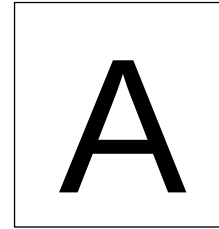

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**TEST BOOKLET
GENERAL KNOWLEDGE**



Time Allowed: Two Hours

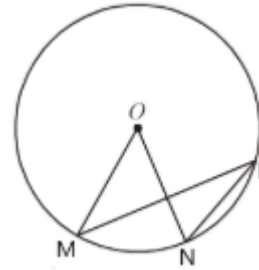
Maximum Marks: 100

INSTRUCTIONS

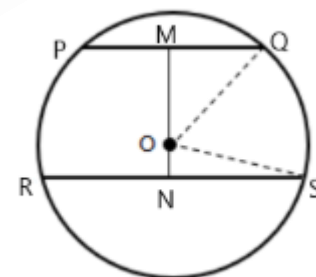
1. **IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS, ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.**
2. **Please note that it is the candidate's responsibility to encode and fill in the Roll Number and Test booklet series A, B, C or D carefully and without any omission or discrepancy at the appropriate places in the OMR Answer Sheet. Any omission/discrepancy will render the Answer Sheet liable for rejection.**
3. You have to enter your Roll Number on the Test Booklet in the Box provided alongside. **DO NOT** write **anything else** on the test booklet. 
4. This Test Booklet contains **120** items (questions). You will select the response which you want to mark on the Answer sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each items.
5. You have to mark all your responses **ONLY** on the separate Answer Sheet provided. See directions in the Answer Sheet.
6. All items carry equal to marks.
7. Before you proceed to mark in the Answer Sheet the response to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instructions sent to you with your Admission Certificate.
8. After you have completed filling in all your responses on the Answer Sheet and the examination has concluded, you should hand over to the invigilator **only the Answer Sheet**. You are permitted to take away with you the Test Booklet
9. Sheets for rough work are appended in the Test Booklet at the end.
10. **Penalty for wrong answers:**
THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY THE CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.
 - (i) There are four alternatives for the answer to energy question. For each question for which a wrong answer has been given by the candidate, **one third** of the marks assigned to that question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
 - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be no penalty for that question.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO

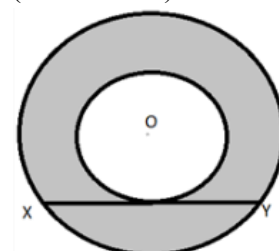
- The sum of ages of a father, a mother, a son Sonu and daughters Savita and Sonia is 96 years. Sonu is the youngest member of the family. The year Sonu was born, the sum of the ages of all the members of the family was 66 years. If the father's age now is 6 times that of Sonu's present age, then 12 years hence, the father's age will be?
(a) 44 years (b) 45 years
(c) 46 years (d) 48 years
- The average of 50 numbers is 150. Later it is found that a number 46 is wrongly written as 91, then find the correct average?
(a) 151.1 (b) 147.1
(c) 149.1 (d) 153.1
- The average age of 6 persons living in a house is 23.5 years. Three of them are majors and their average age is 42 years. The difference in ages of the three minor children is the same. What is the mean of the ages of minor children?
(a) 3 years
(b) 5 years
(c) 7 years
(d) Cannot be determined due to insufficient data
- The average weight of a class of 15 boys and 10 girls is 38.4 kg. If the average weight of the boys is 40 kg, then what is the average weight of the girls?
(a) 36.5 kg (b) 35 kg
(c) 36 kg (d) 35.6 kg
- In a circle of radius 29 cm, two parallel chords are drawn on opposite side of a diameter. The distance between the chords is 41 cm. If the length of one chord is 42 cm. Find the length of both perpendicular bisector drawn from the centre of a circle?
(a) 18 cm and 23 cm (b) 19 cm and 22 cm
(c) 20 cm and 21 cm (d) 23 cm and 18 cm
- In a circle of radius 29 cm, two parallel chords are drawn on opposite side of a diameter. The distance between the chords is 41 cm. If the length of one chord is 42 cm. Find the length of another chord?
(a) 20 cm (b) 36 cm
(c) 38 cm (d) 40 cm
- In the figure given below, $\angle MON = 56^\circ$ MP and ON intersect each other at right angles. What is the measure of $\angle ONP$ (where, O is the centre of the circle)?



