

## SSC CGL Tier-2 12-January-2017 Maths

### Instructions

For the following questions answer them individually

#### Question 1

Twenty one times of a positive number is less than its square by 100. The value of the positive number is

- A 25
- B 26
- C 42
- D 41

Answer: A

#### Question 2

Two pipes of length 1.5 m and 1.2 m are to be cut into equal pieces without leaving any extra length of pipes. The greatest length of the pipe pieces of same size which can be cut from these two lengths will be

- A 0.13 m
- B 0.4 m
- C 0.3 m
- D 0.41 m

Answer: C

#### Question 3

A General of an Army wants to create a formation of square from 36562 army men. After arrangement, he found some army men remained unused. Then the number of such army men remained unused was

- A 36
- B 65
- C 81
- D 97

Answer: C

#### Question 4

The smallest number, which should be added to 756896 so as to obtain a multiple of 11, is

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

Answer: C

Question 5

A boy found the answer for the question "Subtract the sum of  $\frac{1}{4}$  and  $\frac{1}{5}$  from unity and express the answer in decimals" as 0.45. The percentage of error in his answer was

A  $\left(\frac{100}{11}\right)\%$

B 50%

C 10%

D  $\left(\frac{200}{11}\right)\%$

Answer: C

Question 6

The product of two numbers is 48. If one number equals "The number of wings of a bird plus 2 times the number of fingers on your hand divided by the number of wheels of a Tricycle". Then the other number is

A 9

B 10

C 12

D 18

Answer: C

Question 7

Natu and Buchku each have certain number of oranges. Natu says to Buchku, "If you give me 10 of your oranges, I will have twice the number of oranges left with you". Buchku replies, "If you give me 10 of your oranges, I will have the same number of oranges as left with you". What is the number of oranges with Natu and Buchku, respectively?

A 50, 20

B 70, 50

C 20, 50

D 50, 70

Answer: B

Question 8

A square play ground measures 1127.6164 sq.m. If a man walks  $2\frac{9}{20}$  m a minutes then time taken by him to complete one round around it is approximately

A 50.82 min

B 54.82 min

C 54.62 min

D 50.62 min

Answer: B

#### Question 9

Three electronic devices make a beep after every 48 sec, 72 sec and 108 sec respectively. They beeped together at 10 a.m. The time when they will next make a beep together at the earliest is

A 10:07:12 hrs

B 10:07:24 hrs

C 10:07:36 hrs

D 10:07:48 hrs

Answer: A

#### Question 10

Two baskets together have 640 oranges. If  $\left(\frac{1}{5}\right)$ th of the oranges in the first basket be taken to the second basket. The number of oranges in the first basket is

A 800

B 600

C 400

D 300

Answer: C

#### Question 11

P can do  $\left(\frac{1}{4}\right)$ th of work in 10 days, Q can do 40% of work in 40 days and R can do  $\left(\frac{1}{3}\right)$ rd of work in 13 days. Who will complete the work first?

A P

B Q

C R

D Both P and R

Answer: C

#### Question 12

Working 7 hours in a day, 4 men can do a piece of work in 8 days. Working 8 hours in a day, the required number of men to perform the same work in 4 days will be

A 8

B 4

C 7

D 9

Answer: C

**Question 13**

35 persons are engaged to complete a work in 60 days. After 32 days it is observed that only  $(\frac{2}{5})$ th part of the work has been done. The number of persons to be engaged to complete the remaining work in the said period is

A 20

B 35

C 30

D 25

Answer: D

**Question 14**

The time taken by 4 men to complete a job is double the time taken by 5 children to complete the same job. Each man is twice as fast as a woman. How long will 12 men, 10 children and 8 women take to complete a job, given that a child would finish the job in 20 days.

