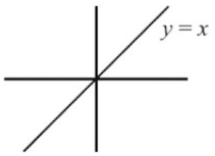
PARISHRAM 2025

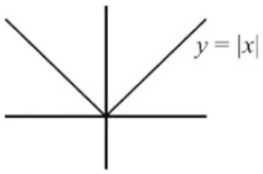
Mathematics

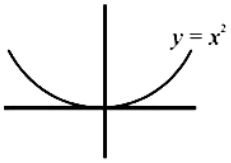
DPP: 2

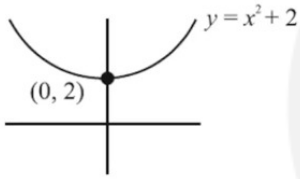
Relations and Functions

Q1 Which of the following function is One-One?

(A) 

(B) 

(C) 

(D) 

Q2 The number of injective functions from $\{1,2,3\} \to \{1,2,3,4,5\}$ is

(A) 125 (B) 243

(C) 10 (D) 60

Q3 Set $A = \{a,b,c,d\}$ and $B = \{5,6,8,-2\}$ and let a function defined from set A to set B $f = \{a,6),(b,8),(c,-2),(d,5)\}$, then f is

(A) Many-One

(B) One-One Onto

(C) One-One Into

(D) Many-One Onto

Q4 If $X = \{4,5,6\}$ and $Y = \{0,1\}$ and $f : X \to Y$ defined by $f = \{(4,1),(5,1),(6,0)\}$, then f is

(A) one-one, into

(B) one-one, onto

(C) many-one, into

(D) many-one, onto

Q5 $f(x) = x + \sqrt{x^2}$ is a function from $\mathrm{R} \to \mathrm{R}$ then $f(x)$ is:

(A) Injective

(B) Surjective

(C) Bijective

(D) None of these

Q6 The function $f : R \to R, f(x) = x^2 \forall x \in R$ is

(A) One-One but not Onto

(B) Onto but not One-One

(C) Injection as well as surjection

(D) Neither One-One nor Onto

Q7 Let $f : R \to R$ be a function defined by $f(x) = \frac{x-7}{x-8}$, then

(A) f is One-One Onto

(B) f is One-One Into

(C) f is Many-One Onto

(D) f is Many-One Into

Q8 Function $f : N \to N, f(x) = 2x + 3$ is:

(A) One-one onto (B) One-one into

(C) Many-one onto (D) Many-one into

Q9 The function $f : R \to R$ defined by $f(x) = (x-1)(x-2)(x-3)$ is:

(A) One-one but not onto

(B) Onto but not one-one

(C) Both one-one and onto

(D) Neither one-one nor onto

Q10 If $A = \{a,b,c\}$, then total number of one-one onto functions which can be defined from A to A is:

(A) 3 (B) 4

(C) 9 (D) 6

Q11 If $f : R \to R$, then $f(x) = |x|$ is

(A) One-one but not onto
(B) Onto but not one-one
(C) One-one and onto
(D) None of these

Q12 The function $f : R \to R$ defined by $f(x) = e^x$ is:
(A) Onto
(B) Many-one
(C) One-one and into
(D) Many one and onto

Q13 If $f : \left[-\frac{\pi}{2}, \frac{\pi}{2}\right] \to [-1, 1]$ and $f(x) = \sin x$ then
(A) one-one and onto
(B) one-one and into
(C) many-one and into
(D) many-one and onto

Q14 If $A = R - \{2\}$ and $B = R - \{1\}$. If $f : A \to B$ is a function defined by $f(x) = \frac{x-1}{x-2}$, then show that f is one-one and onto.

Q15 Show that the function $f : w \to w$ defined by $f(x) = \begin{cases} x + 1, & \text{if } x \text{ is even} \\ x - 1, & \text{if } x \text{ is odd} \end{cases}$ is a bijecton.

Answer Key

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