**Q1. 64329 is divided by a certain number. While dividing, the numbers, 175, 114 and 213 appear as three successive remainders. The divisor is**

(a) 184 (b) 224
(c) 234 (d) 296

**Q2. What fraction of $\frac{4}{7}$ must be added to itself to make the sum $1\frac{1}{14}$?**

(a) $\frac{7}{8}$ (b) $\frac{1}{2}$
(c) $\frac{4}{7}$ (d) $\frac{15}{14}$

**Q3. There are some boys and girls in a room. The square of the number of girls is less than the square of the number of boys by 28. If there were two more girls, the number of boys would have been the same as that of the girls. The total number of the boys and girls in the room are**

(a) 56 (b) 14
(c) 10 (d) 7

**Q4. In an examination, a student was asked to find $\frac{3}{14}$ of a certain number, By mistake, he found $\frac{3}{4}$ of it. His answer was 150 more than the correct answer. The given number is:**

(a) 500 (b) 280
(c) 240 (d) 180

**Q5. The sum of first 50 odd natural numbers is**

(a) 1000 (b) 1250
(c) 5200 (d) 2500

**Q6. A 4-digit number is formed by repeating a 2-digit number such as 1515, 3737, etc. Any number of this form is exactly divisible by**

(a) 7 (b) 11
(c) 13 (d) 101

**Q7. The greatest among $\sqrt{7}-\sqrt{5}, \sqrt{5}-\sqrt{3}, \sqrt{9}-\sqrt{7}, \sqrt{11}-\sqrt{9}$ is**

(a) $\sqrt{7}-\sqrt{5}$ (b) $\sqrt{5}-\sqrt{3}$
(c) $\sqrt{9}-\sqrt{7}$ (d) $\sqrt{11}-\sqrt{9}$

**Q8. Two numbers are respectively $12\frac{1}{2}\%$ and 25% more than a third number. The first number is how much percent of the second number?**

(a) 90 (b) 87.5
(c) 25 (d) 12.5

**Q9. If the sum of the squares of three consecutive natural numbers is 110, then the smallest of these natural numbers is:**

(a) 8 (b) 6
(c) 7 (d) 5

**Q10. A candidate secured 20% marks in an examination and failed by 10 marks. Another candidate secured 42% marks and got 1 mark more than the marks required to pass the examination. Determine the maximum number of marks.**

(a) 100 (b) 50
(c) 150 (d) none of these

**Q11. Rama's expenditures and savings are in the ratio 5 : 3. If her income increases by 12% and expenditure by 15%, then by how much percent do her savings increase?**

(a) 12 (b) 7
(c) 8 (d) 13

**Q12. The value of a commodity depreciates 10% annually. If it was purchased 3 years ago and its present value is Rs. 5,832, what was its purchase price?**

(a) Rs. 7200 (b) Rs. 7862
(c) Rs. 8000 (d) Rs. 8500

**Q13. 72% of the students of a certain class took Biology and 44% took Mathematics. If each student took at least one of Biology or Mathematics and 40 students took both of these subjects, the total number of students in the class is**

(a) 200 (b) 240
(c) 250 (d) 320



**Q14. The bowling average of a cricketer was 12.4. He improves his bowling average by 0.2 points when he takes 5 wickets for 26 runs in his last match. The number of wickets taken by him before the last match was**

(a) 125 (b) 150
(c) 175 (d) 200

**Q15. A man buys a certain number of oranges at 20 for Rs. 60 and an equal number at 30 for Rs. 60. He mixes them and sells them at 25 for Rs. 60. What is gain or loss per cent?**

(a) Gain of 4% (b) Loss of 4%
(c) Neither gain nor loss (d) Loss of 5%

**Q16. The average monthly salary of the workers in a workshop is Rs. 8,500. If the average monthly salary of 7 technicians is Rs. 10,000 and average monthly salary of the rest is Rs. 7,800, the total number of workers in the workshop is**

(a) 18 (b) 20
(c) 22 (d) 24

**Q17. The average of two numbers A and B is 20, that of B and C is 19 and of C and A it is 21. What is the value of A?**