A 4 Days

B  $2\frac{1}{8}$  Days

C 2 Days

D 1 Day

Answer: D

**Question 15**

The labour A,B,C were given a contract of 750 for doing certain piece of work.All three can finish the work in 8 days.A and c can together finish the work in 12 days while A and B can do it  $13\frac{1}{3}$  days.The money will divide in the ratio

A 4 : 5 : 6

B 4 : 7 : 5

C 5 : 7 : 4

D 5 : 6 : 8

Answer: A

**Question 16**

A and B together can complete a piece of work in 12 days. They worked together for 5 days and then A alone finished the rest work in 14 days. A alone can complete the work in \_\_\_\_.

A 24

B 22

C 20

D 18

Answer: A

#### Question 17

A shopkeeper offers 15% discount on all plastic toys. He offers a further discount of 4% on the reduced price to those customers who pay cash. What does a customer have to pay (in Rs) in case for a toy of Rs 200?

A 133.7

B 129.8

C 163.2

D 153.3

Answer: C

#### Question 18

A photographer allows a discount of 10% on the advertised price of a camera. The price (in Rs) that must be marked on the camera, which cost him Rs600, to make a profit of 20% would be

A 650

B 800

C 700

D 850

Answer: B

#### Question 19

- A dinner set is quoted for Rs 1500. A customer pays Rs 1173 for it. If the customer got a series of two discounts and the rate of first discount is 15% then the rate of second discount was,

A 15%

B 7%

C 9%

D 8%

Answer: D

#### Question 20

A dishonest dealer defrauds to the extent of  $x\%$  in buying as well as selling his goods by using faulty weight. What will be the gain percent on his outlay?

- A  $2x\%$
- B  $\left(\frac{10}{x} + x^2\right)\%$
- C  $\left(2x + \frac{x^2}{100}\right)\%$
- D  $\left(x + \frac{x^2}{100}\right)\%$

Answer: C

#### Question 21

In a college union, there are 48 students. The ratio of the number of boys to the number of girls is 5:3. The number of girls to be added in the union, so that the number of boys to girls in 6:5 is

- A 6
- B 7
- C 12
- D 17

Answer: B

#### Question 22

There are three bottles of mixture of syrup and water of ratios 2:3, 3:4 and 7:5. 10 Litres of first and 21 Litres of second bottles are taken. How much quantity from third bottle is to be taken so that final mixture from three bottles will be of ratios 1:1.

- A 25
- B 20
- C 35
- D 30

Answer: D

#### Question 23

In a colored picture of blue and yellow color, blue and yellow color is used in the ratio of 4 : 3 respectively. If in upper half, blue : yellow is 2:3, then in the lower half blue : yellow is

- A 1 : 1
- B 2 : 1
- C 26 : 9
- D 9 : 26

Answer: C

**Question 24**

A and B start an enterprise together, with A as active partner. A invests Rs 4000 and Rs 2000 more after 8 months. B invests Rs 5000 and withdraws Rs 2000 after 9 months. Being the active partner, A takes Rs 100 per month as allowance, from the profit. What is the share of B if the profit for the year is Rs 6700?

- A Rs 3350
- B Rs 3250
- C Rs 2700
- D Rs 2800

**Answer: C**

**Question 25**

sum of Rs 15525 is divided among Sunil, Anil and Jamil such that if Rs 22, Rs 35 and Rs 48 be diminished from their shares respectively, their remaining sums shall be in the ratio 7:10:13. What would have been the ratio of their sums if Rs 16, Rs 77 and Rs 37 respectively were added to their original shares?

- A 9 : 13 : 17
- B 18 : 26 : 35
- C 36 : 52 : 67
- D None of these

**Answer: C**

**Question 26**

A's income is Rs 140 more than B's income and C's income is Rs 80 more than D's. If the ratio of A's and C's income is 2:3 and the ratio of B's and D's income is 1:2, then the incomes of A, B, C and D are respectively

- A Rs 260, Rs 120, Rs 320 and Rs 240
- B Rs 300, Rs 160, Rs 600 and Rs 520
- C Rs 400, Rs 260, Rs 600 and Rs 520
- D Rs 320, Rs 180, Rs 480 and Rs 360

**Answer: C**

**Question 27**

A batsman has a certain average of runs for 12 innings. In the 13<sup>th</sup> inning he scores 96 runs thereby increasing his average by 5 runs. What will be his average after 13<sup>th</sup> inning?