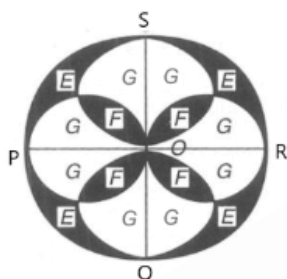
- (a) 60° (b) 62°
(c) 63° (d) 64°
- In the figure given below, S and R are points on the semi-circle described on PQ as diameter. If $\angle PQR = 68^\circ$ and $\angle RPS = 42^\circ$, then what is the $\angle QRS$?
(a) 114° (b) 116°
(c) 118° (d) 120°
- Two circles with their centre at P and Q intersect each other, at the point A and B. Through the point A, a straight line parallel to PQ intersects the two circles at the points C and D respectively. If $PQ = 15$ cm, then determine the length of CD.
(a) 15 cm (b) 20 cm
(c) 30 cm (d) 35 cm
- PQ and RS are two parallel chords on opposite sides of centre of a circle and distance between two chord is 17 cm. If $PQ = 10$ cm and $RS = 24$ cm, then find the diameter of a circle?



- (a) 20 cm (b) 22 cm
(c) 26 cm (d) 30 cm
- Consider the following figure, if $XY = 30$ cm and O is the center of both circles, find the area (in sq. cm) of shaded region. (Use $\pi = 3.14$)



- (a) 706.5 (b) 657
(c) 314 (d) 557.25
12. There are two concentric circular tracks of radii 90 m and 120 m, respectively. A runs on the inner track and goes once round on the inner track in $1\frac{1}{3}$ min, while B runs on the outer track in $1\frac{5}{6}$ min. Who runs faster?
- (a) A runs faster than B
(b) B runs faster than A
(c) Both runs with the same speed
(d) none of these
13. PQRS is a circle and circles are drawn with PO, QO, RO and SO as diameters. Areas E and F are shaded region, find ratio of E : F



- (a) 1:1 (b) 1:2
(c) 2:1 (d) 3:1
14. The following question accompanied by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question:
Question: What is the area of the circular region X?
statement I: Area of the square inscribed in the circular region X is 102 sq cm
statement II: The perimeter of the circular region X is equal to the perimeter of square Z having area 115 sq cm
- (a) Statement 1 alone is sufficient, but statement 2 alone is not sufficient
(b) Statement 2 alone is sufficient, but statement 1 alone is not sufficient
(c) Both statements together are sufficient, but neither statement alone is sufficient
(d) Each statement alone is sufficient
15. Find the area of a segment of a circle with radius 10 cm and a central angle of 120°
- (a) 55.46 cm² (b) 58.46 cm²
(c) 61.46 cm² (d) 65.46 cm²
16. How many plants will be there in a circular field whose outer edge measure 45 cm, allowing 9 cm² for each plant?
- (a) plants > 19 (b) plants < 16
(c) 16 < plants < 19 (d) none of these

17. A 12 m wide circular track runs along the outer border of a circular park which has a circumference of 528 m. Find the area (in m²) of the circular track.
- (a) 5788.57 m² (b) 6088.57 m²
(c) 6788.57 m² (d) 7688.57 m²
18. Rajesh borrowed Rs.1500 from a bank and repaid the entire amount with interest in two equal annual installments, the first installment being paid a year after Rajesh borrowed from the bank. If the rate of interest was 40% per annum, compounded annually, then what was the value (in) of each installment paid by Rajesh?
- (a) 1125 (b) 1470
(c) 1225 (d) 1350
19. Rs.16000 invested at 10% p.a compounded semi-annually amounts to Rs.18522. Then, the period of investment is?
- (a) $1\frac{1}{2}$ yr (b) 3 yr
(c) 2 yr (d) $\frac{5}{2}$ yr
20. A cylinder container with a circular base of radius 18 cm contains water. Metal balls each of radius 0.9 cm are immersed in it. How many balls are required to raise the water level by 3 cm
- (a) 100 (b) 500
(c) 1000 (d) 1500
21. Read the following information and answer the two items below-
The following data shows the number of tigers in different national parks in various years.