(a) 24 (b) 22
(c) 20 (d) 18

**Q18. If a + b + c = 1 and ab + bc + ca = $\frac{1}{3}$ then a : b : c is**

(a) 1 : 2 : 2
(b) 2 : 1 : 2
(c) 1 : 1 : 1
(d) 1 : 2 : 1

**Q19. A box contains 1-rupee, 50-paise and 25-paise coins in the ratio 8 : 5 : 3. If the total amount of money in the box is Rs. 112.50, the number of 50-paise coins is**

(a) 80
(b) 50
(c) 30
(d) 42

**Q20. In a class, the number of girls is 20% more than that of the boys. The strength of the class is 66. If 4 more girls are admitted to the class, the ratio of the number of boys to that of the girls is**

(a) 1 : 2
(b) 3 : 4
(c) 1 : 4
(d) 3 : 5

**Q21. Two vessels A and B contain milk and water in the ratio 7: 5 and 17 : 7 respectively. In what ratio mixtures from two vessels should be mixed to get a new mixture containing milk and water in the ratio 5: 3?**

(a) 2:1
(b) 2:5
(c) 5:1
(d) none of these



**Q22. Two vessels A and B contain mixture of milk and water in the ratio 4 : 1 and 9 : 11 respectively. They are mixed in the ratio of 3 : 2. Find the ratio of milk and water in the resulting mixture.**

(a) 33:19
(b) 33:17
(c) 11:19
(d) none of these

**Q23. A shopkeeper bought 80 kg of sugar at the rate of Rs. 13.50 per kg. He mixed it with 120 kg of sugar costing Rs. 16 per kg. In order to make a profit of 20%, he must sell the mixture at**

(a) Rs. 18 per kg
(b) Rs. 17 per kg
(c) Rs. 16.40 per kg
(d) Rs. 15 per kg

**Q24. A bicycle, marked at Rs. 2,000, is sold with two successive discount of 20% and 10%. An additional discounts of 5% is offered for cash payment. The selling price of the bicycle at cash payment is**

(a) Rs. 1,368
(b) Rs. 1,468
(c) Rs. 1,568
(d) Rs. 1,668

**Q25. Krishnan bought a camera and paid 20% less than its original price. He sold it at 40% profit on the price he had paid. The percentage of profit earned by Krishnan on the original price was**

(a) 22
(b) 32
(c) 12
(d) 15

**Q26. Rita bought a television set with 20% discount on the labelled price. She made a profit of Rs. 800 by selling it for Rs. 16,800. The labelled price of the set was**

(a) Rs. 18,000 (b) Rs. 21,000
(c) Rs. 20,800 (d) Rs. 20000

**Q27. A merchant has announced 25% rebate on prices of ready-made garments at the time of sale. If a purchaser needs to have a rebate of Rs. 400, then how many shirts, each costing Rs. 320, should he purchase?**

(a) 10 (b) 7
(c) 6 (d) 5

**Q28. A person sold a horse at a gain of 15%. Had he bought it for 25% less and sold it for Rs. 60 less, he would have made a profit of 32%. The cost price of the horse was**

(a) Rs. 370 (b) Rs. 372
(c) Rs. 375 (d) Rs. 378

**Q29. A sells an article to B at a gain of 25% B sells it to C at a gain of 20% and C sells it to D at a gain of 10%. If D pays Rs. 330 for it, how much did it cost to A?**

(a) Rs. 200 (b) Rs. 250
(c) Rs. 275 (d) Rs. 290



**Q30. Half of 100 articles were sold at a profit of 20% and the rest at a profit of 40%. If all the articles had been sold at a profit of 25%, the total profit would have been Rs. 100 less than earlier profit. The cost price of each article was**

(a) Rs. 10 (b) Rs. 15
(c) Rs. 20 (d) Rs. 30

**Q31. A shopkeeper wishes to give 5% commission on the marked price of an article but also wants to earn a profit of 10%. If his cost price is Rs. 95, then the marked price is**

(a) Rs. 100 (b) Rs. 110
(c) Rs. 120 (d) Rs. 130

**Q32. A tradesman, who was selling one kind of tea at Rs. 96 per kg with a loss of 20% and another kind at Rs. 140 per kg with a gain of 25%, mixes the two together in equal ratio. He sells the mixed tea at Rs. 174 per kg. His gain is**

