

No of Questions: 100

Time: 2 (Hours)

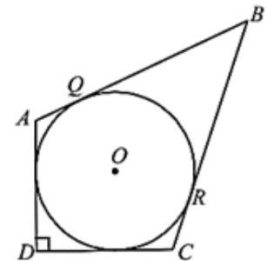
- Which one of the following numbers is a composite number?
a) 589 b) 571
c) 569 d) 563
- One dividing 4996 by a certain number, the quotient is 62 and the remainder is 36. What is the divisor?
a) 80 b) 85
c) 90 d) 95
- If we divide a positive integer by another positive integer, what is the resulting number?
a) It is always a natural number
b) It is always an integer
c) It is a rational number
d) It is an irrational number
- The remainder on dividing given integers a and b by 7 are, respectively 5 and 4. What is the remainder when a b is divided by 7?
a) 3 b) 4
c) 5 d) 6
- The product of a rational number and an irrational number is
a) a natural number
b) an irrational number
c) a composite number
d) a rational number
- The largest integer that divides product of any four consecutive integers is
a) 4 b) 6
c) 12 d) 24
- The pair of numbers which are relatively prime to each other is
a) (68, 85) b) (65, 91)
c) (92, 85) d) (102, 153)
- If N, (N + 2) and (N + 4) are prime number, then the number of possible solutions for N are
a) 1 b) 2
c) 3 d) None of these
- Consider the following statements:
I. To obtain prime numbers less than 121, we have to reject all the multiples of 2, 3, 5 and 7.
II. Every composite number less than 121 is divisible by a prime number.
Which of the statements given above is/are correct?
a) Only I b) Only II
c) Both I and II d) Neither I nor II
- What is the remainder when 41012 is divided by 7?
a) 1 b) 2
c) 3 d) 4
- A light was seen regularly at an interval of 13 seconds. It was seen for the first time at 1 hour 54 minutes 50 seconds (a.m.) and the last time at 3 hours 17 minutes 49 seconds (a.m.). How many times was the light seen?
a) 375 b) 378
c) 383 d) 384
- A person has four iron bars whose lengths are 24 m, 36 m, 48 m and 72 m respectively. This person wants to cut pieces of same length from each of four bars. What is the least number of total pieces if he is to cut without any wastage?
a) 10 b) 15
c) 20 d) 25
- 21 mango trees, 42 apple trees and 56 orange trees have to be planted in rows such that each row contains the same number of trees of one variety only. What is the minimum number of rows in which the above trees may be planted?
a) 3 b) 15
c) 17 d) 20
- What is the sum of the digits of the least number which when divided by 52, leaves 33 as remainder, when divided by 78 leaves 59 and when divided by 117, leaves 98 as remainder?
a) 17 b) 18
c) 19 d) 21
- What is the greatest number that divides 13850 and 17030 and leaves a remainder 17?
a) 477 b) 159
c) 107 d) 87
- The LCM of two intergers is 1237. What is their HCF?
a) 37 b) 19
c) 1 d) Cannot be determined
- What is $27 \frac{1}{2} \times 5.5262 \times 0.6$ equal to?
a) 121.57 b) 121.75
c) 121.75 d) None of these
- What is/are the real value(s) of $(256)^{0.16} \times (16)^{0.18}$?
a) Only - 4 b) Only 4
c) 4, - 4 d) 2, - 2
- If $27 \times (81)^{2n+3} = 0$, then what is m equal to ?
a) $2n+5$ b) $5n+6$

