Er Manish Bhadoria's

Interactions
Study Circle

Strong Foundation for a bright future

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Maths

2nd Term (Apr-May 2022)   Mega Test – 5   Class 10th

Time allowed: 2 h   **Max. Marks: 40**

Section	A	B	C
Q. No.	1 – 6	7 – 10	11 – 14
Marks	2	3	4

Section A

1. 15th term of the A.P. $x - 7$, $x - 2$, $x + 3$,… is:

   (a) $x + 63$ (b) $x + 73$ (c) $x + 83$ (d) $x + 53$

2. Find the roots of the following quadratic equation: $\sqrt{3}\, x^2 - 2x - \sqrt{3} = 0$. Comment on the nature of the roots of this quadratic equation. What is the discriminant of this equation?

3. In figure, PA and PB are a pair of tangents drawn to a circle having its centre at O. If $\angle APB = 52°$, find $\angle PAB$ and $\angle PBA$.
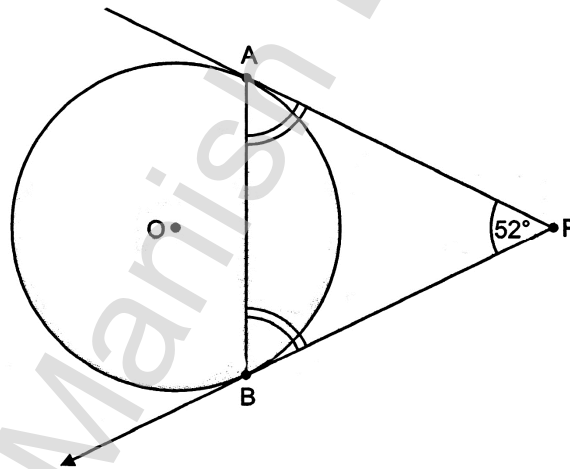
4. A solid cylinder of radius r and height h is placed over other cylinder of the same height and radius. Find the total surface area of the shape so formed.

5. Find the missing frequency f if the mode of the given data is 154.

Class	120 – 130	130 – 140	140 – 150	150 – 160	160 – 170	170 – 180
Frequency	2	8	12	f	8	7

6. For what values of k does $(k - 12)x^2 + 2(k - 12)x + 2 = 0$ have equal roots?

Section B

7. Find the median of the following data

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	Total
Frequency	8	16	36	34	6	100

8. Draw a line segment AB = 10.8 cm and locate a point P on AB such that $\frac{AP}{BP} = \frac{3}{7}$.

**9.** Calculate the mean marks of the following data using the assumed mean method:

Marks	25 – 35	35 – 45	45 – 55	55 – 65	65 – 75
No. of students	6	10	8	12	4

10. As observed from the top of a light house, 100 m high above sea–level, the angle of depression of a ship sailing directly towards it, changes from 30° to 60°. Determine the distance travelled by the ship during the period of observation. ($\sqrt{3}$ = 1.732)

Section C

11. A copper rod of diameter 1 cm and length 8 cm is drawn into a wire of length 18 m of uniform thickness. Find the thickness of the wire.

12. In figure, XP and XQ are tangents from X to the circle with centre O. R is a point on the circle. Prove that XA + AR = XB + BR.
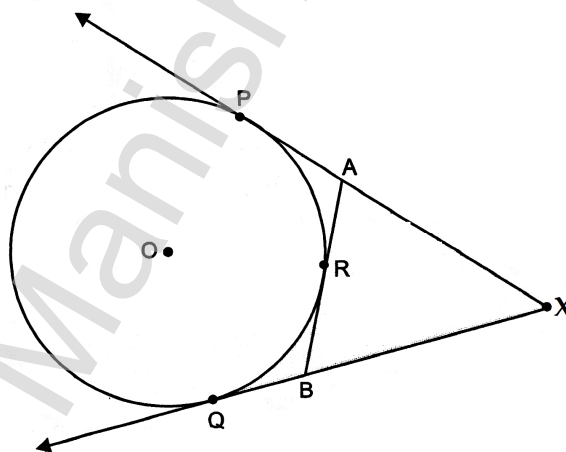
13. A man on the top of a vertical tower observes a car moving towards the tower. If it takes 12 minutes for the angle of depression to change from 30° to 45°, how soon after this car will reach the tower?

14. (i) Find three numbers in A.P. whose sum is 15 and whose product is 105.
(ii) If the sum of first 10 terms of an A.P. is 370 and its first term is 10, find its 20th term.

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