(a) 50% (b) 45%
(c) 30% (d) 25%

**Q33. One trader calculates the percentage of profit on the buying price and another calculates on the selling price. When their selling prices are the same, then the difference of their actual profits is Rs. 85 and both claim to have made 20% profit. What is the selling price of each?**

(a) Rs. 1700 (b) Rs. 2100
(c) Rs. 2550 (d) Rs. 2750

**Q34. The expenses on rice, fish and oil of a family are in the ratio 12 : 17 : 3. The prices of these articles are increased by 20%, 30% and 50% respectively. The total expenses of family on these articles are increased by**

(a) $14\frac{1}{8}\%$ (b) $7\frac{1}{8}\%$
(c) $56\frac{1}{8}\%$ (d) $28\frac{1}{8}\%$

**Q35. A sum of money invested at 5% p.a. simple interest amounts to Rs. 1326 in 6 years. In what time will it amount to Rs. 1530?**

(a) 8 years (b) 10 years
(c) 6 years (d) 5.5 years

**Q36. What annual payment will discharge a debt of Rs. 6,450 due in 4 years at 5% per annum simple interest?**

(a) Rs. 1,400 (b) Rs. 1,500
(c) Rs. 1,550 (d) Rs. 1,600

**Q37. A man lent Rs. 60,000, partly at 5% and the rest at 4% simple interest. If the total annual interest is Rs. 2560, the money lent at 4% was**

(a) Rs. 40000 (b) Rs. 44000
(c) Rs. 30000 (d) Rs. 45000



**Q38. A money-lender borrows money at 4% per annum and pays the interest at the end of the year. He lends it at 6% per annum compound interest compounded half yearly and receives the interest at the end of the year. In this way, he gains Rs. 104.50 a year. The amount of money he borrows, is**

(a) Rs. 6,000 (b) Rs. 5,500
(c) Rs. 5,000 (d) Rs. 4,500

**Q39. In what time Rs. 8,000 will amount to Rs. 9,261 at 10% per annum compound interest, when the interest is compounded half yearly?**

(a) $3\frac{1}{2}$ years (b) $1\frac{1}{2}$ years
(c) $2\frac{1}{2}$ years (d) 2 years

**Q40. A man can do a piece of work in 30 hours. If he works with his son then the same piece of work is finished in 20 hours. If the son works alone he can do the work in:**

(a) 60 hours (b) 50 hours
(c) 25 hours (d) 10 hours

**Q41. A water tap fills a tub in 'p' hours and a sink at the bottom empties it in 'q' hours. If p<q and both tap and sink are open, the tank is filled in 'r' hours; then**

(a) 1/r = 1/p + 1/q (b) 1/r = 1/p - 1/q
(c) r = p + q (d) r = p - q

**Q42. Seema does 1/2 piece of work in 3 hours, Jaya does 1/4 of the remaining work in 1 hour and Geeta finishes remaining work in 5 hours. How long would it have taken the three working together to do the work?**

(a) $2\frac{1}{7}$ hours
(b) $3\frac{1}{7}$ hours
(c) $3\frac{8}{11}$ hours
(d) $2\frac{8}{11}$ hours

**Q43. A does 2/5 of a work in 9 days. Then B joined him and they together completed the remaining work in 6 days. B alone can finish the whole work in**

(a) $6\frac{12}{13}$
(b) $8\frac{2}{11}$
(c) 10 days
(d) 18 days

**Q44. The daily wages of A and B respectively are Rs.3.50 and 2.50 . When A finishes a certain work, he gets a total wage of Rs.63. When B does the same work, he gets a total wage Rs.75. If both of them do it together what is the cost of the work ?**

(a) Rs. 67.50
(b) Rs. 27.50
(c) Rs. 60.50
(d) Rs. 70.50

**Q45. A man does double the work done by a boy in the same time. The number of days that 3 men and 4 boys will take to finish a work which can be done by 10 men in 8 days is:**

(a) 4
(b) 16
(c) $7\frac{3}{11}$
(d) $8\frac{4}{5}$



**Q46. Three containers have their volumes in the ratio 3 : 4 : 5. They are full of mixtures of milk and water. The mixtures contain milk and water in the ratio of(4 :1), (3 : 1) and (5 : 2) respectively. The contents of all these three containers are poured into a fourth container. The ratio of milk and water in the fourth container is**

