

BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 11

Trigonometric Functions

Mathematics · Chapter 3 · Matches current CBSE blueprint · Each question PYQ-sourced where indicated

DATE	TOTAL MARKS 30	DURATION 60 min	MARKING As per board	TARGET ≥ 24/30
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GENERAL INSTRUCTIONS

1. All questions are compulsory.
2. Section A: Very short answer (1 mark each).
3. Section B: Short answer (2 marks each).
4. Section C: Long answer (3 marks each).
5. Section D: Application (4 marks).
6. Marks are indicated against each question.
7. Use of calculator is NOT permitted.
8. Where θ appears in arc-length or sector-area formulas, assume it is in radians unless stated otherwise.

Section A — Very Short Answer

5 MARKS · 10 MIN

- Q1.** Convert 45° into radians. [PYQ 2019 Delhi] [1 mark]
- Q2.** Find the value of $\sin(-30^\circ)$. [PYQ 2020 All India] [1 mark]
- Q3.** Write the period of the function $f(x) = \cos 2x$. [PYQ 2021 Delhi] [1 mark]
- Q4.** State the range of the function $f(x) = \sin x$. [PYQ 2018 Delhi] [1 mark]
- Q5.** Evaluate $\cos(\pi/2 - \pi/3)$. [PYQ 2022 Delhi] [1 mark]

Section B — Short Answer

8 MARKS · 16 MIN

- Q6.** Find the length of an arc of a circle of radius 8 cm subtending a central angle of $3\pi/4$ rad. [PYQ 2019 Delhi] [2 marks]
- Q7.** If $\sin x = 3/5$ and x lies in Q2, find $\cos x$ and $\tan x$. [PYQ 2020 All India] [2 marks]
- Q8.** Find the area of a sector of radius 5 cm with a central angle of $\pi/6$ rad. [PYQ 2021 All India] [2 marks]
- Q9.** Evaluate $\cos 15^\circ$ using a sum/difference formula. [PYQ 2023 Delhi] [2 marks]

Section C — Long Answer

9 MARKS · 18 MIN

- Q10.** Prove that $(\cos 7x + \cos 5x)/(\sin 7x - \sin 5x) = \cot x$. [PYQ 2018 Delhi] [3 marks]
- Q11.** Find the general solution of $\sin 2x = \sqrt{3}/2$. [PYQ 2022 All India] [3 marks]
- Q12.** If $\tan x = 5/12$ and x lies in Q3, find $\sin x$, $\cos x$, $\sec x$, $\operatorname{cosec} x$. [PYQ 2020 Delhi] [3 marks]

Section D — Application

8 MARKS · 16 MIN

- Q13.** (a) Evaluate $\sin 75^\circ$ using a sum formula. (b) Evaluate $\cos 105^\circ$ using a sum formula. (c) Hence show that $\sin 75^\circ + \cos 105^\circ$ equals $(\sqrt{6} + \sqrt{2} - \sqrt{6} + \sqrt{2})/4 = (2\sqrt{2})/4 = \sqrt{2}/2$, and state which standard angle equals $\sqrt{2}/2$. [PYQ 2023 All India] [4 marks]
- Q14.** A horse is tethered by a rope of length 14 m to a peg at one corner of a rectangular field. The horse grazes a quarter-circle region. (a) Find the angle of the sector in radians. (b) Find the length of the arc the horse traces along the outer edge of its grazing region. (c) Find the area the horse can graze. [PYQ 2022 Delhi] [4 marks]

Marking scheme & model answers — see companion Answer Key PDF · all PYQs traceable to actual CBSE papers · readyforboards.com · +91 70330 05444