Mathematics — Ganita Manjari

Chapter 5 Test 7

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. To prove that equal chords subtend equal central angles, the triangles formed by the chords and radii are usually compared by:

(A) AAA
(B) SSS
(C) ASA
(D) Only their areas

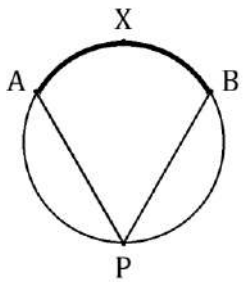
2. A chord rotates about the circle's centre O. Which pair is unchanged?

(A) Its endpoints
(B) Its slope and position
(C) Its length and distance from O
(D) Its slope and direction

3. An exterior angle of a cyclic quadrilateral equals:

(A) Its interior opposite angle
(B) Its interior adjacent angle always
(C) Half its interior opposite angle
(D) The sum of all interior angles

4. Which marked point can be the vertex of an inscribed angle subtended by the highlighted arc AXB?



(A) A
(B) B
(C) X
(D) P

5. The circumcentre of a triangle is the intersection of its:

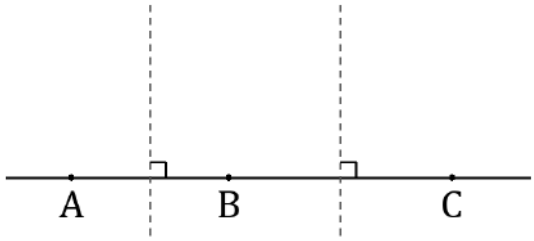
(A) Medians
(B) Perpendicular bisectors of sides
(C) Angle bisectors
(D) Altitudes

SECTION B

(4 questions × 2 marks = 8 marks)

6. Circles of radii 10 cm and 17 cm each have a chord of length 16 cm. Find the chord-distances from the centres. Why need these distances not be equal?

7. A, B and C are distinct collinear points. Use the perpendicular bisectors of AB and BC to explain why no circle can pass through all three.



8. ABCD is cyclic and side CD is extended beyond D to E. Prove that ∠ADE = ∠ABC.

9. A, B and C lie on a circle with centre O. If AB = BC and ∠BAC = 40°, find the reflex and smaller central angles AOC.

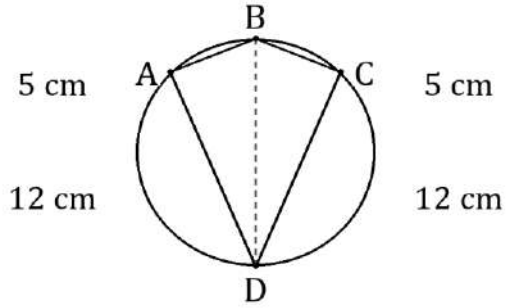
SECTION C

(3 questions × 3 marks = 9 marks)

10. Prove that a parallelogram inscribed in a circle must be a rectangle.

11. An isosceles triangle ABC has AB = AC. Its circumcentre lies on BC. Determine all its angles and justify your reasoning.

12. ABCD is cyclic with AB = BC = 5 cm and CD = DA = 12 cm. Find diagonal BD and the area of the quadrilateral.



SECTION D

(1 application question × 3 marks = 3 marks)

13. Six bolts are equally spaced on a circular rim of radius 8 cm. Find the neighbouring-bolt distance, each joining chord's distance from the centre, and the least positive rotation matching all bolts.