(a) 4 : 1
(b) 151 : 48
(c) 157 : 53
(d) 5 : 2

**Q47. On a river, Q is the midpoint between two points P and R on the same bank of the river. A boat can go from P to Q and back in 12 hours, and from P to R in 16 hours 40 min. How long would it take to go from R to P ?**

(a) $3\frac{1}{3}$
(b) $6\frac{2}{3}$
(c) 5
(d) $7\frac{1}{3}$

**Q48. A car can finish a certain journey in 10 hours at a speed of 42 kmph. In order to cover the same distance in 7 hours, the speed of the car (km/h) must be increased by:**

(a) 12
(b) 15
(c) 18
(d) 24

**Q49. A man travels 450 km to his home partly by train and partly by car. He takes 8 hrs 40 mins if he travels 240 km by train and rest by car. He takes 20 mins more if he travels 180 km by train and the rest by car. The speed of the car in km/hr is**

(a) 45 (b) 50
(c) 60 (d) 48

**Q50. A train 'B' speeding with 100 kmph crosses another train C, running in the same direction, in 2 mins. If the length of the train B and C be 150m and 250m respectively, what is the speed of the train C (in kmph) ?**

(a) 75 (b) 88
(c) 95 (d) 110

**Q51. A hollow cylindrical tube 20 cm long is made of iron and its external and internal diameters are 8 cm and 6 cm respectively. The volume (in cubic cm) of iron used in making the tube is (Take $\pi = 22/7$)**

(a) 1760 (b) 440
(c) 220 (d) 880

**Q52. If the areas of three adjacent faces of a rectangular box which meet in a corner are 12 $cm^2$, 15 $cm^2$ and 20 $cm^2$ respectively. Then the volume of the box is:**

(a) 3600 $cm^3$ (b) 300 $cm^3$
(c) 60 $cm^3$ (d) 180 $cm^3$



**Q53. The ratio between the length and the breadth of a rectangular park is 3 : 2. If a man cycling along the boundary of the park at the speed of 12 km/hour completes one round in 8 minutes, then the area of the park is:**

(a) 153650 $m^2$ (b) 135600 $m^2$
(c) 153600 $m^2$ (d) 156300 $m^2$

**Q54. If the radius of a right circular cylinder open at both the ends, is decreased by 25% and the height of the cylinder is increased by 25%. Then the curved surface area of the cylinder thus formed:**

(a) remains unaltered (b) is increased by 25%
(c) is increased by 6.25% (d) is decreased by 6.25%

**Q55. A cylindrical pencil of diameter 1.2 cm has one of its end sharpened into a conical shape of height 1.4 cm. The volume of the material removed is**

(a)1.056 $cm^3$ (b) 4.224 $cm^3$
(c) 10.56 $cm^3$ (d) 42.24 $cm^3$

**Q56. A rectangular park 60 m long and 40 m wide has two concrete crossroads running in the middle of the park and rest of the park has been used as a lawn. If the area of the lawn is 2109 $m^2$ then the width of the road is:**

(a) 3 m (b) 5 m
(c) 6 m (d) 2 m

**Q57. Four circles of equal radii are described about the four corners of a square so that each touches two of the other circles. If each side of the square is 140 cm then area of the space enclosed between the circumference of the circle is (take π = 22/7)**

(a) 4200 $cm^2$ (b) 2100 $cm^2$
(c) 7000 $cm^2$ (d) 2800 $cm^2$

**Q58. The amount of concrete required to build a concrete cylindrical pillar whose base has a perimeter 8.8 metre and curved surface area 17.6 sq. metre, is (Take π = 22/7)**

(a) 8.325 $m^3$ (b) 9.725 $m^3$
(c) 10.5 $m^3$ (d) 12.32 $m^3$

**Q59. A hemispherical bowl of internal radius 9 cm, contains a liquid. This liquid is to be filled into small cylindrical bottles of diameter 3 cm and height 4 cm.Then the number of bottles necessary to empty the bowl is**