Year	No. of tigers in P1	No. of tigers in P2	No. of tigers in P3
2017	406	340	308
2018	456	370	328
2019	472	397	364
2020	503	413	398

Choose the incorrect statement regarding percentage growth in no. of tigers from year 2017 to 2020 in P1, P2 and P3

- (a) $P_3 > P_1 > P_2$ (b) $P_3 > P_1$
(c) $P_2 > P_3 > P_1$ (d) $P_1 > P_2$
22. The mean of a set of 10 numbers is 15. If one number is removed, the new mean becomes 13. What was the number that was removed?
- (a) 33 (b) 12
(c) 13 (d) 15
23. What is/are the factor(s) of $324x^{30} - 225x^{25} - 65x^{18} - 34$?
- (a) Only $(x - 1)$
(b) Only $(x + 1)$
(c) $(x - 1)$ and $(x + 1)$
(d) Neither $(x - 1)$ nor $(x + 1)$

24. A salesman is hired on the condition a job saying that he will be given 6% commission on the sales done by him. But later on it was decided that he will be given a monthly salary of Rs. 1200 and every month, 3% commission will be awarded on sales above Rs. 5000. If in second case his earnings are Rs. 1350 less than earlier, then find his sales per month.
 (a) Rs 75,000 (b) Rs 80,000
 (c) Rs 60,000 (d) Rs 85,000
25. The least number which when divided by 16,18,20 and 25 leaves 4 as remainder in each case but when divided by 7 leaves no remainder is:
 (a) 17004 (b) 18000
 (c) 18002 (d) 18004
26. If H.C.F of $\left(\frac{1}{2}, \frac{7}{8}, \frac{1}{16}, \frac{3}{64}\right)$ is x and L.C.M is y.
 (a) $\frac{49}{2}$ (b) $\frac{149}{2}$
 (c) $\frac{19}{2}$ (d) $\frac{141}{2}$
27. The shadow of a tower is 15 m when the sun's altitude is 30° . What is the length of the shadow when the sun's altitude is 60° ?
 (a) 5 m. (b) 4 m.
 (c) 3 m. (d) 2 m.
28. A man from the top of a 100 m high tower sees a car moving towards the tower at an angle of depression 30° . After some time, the angle of depression becomes 60° . What is the distance travelled by the car during this time?
 (a) $100\sqrt{3}$ (b) $\frac{100\sqrt{3}}{3}$
 (c) $\frac{200\sqrt{3}}{3}$ (d) $200\sqrt{3}$
29. The ratio of A's and B's salary is 6: 7. If B's salary is increased by $5\frac{1}{2}\%$, then his total salary becomes Rs.147700. The salary (in Rs.) of A is?
 (a) 110000 (b) 120000
 (c) 140000 (d) 135000
30. Which of the following are the pairs of consecutive odd positive integers, both of which are smaller than 16, such that their sum is more than 18?
 (a) (7,9), (9,11), (11,13)
 (b) (9,11), (11,13), (13,15)
 (c) (7,9), (11,13), (13,15)
 (d) (9,11), (7,9), (13, 15)
31. What is the value of x if, $\frac{(\sqrt{7+x}) + (\sqrt{7-x})}{(\sqrt{7+x}) - (\sqrt{7-x})} = 13$?
- (a) $\frac{72}{85}$ (b) $\frac{91}{72}$
 (c) $\frac{85}{91}$ (d) $\frac{91}{85}$
32. Consider the following statements in respect of the set $S = \{1, 2, 3, \dots, n\}$: 1. $(n + 1) / 2$ is the median of the numbers in S. 2. n is the mode of the numbers in S. Which of the above statements is/are correct
 (a) 1 only (b) 2 only
 (c) Both 1 and 2 (d) Neither 1 nor 2
33. Consider the following statements in respect of a histogram:
 1. The histogram consists of vertical rectangular bars with a common base such that there is no gap between consecutive bars.
 2. The height of the rectangle is determined by the frequency of the class it represents.
 Which of the statements given above is/are correct?
 (a) 1 only (b) 2 only
 (c) Both 1 and 2 (d) Neither 1 nor 2
34. Out of 250 observations, the first 100 observations have mean 5 and the average of the remaining 150 observations is $25/3$. What is the average of the whole group of observations?
 (a) 6 (b) 7
 (c) 8 (d) 9
35. Answer the question by using following statements:
 Question: Can the value of $(m + n)$ be determined uniquely where $m, n \in \mathbb{N}$
 Statement I: $(m + n)^6 = 729$
 Statement II: $(m + n)^5 > 81$
 (a) Statement 1 alone is sufficient, but statement 2 alone is not sufficient
 (b) Statement 2 alone is sufficient, but statement 1 alone is not sufficient
 (c) Both statements together are sufficient, but neither statement alone is sufficient
 (d) Each statement alone is sufficient
36. If $P_n = a_n + 5$ where a_n is the product of the first n prime number, then which option is correct?
 (a) P_n is always a composite number
 (b) $P_n + 1$ is always even number
 (c) P_n is always a multiple of 5
 (d) none of these
37. If $x^3 + \frac{3}{x} = 32(p^3 + q^3)$ and $3x + \frac{1}{x^3} = 32(p^3 + q^3)$ then $(p^2 - q^2)$ is equal to
 (a) $1/2$ (b) 1
 (c) $1/4$ (d) 2

