Mathematics — Ganita Manjari

Chapter 5 Test 6

I'm Up and Down, and Round and Round

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

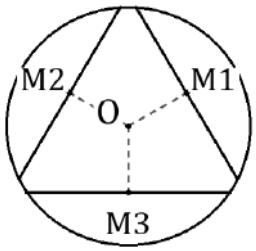
General Instructions

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 marked midpoints belong to equal non-diameter chords. Their complete locus is:



(A) A straight line
(B) A circle with centre O
(C) The whole disc
(D) Just one point

2. Which parallelogram can always be inscribed in a circle?

(A) Every parallelogram
(B) Every rhombus
(C) Only a rectangle
(D) Only a non-square rhombus

3. Among chords with distinct endpoints in a fixed circle, is there a shortest positive length?

(A) No; endpoints can be arbitrarily close
(B) Yes; it is the radius
(C) Yes; it is half the radius
(D) Yes; it is the diameter

4. A triangle is inscribed in a circle when:

(A) All its sides touch the circle
(B) Its centre is on the circle
(C) It contains the whole circle
(D) All three vertices are on the circle

5. O is the centre and M the midpoint of a diameter. What is OM?

(A) Length equal to a radius
(B) Zero length
(C) Length equal to a diameter
(D) No relation to the radius

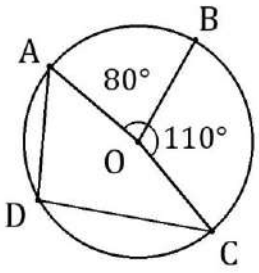
SECTION B

(4 questions × 2 marks = 8 marks)

6. Describe how to construct a triangle with sides 6 cm, 7 cm and 7 cm, and then its circumcircle. How would you verify the centre?

7. Two distinct parallel chords of a circle have equal length. Prove that the centre lies halfway between their lines.

8. A, B, C and D occur in that order on a circle. The minor central angles AOB and BOC are 80° and 110°. Find the central angle swept along arc ABC and ∠ADC.



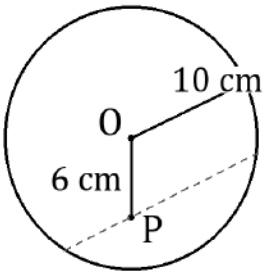
9. Triangle ABC is inscribed in a circle with centre O. If ∠A = 90° and ∠B = 35°, find ∠C and the smaller angles AOC and AOB.

SECTION C

(3 questions × 3 marks = 9 marks)

10. Prove that equal chords of one circle subtend equal angles at the centre.

11. O is the centre, OP = 6 cm and the radius is 10 cm. Find the length of the shortest chord through P and justify its direction.



12. ABCD is cyclic with AB as a diameter. If ∠BAC = 28° and ∠CAD = 17°, find ∠ABC, ∠ADB and ∠BCD.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A square stage has all four corners on a circle of radius 10 m. Find the stage's diagonal, side length and the distance from the circle's centre to a side.