(a) 18 (b) 45
(c) 27 (d) 54

**Q60. A rectangular water tank is 80 m x 40 m. Water flows into it through a pipe of 40 sq.cm at the opening at a speed of 10 km/hr. The water level will rise in the tank in half an hour is**

(a) 3/2 cm (b) 4/9 cm
(c) 5/9 cm (d) 5/8 cm



**Q61. A square and a regular hexagon are drawn such that all the vertices of the square and the hexagon are on a circle of radius r cm. The ratio of area of the square and the hexagon is**

(a) 3 : 4 (b) 4 : 3√3
(c) √2 : √3 (d) 1 : √2

**Q62. A solid cylinder has the total surface area 231 sq. cm. If its curved surface area is 2/3 of the total surface area, then the volume of the cylinder is**

(a) 154 cu.cm (b) 308 cu.cm
(c) 269.5 cu.cm (d) 370 cu.cm

**Q63. The lateral surface area of frustum of a right circular cone, if the area of its base is 16π $cm^2$ and the diameter of circular upper surface is 4 cm and slant height 6 cm, will be:**

(a) 30π $cm^2$ (b) 48π $cm^2$
(c) 36π $cm^2$ (d) 60π $cm^2$

**Q64. The diameter of a sphere is twice the diameter of another sphere. The surface area of the first sphere is equal to the volume of the second sphere. The magnitude of the radius of the first sphere is:**

(a) 12 (b) 24
(c) 16 (d) 48



**Q65. A right circular cylinder having diameter 21 cm & height 38 cm is full of ice cream. The ice cream is to be filled in cones of height 12 cm and diameter 7 cm having a hemispherical shape on the top. The number of such cones to be filled with ice cream is**

(a) 54 (b) 44
(c) 36 (d) 24

**Q66. The Simplified value of:**

$\left(1-\frac{2xy}{x^2+y^2}\right)\div\left(\frac{x^3-Y^3}{x-y}-3xy\right)$ is

(a) $\left(\frac{1}{x^2-y^2}\right)$ (b) $\left(\frac{1}{x^2+y^2}\right)$

(c) $\left(\frac{1}{x-y}\right)$ (d) $\left(\frac{1}{x+y}\right)$

**Q67. If a +b +c = 0 then the value of:**

$\frac{1}{(a+b)(b+c)}+\frac{1}{(b+c)(c+a)}+\frac{1}{(c+a)(a+b)}$ **is**

(a) 0 (b) 1

(c) 3 (d) 2

**Q68. If $x^2 + y^2 + 2x + 1 = 0$, then the value of $x^{31} + y^{35}$ is:**

(a)-1 (b) 0

(c) 1 (d) 2

**Q69. If $x = \frac{\sqrt{5}+1}{\sqrt{5}-1}$ and $y = = \frac{\sqrt{5}-1}{\sqrt{5}+1}$, the value of $\frac{x^2+xy+y^2}{x^2-xy+y^2}$ is :**

(a) 3/4 (b) 4/3

(c) 3/5 (d) 5/3

**Q70. If $\left(x-\frac{1}{x}\right)^2 = 3$, then the value of $x^6+\frac{1}{x^6}$ equals:**

(a) 90 (b) 100

(c) 110 (d) 120

**Q71. If $x^4 + 2x^3 + ax^2 + bx + 9$ is a perfect square, where a and b are positive real numbers, then the value of a and b are**

(a) a = 5, b = 6 (b) a = 6, b = 7

(c) a = 7, b = 6 (d) a = 7, b = 8

**Q72. If $a^2 + b^2 + c^2 = 16$, $x^2 + y^2 + z^2 = 25$ and $ax + by + cz = 20$, then the value of $\frac{a+b+c}{x+y+z}$**

(a) 3/5 (b) 5/3

(c) 4/5 (d) 5/4

**Q73. The value of x which satisfies the equation $\frac{x+a^2+2c^2}{b+c}+\frac{x+b^2+2a^2}{c+a}+\frac{x+c+2b^2}{a+b}=0$ is**