38. Which of the following must be subtracted from $(12x^4 - 6x^3 - 18x^2 + 6x + 18)$ so that the result is exactly divisible by $(6x^2 + 3x - 3)$?

(a) $4x + 12$ (b) $2x + 7$
(c) $x + 5$ (d) $3x + 15$

39. What is the value of s if

$$s = \frac{(b-a)^3 + (a-c)^3 + (c-b)^3}{(c^2 - b^2)^3 + (b^2 - a^2)^3 + (a^2 - c^2)^3}?$$

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

40. If p & q ($p < q$) are the roots of the equation $x^2 - 21x + 54 = 0$. If four terms r, s, t, u are inserted between p and q to form an AP, then what is the value of $r+s+t+u$?

(a) 42 (b) 35
(c) 30 (d) 24

41. Consider the following statements in respect of the equation

$$x^2 - (px - pq + qx) = \frac{r^2}{6} \times pq \text{ where } p, q \text{ and } r \text{ are real numbers.}$$

1. The roots are real.
2. The roots are equal, if $p = q$ and $r = 0$
Which of the above statements is/are correct?

(a) Only 1 (b) only 2
(c) Both 1 and 2 (d) Neither 1 nor 2

42. In $\triangle ABC$, $\angle B = 90^\circ$, BD is perpendicular to AC at D . If $BC = 21$ cm, and $AB = 28$ cm, then what is the length (in cm) of DA ?

(a) 22.4 (b) 18.4
(c) 20.4 (d) 21.4

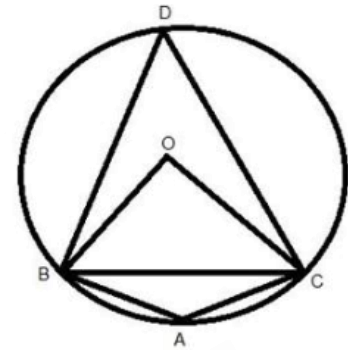
43. In $\triangle PQR$, $\angle Q = 60^\circ$, $\angle R = 70^\circ$, and $PR = 8$ cm. The length of QR (in cm) lies between: (Take $\sin 50^\circ = 0.8$ and $\sqrt{3} = 1.73$)

(a) 6 and 10 (b) 10 and 14
(c) 14 and 18 (d) 2 and 6

44. In a circle with centre O , AB is the diameter and CD is a chord such that $ABCD$ is a trapezium. If angle $BAC = 35^\circ$, then angle CAD is equal to:

(a) 15° (b) 35°
(c) 30° (d) 20°

45. In the given figure, $BD = CD$ and $\angle BAC = 100^\circ$. Find the measure of $(\angle OBD + \angle OCD)$.



(a) 80° (b) 70°
(c) 90° (d) 100°

46. A circle has a radius of 45 cm. What is the area of the largest rectangle that can be inscribed in the circle?

(a) 2050 cm^2 (b) 3050 cm^2
(c) 4050 cm^2 (d) 4550 cm^2

47. Four identical coins are placed in a square. For each coin, the ratio of area to circumference is the same as the ratio of circumference to area.

Find the area of the square covered by the coins?

(a) 44.28 unit^2 (b) 50.28 unit^2
(c) 52.28 unit^2 (d) 55.28 unit^2

48. Four identical coins are placed in a square. For each coin, the ratio of area to circumference is the same as the ratio of circumference to area.

