

**TARGET PLUS DIAGNOSTIC MOCK**

Class X (CBSE)  
**MATHEMATICS**

(Three hours)

Paper Code  
**Z 201**

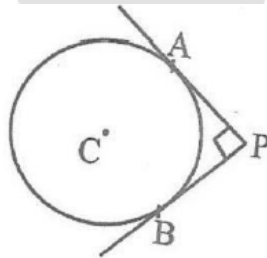
(Candidate are allowed additional 15 minutes for only reading the paper.  
They must NOT start writing during this time)

1. All questions are compulsory.
2. The question paper consists of **31** questions divided into four sections **A, B, C** and **D**.
3. **Section A** contains 4 questions of 1 mark each. **Section B** contains 6 questions of 2 marks each. **Section C** contains 10 questions of 3 marks each. **Section D** contains 11 questions of 4 marks each.
4. Use of calculators is not permitted.

**SECTION A**

(Question numbers 1 to 4 carry 1 mark each)

1. The probability of a the number selected at random from the numbers 1,2,3,...,15 is a multiple of 4 is \_\_\_\_\_.
2. The roots of the equation  $x^2 - 3x - m(m+3) = 0$ , where  $m$  is constant, are \_\_\_\_\_.
3. If the  $n$ th term of an A.P. is  $(2n+1)$ , then the sum of its first three terms is \_\_\_\_\_.
4. In given figure,  $PA$  and  $PB$  are two tangents drawn from an external point  $P$  to a circle with centre  $C$  and radius 4 cm. If  $PA \perp PB$ , then the length of each tangent is \_\_\_\_\_.

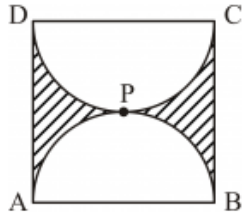


**SECTION - B**

(Question numbers 5 to 10 carry 2 marks each)

5. Two different dice are tossed together. Find the Probability
  - That the number on each die is even.
  - That the sum of numbers appearing on the two dice is 5.
6. The slant height of a frustum of a cone is 4 cm and the perimeters (circumferences) of its circular ends are 18 cm and 6 cm then the curved surface area of the frustum is \_\_\_\_\_.

7. If the point  $P(2,4)$  is equidistant from the points  $A(5,k)$  and  $B(k,7)$  then the value of  $k$  is \_\_\_\_\_ .
8. In the given figure, a circle inscribed in triangle  $ABC$  touches its sides  $AB$ ,  $BC$  and  $AC$  at points  $D$ ,  $E$  and  $F$ , respectively. If  $AB=12$  cm,  $BC=8$  cm and  $AC=10$  cm, then the lengths of  $AD$ ,  $BE$  and  $CE$ , respectively are
9. In figure if  $ABCD$  is a square of side 14 cm and  $APB$  and  $CPD$  are semicircle, then the perimeter of the shaded region is \_\_\_\_\_ .

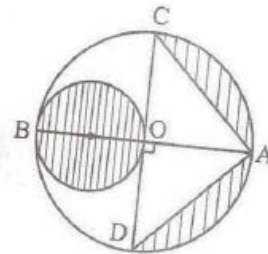


10. The sum of first  $n$  terms of an AP is  $3n^2 + 4n$ . Find the 25<sup>th</sup> term of this AP?

**SECTION - C**

*(Question numbers 11 to 20 carry 3 marks each)*

11. In given figure,  $AB$  and  $CD$  are the diameters of a circle with centre  $O$ , which are perpendicular to each other.  $OB$  is the diameter of the smaller circle. If  $OA = 7$  cm, then the area of the shaded region is \_\_\_\_\_ .



