in Rs. million). In which year the exports of car of type A was around 10% less than the average exports (per year) of cars of type B over the 5 years?

Difficulty: Moderate Average Time: 70 Seconds

Options:

- 1. 2015
- 2. 2017
- 3. 2014
- 4. 2016

Solution:

The correct answer is option 3 ie 2014.

The question has been modified since it was incorrect accorrding to the answer key released by the SSC.

Average of type A = 1100/5 = 220

Around 10% less

 $220 - (10 / 100) \times 220 = 220 - 22$

= 198

In the year 2014, the export was 200 which is around 10% less than the average exports.

Question 37:

If $\sin = 3 \cos 0^\circ$, then the value of $2\sin^2 + \sec^2 + \csc + \csc = 3\cos^2 + 3\cos^2$

Difficulty: Moderate Average Time: 62 Seconds

Options:

- 1. (33 + 103)/6
- 2. (19 + 103)/6
- 3. (33 + 103)/3

Page No: 26

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(19 + 103)/3

Solution:

The correct answer is option 1 i.e. (33 + 103)/6

sin = 3cos

sin/cos = 3

tan = 3

 $= 60^{\circ}$

Now, substitute the value of $= 60^{\circ}$ in the given equation:

 $2 \times \sin^2 60^\circ + \sec^2 60^\circ + \sin 60^\circ \times \sec 60^\circ + \csc 60^\circ$

 $2 \times (3/4) + 4 + (3/2) \times 2 + (2/3)$

(33 + 103)/6

Question 38:

To do a certain work, the ratio of efficiency of A to that of B is 3:7. Working together, they can complete the work in 10.5 days. They work together for 8 days. 60% of the remaining work will be completed by A alone in ?

Difficulty : Moderate

Average Time: 112 Seconds

Options:

1. 5.5 days

2. 5 days

3. 6.6 days

4. 4 days

Solution:

The correct answer is option 2 ie 5 days.

Efficiency ratio of A : B = 3 : 7

Work by A in 1 day = 5 units

Work by B in 1 day = 7 units

Work remaining = $(10.5 - 8) \times 10 = 25$ units

Page No: 27

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Average Time: 71 Seconds



$$= (60/100) \times 25 = 15$$
 units

Time taken by A = 15/3 = 5 days

Question 39:

The average of thirteen numbers is 47. The average of first 3 numbers is 39 and that of next 7 numbers is 49. The 11th number is two times the 12th number and 12th number is 3 less than the 13th number. What is the average of 11th and 13th numbers?

Difficulty: Moderate

Options :

- 1. 54.5
- 2. 57
- 3. 56
- 4. 55.5

Solution:

The correct answer is option 2 ie 57.

= (sum of 13 numbers) / 13 = 47

Avg. of first 3 numbers = 39

Avg. of next 7 numbers = 49

Let the 12th number be x.

Then, 11^{th} number = 2x.

 13^{th} number = x+3

Now,

$$(39 \times 3) + (49 \times 7) + 3x + (x + 3) = 47 \times 13$$

$$4x + 120 + 343 = 47 \times 13$$

$$4x = 148$$

$$x = 37$$

Avg. of 11^{th} and 13^{th} number = (2x + x + 3) / 2

Page No: 28



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$$= [3(37) + 1] / 2$$

= 57

Question 40:

The bar graph show the exports of cars of type A and B (in Rs millions). What is the ratio of the total exports of cars of type A in 2014 and 2018 to the total exports of cars of type B in 2015 and 2016?

Difficulty : Moderate

Average Time: 86 Seconds

Options:

1. 11:10

2. 10:9

3. 5:4

4. 3:2

Solution:

The correct answer is option 2 ie 10:9.

A (2014 and 2018) = 500

B (2015 and 2016) = 450

Ratio = 500/450

=10/9

hence, 10:9

Question 41:

If x8 - 1442x4 + 1 = 0, then a possible value of is?

Difficulty: Moderate

Average Time: 48 Seconds

Options:

1. 5

2. 8

3. 4

4. 6

Solution:

Page No: 29

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The correct answer is option 4 ie 6.

$$x^8 + 1 = 1442x^4$$

dividing by x^4

$$x^4 + \frac{1}{x^4} = 1442$$

$$x^2 + \frac{1}{x^2} = \sqrt{1442}$$

$$x^2 + \frac{1}{x^2} = 38$$

$$x - \frac{1}{x} = \sqrt{38 - 2}$$

= 6

Question 42:

The graphs of the equations 3x + y - 5 = 0 and 2x - y - 5 = 0 intersect at the point P (,). What is the value of (3 +)?

Difficulty: Moderate

Average Time: 54 Seconds

Options:

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

Solution:

The correct answer is option 4 ie 5.

$$3x + y - 5 = 0$$

$$2x - y - 5 = 0$$

Solving eq 1 and eq 2, we get

$$x = 2 =$$

$$y = -1 =$$

$$3 \times () + () = 3(2) - 1$$

Page No: 30

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$$= 6 - 1$$

Question 43:

If, then what will be the value of, correct to one decimal place.

Difficulty : Moderate

Average Time: 61 Seconds

Options:

- 1. 8.4
- 2. 8.2
- 3. 7.8
- 4. 7.2

Solution:

The correct answer is option 3 ie 7.8

$$\sqrt{86 - 60\sqrt{2}} = \sqrt{\left[(6)^2 + \left(5\sqrt{2} \right)^2 - 2 \times 6 \times 5\sqrt{2} \right]}$$

$$\sqrt{6-5\sqrt{2}}^2$$

$$= (6 - 52)$$

$$= a = 6$$

$$= b = 5$$

$$\sqrt{6^2 + 5^2} = \sqrt{36 + 25}$$

$$= 61 = 7.8$$

Question 44:

The sides AB and AC of ABC are produced to P and Q respectively. The bisectors of CBP and BCQ meet at R. If the measure of A is 44°, then what is the measure of 1/2BRC?