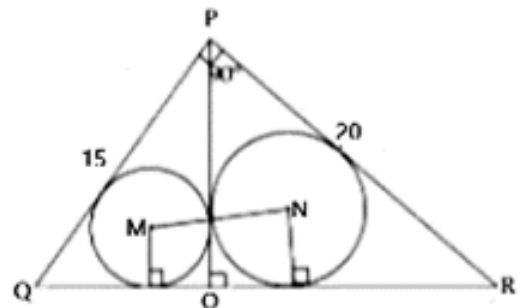
Find the area of the square not covered by the coins?

(a) 5.72 unit^2 (b) 7.72 unit^2
(c) 9.72 unit^2 (d) 11.72 unit^2

49. A circle is inscribed in an equilateral triangle of side p . Find the area of any square inscribed in this circle.

(a) $p^2/4$ (b) $p^2/5$
(c) $p^2/6$ (d) none of these

50. In the figure given below, PQR is a right-angled triangle having its altitude OP . In $\triangle POQ$ and $\triangle POR$ each has one circle inscribed. Find the distance MN ?



(a) 4 (b) 5
(c) 6 (d) 7

51. The sum of the radius of base and height of a solid right circular cylinder is 37 cm. If the total surface area of the solid cylinder is 1628 cm^2 , the volume of cylinder (in cm^3) is?

(a) 3680 (b) 4620
(c) 6420 (d) 5640

52. The cuboid dimensions are in the ratio of 3: 4: 5. If its volume is 1620 cm^3 , then what is its surface area in cm^2
 (a) 846 cm^2 (b) 886 cm^2
 (c) 746 cm^2 (d) 785 cm^2
53. A rectangular sheet is of length x and breadth y . If p is the volume of the cylinder formed by rolling the sheet along its breadth and q is the volume of the cylinder formed by rolling the sheet along its length, and $q = 2p$ then which one of the following is correct?
 (a) $x = y$ (b) $2x = 3y$
 (c) $x = 2y$ (d) $3x = 4y$
54. A conical flask is full of water. The flask has base radius r and height h . This water is poured into a cylindrical flask of base radius mr . The height of water in the cylindrical flask is?
 (a) $h/3m^2$ (b) $m/2h$
 (c) $h/2m^2$ (d) $2h/m$
55. A tin of oil was $4/5$ full. When 6 bottles of oil were taken out from this tin and 4 bottles of oil were poured into it, it was $3/4$ full. Oil of how many bottles can the tin contain? (All bottles are of equal volume)
 (a) 35 (b) 40
 (c) 45 (d) 50
56. How many positive integer value of 'p' are possible such that $\frac{p+220}{p+4}$ is an integer?
 (a) 10 (b) 12
 (c) 14 (d) 16
57. Find the sum and number of even factor of 22050
 (a) 43,942 and 27 (b) 45,942 and 29
 (c) 45,942 and 27 (d) 43,942 and 29
58. Find the number of zeroes in the product $1^1 \times 2^2 \times 3^3 \times 4^4 \times 5^5 \times \dots \times 46^{46}$?
 (a) 150 (b) 200
 (c) 250 (d) 300
59. ABCD is a parallelogram. P and R are the mid-points of DC and BC, respectively. The line PR intersects the diagonal AC at Q. The distance CQ will be
 (a) $\frac{AC}{2}$ (b) $\frac{BD}{4}$
 (c) $\frac{AC}{4}$ (d) $\frac{BD}{2}$
60. Sunil spends 14.28% of his salary on rent, 20% of the remaining on food, 65% and of the remaining miscellaneous items like cloth, traveling, etc. In the end, he is left with Rs 1500. What is the Salary of Sunil?
 (a) Rs 6000 (b) Rs 6250
 (c) Rs 6500 (d) Rs 7000
61. The difference between the exterior and interior angles at a vertex of a regular polygon is 140° . The number of sides of the polygon is
 (a) 18 (b) 19
 (c) 20 (d) 21
62. A sold an article to B at a loss of 12.5%. B sold it to C at a gain of 21.42%. C sold it to D at a gain of Rs 200. If the amount paid by D is Rs 7000. Then find the cost paid by A?
 (a) Rs 6300 (b) Rs 6200
 (c) Rs 6400 (d) Rs 6500
63. A man has 100 kg of rice. He sold 35% at 10% profit, 20% of the remaining at 10% profit, and 50% of the remaining at 25% loss. For how much percent, should he sell the remaining to gain 5% on the entire transaction?
 (a) 14% (b) 12%
 (c) 10% (d) 15%
64. The price of the gold is directly proportional to the square of its weight. A person broke down the gold in the ratio of 3:2:1 and faces a loss of Rs.4620. Find the initial price of gold?
 (a) Rs.7520 (b) Rs.7530
 (c) Rs.7540 (d) Rs.7560
65. What is the number of quadratic equation that can be formed by following the relations $x^2 - y^2 = x + y$ and $xy = x^2y^2$, x & y are the roots of the quadratic equation?
 (a) 0 (b) 2
 (c) 3 (d) 4
66. If α & β ($\neq 0$) are the roots of the quadratic equation $x^2 + \beta x + \alpha^3 = 0$ then the quadratic expression $-x^2 + \alpha x + \beta$ has maximum value, where $x \in \mathbb{R}$ has
 (a) $7/11$ (b) $3/13$
 (c) $2/15$ (d) $5/16$
67. If α & β are the roots of the equation $5x^2 + 6x + 1 = 0$ then the equation whose roots are $\alpha + \beta^{-1}$ and $\beta + \alpha^{-1}$ is
 (a) $x^2 + 36x + 36$ (b) $5x^2 - 36x + 36$
 (c) $5x^2 + 36x - 36$ (d) $5x^2 + 36x + 36$
68. If $m = \frac{x^2(p^2 + m^2) + p(xp + 1)}{2px^2 + x + 1}$ where p is real and α & 2α can satisfy the expression then, what is the greatest value of m ?
 (a) $\frac{9}{8}$ (b) $-\frac{9}{8}$
 (c) $\frac{8}{9}$ (d) $-\frac{8}{9}$
69. Point R is a centre of a circle which is inscribe in a quadrilateral STUV. If length of sides ST, UV, and VS of the quadrilateral STUV are 12 cm, 10 cm, and 14 cm, respectively, then what is the length of the side TU of the quadrilateral?
 (a) 10 cm (b) 8 cm
 (c) 12 cm (d) 9 cm
70. ABCD is a cyclic quadrilateral such that AB is diameter of the circle. 'E' is the intersection point of

