

GENERAL INSTRUCTIONS

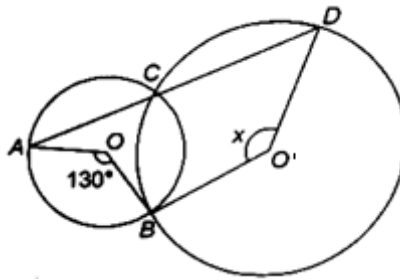
- This question paper contains 15 questions. All questions are compulsory.
- The total duration of the examination is 90 minutes.
- Each question carries 4 marks for a correct answer.
- There is a negative marking of 1 mark for each incorrect answer.
- The answer to each question must be a non-negative integer ranging from 000 to 999 (both inclusive).
- No marks will be awarded for answers that are not in the specified format.

Note:

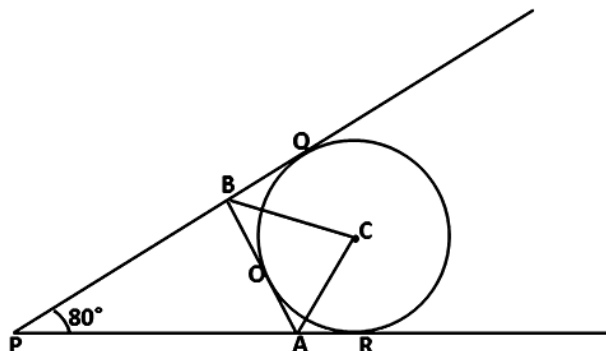
Read each question carefully before answering. Accuracy matters due to negative marking.

Sample paper 6, 7, 8

1. If $\frac{-3}{\sqrt{3}+\sqrt{2}} - \frac{3\sqrt{2}}{\sqrt{6}+\sqrt{3}} + \frac{4\sqrt{3}}{\sqrt{6}+\sqrt{2}} = a\sqrt{2} + b\sqrt{3}$, then find the value of $a + b$.
2. A number is such that when divided by 3, 5, 6 or 7 it leaves the remainder 1, 3, 4 or 5 respectively. If the largest number below 4000 that satisfies this property is k . Find the last two digit of k ?
3. If $100^{25} - 25$ is written in decimal notations, then the sum of its digits is
4. In the given figure O and O' are centres of two circles intersecting at B and C . If ACD is a straight line, the value of x is equal to

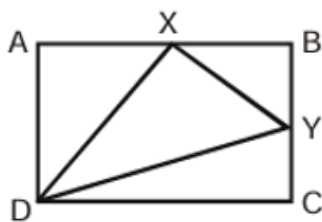


5. Triangle PAB is formed by three tangents to circle with center C and $\angle APB = 80^\circ$, then angle ACB equals _____.

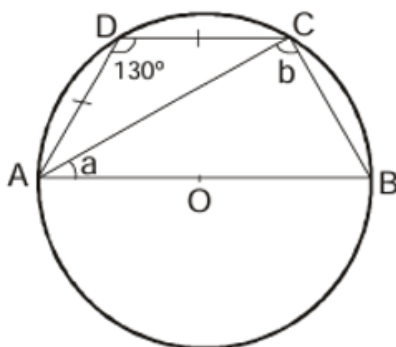


6. A number when divided by 259 leaves a remainder 139. What will be the remainder when the same number is divided by 37 ?

7. ABCD is a rectangle and lines DX, DY and XY drawn as shown. Area of $\triangle AXD$ is 5, Area of $\triangle BXY$ is 4 and area of $\triangle CYD$ is 3. If the area of $\triangle DXY$ can be expressed as $\sqrt{x}$ where $x \in \mathbb{N}$ then x is equal to



8. How many numbers are there between 100 and 1000 in which all the digits are distinct?
9. Let R_1 and R_2 are the remainders when the polynomials $f(x) = 4x^3 + 3x^2 - 12ax - 5$ and $g(x) = 2x^3 + ax^2 - 6x + 2$ are divided by $(x - 1)$ and $(x + 2)$ respectively. If $3R_1 + R_2 + 28 = 0$, then find the value of a .
10. Find remainder when $1! + 2! + 3! + \dots + 100!$ is divided by 24. (Here $n! = 1 \times 2 \times 3 \times \dots \times n$)
11. Let a , b and c be real numbers, such that $a - 7b + 8c = 4$ and $8a + 4b - c = 7$ then the value of $a^2 - b^2 + c^2 = \dots$
12. Find the number of positive divisors of 600.
13. Find the value of a .



14. How many numbers between 10 and 10,000 can be formed by using the digits 1, 2, 3, 4, 5 if Digits can be repeated
15. The hypotenuse of a right angled triangle is 10 cm and the radius of its inscribed circle is 1 cm. Find perimeter of the triangle is :

Answer Key:

1. (1)	2. (88)	3. (444)	4. (130)	5. (50)	6. (28)	7. (84)	8. (648)	9. (1)	10. (9)
11. (1)	12. (24)	13. (40)	14. (775)	15. (22)					

