Mathematics — Ganita Manjari

Chapter 5 Test 4

I'm Up and Down, and Round and Round

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

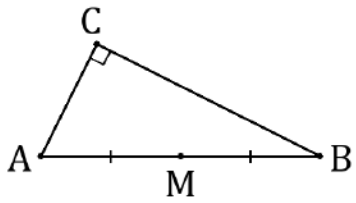
General Instructions

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. Triangle ABC is right-angled at C, and M is the midpoint of AB. Its circumcentre is:



(A) A
(B) C
(C) M
(D) The midpoint of BC

2. Which line always gives a reflection symmetry of a circle?
(A) Any line through its centre
(B) Any line outside it
(C) Every chord's line
(D) Any tangent line

3. Which ordered list of angles A, B, C, D can belong to a cyclic quadrilateral?
(A) 80°, 100°, 110°, 70°
(B) 80°, 110°, 100°, 70°
(C) 60°, 90°, 120°, 80°
(D) 70°, 80°, 90°, 120°

4. OM is perpendicular to chord AB. To prove triangles OMA and OMB congruent using equal radii and common OM, use:
(A) AAA
(B) ASA
(C) SSS alone
(D) RHS

5. In the theorem relating an arc's central angle to an angle on the circle, the latter vertex must lie:
(A) At the centre
(B) Inside the disc
(C) On the circle outside the chosen arc
(D) Anywhere in the plane

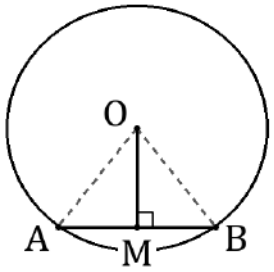
SECTION B

(4 questions × 2 marks = 8 marks)

6. Justify why no chord is longer than the diameter. State when equality occurs.

7. A and B are 14 cm apart. Find the least possible radius of a circle through them, and explain why there is no greatest radius.

8. A circle has radius 10 cm. Every chord considered has length 12 cm. Find OM and describe the locus of all such midpoints M.



r = 10 cm

AB = 12 cm

9. In a circle with centre O, AB = AC. Prove that AO bisects ∠BAC.

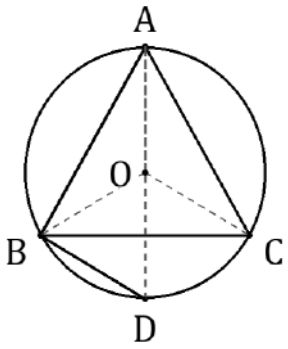
SECTION C

(3 questions × 3 marks = 9 marks)

10. ABCD is cyclic and ∠A = ∠B = 75°. Find ∠C and ∠D, and prove that AB is parallel to CD.

11. A and B are fixed points on a circle. P and Q are other points on the same arc AB. Prove that ∠APB = ∠AQB.

12. ABC is equilateral and O is the circle's centre. AO is extended to meet the circle at D. Find ∠AOB, ∠ADB and ∠ABD, with reasons.



SECTION D

(1 application question × 3 marks = 3 marks)

13. Two survey markers A and B are 26 m apart. A surveyor at C measures ∠ACB = 90° and AC = 10 m. Find BC and the centre and radius of the circle through A, B and C.