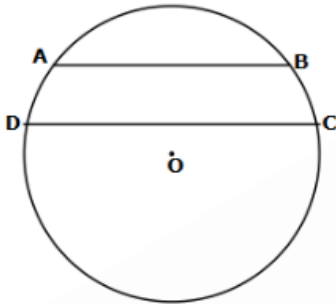
diagonals AC and BD. If angle DBC is 55° , then find the value of angle AED.

- (a) 65° (b) 55°
(c) 35° (d) 45°

71. WXYZ is a quadrilateral. The length of diagonal WY is 32 cm. The sum of perpendicular drawn from vertex X and Z on the diagonal WY is 12 cm. What is the area of the quadrilateral?

- (a) 160 sq. cm (b) 180 sq. cm
(c) 192 sq. cm (d) 172 sq. cm

72. In the following figure, $AB \parallel CD$ and Chord CD is at distance of 8 cm from the centre of the circle of radius 17 cm. Find the area of quadrilateral ABCD if perpendicular distance between chord AB and CD is 7 cm.



- (a) 345 cm^2 (b) 161 cm^2
(c) 545 cm^2 (d) 330 cm^2

73. What is the remainder when 25^{27} is divided by 9?

- (a) 0 (b) 1
(c) 2 (d) 3

74. ABCD is a rhombus. A straight line passing through C cuts AD which is produced at P and cuts AB produced at Q. If $DP = \frac{1}{2} AB$ and $BQ = 12 \text{ cm}$, then find the length of AQ?

- (a) 8 cm (b) 10 cm
(c) 15 cm (d) 20 cm

75. Out of a sum of Rs.625 a part was lent at 5% and the other at 10% simple interest. If the interest on the first part after 2 year is equal to the interest on the second part after 4 year, then the second sum (in Rs.) is?