Difficulty: Moderate

Average Time : 66 Seconds

Options:

Page No: 31

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33°

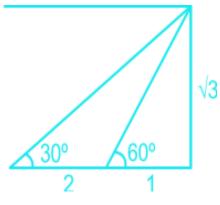
2. 38°

3. 34°

4. 32°

Solution:

The correct answer is option 3 i.e. 34°.



 $BRC = 90^{\circ} - (A/2)$

 $BRC = 90^{\circ} - (44^{\circ}/2)$

 $BRC = 68^{\circ}$

Hence,

 $1/2 BRC = 68^{\circ}/2 = 34^{\circ}$

Question 45:

In ABC, D is a point on side BC such that ADC = BAC. If CA = 12 cm, CB = 8 cm, then CD is equal to:

Difficulty: Moderate Average Time: 73 Seconds

Options:

1. 12 cm

2. 15 cm

3. 18 cm

4. 16 cm

Page No: 32

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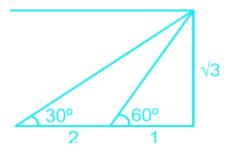






Solution:

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



In ADC and BAC:

C = Common

ADC = BAC

By AA criterion, Both the triangles are similar.

Let us assume DAC =

Then, ABC = (Similar triangles)

AC/BC = 12/8 = 5/2

Then,

x : 12 = 3 : 2 (By similar trainingle property)

x = 18 cm

Question 46:

A person marks his goods x% above the cost price and allows a discount of 30% on the marked price. If his profit is 5%, then value of x will be?

Difficulty: Moderate

Average Time: 85 Seconds

Options:

1. 50%

2. 60%

3. 45%

4. 35%

Solution:

Page No: 33

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The correct answer is option 1 i.e. 50%

Let us assume the cost price to be 100

Then, according to the question

SP = 105 (5% profit)

 $MP - (30/100) \times MP = 105$

 $x - (3/10) \times x = 105$

10x - 3x = 1050

x = 1050/7

x = 150

Marked price = 150 - 100

= 50%

Question 47:

If a2 + b2 + c2 + 96 = 8 (a + b - 2c), then is equal to?

Difficulty: Moderate

Average Time: 63 Seconds

Options :

1. 6

2. 22

3. 4

4. 23

Solution:

The correct answer is option 3 ie 4.

 $a^2 + b^2 + c^2 + 96 = 8a + 8b - 16c$

 $(a^2 - 8a + 16) + (b^2 - 8b + 16) + (c^2 + 16c + 64) = 0$

 $(a - 4)^2 + (b - 4)^2 + (c + 8)^2 = 0$

a = b = 4

c = -8

Page No: 34

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Now,

$$\sqrt{(4(4)-4(-8)+4(8))}$$

= 16

= 4

Question 48:

A right circular cylinder of maximum volume is cut out from a solid wooden cube. The material left is what percent of the volume (nearest to an integer) of the original cube?

Difficulty : Moderate Average Time : 74 Seconds

Options:

- 1. 19
- 2. 28
- 3. 23
- 4. 21

Solution:

The correct answer is option 4 ie 21.

Radius = a/2

Height = a

Volume of cylinder = r^2h

$$= \times (a^2/4) \times a$$

$$= \times (a^3/4)$$

$$a^3 - \pi \frac{a^3}{4} = \frac{4a^3 - 3.14a^3}{4}$$

 $= 0.21a^3$

Hence, 0.21 = 21

Question 49:

The ratio of the volumes of two cylinder is x : y and the ratio of their diameters is a : b. What is the ratio of their heights?

Page No: 35

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Difficulty: Moderate

Average Time: 67 Seconds

Options:

- 1. xb : ya
- 2. xa:yb
- 3. xb²: ya²
- 4. xa²: yb²

Solution:

The correct answer is option 3 ie xb2: ya2.

$$V_1 / V_2 = x / y$$

$$(r_1/r_2)^2 \times (h_1/h_2) = x/y$$

$$(a^2/b^2) \times (h_1/h_2) = x/y$$

$$h_1/h_2 = xb^2/ya^2$$

Question 50:

If x + y + z = 11, $x^2 + y^2 + z^2 = 133$ and $x^3 + y^3 + z^3 = 881$, then the value of is?

Difficulty: Moderate

Average Time : 65 Seconds

Options:

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

Solution:

The correct answer is option 1 ie -6.

$$x + y + z = 11$$

$$x^2 + y^2 + z^2 = 133$$

$$x^3 + v^3 + z^3 = 881$$

Lets assume

Page No: 36

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Average Time: 75 Seconds



$$[x = \pm 4, y = \pm 6, z = 9]$$

Putting in eq 1

We get the combination as:

$$[x = -4, y = 6, z = 9]$$

$$\sqrt[3]{x \times y \times z} = \sqrt{-4 \times 6 \times 9}$$

= -6

Question 51:

The value of is?

Difficulty: Moderate

Options:

- 1. 0.32
- 2. $0.\overline{412}$
- **3** 0. $\overline{31}$
- 4. $0.4\overline{12}$

Solution:

The correct answer is option 4 ie $\,\,^{0.4\overline{12}}\,$.

$$= 22.\overline{4} + 11.5\overline{67} - 33.5\overline{9}$$

$$= 0.\overline{4} + 0.5\overline{67} + 0.5\overline{9}$$

$$= (4/9) + [(567-5)]/990 - (59/90)$$

= 0.408/990

 $= 0.4\overline{12}$

Question 52:

Page No: 37

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Anu sold an article for Rs.480 at some profit. Had she sold it for Rs400. Then there would have been a loss equal to one-third of the initial profit. What was the cost price of the article?

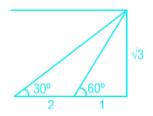
Difficulty : Moderate Average Time : 89 Seconds

Options:

- 1. Rs 450
- 2. Rs 430
- 3. Rs 425
- 4. Rs 420

Solution:

The correct answer is option 4 i.e. Rs 420.



