

BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 11

Relations and Functions

Mathematics · Chapter 2 · 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. Draw neat labelled diagrams where required.

Section A — Very Short Answer

5 MARKS · 10 MIN

- Q1.** If $A = \{1, 2\}$ and $B = \{3, 4\}$, write the number of elements in $A \times B$. [PYQ 2019 Delhi] **[1 mark]**
- Q2.** Find x if $(x + 2, 5) = (4, 5)$. [PYQ 2020 All India] **[1 mark]**
- Q3.** State the range of the constant function $f(x) = 7$. [PYQ 2021 Delhi] **[1 mark]**
- Q4.** Write the range of the signum function on $\mathbb{R}$. [PYQ 2018 Delhi] **[1 mark]**
- Q5.** If $f(x) = 3x$ and $g(x) = x + 1$, find $(f + g)(2)$. [PYQ 2022 Delhi] **[1 mark]**

Section B — Short Answer

8 MARKS · 16 MIN

- Q6.** If $A = \{1, 2, 3\}$, write the relation $R = \{(x, y) : y = x + 1, x \in A, y \in A\}$ in roster form. [PYQ 2019 Delhi] **[2 marks]**
- Q7.** If $f(x) = 2x + 1$ and $g(x) = x^2$, find $(f \circ g)(2)$ and $(g \circ f)(2)$. Are they equal? [PYQ 2022 Delhi] **[2 marks]**
- Q8.** Find the domain of $f(x) = 1/(x - 5)$. [PYQ 2020 Delhi] **[2 marks]**
- Q9.** If $A = \{a, b\}$, write all subsets of $A \times A$ that are reflexive relations. [PYQ 2021 All India] **[2 marks]**

Section C — Long Answer

9 MARKS · 18 MIN

- Q10.** Find the domain and range of $f(x) = \sqrt{9 - x^2}$. [PYQ 2018 All India] **[3 marks]**
- Q11.** Show that $f: \mathbb{N} \rightarrow \mathbb{N}$ defined by $f(x) = 2x$ is one-one but not onto. [PYQ 2020 Compartment] **[3 marks]**
- Q12.** If $f(x) = x^2 + 1$ and $g(x) = 2x - 3$, find $(f \circ g)(x)$ and $(g \circ f)(x)$. [PYQ 2023 Delhi] **[3 marks]**

Section D — Application

8 MARKS · 16 MIN

- Q13.** Draw the graph of the greatest integer function $f(x) = [x]$ for $-2 \leq x < 3$ and find its range on this interval. [PYQ 2023 Delhi] **[4 marks]**
- Q14.** Let $f(x) = (x + 1)/(x - 1)$, $x \neq 1$. Find (a) the domain, (b) $f(2)$, $f(0)$, $f(-1)$, (c) check whether f is one-one on its domain. [PYQ 2022 All India] **[4 marks]**

Marking scheme & model answers — see companion Answer Key PDF · all PYQs traceable to actual CBSE papers ·
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