- A 28
- B 32
- C 36
- D 42

**Answer: C**

**Question 28**

A team of 8 persons joins in a shooting competition. The best marksman scored 85 points. If he had scored 92 points, the average score for the team would have been 84. The number of points the team scored was

- A 672
- B 665
- C 645
- D 588

**Answer: B**

**Question 29**

A librarian purchased 60 story books for his library. But he found that he could get 4 extra books by spending Rs 336 more and then the overall average price per book would be reduced by Re 1. The previous average price of each book was

- A Rs 84
- B Rs 83
- C Rs 68
- D Rs 100

**Answer: D**

**Question 30**

In an exam, the average marks obtained by John in English, Maths, Hindi and Drawing were 50. His average marks in Maths, Science, Social Studies and Craft were 70. If the average marks in all seven subjects is 58, his score in maths was

- A 50
- B 52
- C 60
- D 74

**Answer: D**

**Question 31**

The average weight of 3 men A, B and C is 84 Kg. Another man D joins the group and the average now becomes 80 Kg. If another man E whose weight is 3 Kg more than that of D, replaces A then the average weight of B, C, D and E becomes 79 Kg. What is the weight of A?

- A 70 kg
- B 72 kg
- C 75 kg
- D 80 kg

**Answer: C**



**Question 32**

The average monthly salary of all the employees in a factory is Rs 8840. If the average salary of all the officers is Rs 15000 and that of the remaining employees is Rs 8000, then what is the percentage of the officers among the employees?

A  $10\frac{5}{7}$

B  $9\frac{5}{7}$

C  $8\frac{1}{3}$

D  $11\frac{2}{3}$

Answer: A

**Question 33**

The ratio of cost price and selling price of an article is 20 : 21. Then gain percent on it is

A  $5\frac{1}{2}$

B 5

C 6

D  $6\frac{1}{4}$

Answer: B

**Question 34**

The ratio of cost price and selling price 25:26. The percent of profit will be

A 26%

B 25%

C 1%

D 4%

Answer: D

**Question 35**

A shopkeeper buys a product of Rs 150 per Kg. 15% of product was damaged. At what price (per Kg) should he sell the remaining so as to earn a profit of 20%?

A Rs.  $205\frac{13}{17}$

B Rs.  $207\frac{13}{17}$

C Rs.  $209\frac{13}{17}$

D Rs.211 $\frac{13}{17}$

Answer: D

**Question 36**

Mr. Kapur purchased two toy cycles for Rs 750 each. He sold these cycles, gaining 6% on one and losing 4% on the other. The gain or loss percent in the whole transaction is

- A 1% Loss
- B 1% Gain
- C 1.5% loss
- D 1.5% gain

Answer: B

**Question 37**

The profit earned by a shopkeeper by selling a bucket at a gain of 8% is Rs 28 more than when he sells it at a loss of 8%. The cost price (in Rupees) of the bucket is

- A 170
- B 190
- C 175
- D 165

Answer: C

**Question 38**

A man bought 500 metres of electronic wire at 50 paise per metre. He sold 50% of it at a profit of 5%. At what percent should he sell the remainder so as to gain 10% on the whole transaction?

- A 13%
- B 12.5%
- C 15%
- D 20%

Answer: A

**Question 39**

A line of length 1.5 metres was measured as 1.55 metres by mistake. What will be the value of error percent?

- A 0.05%
- B  $3\frac{7}{31}\%$
- C  $3\frac{1}{3}\%$

D 0.5%

Answer: C

#### Question 40

A businessman imported Laptops, worth Rs 210000, Mobile phones worth Rs 100000 and Television sets worth Rs 150000. He had to pay 10% duty on laptops, 8% on Phones and 5% on Television sets as a special case. How much total duty (in Rupees) he had to pay on all items as per above details?