- (a) Rs.125 (b) Rs.200
(c) Rs.250 (d) Rs.300

76. The value of

$$\left[\frac{1}{\sqrt{10}-\sqrt{9}} \right] - \left[\frac{1}{\sqrt{9}-\sqrt{8}} \right] + \left[\frac{1}{\sqrt{8}-\sqrt{7}} \right] - \left[\frac{1}{\sqrt{7}-\sqrt{6}} \right] + \left[\frac{1}{\sqrt{6}-\sqrt{5}} \right]$$

is

- (a) 0 (b) $\sqrt{10} + \sqrt{5}$
(c) $\sqrt{10} - \sqrt{5}$ (d) 1

77. Simplify : $25\sqrt[3]{250} + 49\sqrt[3]{54} - 28\sqrt[3]{128} - 160$

- (a) $160(\sqrt[3]{3}-1)$ (b) $160(\sqrt[3]{2})$

- (c) $160(\sqrt[3]{2}-1)$ (d) $160(1-\sqrt[3]{2})$

78. What should come in the place of the question mark '?' in the following question?

$$\sqrt{169} + \sqrt{225} - \sqrt{196} \div \sqrt{49} \times \sqrt{289} = ?$$

- (a) 6 (b) 36
(c) -6 (d) -36

79. A man cycles with a speed of 10 kmph and reaches his office at 1 p. m. However, when he cycles with a speed of 15 kmph, he reaches his office at 11 a. m. At what speed should he cycle so that he reaches his office at 12 noon?

- (a) 12.5 kmph (b) 12 kmph
(c) 13 kmph (d) 13.5 kmph

80. A person reaches his destination 32 minutes late if his speed is 6 km/h, and reaches 18 minutes before time if his speed is 7 km/h. Find twice the distance (in km) of his destination from his starting point.

- (a) 55 (b) 70
(c) 60 (d) 65

81. A person rode one-third of a journey at 60 km/hr, one-third at 50 km/hr and the rest at 40 km/hr. Had the person ridden half of the journey at 60 km/hr and the rest at 40 km/hr, he would have taken 4 minutes longer to complete the journey. What distance did the person ride?

- (a) 180 km (b) 210 km
(c) 240 km (d) 300 km

82. A solid cube having volume 46656 cm^3 is cut into 27 cubes of equal volume. The surface area (in cm^2) of the smaller cube is?

- (a) 864 (b) 756
(c) 936 (d) 921

83. We have a square PQRS, inside a square QTR is an equilateral triangle. If RT and QS intersect at O, then value of $\angle TOS$?

- (a) 45° (b) 55°
(c) 60° (d) 75°

84. In a square of side length 54 cm, the midpoints of the sides are joined to form another square. Find the ratio of the area of outer square to the inner square?

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

85. If diagonal of a square is $(a + \sqrt{6}) \text{ cm}$ and area of square is A, then which of following expression is equal to the value of $2A$?

- (a) $(a^2 + 2 + 2a\sqrt{2})$ (b) $(a^2 + 3 + 2a\sqrt{3})$
(c) $(a^2 + 6 + 2a\sqrt{6})$ (d) $(a^2 + 4 + 4a)$

