Mathematics — Ganita Manjari

Chapter 5 Test 10

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.

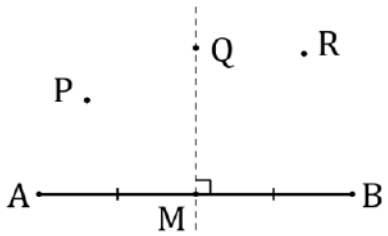
SECTION A

(5 questions × 1 mark = 5 marks)

1. Opposite angles of a cyclic quadrilateral are in the ratio 1:4. The larger angle is:

(A) 72° (B) 144°
(C) 120° (D) 288°

2. M is the midpoint of AB; the dashed line is perpendicular to AB. Which marked point can centre a circle through A and B?



(A) P only (B) All three
(C) Q only (D) R only

3. Two distinct circles can have at most how many common points?

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

4. Two chords in one circle have unequal perpendicular distances from the centre. Their lengths must be:

(A) Unequal (B) Equal
(C) Both diameters (D) Both zero

5. Four distinct points are joined in their circular order by four equal chords. The quadrilateral formed is a:

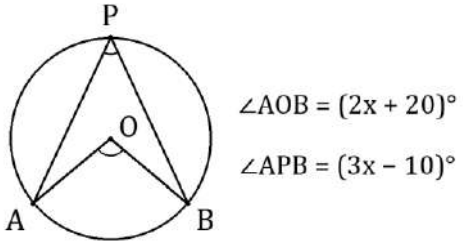
(A) General kite only (B) Square
(C) Non-rectangular rhombus (D) Non-isosceles trapezium

SECTION B

(4 questions × 2 marks = 8 marks)

6. OM and ON are perpendiculars from the centre to chords AB and CD. If OM = ON, AM = (3x − 2) cm and CN = (x + 6) cm, find x and both chord lengths.

7. O is the centre. The smaller angle AOB is (2x + 20)° and ∠APB = (3x − 10)°. Find x and both angles.



8. A circular paper disc has no marked centre. Explain how two different folds, each making the boundary overlap exactly, locate its centre.

9. In cyclic ABCD, ∠A = 90°. Must it be a rectangle? State what follows about ∠C and BD, and give a possible non-rectangular angle set.

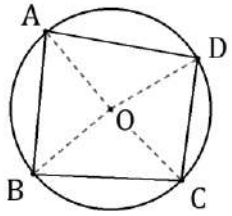
SECTION C

(3 questions × 3 marks = 9 marks)

10. Prove both directions: the centres of all circles through distinct A and B form the perpendicular bisector of AB.

11. ABCD is a cyclic quadrilateral with AB ∥ CD. Prove that its remaining sides AD and BC are equal.

12. O lies inside cyclic ABCD. Using the four isosceles triangles formed by the radii, prove that opposite angles are supplementary.



SECTION D

(1 application question × 3 marks = 3 marks)

13. Two gears have different radii. Each has a chord equal to its radius. Compare their central angles and chord-distance/radius ratios. Are the gears congruent?