-k - 3k = 400 - 480

k = 20

x = 400 + k

= 400 + 20

= 420

Question 53:

In a school, 4/9 of the number of students are girls and the rest are boys. 3/5 of the number of boys are below 12 years of age and 5/12 of the number of the girls are 12 years or above 12 years of age. If the number of students below 12 years of age is 480, then 5/18 of the total number of students in the school will be equal to?

Difficulty: Moderate Average Time: 71 Seconds

Options:

1. 270

2. 315

Page No: 38

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225

4. 240

Solution:

The correct answer is option 3 ie 225.

G : B

4 : 5 [Given: (girls/boys) = 4/5]

 $[(7/12) \times 4]$: $[(3/5) \times 5]$

7/3 : 3 [Age below 12]

7 : 9

16 parts = 480

1 part = 480/16 = 30

 $= (5/18) \times 27 \times 30$

= 225

Question 54:

is equal to?

Difficulty: Moderate Average Time: 71 Seconds

Options:

1. 1 + sinA - cosA

2. 1 - sinAcosA

3. 1 + cosA - sin A

4. 1 + sinA cosA

Solution:

The correct answer is option 1 ie 1 + sinA - cosA.

Putting the value of $A = 90^{\circ}$

Page No: 39

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$$\frac{(2\sin 90^{\circ})(1+\sin 90^{\circ})}{1+\sin 90^{\circ}+\cos 90^{\circ}}$$

$$= (2/2) \times 2 = 2$$

$$= 1 + \sin 90^{\circ} - \cos 90^{\circ} = 2$$

Question 55:

The given pie chart shows the breakup of total number of the employees of a company working in different offices (A, B, C, D and E) Total number of employees = 2400 What is the number of offices in which the number of employees of the company is between 350 and 650 ?

Difficulty: Moderate Average Time: 64 Seconds

Options:

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

Solution:

The correct answer is option 4 ie 3.

Total number of employees = 2400

100% = 2400

350 employees = 14%

650 employees = 25%

Total number of offices = 3

Question 56:

A sum of Rs 18000 is lent at 10% p.a. compound interest, compounded annually. What is the difference between the compound interest for 3rd year and 4th year?

Difficulty: Moderate Average Time: 50 Seconds

Options:

1. Rs 220.60

Page No: 40

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Rs 217.80

- 3. Rs 221.80
- 4. Rs 215.40

Solution:

The correct answer is option 2 i.e. Rs 217.80

1st yr = 10%

2nd yr = 11%

3rd yr = 12.1%

4th yr = 13.31%

Difference = $(1.21 \times 18000) / 100$

 $= 1.21 \times 180$

= 217.80

Question 57:

What is the value of cosec(65° +) - sec(25° -) + tan220° - cosec270° ?

Difficulty: Moderate

Average Time: 56 Seconds

Options:

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

Solution:

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

 $= \csc(65^{\circ} +) - \sec(25^{\circ} -) + \tan^{2}20^{\circ} - \csc^{2}70^{\circ}$

 $= cosec(65^{\circ} +) - cosec(90^{\circ} - (25^{\circ} -)) + tan^{2}20^{\circ} - cosec^{2}70^{\circ}$

 $= \csc(65^{\circ} +) - \csc(65^{\circ} +) + \tan^{2}20^{\circ} - \csc^{2}70^{\circ}$

 $= \tan^2 20^\circ - \sec^2 20^\circ$

Page No: 41

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= -1

Question 58:

Pipes A, B and C can fill a tank in 30hrs, 40hrs and 60hrs respectively, Pipes A, B and C are opened at 7am, 8am and 10am respectively on the same day. When will the tank be full?

Difficulty: Moderate Average Time: 70 Seconds

Options:

- 1. 10.00 p.m.
- 2. 10.20 p.m
- 3. 9.20 p.m
- 4. 9.40 p.m

Solution:

The correct answer is option 3 ie 9.20 p.m

A = 30

B = 40

C = 60

LCM = 120 [A = 4, B = 3, C = 2]

A was opened at 7 a.m. work done per hour = 4 units

B was opened at 8 a.m. work done per hour = 3 units

C was opened at 10 a.m. work done per hour = 2 units

Units completed by A + B till 10 a.m. = (4×3) + (3×2)

= 12 + 6 = 18 units

work left = 120 - 18 = 102

Time taken = 102/9 = 11hrs 20 min

= 9.20 p.m.

Question 59:

If the radius of the right circular cylinder is decreased by 20% while its height is increased by 40%, then the percentage change in its volume will be ?

Page No: 42

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Difficulty: Moderate

Average Time: 93 Seconds

Options:

- 1. 1.04% increase
- 2. 10.4% decrease
- 3. No increase or decrease
- 4. 10.4% increase

Solution:

The correct answer is option 2 ie 10.4% decrease.



$$r^2_1h_1$$

$$\times (0.8)^2 \times 1.4$$

$$100 = 89.6$$

10.4% decrease

Question 60:

The number of students in a class is 75, out of which are boys and the rest are girls. The average score in mathematics of the boys is more than that of the girls. If the average score of all the students is 66, then the average score of the girls is ?

Difficulty : Moderate Average Time : 74 Seconds

Options:

- 1. 52
- 2. 55
- 3, 54
- 4. 58

Solution:

The correct answer is option 3 ie 54.

Boys : Girls

Page No: 43

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1 : 2

5x : 3x

(5x+6x)/3 = 66

11x = 198

x = 18

 $3x = 18 \times 3 = 54$

Question 61:

A shopkeeper allows 28% discount on the marked price of an article and still makes a profit of 20%. If he gains Rs 30.80 on the sale of one article, then what will be the cost price of the article?

Difficulty: Moderate Average Time: 66 Seconds

Options:

- 1. Rs164
- 2. Rs145
- 3. Rs160
- 4. Rs154

Solution:

The correct answer is option 4 i.e. Rs 154.