A 36500

B 37000

C 37250

D 37500

Answer: A

#### Question 41

A man spend  $7\frac{1}{2}\%$  of his money and after spending 75% of the remaining , he had Rs 370 left. How much money did he have?

A 1200

B 1600

C 1500

D 1400

Answer: B

#### Question 42

On a certain date, Pakistan has a success rate of 60% against India in all the ODIs played between the two countries. They lost the next 30 ODIs in a row to India and their success rate comes down to 30%. The total number of ODIs played between the two countries is

A 50

B 45

C 60

D 30

Answer: C

#### Question 43

Two donkeys are standing 400 meters apart. First donkey can run at a speed of 3 m/sec and the second can run at 2 m/sec. If two donkeys run towards each other after how much time (in sec) will they bump into each other?

A 60

B 80

C 400

D 40

Answer: B

**Question 44**

Rubi goes to a multiplex at the speed of 3 km/hr to see a movie and reaches 5 minutes late. If she travels at the speed of 4 Km/hr she reaches 5 minutes early. Then the distance of the multiplex from her starting point is

A 2 km

B 5 km

C 2 m

D 5 m

Answer: A

**Question 45**

A man travels some distance at a speed of 12 km/hr and returns at a speed of 9 km/hr. If the total time taken by him is 2 hrs 20 min, the distance is

A 35 Km

B 21 Km

C 9 Km

D 12 Km

Answer: D

**Question 46**

A and B are 15 kms apart and when travelling towards each other meet after half an hour whereas they meet two and a half hours later if they travel in the same direction. The faster of the two travels at the speed of

A 15 km/hr

B 18 km/hr

C 10 km/hr

D 8 km/hr

Answer: B

**Question 47**

The sum for 2 years gives a compound interest of Rs 3225 at 15% rate. Then sum is

A 10000

B 20000

C 15000

D 32250

Answer: A

**Question 48**

In 3 years Rs 3000 amounts to Rs 3993 at  $x\%$  compound interest, compounded annually. The value of  $x$  is

A 10

B 8

C 5

D  $3\frac{1}{3}$

Answer: A

**Question 49**

A man borrowed some money and agreed to pay-off by paying Rs 3150 at the end of the 1st year and Rs 4410 at the end of the 2nd year. If the rate of compound interest is 5% per annum, then the sum is

A Rs 5000

B Rs 6500

C Rs 7000

D Rs 9200

Answer: C

**Question 50**

Rs 260200 is divided between Ram and Shyam so that the amount that Ram receives in 3 years is the same as that Shyam receives in 6 years. If the interest is compounded annually at the rate of 4% per annum then Ram's share is

A 125000

B 135200

C 152000

D 108200

Answer: B

**Question 51**

The radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 5 : 3. The ratio of their volumes is

A 27 : 20

B 20 : 27

C 4 : 9

D 9 : 4

Answer: B

**Question 52**

Three cubes of iron whose edges are 6cm, 8cm and 10cm respectively are melted and formed into a single cube. The edge of the new cube formed is

A 12 cm

B 14 cm

C 16 cm

D 18 cm

Answer: A

**Question 53**

The radii of two concentric circles are 68 cm and 22 cm. The area of the closed figure bounded by the boundaries of the circles is

A  $4140\pi$  sq.cm

B  $4110\pi$  sq.cm

C  $4080\pi$  sq.cm

D  $4050\pi$  sq.cm

Answer: A

**Question 54**

The radius of a sphere is 6 cm. It is melted and drawn into a wire of radius 0.2 cm. The length of the wire is

A 81m

B 80m

C 75m

D 72m

Answer: D

**Question 55**

The radius of a wire is decreased to one-third. If volume remains the same, length will increase by