- c) $8n+3$ d) $8n+15$
20. A person spends 30% of monthly salary on rent, 25% on food, 20% on children's education and 12% on electricity and the balance of Rs 1040 on the remaining items. What is the monthly salary of the person?
- a) 8000 b) 9000
c) 9600 d) 10600
21. The price of an article is 25. After two successive cuts by the same percentage, the price becomes Rs20.25. If each time the cut was $x\%$, then
- a) $x = 9$ b) $x = 10$
c) $x = 11$ d) $x = 11.5$
22. The age of a mother, before two years, was eight times the age of their daughter. After 1 year, mother's age will be five times the daughter's age. After how many years from now the mother's age will become three times the daughter's age?
- a) 6 years b) 8 years
c) 10 years d) 12 years
23. If the ratio of x to y is 25 times the ratio of y to x , then what is the ratio of x to y ?
- a) 1: 5 b) 5: 1
c) 25: 1 d) 1: 25
24. A certain amount of money has be divided between two persons P and Q in the ratio 3: 5. But it was divided in the ratio 2: 3 and thereby Q loses Rs 10. What was the amount?
- a) Rs 250 b) Rs 300
c) Rs 350 d) Rs 400
25. A milkman bought 15 kg of milk and mixed 3 kg of water in it. If the price per kg of the mixture becomes Rs 22, what is cost price of the milk per kg?
- a) Rs 28.00 b) Rs 26.40
c) Rs 24.00 d) Rs 22.00
26. How much tea at Rs 9 per kg must be mixed with 100 kg of superior tea at Rs 13.50 per kg to give an average price of Rs 11 per kg?
- a) 85 kg b) 120 kg
c) 125 kg d) 130 kg
27. If the average of A and B is 30, the average of C and D is 20, then which of the following is/are correct?
- I. The average of B and C must be greater than 25.
II. The average of A and D must be less than 25.
Select the correct answer using the codes given below.
- a) Only I b) Only II
c) Either I or II d) Neither I or II
28. The simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs 4000 for 2 years at 10% per annum. What is the sum placed on simple interest?
- a) Rs 1550 b) Rs 1650
c) Rs 1750 d) Rs 2000
29. The difference between compound interest and simple interest for 2 yr at the rate of 10% over principal amount of Rs X is Rs10. What is the value of X?
- a) Rs 100 b) Rs 1000
c) Rs 500 d) Rs 5000
30. Successive discounts of 25/2% and 15/2% are given on the marked price of a cupboard. If the customer pays Rs 2590, then what is the marked price?
- a) Rs 3108 b) Rs 3148
c) Rs 3200 d) Rs 3600
31. The marked price of a machine is Rs 18000. By selling it at a discount of 20%, the loss is 4%. What is the cost price of the machine?
- a) Rs 10000 b) Rs 12000
c) Rs 14000 d) Rs 15000
32. A trader marks 10% higher than the cost price. He gives a discount of 10% on the marked price. In this kind of sales how much per cent does the trader gain or loss?
- a) 5% gain b) 2% gain
c) 1% loss d) 3% loss
33. A shopkeeper sells his articles at their cost price but uses a faulty balance which reads 1000g for 800g. What is his actual profit percentage?
- a) 25% b) 20%
c) 40% d) 30%
34. A boy walks from his house to school at 2.5 km/h and arrives 12 min late. The next day he walks at 4 km/h and reaches the school 15 min earlier. What is the distance from his house to school?
- a) 2 km b) 2.5 km
c) 3 km d) 3.5 km
35. A man can walk uphill at the rate of 2.5 km/h and downhill at the rate of 3.25 km/h. If the total time required to walk a certain distance up the hill and return to the starting position is 4 h 36 min, what is the distance he walked up the hill?
- a) 3.5 km b) 4.5 km
c) 5.5 km d) 6.5 km
36. A train running at the speed of 72 km/h goes past a pole in 15 s. What is the length of the train?
- a) 150 m b) 200 m
c) 300 m d) 350 m
37. A runs $\frac{5}{3}$ times as fast as B. If A gives B a start of 80 m, how far must the winning post from the starting point be so that A and B might reach it at the same time?
- a) 200 m b) 300 m

