LAKSHYA (JEE)

Relations and Functions

DPP-09

1. Let E = {1, 2, 3, 4} and F ={1, 2}. Then the number of onto functions from E to F is
(A) 14 (B) 16
(C) 12 (D) 8

2. Let the function f : R $\to$ R be defined by f(x) = 2x + sin x for x $\in$ R. Then f is
(A) one-to-one and onto
(B) one-to-one but not onto
(C) onto but not one-to-one
(D) neither one-to-one nor onto

3. If f : [0, ∞) $\to$ [0, ∞) and $f(x)=\frac{x}{1+x}$ then f(x) is
(A) one-one and onto
(B) one-one but not onto
(C) onto but not one-one
(D) neither one-one nor onto

4. f : N $\to$ N, where f(x) = x –(–1)^x. Then f is
(A) one-one and into
(B) many-one and into
(C) one-one and onto
(D) many-one and onto

5. If $f(x)=\frac{\sin([x]\pi)}{x^2+x+1}$, where [.] denotes the greatest integer function, then
(A) f is one-one
(B) f is not one-one and non-constant
(C) f is a constant function
(D) none of these

6. The function f : N $\to$ N (N is the set of natural numbers) defined by f(n) = 2n + 3 is
(A) surjective only
(B) injective only
(C) bijective
(D) none of these

7. The range of the following function is

$$f(x)=\sqrt{(1-\cos x)\sqrt{(1-\cos x)\sqrt{(1-\cos x)\sqrt{...\infty}}}}$$

(A) [0, 1]
(B) [0, 1/2]
(C) [0, 2]
(D) none of these

8. Set A has 3 elements and set B has 4 elements then number of injections defined from A to B are?
(A) 12 (B) 24
(C) 36 (D) 48

9. The function f : N $\to$ N defined by $f(x)=x-5\left[\frac{x}{5}\right]$, where N is the set of natural numbes and [x] denotes the greatest integer less than or equal to x, is:
(A) one-one and onto
(B) one-one but not onto
(C) onto but not one-one
(D) neither ono-one nor onto

10. If the function f : R –{1, –1} $\to$ A defined by $f(x)=\frac{x^2}{1-x^2}$, is surjective, then A is equal to
(A) R–(–1, 0)
(B) R–{–1}
(C) R–[–1, 0)
(D) [0, ∞)

ANSWERS

1. (A)
2. (A)
3. (B)
4. (C)
5. (C)
6. (B)
7. (C)
8. (B)
9. (D)
10. (C)

Note - If you have any query/issue

Mail us at support@physicswallah.org