20% of x = 30.80

100% of $x = 30.80 \times 5$

x = CP = Rs 154

Question 62:

In ABC, A = 52° and O is the orthocenter of the triangle (BO and CO meet AC and AB at E and F respectively when produced). If the bisectors of OBC and OCB meet at P, then the measure of BPC is ?

Difficulty : Moderate Average Time : 52 Seconds

Options:

- 1. 124°
- 2. 132°

Page No: 44

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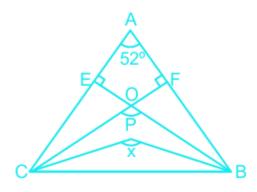


138°

4. 154°

Solution:

The correct answer is option 4 i.e. 154°.



$$COB = EOF = 180^{\circ} - 52^{\circ}$$

COB = 128°

$$BPC = 90^{\circ} + (COB/2)$$

$$BPC = 90^{\circ} + 128/2 = 90 + 64 = 154^{\circ}$$

Question 63:

Let a, b and c be fractions, such that a b c. If c is divided by a, the result is 5/2, which exceeds b by 7/4. If a + b + c =, then (c - a) will be equal to?

Difficulty: Moderate

Average Time: 67 Seconds

Options:

1. 1/3

2. 2/3

3. 1/6

4. 1/2

Solution:

The correct answer is option 4 ie 1/2.

c/a = 5/2

Page No: 45

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$$b = (5/2) - (7/4)$$

$$= 3/4$$

$$a + c = (23/12) - (9/12)$$

$$= 7/6$$
 eq 1

Ratio of c :
$$a = 5/2 = 5 + 2 = 7$$
 parts

$$7 \text{ parts} = 7/6 \text{ (from eq 1)}$$

$$3 \text{ parts} = 3/6 = 1/2$$

Question 64:

In triangle ABC, $A = 58^{\circ}$. If I is the incenter of the triangle, then the measure of BIC is:

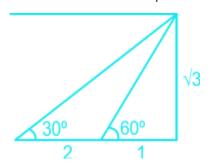
Difficulty: Moderate Average Time: 60 Seconds

Options:

- 1. 109°
- 2. 123°
- 3. 112°
- 4. 119°

Solution:

The correct answer is option 4 i.e. 119°



Given: A = 58°

Hence,

$$BIC = 90^{\circ} + (1/2)A$$

 $= 90^{\circ} + 29^{\circ}$

Page No: 46

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 $= 119^{\circ}$

Question 65:

The value of is 50×10 k, where the value of k is?

Difficulty : Moderate

Average Time: 64 Seconds

Options:

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

Solution:

The correct anwser is option 1 i.e. 3.

$$\frac{(253)^3 + (247)^3}{25.3 \times 25.3 - 624.91 + 24.7 \times 24.7}$$
 is 50×10^1

It is of the form
$$\frac{a^3 + b^3}{a^2 + b^2 - ab}$$

$$\frac{10^3(a^3+b^2)}{a^2+b^2-ab}$$
 [a = 25.3, b = 24.7]

$$10^3 \times (a + b) = 10^3 \times 50$$

Therefore, k = 3

Question 66:

Travelling at 60 km/h, a person reaches his destination in a certain time. He covers 60% of his journey in 2/5th of the time. At what speed (in km/h) should he travel to cover the remaining journey so that he reaches the destination right on time?

Difficulty: Moderate

Average Time: 80 Seconds

Options:

1. 40

2. 48

3. 42

Page No: 47

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36

Solution:

The correct answer is option 1 i.e. 40.

60% of the journey is covered in 2/5 times.

Rest 40% journey is to be covered in 3/5 time, if he has to be right on time.

Time ratio = 2:3

 $60 \times 2 = \times \times 3$

 $x = (60 \times 2)/3$

x = 40 km/hr

Question 67:

Study the graph and answer the question that follows. What is the ratio of the total number of workers whose daily wages are less than Rs 500 to the total number of workers whose daily wages are Rs 600 and above?

Difficulty: Moderate

Average Time: 63 Seconds

Options:

1.5:6

2.6:7

3. 3:4

4. 15:11

Solution:

The correct answer is option 1 ie 5:6.

75:90

5:6

Question 68:

The value of is?

Difficulty: Moderate Average Time: 38 Seconds

Options:

Page No: 48



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Average Time: 51 Seconds



4

- 2. 0.5
- 3. 2
- 4. 1/4

Solution:

The correct answer is option 3 ie 2.

$$= \frac{(\cos 9^{\circ} + \sin 81^{\circ})(\sec 9^{\circ} + \csc 81^{\circ})}{\sin 56^{\circ} \sec 54^{\circ} + \cos 25^{\circ} \csc 65^{\circ}}$$

$$= \frac{(2\cos^{\circ}9)(2\sec9^{\circ})}{\left(\frac{\sin56^{\circ}}{\cos34^{\circ}}\right) + \left(\frac{\cos25^{\circ}}{\sin25^{\circ}}\right)}$$

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

Question 69:

If $(2 + 5 - 3) \times k = -12$, then what will be the value of k?