- c) 270 m d) 160 m
38. Two taps can fill a tub in 5 min and 7 min respectively. A pipe can empty it in 3 min. If all the three are kept open simultaneously, when will the tub be full?
- a) 60 min b) 85 min
c) 90 min d) 105 min
9. Consider the following statements:
- I. If 18 men can earn Rs 1440 in 5 days, then 10 men can earn Rs1280 in 6 days.
II. If 16 men can earn Rs1120 in 7 days, then 21 men can earn Rs 800 in 4 days.
- Which of the above statements is/are correct?
- a) Only I b) Only II
c) Both I and II d) Neither I nor II
40. 4 goats or 6 sheeps can graze a field in 50 days. 2 goats and 9 sheeps can graze the field in
- a) 100 days b) 75 days
c) 50 days d) 25 days
41. 76 ladies complete a job in 33 days. Due to some reason some ladies did not join the work and therefore, it was completed in 44 days. The number of ladies who did not report for the work is
- a) 17 b) 18
c) 19 d) 20
42. If $(5x^2 + 14x + 2)^2 - (4x^2 - 5x + 7)^2$ is divided by $(x^2 + x + 1)$, what is the remainder?
- a) -1 b) 0
c) 1 d) 2
43. Suppose $p \cdot q = 2P + 2q - pq$, where p, q are natural numbers. If $8 \cdot x = 4$, then what is the value of x ?
- a) 1 b) 2
c) 3 d) 4
44. The shadow of a pole 6 m high is 15 m long and at the same time the shadow of a tree is 25 m long. What is the height of the tree?
- a) 21 m b) 10 m
c) 35 m d) None of these
45. What is the value of $3 \times 0.3 \times 0.03 \times 0.003 \times 0.0003 \times 30$?
- a) $(0.09)^3$ b) $(0.009)^3$
c) $(0.0009)^3$ d) None of these
46. What is the remainder when $(1235 \times 4523 \times 2451)$ is divided by 12?
- a) 1 b) 3
c) 5 d) 7
47. In a school there are 30 teachers who teach Mathematics or Physics. Of these teachers, 20 teach Mathematics and 15 teach Physics, 5 teach both Mathematics and Physics. The number of teachers teaching only Mathematics is
- a) 5 b) 10
- c) 15 d) 20
48. If $\sec \theta = \frac{13}{5}$, then what is the value of $\frac{2\sin \theta - 3\cos \theta}{4\sin \theta - 9\cos \theta}$?
- a) 1 b) 2
c) 3 d) 4
49. Which one of the following is correct?
- a) $\sin 35^\circ > \cos 55^\circ$ b) $\cos 61^\circ > \frac{1}{2}$
c) $\sin 32^\circ > \frac{1}{2}$ d) $\tan 44^\circ > 1$
50. What is the value of $\cot^2 \theta - \left(\frac{1}{\sin^2 \theta}\right)$?
- a) $\frac{1}{2}$ b) -1
c) $-\frac{1}{2}$ d) $\frac{3}{2}$
51. If $x \cos 60^\circ + y \cos 0^\circ = 3$ and $4x \sin 30^\circ - y \cot 45^\circ = 2$, then what is the value of x ?
- a) -1 b) 0
c) 1 d) 2
52. If $\frac{\cos x}{\cos y} = n$ and $\frac{\sin x}{\sin y} = m$, then $(m^2 - n^2) \sin^2 y$ is equal to
- a) $1 - n^2$ b) $1 + n^2$
c) m^2 d) n^2
53. $\frac{\cos \theta}{1 - \sin \theta} - \frac{\cos \theta}{1 + \sin \theta} = 2$ is satisfied by which one of the following values of θ ?
- a) $\frac{\pi}{2}$ b) $\frac{\pi}{3}$
c) $\frac{\pi}{4}$ d) $\frac{\pi}{6}$
54. What is the angle subtended at the centre of a circle of radius 8 m after traversing 4π m along its circumference?
- a) $\frac{\pi}{3}$ b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$ d) $\frac{3\pi}{4}$
55. ABC is aright triangle with right angle at A. If the value of $\tan B = \frac{1}{\sqrt{3}}$, then for any real k the length of the hypotenuse is of the from
- a) $3k$ b) $2k$
c) $5k$ d) $9k$
56. What is $\frac{\sin^6 \theta - \cos^6 \theta}{\sin^2 \theta - \cos^2 \theta}$ equal to?