A 1.5 times

B 3 times

C 6 times

D 9 times

Answer: D

**Question 56**

In a trapezium ABCD, AB and DC are parallel sides and  $\angle ADC = 90^\circ$ . If AB = 15 cm, CD = 40 cm and diagonal AC = 41 cm. Then the area of the trapezium ABCD is

A  $245 \text{ cm}^2$

B  $240 \text{ cm}^2$

C  $247.5 \text{ cm}^2$

D  $250 \text{ cm}^2$

Answer: C

**Question 57**

The area of a rhombus having one side 10 cm and one diagonal 12 cm is

A  $48 \text{ cm}^2$

B  $96 \text{ cm}^2$

C  $144 \text{ cm}^2$

D  $192 \text{ cm}^2$

Answer: B

**Question 58**

The cost of levelling a circular field at 50 Paise per square metre is Rs 7700. The cost (in Rs) of putting up a fence all round it at Rs 1.20 per meter is ( Use  $\pi = \frac{22}{7}$  )

A Rs 132

B Rs 264

C Rs 528

D Rs 1056

Answer: C

**Question 59**

From the four corners of a rectangular sheet of dimensions 25 cm  $\times$  20 cm, square of side 2 cm is cut off from four corners and a box is made. The volume of the box is

A  $828 \text{ cm}^3$

B  $672 \text{ cm}^3$

C  $500 \text{ cm}^3$

D  $1000 \text{ cm}^3$

Answer: B

**Question 60**

The height and the total surface area of a right circular cylinder are 4 cm and  $8\pi$  sq.cm. respectively. The radius of the base of cylinder is

A  $(2\sqrt{2} - 2)$  cm

B  $(2 - \sqrt{2})$  cm

C 2 cm

D  $\sqrt{2}$  cm

Answer: A

**Question 61**

The radius of a cylindrical milk container is half its height and surface area of the inner part is 616 sq.cm. The amount of milk that the container can hold, approximately, is [ Use :  $\sqrt{5} = 2.23$  and  $\pi = \frac{22}{7}$  ]

A 1.42 litres

B 1.53 litres

C 1.71 litres

D 1.82 litres

Answer: B

**Question 62**

A solid brass sphere of radius 2.1 dm is converted into a right circular cylindrical rod of length 7cm. The ratio of total surface areas of the rod to the sphere is

A 3 : 1

B 1 : 3

C 7 : 3

D 3 : 7

Answer: C

**Question 63**

The sum of the length and breadth of a rectangle is 6 cm. A square is constructed such that one of its sides is equal to a diagonal of the rectangle. If the ratio of areas of the square and rectangle is 5 : 2, the area of the square in  $\text{cm}^2$  is



- A 20
- B 10
- C  $4\sqrt{5}$
- D  $10\sqrt{2}$

Answer: A

**Question 64**

The length of a side of an equilateral triangle is 8 cm. The area of the region lying between the circum circle and the incircle of the triangle is (use:  $\pi = \frac{22}{7}$ )

- A  $50\frac{1}{7} \text{ cm}^2$
- B  $50\frac{2}{7} \text{ cm}^2$
- C  $75\frac{1}{7} \text{ cm}^2$
- D  $75\frac{2}{7} \text{ cm}^2$

Answer: B

**Question 65**

A solid sphere of radius 3 cm is melted to form a hollow right circular cylindrical tube of length 4 cm and external radius 5 cm. The thickness of the tube is

- A 1 cm
- B 9 cm
- C 0.6 cm
- D 1.5 cm

Answer: A

**Question 66**

If  $x^2 + \frac{1}{x^2} = 98 (x > 0)$ , then the value of  $x^3 + \frac{1}{x^3}$  is

- A 970
- B 1030
- C -970
- D -1030

Answer: A

**Question 67**

If  $a + \frac{1}{b} = 1$  and  $b + \frac{1}{c} = 1$ , then the value of  $c + \frac{1}{a}$  is