Difficulty : Moderate

Options:

- 1. (2 + 5 + 3)
- 2. (2 + 5 + 3)(2 10)
- 3. (2 + 5 3)(2 + 5)
- 4. (2+5+3)(2-5)

Solution:

The correct answer is option 2 ie (2 + 5 + 3)(2 - 10)

$$(2 + 5 - 3) \times k = -12$$

$$(1.4 + 2.2 - 1.7) \times k = -12$$

k â‰f -6

By option elimination

$$k = -6 = (2 + 5 + 3)(2 - 10)$$

Page No: 49

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or

By rationalisation,

$$x = \frac{-12}{(\sqrt{2} + \sqrt{5} - \sqrt{3})} \times \frac{(\sqrt{2} + \sqrt{5} + \sqrt{3})}{(\sqrt{2} + \sqrt{5} + \sqrt{3})}$$

$$x = \frac{-12(\sqrt{2} + \sqrt{5} + \sqrt{3})}{(4 + 2\sqrt{10})}$$

$$x = \frac{-12(\sqrt{2} + \sqrt{5} + \sqrt{3})}{(4 + 2\sqrt{10})}$$

$$x = \frac{-12(\sqrt{2} + \sqrt{5} + \sqrt{3})}{2(2 + \sqrt{10})}$$

$$x = \frac{-6(\sqrt{2} + \sqrt{5} + \sqrt{3})(2 - \sqrt{10})}{-6}$$

$$x = (2 + 5 + 3)(2 - 10)$$

Question 70:

If lies in the first quadrant and cos2 - sin2 = 1/2, then the value of tan22 + sin23 is?

Difficulty : Moderate Average Time : 91 Seconds

Options:

1, 7/2

2. 3

3. 4

4. 4/3

Solution:

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

0° 90°

$$\cos^2 - \sin^2 = 1/2$$

 $\cos 2 = 1/2$

 $2 = 60^{\circ}, = 30^{\circ}$

Hence,

Page No: 50

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$$\tan^2 60^\circ + \sin^2 90^\circ = 3 + 1 = 4$$

Question 71:

The ratio of the income of A to that of B is 5 : 7. A and B save Rs 4000 and Rs 5000 respectively. If the expenditure of A is equal to of the expenditure of B, then the total income of A and B is ?

Difficulty: Moderate Average Time: 73 Seconds

Options:

- 1. Rs 25,200
- 2. Rs 24,000
- 3. Rs 26,400
- 4. Rs 28,800

Solution:

The correct answer is option 2 ie Rs 24,000.

Explanation:

Income ratio = 5 : 7 = 10 : 14

Expenditure = 2:3=6:9

Savings = 4:5 = 4:5

k = 1000

 $(10 + 14) \times k = 24 \times 1000 = Rs 24000$

Question 72:

In triangle ABC, AB = 6 cm, AC = 8 cm, and BC = 9 cm. The length of median AD is:

Difficulty: Moderate Average Time: 56 Seconds

Options:

- 1. $\frac{\sqrt{317}}{2}$ cm
- 2. $\frac{\sqrt{119}}{2}$ cm

3.

Page No: 51

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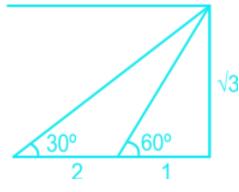
$$\frac{\sqrt{313}}{2}$$
 cm

4.
$$\frac{\sqrt{115}}{2}$$
 cm

Solution:

The correct answer is option **2** i.e. $\frac{\sqrt{119}}{2}$ **cm**

Explanation:



$$6^2 + 8^2 = 2[m^2 + (9/2)^2]$$

$$100 = 2[m^2 + (9/2)^2]$$

$$50 = [m^2 + 81/4]$$

$$m^2 = 50 - (81/4)$$

$$m^2 = 119/4$$

$$m = \frac{\sqrt{119}}{2} cm$$

Question 73:

If a nine digit number 389x6378y is divisible by 72, then the value of (6x+7y) will be?

Difficulty: Moderate Average Time: 119 Seconds

Options:

1. 6

2. 13

Page No: 52

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46

4. 8

Solution:

The correct answer is option 4 ie 8.

389x6378y divisible by 72

$$72 = 8 \times 9$$

$$78y = y = 4$$

$$x + 12 = 18$$

$$x = 6$$

$$= [(6 \times 6) + (7 \times 4)]$$

$$= 64 = 8$$

Question 74:

= ?

Difficulty : Moderate

LIVE

Average Time: 52 Seconds

Options :

1.
$$\cos (1 + \sin)$$

2.
$$2\cos(1 + \sec)$$

3.
$$sec(1 + sin)$$

4.
$$2 \sec (1 + \sec)$$

Solution:

The correct answer is option 4 ie 2sec (1 + sec).

Explanation:

$$\frac{(1+\cos\theta)^2+\sin^2\theta}{(\cos^2\theta)\sin^2\theta}$$

Page No: 53



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$$\frac{1+1+2\cos\theta}{\cos^2\theta}$$
$$2[1+\cos\theta]$$

$$\frac{2[1+\cos \theta]}{\cos^2 \theta}$$

$$= 2 sec (1 + sec)$$

Question 75:

When 12, 16, 18, 20 and 25 divide the least number x, the remainder in each case is 4 but x is divisible by 7. What is the digit at the thousand's place in x?

Difficulty: Moderate Average Time: 61 Seconds

Options:

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



The correct answer is 2 ie 8.

 $n = k\{ LCM (12, 16, 18, 20, 25) \} + 4$

 $n = (k \times 144 \times 25) + 4$

n = 3600k + 4

n = 3598k + 2k + 4

(2k + 5) / 7, k = 5

n = 18004

Digit at thousand's place = 8

Question 76:

PQRS is a cyclic quadrilateral in which PQ = 14.4 cm, QR = 12.8 cm and SR = 9.6 cm. If PR bisects QS, what is the length of PS?

Difficulty: Moderate Average Time: 56 Seconds

Options:

Page No: 54

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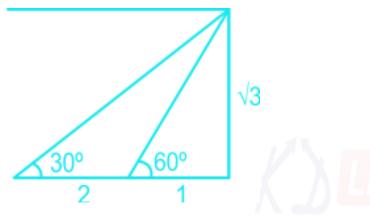


15.8 cm

- 2. 16.4 cm
- 3. 13.6 cm
- 4. 19.2 cm

Solution:

The correct answer is **option 4** i.e. **19.2 cm**.