12. An open metal bucket is in the shape of a frustum of a cone of height 21 cm with radii of its lower and upper ends as 10 cm and 20 cm respectively, then the cost of milk completely fill the bucket at Rs. 30 per litre is \_\_\_\_\_ .
13. The ratio in which the y-axis divides the line segment joining the points  $(-4,-6)$  and  $(10,12)$  is \_\_\_\_\_ .
14. Draw a triangle  $\Delta ABC$  with  $BC = 7$  cm,  $\angle B = 45^\circ$  and  $\angle C = 60^\circ$ . Then construct another triangle, whose sides are  $\frac{3}{5}$  times the corresponding sides of  $\Delta ABC$ .

15. From the top of a 60 m high building, the angles of depression of the top and the bottom of a tower are  $45^\circ$  and  $60^\circ$  respectively then the height of the tower is \_\_\_\_\_.
16. Point  $P$  divides the line segment joining the points  $A(2,1)$  and  $B(5,-8)$  such that  $\frac{AP}{AB} = \frac{1}{3}$ .  
If  $P$  lies on the line  $2x - y + k = 0$ , then the value of  $k$  is \_\_\_\_\_.
17. The sum of all multiples of 7 lying between 500 and 900 is \_\_\_\_\_.
18. For the given equation:  

$$\frac{1}{2a+b+2x} = \frac{1}{2a} + \frac{1}{b} + \frac{1}{2x}$$
The values of  $x$  is \_\_\_\_\_.
19. A solid sphere of radius 10.5 cm is melted and recast into smaller solid cones, each of radius 3.5 cm and height 3 cm then the number of cones so formed is \_\_\_\_\_.
20.  $P$  is point on the  $y$ -axis which is equidistant from the points  $A(4, 8)$  and  $B(-6,6)$  then the coordinate of  $P$  and the distance  $AP$  is \_\_\_\_\_.

**SECTION - D**  
(Question numbers 21 to 31 carry 4 marks each)

21. Solve for  $x$ :  $\frac{(x-4)}{(x-5)} + \frac{(x-6)}{(x-7)} = \frac{10}{3}$ ,  $x \neq 5, 7$
22. The angle of elevation of the top of a vertical tower from a point on the ground is  $60^\circ$ . From another point 10 m vertically above the first, its angle of elevation is  $30^\circ$ , then the height of the tower is \_\_\_\_\_.
23. All kings, queens and aces are removed from a pack of 52 cards. The remaining cards are well shuffled and then a card is drawn from it, find the probability that the drawn card is (i) a black face card (ii) a red card \_\_\_\_\_.
24. 150 spherical marbles, each of diameter 1.4 cm, are dropped in a cylindrical vessel of diameter 7 cm containing some water, which are completely immersed in water then the rise in the level of water in the vessel is \_\_\_\_\_.

25. The common difference of an A.P. whose first term is 5 and the sum of its four terms is half the sum of the next four terms is \_\_\_\_\_ .
26. A train travels 180 km at a uniform speed. If the speed had been 9 km/h more, it would have taken 1 h less for the same journey, then the speed of the train is \_\_\_\_\_ .
27. If the points  $A(x, y)$ ,  $B(3, 6)$  and  $C(-3, 4)$  are collinear then relation between  $x$ ,  $y$  and  $z$  is \_\_\_\_\_ .
28. The angles of depression of the top and bottom of a tower as seen from the top of a  $60\sqrt{3}$  m high cliff are  $45^\circ$  and  $60^\circ$  respectively then the height of the tower is \_\_\_\_\_ .
29. In a school students decided to plant trees in and around the school to reduce air pollution. It was decided that the number of trees, that each section of each class will plant be double of the class in which they are studying. If there are 1 to 12 classes in the school and each class has two sections then how many trees were planted by the students is \_\_\_\_\_ .
30. The coordinates of a point  $P$ , which lies on the line segment joining the points  $A(-2, -2)$  and  $B(2, -4)$  such that  $AP = \frac{3}{7} AB$  is \_\_\_\_\_ .
31. A military tent of height 8.25 m is in the form of a right circular cylinder of base diameter 30 m and height 5.5 m surmounted by a right circular cone of same base and radius, then the length of the canvas use in making the tent if the breadth of the canvas is 1.5 m is \_\_\_\_\_ .



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