- A 0
- B 2
- C 1
- D 3

Answer: C

**Question 68**

If  $x = y + 2$  then  $x^3 - y^3 - z^3$  is

- A 0
- B  $3xyz$
- C  $-3xyz$
- D 1

Answer: B

**Question 69**

If  $a + b + c + d = 4$ , then the value of

$(1-a)(1-b)(1-c) + (1-b)(1-c)(1-d) + (1-c)(1-d)(1-a) + (1-d)(1-a)(1-b)$  is

- A 0
- B 1
- C 4
- D  $1 + abcd$

Answer: A

**Question 70**

The simplified value of  $\frac{\sqrt{3}-\sqrt{2}}{\sqrt{12}-\sqrt{18}} - \frac{1}{3} \times \sqrt{27} - \frac{1}{2} \times \sqrt[3]{27}$  is Closest to

- A  $(\sqrt{3} - 1)$
- B  $(1 - \sqrt{3})$
- C  $-(-\sqrt{3} - 1)$
- D  $-(\sqrt{3} + 1)$

Answer: D

**Question 71**

If  $x = 11$ , the value of  $x^5 - 12x^4 + 12x^3 - 12x^2 + 12x - 1$  is

- A 11
- B 10
- C 12
- D -10

**Answer: B**

**Question 72**

If  $a = a^{-5}$  ( $a > 0$ ), then the value of  $a + \frac{1}{a}$  is

- A  $\sqrt{28}$
- B  $\sqrt{29}$
- C  $-\sqrt{29}$
- D  $\sqrt{27}$

**Answer: B**

**Question 73**

If  $a + \frac{1}{b} = b + \frac{1}{c} = c + \frac{1}{a}$  (where  $a \neq b \neq c$ ), then  $abc$  is equal to

- A +1
- B -1
- C +1 & -1
- D None of the options

**Answer: C**

**Question 74**

If  $ax + by = 1$  and  $bx + ay = \frac{2ab}{a^2+b^2}$  then  $(x^2 + y^2)(a^2 + b^2)$  is equal to

- A 1
- B 2
- C 0.5
- D 0

**Answer: A**

**Question 75**

If  $x, y, z$  are the three factors of  $a^3 - 7a - 6$ , then value of  $x + y + z$  will be

- A 3a
- B 3
- C 6
- D a

Answer: A

**Question 76**

ABCD is a cyclic quadrilateral of which AB is the diameter. Diagonals AC and BD intersect at E. If  $\angle DBC = 35^\circ$ , Then  $\angle AED$  measures

- A  $35^\circ$
- B  $45^\circ$
- C  $55^\circ$
- D  $90^\circ$

Answer: A

**Question 77**

In a triangle ABC,  $\angle A = 70^\circ$ ,  $\angle B = 80^\circ$  and D is the incentre of  $\triangle ABC$ .  $\angle ACB = 2x^\circ$  and  $\angle BDC = y^\circ$ . The values of x and y, respectively are

- A 15, 130
- B 15, 125
- C 35, 40
- D 30, 150

Answer: B

**Question 78**

In a right angled triangle  $\triangle DEF$ , if the length of the hypotenuse EF is 12 cm, then the length of the median DX is

- A 3 cm
- B 4 cm
- C 6 cm
- D 12 cm

Answer: C

**Question 79**

Two equal circles intersect so that their centres, and the points at which they intersect form a square of side 1 cm. The area (in sq.cm) of the portion that is common to the circles is

- A  $\frac{\pi}{4}$
- B  $\frac{\pi}{2} - 1$
- C  $\frac{\pi}{5}$
- D  $\sqrt{2} - 1$

Answer: B

#### Question 80

PQRA is a rectangle, AP = 22 cm, PQ = 8 cm.  $\triangle ABC$  is a triangle whose vertices lie on the sides of PQRA such that BQ = 2 cm and QC = 16 cm. Then the length of the line joining the mid points of the sides AB and BC is

- A  $4\sqrt{2}$  cm
- B 5 cm
- C 6 cm
- D 10 cm

Answer: B

#### Question 81

$\triangle ABC$  is an isosceles right angled triangle having  $\angle C = 90^\circ$ . If D is any point on AB, then  $AD^2 + BD^2$  is equal to