- a) $\sin^4 \theta - \cos^4 \theta$ b) $1 - \sin^2 \theta \cos^2 \theta$
 c) $1 + \sin^2 \theta \cos^2 \theta$ b) $1 - 3\sin^2 \theta \cos^2 \theta$
57. If $A = \frac{\pi}{6}$ and $B = \frac{\pi}{3}$, then which of the following is/are correct?
 I. $\sin A + \sin B = \cos A + \cos B$
 II. $\tan A + \tan B = \cot A + \cot B$
 Select the correct answer using the codes given below.
 a) Only I b) Only II
 c) Both I and II d) Neither I nor II
58. If $3 \sin x + 5 \cos x = 5$, then what is the value of $(3 \cos x - 5 \sin x)$?
 a) 0 b) 2
 c) 3 d) 5
59. The angle of elevation of the top of an unfinished pillar at a point 150 m from its base is 30° . If the angle of elevation at the same point is to be 45° , then the pillar has to be raised to a height of how many metres?
 a) 59.4 m b) 61.4 m
 c) 62.4 m d) 63.4 m
60. A ladder 20 m long is placed against a wall, so that the foot of the ladder is 10 m from the wall. The angle of inclination of the ladder to the horizontal will be
 a) 30° b) 45°
 c) 60° d) 75°
61. From a rectangular metal sheet of sides 25 cm and 20 cm, a circular sheet as large as possible is cut-off. What is the area of the remaining sheet?
 a) 186 cm^2 b) 144 cm^2
 c) 93 cm^2 d) 72 cm^2
62. If a wire of length 36 cm is bent in the form of a semi-circle, then what is the radius of the semi-circle?
 a) 9 cm b) 8 cm
 c) 7 cm d) 6 cm
63. A grassy field has the shape of an equilateral triangle of side 6 m. A horse is tied to one of its vertices with a rope of length 4.2 m. The percentage of the total area of the field which is available for grazing is best approximated by
 a) 50% b) 55%
 c) 59% d) 62%
64. If the circumferences of two circles are in the ratio 2:3, then what is the ratio of their areas?
 a) 2:3 b) 4:9
 c) 1:3 d) 8:27
65. What is the area between a square of side 10 cm and two inverted semi-circular, cross-sections each of radius 5 cm inscribed in the square?
 a) 17.5 cm^2 b) 18.5 cm^2
 c) 20.5 cm^2 d) 21.5 cm^2
66. The sides of a triangular field are 41 m, 40 m and 9 m. The number of rose beds that can be prepared in the field if each rose bed, on an average, needs 900 square cm space, is
 a) 2000 b) 1800
 c) 900 d) 800
67. From a wooden cylindrical block, whose diameter is equal to its height, a sphere of maximum possible volume is carved out. What is the ratio of the volume of the utilised wood to that of the wasted wood?
 a) 2:1 b) 1:2
 c) 2:3 d) 3:2
68. A hollow cylindrical iron pipe of length 1.4 m has base radius 2.5 cm and thickness of the metal is 1 cm. What is the volume of the iron used in the pipe?
 a) 2640 cu cm b) 2604 cu cm
 c) 2460 cu cm d) None of these
69. A cylindrical vessel of base radius 14 cm is filled with water to some height. If a rectangular solid of dimensions $22 \text{ cm} \times 7 \text{ cm} \times 5 \text{ cm}$ is immersed in it, what is the rise in water level?
 a) 0.5 cm b) 1.0 cm
 c) 1.25 cm d) 1.5 cm
70. How many litres of water (approximately) can a hemispherical container of radius 21 cm hold?
 a) 19.4 L b) 38.8 L
 c) 194 L d) 388 L
71. A cylinder having base of circumference 60 cm is rolling without sliding at a rate of 5 rounds per second. How much distance will the cylinder roll in 5 s?
 a) 15 m b) 1.5 m
 c) 30 m d) 3 m
72. What is the height of the cone?
 a) 9 cm b) 12 cm
 c) 13.5 cm d) 18 cm
73. If the diameter of a sphere is doubled, then how does its surface area change?
 a) It increases two times
 b) It increases three times
 c) It increases four times
 d) It increases eight times
74. A cardboard sheet in the form of a circular sector of radius 30 cm and central angle 144° is folded to make a cone. What is the radius of the cone?
 a) 12 cm b) 18 cm
 c) 21 cm d) None of these
75. What is the height of a solid cylinder of radius 5 cm and total surface area is 660 sq cm ?
 a) 10 cm b) 12 cm
 c) 15 cm d) 16 cm