(a) $(a^2 + b^2 + c^2)$ (b) $-(a^2 + b^2 + c^2)$

(c) $(a^2 + 2b^2 + c^2)$ (d) $-(a^2 + 2b^2 + c^2)$

**Q74. If $a^3 = 117 + b^3$ and $a = 3 + b$, then the value of a + b is:**

(a) ±7 (b) ±49
(c) ±13 (d) 0



**Q75. If $a + \frac{1}{a} = -2$ then the value of $a^{1000} + a^{-1000}$ is**

(a) 2 (b) 0
(c) 1 (d) 1/2

**Q76. ΔABC is similar to ΔDEF. If area of ΔABC is 9 sq.cm. and area of ΔDEF is 16 sq.cm. and BC = 21 cm. Then the length of EF will be**

(a) 5.6 cm (b) 2.8 cm
(c) 3.7 cm (d) 1.4 cm

**Q77. A chord of a circle is equal to its radius. The angle subtended by this chord at a point on the circumference is**

(a) 80° (b) 60°
(c) 30° (d) 90°

**Q78. Let two chords AB and AC of the larger circle touch the smaller circle having same centre at X and Y. Then XY =?**

(a) BC (b) $\frac{1}{2}$BC
(c) $\frac{1}{3}$BC (d) $\frac{1}{4}$BC



**Q79. Let G be the centroid of the equilateral triangle ABC of perimeter 24 cm. Then the length of AG is**

(a) $2\sqrt{3}$ cm (b) $\frac{8}{\sqrt{3}}$ cm
(c) $8\sqrt{3}$ cm (d) $4\sqrt{3}$ cm

**Q80. A and B are the centres of two circles with radii 11 cm and 6 cm respectively. A common tangent touches these circles at P & Q respectively. If AB 13 cm, then the length of PQ is**

(a) 13 cm (b) 17 cm
(c) 8.5 cm (d) 12 cm

**Q81. ABC is an isosceles triangle inscribed in a circle. If AB = AC = $12\sqrt{5}$ and BC = 24 cm then radius of circle is**

(a) 10 cm (b) 15 cm
(c) 12 cm (d) 14 cm

**Q82. ABC is an isosceles triangle where AB = AC which is circumscribed about a circle. If P is the point where the circle touches the side BC, then which of the following is true?**

(a) BP = PC (b) BP > PC
(c) BP < PC (d) BP = $\frac{1}{2}$PC

**Q83. If D and E are the mid points of AB and AC respectively of ΔABC, then the ratio of the areas of ADE and BCED is?**

(a) 1 : 2 (b) 1 : 4
(c) 2 : 3 (d) 1 : 3

**Q84. O is the circumcentre of the isosceles ΔABC. Given that AB = AC = 17 cm and BC = 6 cm. The radius of the circle is**

(a) 3.015 cm (b) 3.205 cm
(c) 2.025 cm (d) 3.125 cm

**Q85. $B_1$ is a point on the side AC of ΔABC and $B_1B$ is joined. A line is drawn through A parallel to $B_1B$ meeting BC at $A_1$ and another line is drawn through C parallel to $B_1B$ meeting AB produced at $C_1$. Then**

(a) $\frac{1}{CC_1} = \frac{1}{AA_1} = \frac{1}{BB_1}$ (b) $\frac{1}{CC_1} + \frac{1}{AA_1} = \frac{1}{BB_1}$
(c) $\frac{1}{BB_1} - \frac{1}{AA_1} = \frac{2}{CC_1}$ (d) $\frac{1}{AA_1} - \frac{1}{CC_1} = \frac{2}{BB_1}$

**Q86. The value of the expression (1 + sec 22° + Cot 68°) (1 – cosec 22° + tan 68°) is**

(a) 0 (b) 1
(c) –1 (d) 2

**Q87. If $x \sin^3\theta + y \cos^3\theta = \sin\theta \cos\theta$ and $x \sin\theta - y \cos\theta = 0$, then the value of $x^2 + y^2$ equals**

(a) 1 (b) 1/2
(c) 3/2 (d) 2

**Q88. If $\sec\theta + \tan\theta = m$ (>1), then the value of $\sin\theta$ is ($0° < \theta < 90°$)**

(a) $\frac{1-m^2}{1+m^2}$ (b) $\frac{m^2-1}{m^2+1}$
(c) $\frac{m^2+1}{m^2-1}$ (d) $\frac{1+m^2}{1-m^2}$