- A  $CD^2$
- B  $2CD^2$
- C  $3CD^2$
- D  $4CD^2$

Answer: B

#### Question 82

D and E are points on the sides AB and AC respectively of  $\triangle ABC$  such that DE is parallel to BC and AD : DB = 4 : 5, CD and BE intersect each other at F. Then the ratio of the areas of  $\triangle DEF$  and  $\triangle CBF$

- A 16 : 25
- B 16 : 81
- C 81 : 16
- D 4 : 9

Answer: B

**Question 83**

Diagonals of a Trapezium ABCD with  $AB \parallel CD$  intersect each other at the point O. If  $AB = 2CD$ , then the ratio of the areas of  $\triangle AOB$  and  $\triangle COD$  is

- A 4 : 1
- B 1 : 16
- C 1 : 4
- D 16 : 1

**Answer: A**

**Question 84**

If O is the orthocentre of a triangle ABC and  $\angle BOC = 100^\circ$ , the measure of  $\angle BAC$  is

- A  $100^\circ$
- B  $180^\circ$
- C  $80^\circ$
- D  $200^\circ$

**Answer: C**

**Question 85**

PQ and RS are common tangents to two circles intersecting at A and B. AB, when produced both sides, meet the tangents PQ and RS at X and Y, respectively. If  $AB = 3$  cm,  $XY = 5$  cm, then PQ (in cm) will be

- A 3 cm
- B 4 cm
- C 5 cm
- D 2 cm

**Answer: B**

**Question 86**

If  $\sec A + \tan A = a$ , then the value of  $\cos A$  is

- A  $\frac{a^2+1}{2a}$
- B  $\frac{2a}{a^2+1}$
- C  $\frac{a^2-1}{2a}$
- D  $\frac{2a}{a^2-1}$

**Answer: B**

**Question 87**

If  $\sin P + \operatorname{cosec} P = 2$ , then the value of  $\sin^7 P + \operatorname{cosec}^7 P$  is

- A 1
- B 2
- C 3
- D 0

**Answer: B**

**Question 88**

If  $\cos x \cdot \cos y + \sin x \cdot \sin y = -1$  then  $\cos x + \cos y$  is

- A -2
- B 1
- C 0
- D 2

**Answer: C**

**Question 89**

The value of the expression  $2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta) + 1$  is

- A -1
- B 0
- C 1
- D 2

**Answer: B**

**Question 90**

If  $\cos \theta = \frac{x^2 - y^2}{x^2 + y^2}$  then the value of  $\cot \theta$  is equal to [If  $0 \leq \theta \leq 90^\circ$ ]

- A  $\frac{2xy}{x^2 - y^2}$
- B  $\frac{2xy}{x^2 + y^2}$
- C  $\frac{x^2 + y^2}{2xy}$
- D  $\frac{x^2 - y^2}{2xy}$

**Answer: D**

**Question 91**

The distance between two pillars is 120 metres. The height of one pillar is thrice the other. The angles of elevation of their tops from the midpoint of the line connecting their feet are complementary to each other. The height (in metres) of the taller pillar is (Use :  $\sqrt{3} = 1.732$ )

- A 34.64
- B 51.96
- C 69.28
- D 103.92

**Answer: D**

**Question 92**

If  $x = \operatorname{cosec} \theta - \sin \theta$  and  $y = \sec \theta - \cos \theta$ , then the relation between x and y is

- A  $x^2 + y^2 + 3 = 1$
- B  $x^2 y^2 (x^2 + y^2 + 3) = 1$
- C  $x^2 (x^2 + y^2 - 5) = 1$
- D  $y^2 (x^2 + y^2 - 5) = 1$

