Mathematics — Ganita Manjari

Chapter 5 Test 3

I'm Up and Down, and Round and Round

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. No calculators. Give exact lengths and reasons for angle calculations.
3. Figures are schematic. Use the stated dimensions and show your working.

SECTION A

(5 questions × 1 mark = 5 marks)

1. An arc subtends 230° at the centre. It is a:

(A) Minor arc (B) Semicircle
(C) Major arc (D) Diameter

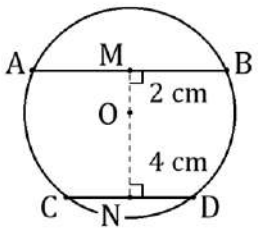
2. A diameter subtends an angle at a point on the circle other than its endpoints. That angle is:

(A) 45° (B) 90°
(C) 180° (D) 360°

3. Two chords of the same circle subtend equal central angles. What follows?

(A) The chords are equal
(B) The chords are diameters
(C) The chords are parallel
(D) The chords are perpendicular

4. O is the centre, OM ⊥ AB and ON ⊥ CD. The marked distances show that:



(A) AB = CD (B) AB < CD
(C) AB is a diameter (D) AB > CD

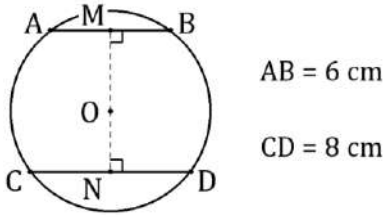
5. Two points are 18 cm apart. The least radius of a circle through them is:

(A) 18 cm (B) 36 cm
(C) 9 cm (D) 4.5 cm

SECTION B

(4 questions × 2 marks = 8 marks)

6. In a circle of radius 5 cm, parallel chords AB = 6 cm and CD = 8 cm lie on opposite sides of O. Find their separation.



7. Derive the length of a chord at perpendicular distance d from the centre of a circle of radius r, where $0 \le d < r$.

8. In a circle of radius 5 cm, chords are 2 cm and 4 cm from the centre. Use their lengths to test whether doubling this distance halves the chord length.

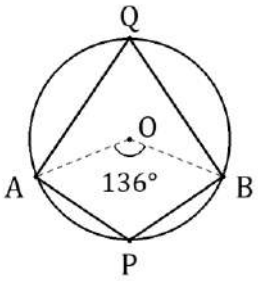
9. Triangle ABC is inscribed in a circle and AB = AC. Explain why the line containing the altitude from A to BC passes through the centre.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Prove that the intersection of the diagonals of a rectangle inscribed in a circle is the centre of the circle.

11. The smaller central angle AOB is 136°. P lies on the minor arc AB and Q on the major arc AB. Find ∠APB and ∠AQB, and compare their sum.



12. In convex quadrilateral ABCD, ∠BAC = ∠BDC = 54° and ∠BCD = 71°. Prove that ABCD is cyclic and find ∠BAD.

SECTION D

(1 application question × 3 marks = 3 marks)

13. Parallel braces of lengths 10 cm and 24 cm lie on the same side of a circular frame's centre, 7 cm apart. Find the radius.