86. The simplified value of $\left\{ \left[\left(\sqrt[3]{(1296)^2} \right)^{\frac{3}{2}} \right]^{\frac{1}{5}} \right\}^{\frac{5}{4}}$?
 (a) 4 (b) 6
 (c) 12 (d) 36
87. 2 men and 1 woman can complete a piece of work in 14 days, while 4 women and 2 men can do the same work in 8 days. If a man gets 90 per day, what should be the wages per day of a woman?
 (a) Rs.48 (b) Rs.60
 (c) Rs.72 (d) Rs.135
88. A and B are two taps which can fill a tank individually in 10 minutes and 20 minutes respectively. However, there is a leakage at the bottom, which can empty a filled tank in 40 minutes. If the tank is empty initially, how much time will both the taps take to fill the tank with leakage?
 (a) 2 minutes (b) 4 minutes
 (c) 5 minutes (d) 8 minutes
89. A, B and C can do a piece of work individually in 8, 10 and 15 days respectively. A and B start working but A quits after working for 2 days. After this, C joins B till the completion of work. In how many days will the work be completed?
 (a) $\frac{53}{9}$ days (b) $\frac{34}{7}$ days
 (c) $\frac{85}{13}$ days (d) $\frac{53}{10}$ days
90. If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, what is the time taken by 15 men and 20 boys in doing the same type of work?
 (a) 4 days (b) 5 days
 (c) 6 days (d) 7 days
91. In $\triangle ABD$, the medians AC and BF intersect at E and a line CG is drawn parallel to BF such that point G is on side AD of AABD. If AD = 24 cm, then what is the length of GD?
 (a) 7 cm (b) 8 cm
 (c) 6 cm (d) 10 cm
92. In $\triangle STU$, the $ST = \frac{7SU}{5}$ and $TU = 36$ cm. If SV is the angle bisector on side TU, then what is the length of TV?
 (a) 42 cm (b) 21 cm
 (c) 14 cm (d) 20 cm
93. ABC is an isosceles triangle with $AB = AC$, if a circle passes through B touches AC at the middle point Q and intersects AB at D. Then find AD: AB.
 (a) 1:3 (b) 2:3
- (c) 1:2 (d) 1:4
94. If $t_n = \sin^n x + \cos^n x$ then, what is the value of $\frac{t_5 - t_7}{t_7 - t_9}$?
 (a) $\frac{t_3}{t_5}$ (b) $\frac{t_2}{t_5}$
 (c) $\frac{t_3}{t_2}$ (d) $\frac{t_5}{t_3}$
95. What is the value of $\cos 120^\circ \sin 390^\circ - \cos 330^\circ \cos 510^\circ$
 (a) 1 (b) 1/2
 (c) 1/4 (d) 0
96. If A, B, C, D are the angles of a cyclic quadrilateral taken in order, then consider the following statements
 I. $\cos A - \sin\left(\frac{3\pi}{2} + B\right) = \sin\left(\frac{3\pi}{2} - C\right) - \cos D$
 II. $-\sin\left(\frac{\pi}{2} - A\right) + \cos(\pi - B) - \sin\left(\frac{\pi}{2} - C\right) + \cos(\pi + D) = 0$
 (a) Only I (b) Only II
 (c) Both I and II (d) Neither I nor II
97. Find the unit's digit of $5^{6251} + 16^{528} + 23^{54}$
 (a) 0 (b) 1
 (c) 2 (d) 3
98. A, B, C and D have 345 pens among them. The numbers of pens with A are 25% less than B but 15 more than C. If numbers of pens with C are 25% more than D, then find the difference between the number of pens with B and C.
 (a) 60 (b) 45
 (c) 30 (d) 40
99. If $m \csc x - \sin x$ and $n = \sec x - \cos x$ then $\tan x$ is equal to?
 (a) $\left(\frac{n}{m}\right)^{2/3}$ (b) $\left(\frac{n}{m}\right)^{1/3}$
 (c) $\left(\frac{n}{m}\right)$ (d) $\left(\frac{n}{m}\right)^2$
100. If $\tan \theta - \cot \theta = a$ and $\cos \theta - \sin \theta = b$, then the value of $(a^2 + 4)(b^2 - 1)$ is?
 (a) 4 (b) 1
 (c) 2 (d) 3

ANSWER KEY

1.	d	2.	c	3.	b	4.	c	5.	c	6.	d	7.	b	8.	b	9.	c	10.	c
11.	a	12.	a	13.	a	14.	d	15.	c	16.	c	17.	c	18.	c	19.	a	20.	c
21.	c	22.	a	23.	a	24.	b	25.	d	26.	b	27.	a	28.	c	29.	b	30.	b
31.	d	32.	d	33.	c	34.	b	35.	c	36.	b	37.	c	38.	d	39.	b	40.	a
41.	c	42.	a	43.	a	44.	d	45.	a	46.	c	47.	b	48.	c	49.	c	50.	d
51.	b	52.	a	53.	c	54.	a	55.	b	56.	b	57.	c	58.	c	59.	c	60.	b
61.	a	62.	c	63.	b	64.	d	65.	c	66.	d	67.	d	68.	a	69.	b	70.	c
71.	c	72.	b	73.	b	74.	c	75.	a	76.	b	77.	c	78.	c	79.	b	80.	b
81.	c	82.	a	83.	d	84.	c	85.	c	86.	b	87.	b	88.	d	89.	d	90.	a
91.	c	92.	b	93.	d	94.	a	95.	b	96.	c	97.	a	98.	b	99.	b	100.	a