**Answer: B**

**Question 93**

A hydrogen filled balloon ascending at the rate of 18 kmph was drifted by wind. Its angle of elevation at 10th and 15th minutes were found to be  $60^\circ$  and  $45^\circ$  respectively. The wind speed (in whole numbers) during the last five minutes, approximately, is equal to

- A 7 km/hr
- B 11 km/hr
- C 26 km/hr
- D 33 km/hr

**Answer: B**

**Question 94**

The angle of elevation of an aeroplane as observed from a point 30 m above the transparent water-surface of a lake is  $30^\circ$  and the angle of depression of the image of the aeroplane in the water of the lake is  $60^\circ$ . The height of the aeroplane from the water-surface of the lake is

- A 60 m
- B 45 m
- C 50 m
- D 75 m

**Answer: A**



**Question 95**

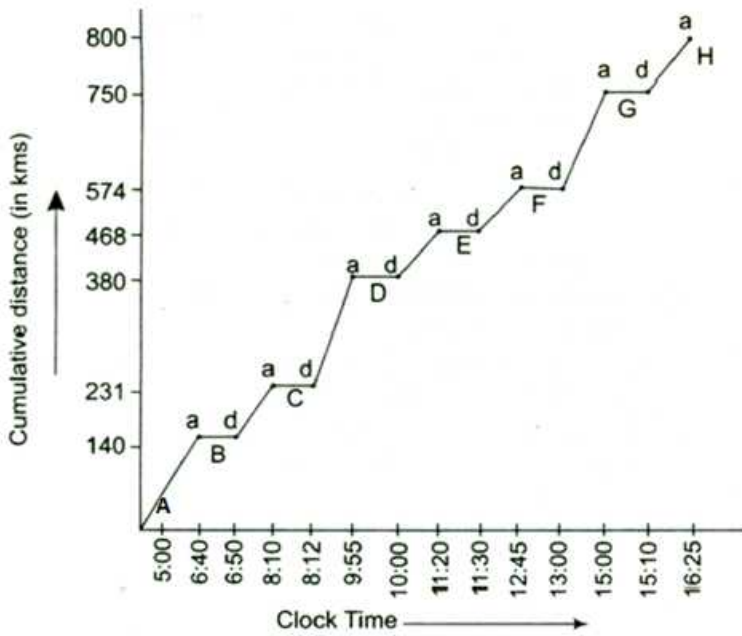
The angles of depression of two ships from the top of a light house are  $60^\circ$  and  $45^\circ$  towards east. If the ships are 300 m apart, the height of the light house is

- A  $200(3 + \sqrt{3})$  meter
- B  $250(3 + \sqrt{3})$  meter
- C  $150(3 + \sqrt{3})$  meter
- D  $160(3 + \sqrt{3})$  meter

**Answer: C**

**Instructions**

**Directions:** Study the following line graph to answer these questions.



Railway Time Schedule of an Express Train X Running Between City A and City H

a → Arrival of the train

d → Departure of train

A, B, C, D, E, F, G, and H are cities through which the train runs.

a-d → Indicates stoppage/halting of the train at the city station.

**Question 96**

What is the difference between the total number of females and the total number of males from all the organisations together?

- A 2005
- B 2050
- C 2500
- D 2055

**Answer: C**

**Question 97**

By how much percentage is the average number of females from all the organisations together is more than the number of males in organization 'D'?

- A 30%
- B 38%
- C 40%
- D 45%

**Answer: C**

**Question 98**

What is the ratio of the number of females from the organisations B and C to the number of males from the organisations D and E?

- A 12 : 11
- B 12 : 15
- C 11 : 15
- D 15 : 11

**Answer: D**

**Question 99**

Males from organisations A and B together form what percent of total number of males from organisations C, D and E together?

- A 78.04%
- B 87.44%
- C 47.08%
- D 74.08%

**Answer: A**

**Question 100**

What is the ratio of average number of females from the organisations A, B and C to the average number of males from the organisations C, D and E?

- A 42 : 41
- B 41 : 42
- C 40 : 41
- D 41 : 40

**Answer: A**