**Q89. If $(a^2 - b^2) \sin\theta + 2ab \cos\theta = a^2 + b^2$, then $\tan\theta$ =**

(a) $\frac{2ab}{a^2-b^2}$ (b) $\frac{a^2-b^2}{2ab}$
(c) $\frac{ab}{a^2-b^2}$ (d) $\frac{a^2-b^2}{ab}$

**Q90. A person from the top of a hill observes a vehicle moving towards him at a uniform speed. It takes 10 minutes for the angle of depression to change from 45° to 60°. After this the time required by the vehicle to reach the bottom of the hill is**

(a) 12 min (b) 13 min
(c) 14 min (d) None Of These

**Q91. If $2y \cos\theta = x \sin\theta$ and $2x \sec\theta - y \operatorname{cosec}\theta = 3$, then the value of $x^2 + 4y^2$ is**

(a) 1 (b) 2
(c) 3 (d) 4

**Q92. From the top of a cliff 100 metre high, the angles of depression of the top and bottom of a tower are 45° and 60° respectively. The height of the tower is**

(a) $\frac{100}{3}(3-\sqrt{3})$ meter
(b) $\frac{100}{3}(\sqrt{3}-1)$ meter
(c) $\frac{100}{3}(2\sqrt{3}-1)$ meter
(d) $\frac{100}{3}(\sqrt{3}-\sqrt{2})$ meter

**Q93. A vertical tower stands on a horizontal plane and is surmounted by a vertical flag staff of height h. At a point on the plane, the angle of elevation of the bottom of the flag staff is α and that of the top of the flag staff is β. Then the height of the tower is**

(a) h tan α
(b) $\frac{h\tan\alpha}{\tan\beta-\tan\alpha}$
(c) $\frac{h\tan\alpha}{\tan a-\tan\beta}$
(d) None of these

**Q94. A man on the top of a tower, standing on the sea-shore, finds that a boat coming towards him takes 10 minutes for the angle of depression to change from 30° to 60°. How soon the boat reach the sea-shore?**

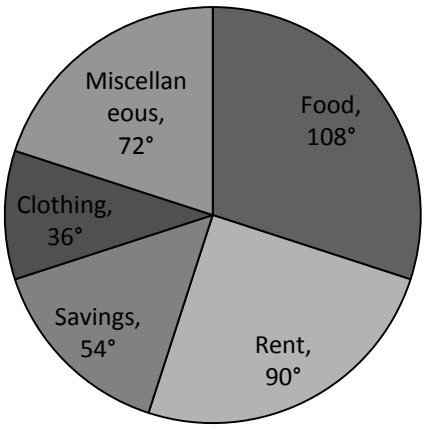
(a) 5 minutes
(b) 7 minutes
(c) 10 minutes
(d) 15 minutes

**Q95. The expression of $\frac{\cot\theta+\text{cosec}\,\theta-1}{\cot\theta+\text{cosec}\,\theta+1}$ is equal to**

(a) $\frac{1+\cos\theta}{\sin\theta}$
(b) $\frac{1-\cos\theta}{\sin\theta}$
(c) $\frac{\cot\theta+1}{\text{cosec}\,\theta}$
(d) $\frac{\cot\theta-1}{\text{cosec}\,\theta}$



**Directions (96-100): The following pie-chart shows the monthly expenditure of a family on various items. If the family spends Rs. 825 on clothing, answer the question**




**Q96. What is the total monthly income of the family?**

(a) Rs. 8025
(b) Rs. 8250
(c) Rs. 8520
(d) Rs. 8052

**Q97. What percent of the total income does the family save?**

(a) 15%
(b) 50%
(c) 20%
(d) 25%

**Q98. What is the ratio of expenses on food and miscellaneous?**

(a) 3 : 4 (b) 2 : 3
(c) 3 : 2 (d) 2 : 5

**Q99. What is the average of expenses on clothing and rent?**

(a) Rs. 1443.75 (b) Rs. 1344.57
(c) Rs. 1574.34 (d) Rs. 1734.45

**Q100. The ratio of average of expenses on food, clothing and miscellaneous items to the average of expenses on savings and rent is**

(a) 3 : 2 (b) 1 : 3
(c) 2 : 1 (d) 1 : 1