Q1 Let set **A** has 7 elements and set **B** has 8 elements, then number of one-one mapping that can be defined from **A** to **B** is
(A) 56 (B) 5760
(C) 40320 (D) 192

Q2 A function **f**(**x**) is said to be one-one if
(A) **f**(**x₁**) = **f**(**x₂**) ⇒ −**x₁** = **x₂**
(B) **f**(−**x₁**) = **f**(−**x₂**) ⇒ −**x₁** = **x₂**
(C) **f**(**x₁**) = **f**(**x₂**) ⇒ **x₁** = **x₂**
(D) None of these

Q3 The function **f** : **N** → **N** : **f**(**x**) = 2**x** is
(A) one-one and onto
(B) one-one and into
(C) many-one and onto
(D) many-one and into

Q4 The function f : **N** → **N** : **f**(**x**) = **x**² + **x** + 1 is
(A) one-one and onto
(B) one-one and into
(C) many-one and onto
(D) many-one and into

Q5 The function **f** : **R** → **R** : **f**(**x**) = **x**³ is
(A) one-one and onto
(B) one-one and into
(C) many-one and onto
(D) many-one and into

Q6 The function **f** : **R** → **R** : **f**(**x**) = cos **x** is
(A) one-one and into
(B) one-one and onto
(C) many-one and into
(D) many-one and onto

Q7 Let **A** = {1, 2, 3}, **B** = {4, 5, 6, 7} and let **f** = {(1, 4), (2, 5), (3, 6)} be a function from **A** to **B**. Function **f** is
(A) one−one and onto

(B) many−one and onto
(C) many−one and into
(D) one−one and into

Q8 The function
$$f : R \to R : f(x) = \begin{cases} 1, & \text{if } x \text{ is rational} \\ -1, & \text{if } x \text{ is irrational} \end{cases} \text{ is}$$
(A) one−one and into
(B) one−one and onto
(C) many−one and into
(D) many−one and onto

Q9 The function $f : N \to N : f(x) = x^2$ is
(A) one−one and into
(B) one−one and onto
(C) many−one and into
(D) many−one and onto

Q10 The function $f : R \to R : f(x) = |x|$ is
(A) one−one and into
(B) one−one and onto
(C) many−one and into
(D) many−one and onto

Q11 Show that the function $f : R \to R : f(x) = x^4$ is many-one and into.

Q12 Show that the function $f : R \to R : f(x) = x^5$ is one−one and onto.

Q13 Let **R₀** be the set of all non zero real numbers. Then, show that the function $f : R_0 \to R_0 : f(x) = \frac{1}{x}$ is one−one and onto.

Q14 Show that the signum function **f** : **R** → **R**, defined by

$$f(x) = \begin{cases} 1, & if \quad x > 0 \\ 0, & if \quad x = 0 \\ -1, & if \quad x < 0 \end{cases}$$

is neither one–one nor onto.

Q15 Let $A = R - \{3\}$ and $B = R - \{1\}$.

Let $f : A \to B : f(x) = \frac{x-2}{x-3}$ for all values of $x \in A$.

Show that f is one–one and onto.

Answer Key

Q1	(C)	Q9	(A)
Q2	(C)	Q10	(C)
Q3	(B)	Q11	**Check the solution**
Q4	(B)	Q12	**Check the solution**
Q5	(A)	Q13	**Check the solution**
Q6	(C)	Q14	**Check the solution**
Q7	(D)	Q15	**Check the solution**
Q8	(C)		

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