Here,

SOP is similar to ROQ [AAA property]

SOR is similar to POQ [AAA property]

So,

$$(14.4/9.6) = (OQ/OR)$$
(1)

(OS/OR) = (PS/12.8)

[Given: OS = OQ]

So.

$$(OQ/OR) = (PS/12.8)$$
 -----(2)

From equation (1) and (2):

(14.4/9.6) = (PS/12.8)

3/2 = (PS/12.8)

 $PS = (3/2) \times 12.8$

Page No: 55



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PS = 19.2 cm

Question 77:

In what ratio, sugar costing Rs 60 per kg be mixed with sugar costing Rs 42 per kg such that by selling the mixture at Rs 56 per kg there is a gain of 12%?

Difficulty : Moderate

Average Time: 97 Seconds

Options:

1. 5:6

2.8:9

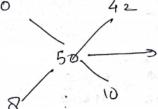
3. 4:5

4. 5:7

Solution:

The correct answer is option 3 ie 4:5

60



$$x + (12x/100) = 56$$

x = 50

Hence, 4:5

Question 78:

When an article is sold for Rs 355, there is a loss of 29%. To gain 21%, it should be sold for Rs?

Difficulty: Moderate

Average Time: 51 Seconds

Options:

1. 629.20

2. 580.80

3.605

Page No: 56

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635

Solution:

The correct answer is option 3 i.e. 605

500 -29% 355

71% = 355

500 +21% 500 × 1.21

= 605

Question 79:

= ?

 ${\bf Difficulty: Moderate}$

Options:

- 1. cosec²
- $2. \sec^2$
- 3. sin²
- $4. \cos^2$

Solution:

The correct answer is option 2 ie sec²

$$\left(\frac{1-tan\theta}{1-cot\theta}\right)^2$$

$$\left(\frac{1-tan\theta}{1+\left(\frac{1}{tan\theta}\right)}\right)^2$$

 $= tan^2 + 1$

 $= sec^2$

Question 80:

is equal to?

Options:

Difficulty : Moderate

inficulty: Moderate

Average Time: 42 Seconds

Average Time: 50 Seconds

Page No: 57

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sec + tan

- 2. 1 + sectan
- 3. 1 sectan
- 4. sec tan

Solution:

The correct answer is option 1 ie sec + tan.

$$\sqrt{\frac{(\cot\theta + \cos\theta)}{(\cot\theta - \cos\theta)}}$$

$$\sqrt{\frac{(1+\sin\theta)}{(1-\sin\theta)}} \times \sqrt{\frac{(1+\sin\theta)}{(1+\sin\theta)}}$$

= sec + tan

Question 81:

In triangle ABC, AB = 7 cm, BC = 10 cm and AC = 8 cm. If AD is the angle bisector of BAC, where D is a point on BC, then BD is equal to:

Difficulty: Moderate Average Time: 55 Seconds

Options:

- 1. 16/3 cm
- 2. 15/4 cm
- 3. 14/3 cm
- 4. 17/4 cm

Solution:

The correct answer is option 3 i.e. 14/3 cm.

Page No: 58



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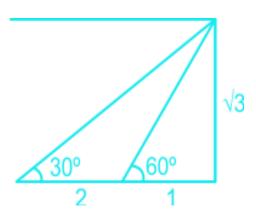












By Angle bisector theorem:

BD : DC = AB : AC

BD: DC = 7:8

So.

 $BD = (7/15) \times 10$

BD = 14/3 cm

Question 82:

The base of right prism is a trapezium whose parallel sides are 11 cm and 15 cm and the distance between them is 9 cm. If the volume of the prism is 1731.6 cm³, then the height (in cm) of the prism will be ?

Difficulty: Moderate

Average Time: 68 Seconds

Options:

1. 15.6

2. 15.2

3. 14.8

4. 14.2

Solution:

The correct anwer is option 3 ie 14.8

Page No: 59



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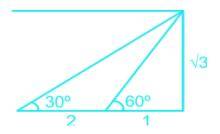












Base area = $(1/2) \times 26 \times 9$

$$= 13 \times 9 = 117$$

V = base height

 $V = 117 \times h$

1731.6 / 117 = h

h = 14.8 cm

Question 83:

Raghav spends 80% of his income. If his income increases by 12% and the savings decrease by 10%, then what will be the percentage increase in his expenditure?

Difficulty : Moderate

Average Time: 64 Seconds

Options:

1. 20.5

2. 16

3. 17.5

4. 22

Solution:

The correct answer is option 3 i.e. 17.5

Explanation:

Let income be 100.

Expenditure = 80

Savings = 20

I:E:S=5:4:1

Page No: 60

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After increasing the income

$$I = 112$$

$$E = 80 + x\%$$

$$S = 18$$

$$I = E + S$$

$$(14 / 80) \times 100 = 140/8 = 17.5\%$$

Question 84:

The lateral surface area of a cylinder is 352 cm2. If its height is 7 cm, then its volume (in cm3) is? (Take = 22/7)

Difficulty: Moderate Average Time: 70 Seconds

Options:

- 1. 1408
- 2. 1078
- 3. 1243
- 4. 891

Solution:

The correct anwer is option 1 i.e. 1408 cm³.

$$L.S.A. = 2rh = 352$$

$$2 \times 22/7 \times r \times 7 = 44$$

$$44 \times r = 352$$

$$r = 8$$

$$V = r^2 h = 22/7 \times 8 \times 8 \times 7$$

$$= 22 \times 64 = 1408 \text{ cm}^3$$

Question 85:

What will be the compound interest on a sum of Rs 31,250 for 2 years at 12% p.a. If the interest is compounded 8 monthly?

Page No: 61

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Difficulty: Moderate

Average Time: 59 Seconds

Options:

- 1. Rs 8106
- 2. Rs 8116
- 3. Rs 8016
- 4. Rs 8156

Solution:

The correct answer is option 2 i.e. Rs 8116.

12% / 12 month = [8% for 8 months]

Cycles in 2 yrs

31250 8%/2500 8% / 2700 (8% / 2916) x

x = 2916 + 2700 + 2500 = 8116

Question 86:

When 7897, 8110 and 8536 are divided by the greatest number x, then the remainder in each case is the same. The sum of the digits of x is ?

