Mathematics — Ganita Manjari

Chapter 5 Test 9

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. The smallest positive rotation that maps a regular pentagon onto itself is:

(A) 36° (B) 60°
(C) 72° (D) 90°

2. A chord has its midpoint at the centre of the circle. The chord must be:

(A) A radius
(B) A diameter
(C) A minor arc
(D) Half a diameter

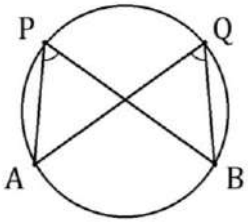
3. A straight line can meet a circle in at most how many distinct points?

(A) One (B) Two
(C) Three (D) Infinitely many

4. A convex quadrilateral has one pair of opposite angles adding to 180°. What can be concluded?

(A) It is a square
(B) Its sides are equal
(C) Its diagonals are perpendicular
(D) It is cyclic

5. P and Q are on the same side of chord AB. Which angle must equal ∠APB?



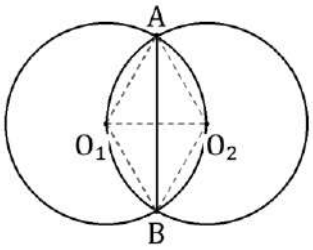
(A) ∠AQB (B) ∠ABP
(C) ∠BAQ (D) ∠PAB

SECTION B

(4 questions × 2 marks = 8 marks)

6. The consecutive arcs AB, BC, CD and DA subtend 60°, 90°, 120° and 90° at the centre. Find the four angles of cyclic quadrilateral ABCD.

7. Two congruent circles with distinct centres O_1 and O_2 intersect at A and B. Show that AB is the perpendicular bisector of O_1O_2.



8. P and Q lie on opposite sides of chord AB on the same circle. If ∠APB = ∠AQB, determine the common angle and identify AB.

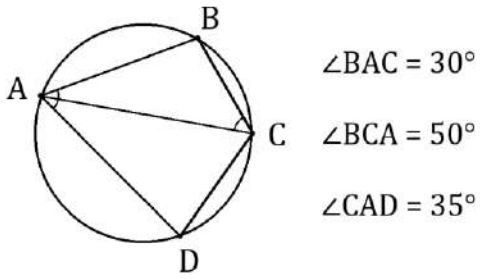
9. A circle has radius r. What happens when a line is at perpendicular distance (i) r and (ii) greater than r from the centre? Can it cut a chord with distinct endpoints?

SECTION C

(3 questions × 3 marks = 9 marks)

10. Equal, non-parallel chords intersect at P, where P is not the centre O. Prove that line OP bisects one of the angles formed by the chord lines.

11. ABCD is cyclic. The marked angles are ∠BAC = 30°, ∠BCA = 50° and ∠CAD = 35°. Find ∠ADC, ∠ACD and ∠BCD.



12. Prove that the longer of two unequal chords of a circle is nearer to the centre.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A circular path must pass through three corners of a rectangular 20 m by 15 m plot. Find its centre and radius. Will it also pass through the fourth corner? Justify.