

**CBSE Class 10 Mathematics/ Sample Question Paper**

**Class X /Term II/ 2021 – 2022**

**Time: 2 hours**

**Max Marks: 40**

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The question paper consists of 14 questions divided into 3 sections A, B, C.

Section A consists of 6 questions, each carries 2 marks.

Section B consists of 4 questions, each carries 3 marks.

Section C consists of 4 questions, each carries 4 marks.

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**Section A (2 Marks)**

1. Find the roots of the quadratic equation  $2x^2 - 7x + 3 = 0$

**OR**

Find the value of k for which the quadratic equation  $2x^2 + kx + 3 = 0$  has two equal roots.

2. Two cubes each of volume 216 cubic cm are joined end to end. Find the surface area of the resulting cuboid?

3. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the Median of the data?

Monthly consumption (in units)	Number of consumers
65 – 85	4
85 – 105	5
105 – 125	13
125 – 145	20
145 – 165	14
165 – 185	8
185 - 205	4

4. The 17<sup>th</sup> term of an AP exceeds its 10<sup>th</sup> term by 7. Find the common difference?

5. The following table shows the ages of the patients admitted in a hospital during a year. Find the Mode of the data?

Age (in years)	5 - 15	15 - 25	25 - 35	35 - 45	45 - 55	55 - 65
Number of patients	6	11	21	23	14	5

6. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

OR

The length of a tangent from a point A at distance 5 cm from the centre of the circle is 4 cm. Find the radius of the circle.

Section B (3 Marks):

7. The sum of the 4<sup>th</sup> and 8<sup>th</sup> terms of an AP is 24 and the sum of the 6<sup>th</sup> and 10<sup>th</sup> terms is 44. Find the first three terms of the AP?

8. From a point on the ground, the angles of elevation of the bottom and the top of a transmission tower fixed at the top of a 20m high building are 45° and 60° respectively. Find the height of the tower?

OR

A circus artist is climbing a 20m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole, if the angle made by the rope with the ground level is 30°.

9. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that  $\angle PTQ = 2 \angle OPQ$ .

10. How many multiples of 4 lie between 10 and 250?

Section C (4 marks)

11. Draw a circle of radius 6 cm. From a point 10cm away from its centre, construct the pair of tangents to the circle and measure their lengths.

OR

Draw a line segment AB of length 8 cm. Taking A as centre, draw a circle of radius 4 cm and taking B as centre, draw another circle of radius 3 cm. Construct tangents to each circle from the centre of the other circle.

12. The following table gives the literacy rate (in percentage) of 35 cities. Find the mean literacy rate.

Literacy rate (in %)	45 - 55	55 - 65	65 - 75	75 - 85	85 - 95
Number of cities	3	10	11	8	3

13. From a point P on the ground the angle of elevation of the top of a 10m tall building is  $30^\circ$ . A flag is hoisted at the top of the building and the angle of elevation of the top of the flagstaff from P is  $45^\circ$ . Find the length of the flagstaff and the distance of the building from the point P. (Take  $\sqrt{3}= 1.732$ )

14. Mayank made a bird – bath for his garden in the shape of a cylinder with a hemispherical depression at one end. The height of the cylinder is 1.45 m and its radius is 30 cm. Find the total surface area of the bird – bath.

(Take  $\pi = \frac{22}{7}$ )

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