

JEE MAIN RELATIONS AND FUNCTIONS (CLASS 12) — COUNTING RELATIONS AND FUNCTIONS (JEE) — PYQS

Max. Marks: 24
Questions: 6

Section A (MCQ) — 6 questions

Q.1 The number of functions $f: \{1, 2, 3, 4\} \rightarrow \{a, b, c\}$, which are not onto, is :

[JEE Main 2026 (Online) 4th April Morning Shift]

- (1) 48 (2) 45 (3) 51 (4) 35

Scan or tap for the
full solution



Q.2 Let R be a relation defined on the set $\{1, 2, 3, 4\} \times \{1, 2, 3, 4\}$ by

$$R = \{(a, b), (c, d) : 2a + 3b = 3c + 4d\}.$$

Then the number of elements in R is

[JEE Main 2026 (Online) 24th January Morning Shift]

- (1) 6 (2) 15 (3) 12 (4) 18

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Q.3 Consider two sets $A = \{x \in \mathbb{Z} : |(|x-3|-3)| \leq 1\}$ and

$$B = \left\{ x \in \mathbb{R} - \{1, 2\} : \frac{(x-2)(x-4)}{x-1} \log_e(|x-2|) = 0 \right\}.$$

Then the number of onto functions $f: A \rightarrow B$ is equal to :

[JEE Main 2026 (Online) 23rd January Evening Shift]

- (1) 32 (2) 81 (3) 79 (4) 62

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Q.4 The number of strictly increasing functions f from the set $\{1, 2, 3, 4, 5, 6\}$ to the set $\{1, 2, 3, \dots, 9\}$ such that $f(i) \neq i$ for $1 \leq i \leq 6$, is equal to :

[JEE Main 2026 (Online) 21st January Morning Shift]

- (1) 21 (2) 28 (3) 27 (4) 22

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Q.5 The number of relations, defined on the set $\{a, b, c, d\}$, which are both reflexive and symmetric, is equal to:

[JEE Main 2026 (Online) 21st January Morning Shift]

- (1) 16 (2) 64 (3) 256 (4) 1024

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Q.6 Consider the sets $A = \{(x, y) \in \mathbb{R} \times \mathbb{R} : x^2 + y^2 = 25\}$,
 $B = \{(x, y) \in \mathbb{R} \times \mathbb{R} : x^2 + 9y^2 = 144\}$,
 $C = \{(x, y) \in \mathbb{Z} \times \mathbb{Z} : x^2 + y^2 \leq 4\}$ and $D = A \cap B$. The total number of one-one functions from the set D to the set C is:

[JEE Main 2025 (Online) 4th April Morning Shift]

- (1) 15120 (2) 18290 (3) 17160 (4) 19320

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ANSWER KEY

Ques.	1	2	3	4	5	6					
Ans.	2	3	4	2	2	3					