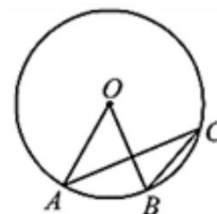
76. If the ratio of the diameters of two spheres is 3:5, then what is the ratio of their surface areas?
 a) 9:25 b) 9:10
 c) 3:5 d) 27:125
77. If the heights and the areas of the base of a right circular cone and a pyramid with square base are the same, then they have
 a) same volume and same surface area
 b) same surface area but different volumes
 c) same volume but different surface areas
 d) different volumes and different surface areas
78. If 64 identical small spheres are made out of big sphere of diameter 8 cm, then what is surface area of each small sphere?
 a) $p \text{ cm}^2$ b) $2p \text{ cm}^2$
 c) $4p \text{ cm}^2$ d) $8p \text{ cm}^2$
79. If the side of a cube is increased by 100%, then by what percentage is the surface area of the cube increased?
 a) 150% b) 200%
 c) 300% d) 400%
80. If three metallic spheres of radii 6 cm, 8 cm and 10 cm are melted to form a single sphere, then the diameter of the new sphere will be
 a) 12 cm b) 24 cm
 c) 30 cm d) 36 cm
81. The line segments AB and CD intersect at O, OF is the internal bisector of obtuse ANGLEBOC and OE is the internal bisector of acute ANGLEAOC. If ANGLEBOC = 130° , what is the measure of ANGLEFOE?
 a) 90° b) 110°
 c) 115° d) 120°
82. A triangle ABC is permitted to move around when its vertex A is fixed. What is the locus of the circumcenter?
 a) A straight-line b) A circle
 c) A point
 d) A curve other than a circle
83. The sides of a triangle are 50 m, 40 m and 30 m. What is the length of the altitude of the vertex opposite to the side 50 m long?
 a) 22 m b) 24 m
 c) 25 m d) 26 m
84. In a triangle, if sum of two angles is equal to the third angle (considering the interior angles only), then the triangle is
 a) right angled b) acute angled
 c) equilateral d) obtuse angled
85. Consider the following statements I. If G is the centroid of DABC, then $GA = GB = GC$. II. If H is the orthocentre of DABC, then $HA = HB = HC$. Which of the statements given above is/are correct?
 a) Only I b) Only II
 c) Both I and II d) Neither I nor II
86. If AD is the internal angular bisector of triangle ABC with $AB = 3 \text{ cm}$ and $AC = 1 \text{ cm}$ then what is BD: BC equal to?
 a) 1:3 b) 1:4
 c) 2:3 d) 3:4
87. Which one of the following figures has only one line of symmetry?
 a) Rhombus
 b) Rectangle
 c) Isosceles trapezium
 d) Parallelogram
88. The area of a rectangle lies between 40 cm^2 and 45 cm^2 . If one of the sides is 5 cm, then its diagonal lies between
 a) 8 cm and 10 cm b) 9 cm and 11 cm
 c) 10 cm and 12 cm d) 11 cm and 13 cm
89. If a star figure is formed by elongating the sides of a regular pentagon, then the measure of each angle at the angular points of the star figure is
 a) 36° b) 35°
 c) 32° d) 30°
90. If two circles C_1 and C_2 have three points in common, then which of the following is correct?
 a) C_1 and C_2 are concentric
 b) C_1 and C_2 are the same circle
 c) C_1 and C_2 have different centres
 d) None of the above
- 91.



In the figure given above, a circle is inscribed in a quadrilateral ABCD. Given that, $BC = 38 \text{ cm}$, $QB = 27 \text{ cm}$, $BC = 25 \text{ cm}$ and AD is perpendicular to DC. What is the radius of the circle?

- a) 11 cm b) 14 cm
 c) 15 cm d) 16 cm

92.

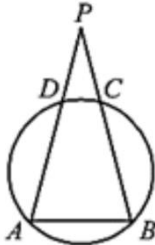


In the figure given above, $\angle AOB = 46^\circ$, AC and OB intersect each other at right angles. What is

the measure of $\angle OBC$ (where, O is the centre of the circle)?

- a) 44° b) 46°
c) 67° d) 78.5°

93. In the figure given below, if $\angle BAD = 60^\circ$, $\angle ADC = 105^\circ$ then what is $\angle DPC$ equal to?



- a) 40° b) 45°
c) 50° d) 60°

94. A bicycle is running straight towards North. What is the locus of the centre of the front wheel of the bicycle whose diameter is d ?

- a) A line parallel to the path of the wheel of the bicycle at a height d cm
b) A line parallel to the path of the wheel of the bicycle at a height $d/2$ cm
c) A circle of radius $d/2$ cm
d) A circle of radius d cm

95. The diameter of a circle with centre at C is 50 cm. CP is a radial segment of the circle. AB is a chord perpendicular to CP and passes through P . CP produced intersects the circle at D . If $DP = 18$ cm, then what is the length of AB ?

- a) 24 cm b) 32 cm
c) 40 cm d) 48 cm

96. The following observation have been arranged in ascending order:

29, 32, 48, 52, x , $x + 3$, 71, 75, 80, 92 If the median

of data is 61.5, then what is the value of x ?

- a) 54 b) 60
c) 62 d) 56

97. The arithmetic mean of a set of 10 numbers is 20. If each number is first multiplied by 2 and then increased by 5, then what is the mean of new numbers?

- a) 20 b) 25
c) 40 d) 45

98. What is the median of the ages of minor children?

- a) 3 years b) 5 years
c) 7 years
d) Cannot be determined

99. Two following characteristics relate to the persons participating in athletic events:

- I. height of the person.
II. colour of the eye of the person. III. number of times a person correctly hits a target in ten attempts.

Which of the following in respect of the above is correct?

- a) I is a continuous variable, II is not a variable and III is a discrete variable
b) I is a continuous variable, II and III are discrete variables
c) I and III are discrete variables and II is not a variable
d) I, II and III all are discrete variables

100. There are 45 male and 15 female employees in an office. If the mean salary of the 60 employees is Rs 4800 and the mean salary of the male employees is Rs 5000, then the mean salary of the female employees is

- a) Rs 4200 b) Rs 4500
c) Rs 5600 d) Rs 6000

ANSWER KEY

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