Difficulty: Moderate

Average Time: 52 Seconds

Options:

- 1. 14
- 2. 5
- 3. 9
- 4. 6

Solution:

The correct answer is option 4 ie 6.

7897, 8110 and 8536

 $7897 - r = N_1$

 $8110 - r = N_2$

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$$8536 - r = N_3$$

HCF of
$$(N_1, N_2, N_3) = x$$

$$x = \{(N_1 - N_2)(N_2 - N_3)(N_3 - N_1)\} HCF$$

$$x = HCF \{213, 426, 639\}$$

$$x = 213$$

Question 87:

The ratios of copper to zinc in alloys A and B are 3: 4 and 5: 9, respectively. A and B are taken in the ratio 2: 3 and melted to form a new alloy C. What is the ratio of copper to zinc in C?

Difficulty: Moderate

Average Time: 75 Seconds

Options:

1.8:13

2. 3:5

3. 9:11

4. 27:43

Solution:

The correct answer is 4 ie 27:43.

Alloy A ratio = C : Z

3:4

B ratio = C : Z

5:9

After mixing, ratio = 2:3

Applying weighted average

$$C / total = \frac{\frac{6}{7} + \frac{15}{4}}{5}$$

Page No: 63

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= 27 / 70

c/z = 27 / (70 - 27) = 27 / 43

Question 88:

In triangle ABC, D and E are the points on sides AB and BC respectively such that DE \parallel AC. If AD : DB = 5 : 3, then what is the ratio of the area of triangle BDE to that of the trapezium ACED?

Difficulty : Moderate Average Time : 81 Seconds

Options:

1. 4:25

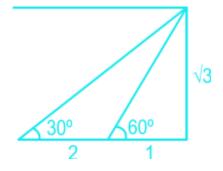
2. 9:55

3. 9:64

4. 1:6

Solution:

The correct answer is option 2 i.e. 9:55.



 $Ar (BDE) : Ar (ABC) = (BD)^2 : (AB)^2$

â€(â€(â€(â)2: (8)2

9:64

Hence,

Ar (BDE): Ar (ADEC)

9 : [Ar(ABC) - Ar(BDE)]

9: (64 - 9)

9:55

Page No: 64

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Question 89:

One year ago, the ratio of the age (in years) of A to that of B was 4 : 3. The ratio of their respective ages, 3 years from now, will be 6 : 5. What will be the ratio of respective ages of A and B, 9 years from now?

Difficulty : Moderate Average Time : 84 Seconds

Options:

- 1.7:6
- 2. 10:9
- 3.9:8
- 4.8:7

Solution:

The correct answer is option 3 i.e. 9:8

Ages of A and B

A/B = 4/3 [1 year ago]

3A = 4B

After 3 years,

(A + 4)/(B + 4) = 6/5

5A + 20 = 6B + 24

5A = 6B + 4

A = 8, B = 6

After 9 years,

(A + 10)/(B + 10) = 18/16 = 9/8

Question 90:

The sides of a triangles are 11 cm, 60 cm and 61 cm. What is the radius of the circle circumscribing the triangle?

Difficulty: Moderate Average Time: 62 Seconds

Options:

1. 31.5 cm

Page No: 65

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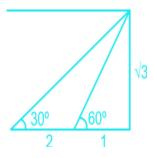


31 cm

- 3. 30 cm
- 4. 30.5 cm

Solution:

The correct answer is option 4 i.e. 30.5 cm



Here we can see that,

$$11^2 + 60^2 = 121 + 3600 = 3721 = 61^2$$

Hence, it is a Pythagoras triplet and this triangle is a right angled triangle with 61 cm side as hypotenuse.

So.

Radius of circumcircle = hypotenuse/2 = 61/2 = 30.5 cm

Question 91:

If x =, then the value of will be closest to?

Difficulty: Moderate

Average Time: 59 Seconds

Options:

1. 0.17

2. 0.12

3. 1.4

4. 1.2

Solution:

The correct answer is option 1 ie 0.17

Page No: 66

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$$X = \sqrt{1 + \frac{\sqrt{3}}{2}} - \sqrt{1 - \frac{\sqrt{3}}{2}}$$

$$x^2 = 1 + (3/2) + 1 - (3/2) - 2 \times \sqrt{1 - \frac{3}{4}}$$

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

$$x^2 = 1, x = +1, x -1$$

$$= \frac{\sqrt{2} - x}{\sqrt{2} + x}$$

$$= \frac{\sqrt{2} - 1}{\sqrt{2} + 1}$$

$$= 3 - 22 = 3 - 2.8$$

$$= 0.20 \ 0.17$$

Question 92:

The given pie chart shows the breakup of total number of employees of a company working in different offices (A, B, C, D and E) Total number of employees = 2400 If the percentage of male employees in office C is 20% and that of female employees in office E is 40%, then what is the ratio of the number of female employees in office C to that of female employees in office E?

Difficulty: Moderate

Average Time: 97 Seconds

Options:

1. 3:2

2. 5:4

3. 2:3

4. 3:8

Solution:

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

Total number of employees = 2400

Female Employees in Office C = 80/100 * 54/360 * 2400

Page No: 67

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Female Employees in Office E = 40/100 * 72/360 * 2400

Ratio = 80 * 54 : 40 * 72

Ratio = 12:8

Ratio = 3:2

Question 93:

In a trapezium ABCD, DC || AB, AB = 12 cm and DC = 7.2 cm. What is the length of the line segment joining the midpoints of its diagonals?

Difficulty: Moderate

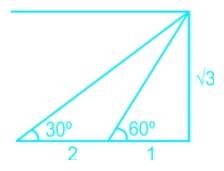
Average Time: 45 Seconds

Options:

- 1. 2.6 cm
- 2. 4.8 cm
- 3. 2.4 cm
- 4. 3.6 cm

Solution:

The correct answer is option 3 i.e. 2.4 cm



Trick [Important formula]: If E and F are mid points of diagonals AC and DB respectiely, then,

EF = (AB - CD)/2

So.

EF = (12 - 7.2)/2 = 4.8/2 = 2.4 cm

Question 94:

A number is first increased by 16% and then increased by 14%. The number, so obtained, is now decreased by 30%. What is the net increase or decrease percent in the original number (nearest to an integer)?

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Difficulty: Moderate

Average Time: 65 Seconds

Options:

- 1. 6% increase
- 2. 7% decrease
- 3. No increase or decrease
- 4. 9% decrease

Solution:

The correct answer is **option 2** i.e. **7% decrease**.

Explanation:

100 +16% +14% -30%

100 -30% +16% +14% = 92.48

100 - 92.48% = 7% decrease

Question 95:

Radha marks her goods 25% above the cost price. She sells 35% of goods at the marked price, 40% at 15% discount and the remaining at 20% discount. What is her overall percentage gain?

Difficulty: Moderate

Average Time: 54 Seconds

Options:

- 1. 11.25
- 2. 10
- 3. 11.75
- 4. 12.75

Solution:

The correct answer is option 1 ie 11.25

Quantity Profit

35% 7 +25%

40% 8 +6.25%

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25% 5 0

100 125 (-15% / -18.75) (106.25)

Applying weighted average

$$\frac{(7 \times 25) + (6.25 \times 8) + 0}{20}$$

$$\frac{175 + 50 + 0}{20}$$

Question 96:

One of the factors of (82k + 52k), where k is an odd number, is ?

Difficulty : Moderate Average Time : 69 Seconds

Options:

1.86

2.88

3.84

4. 89

Solution:

The correct answer is option 4 ie 89.

$$=8^{2k}+5^{2k}$$

$$=64^{k} + 25^{k}$$

aⁿ + bⁿ and n is odd

Then one factor is (a + b)

So.

 $(64^k + 25^k)$ factor is (64 + 25) = 89

Question 97:

The internal and external radii of a hollow hemispherical vessel are 6cm and 7cm respectively. What is the total surface area (in cm²) of the vessel?

Page No: 70

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Difficulty: Moderate

Average Time: 61 Seconds

Options:

- 1. 183
- 2. 189
- 3. 177
- 4. 174

Solution:

The correct answer is option 1 ie 183.

C.S.A. =
$$2 R^2 + 2 r^2 + (R^2 - r^2)$$

= $2 (7^2 + 6^2) + (7^2 - 6^2)$
= $(170 + 13)$
= 183

Question 98:

When the price of an item was reduced by 25%, then its sale was increased by x%. If there is an increase of 20% in the receipt of the revenue, then the value of x will be ?

Difficulty : Moderate

Average Time: 68 Seconds

Options:

- 1. 50%
- 2. 60%
- 3. 45%
- 4. 75%

Solution:

The correct answer is option 2 ie 60%.

 $P \times Q = S$ Receipt

100 -25% 75 +x% 45 120

 $(45/75)\% = (3/5) \times 100 = 60\%$

Question 99:

Page No: 71

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In a constituency, 55% of the total number of voters are males and the rest are the females. If 40% of the males are illiterate and 40% of females are literate, then by what percent is the number of literate males more than that of illiterate females?

Difficulty : Moderate

Average Time: 53 Seconds

Options:

- 1. $22\frac{8}{11}$
- 2. $18\frac{2}{9}$
- 3. $22\frac{2}{9}$
- 4. $18\frac{2}{11}$

Solution:

The correct answer is option 3 ie $22\frac{2}{9}$

Male Females

55% 45%

Illiterate 22% 27%

Literate 33% 18%

 $100 \times (6/27) = (2/9) \times 100 = 22.22$

 $= 22\frac{2}{9}$

Question 100:

From the top of a tower, the angles of depression of two objects on the ground on the same side of it, are observed to be 60° and 30° respectively and the distance between the two objects is 4003 m. The height (in m) of the tower is ?

Difficulty : Moderate Average Time : 99 Seconds

Options:

1.800

2. 8003

Page No: 72

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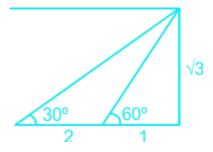


600

4. 6003

Solution:

The correct answer is option 3 ie 600.



2 4003

1 2003

 3.3×2003

= 600



Ssc Cgl Tier II Previous Year Question Paper Analysis

The analysis of Ssc Cgl Tier II Previous Year Question Paper held on 2019-09-11 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 16
- 2. Percentage 5

Page No: 73



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Data Interpretation - 1

- 4. Time Speed And Distance 5
- 5. Interest 4
- 6. Ratios And Proportion 6
- 7. Geometry 15
- 8. Trigonometry 10
- 9. Mensuration 12
- 10. Algebra 1
- 11. Number System 1
- 12. Coordinate Geometry 1
- 13. Quadratic Equation 7
- 14. Partnership 1
- 15. Profit And Loss 7
- 16. Statistics 8

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.

Page No: 74



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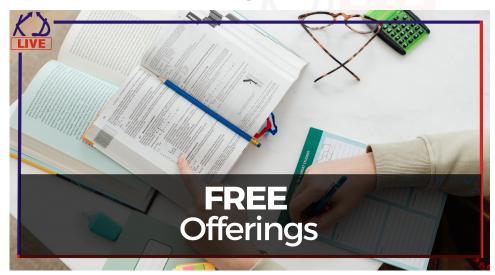


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Logical Reasoning

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Today In History

Syllabus

Know Your State

Know Your Country

Know Your City

Know Your Leader

Books And Authors

Daily Vocabulary

Daily Editorial

Latest Notifications

Exam Dates

Admit Card

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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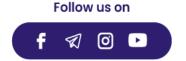
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