

# SHAURYA BATCH

## Relation and Function

**DPP-03**

1. If  $f: N \rightarrow N$  and  $f(x) = 2x$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
2. If  $f: R \rightarrow R$  and  $f(x) = x^2$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
3. If  $f: N \rightarrow R$  and  $f(x) = x^2$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
4. If  $f: R \rightarrow R$  and  $f(x) = x^3$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
5. If  $f: N \rightarrow N$  and  $f(x) = x^2 + x + 1$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
6. If  $f: A \rightarrow B$  where  $A = R - \{3\}$  and  $B = R - \{1\}$  defined as  $f(x) = \frac{x-2}{x-3}$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
7. If  $f: R^+ \rightarrow R^+$  and  $f(x) = e^x$  where  $R^+$  is the set of all positive real numbers then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
8. If  $f: R \rightarrow R$  and  $f(x) = \cos x$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
9. If  $f: \left[0, \frac{\pi}{2}\right] \rightarrow [-1, 1]$  and  $f(x) = \sin x$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
10. If  $f: [0, \pi] \rightarrow [-1, 1]$  and  $f(x) = \sin x$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
11. If  $f: [0, 2\pi] \rightarrow [-1, 1]$  and  $f(x) = \sin x$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
12. If  $f: \left[-\frac{\pi}{2}, \frac{\pi}{2}\right] \rightarrow [-1, 1]$  and  $f(x) = \sin x$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
13. If  $f: R \rightarrow R$  and  $f(x) = x|x|$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into

14. If  $f: R_0 \rightarrow R_0$  where  $R_0 = R - \{0\}$  and  $f(x) = \frac{1}{x}$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
15. If  $f: R \rightarrow R$  and  $f(x) = x + |x|$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
16. If  $f: \left(-\frac{\pi}{2}, \frac{\pi}{2}\right) \rightarrow R$  and  $f(x) = \tan x$  then  
 (A) One-one and onto  
 (B) One-one and into  
 (C) Many-one and onto  
 (D) Many-one and into
17. If  $f(x) = \frac{4x+x^4}{1+4x^3}$  and  $g(x) = \log\left(\frac{1+x}{1-x}\right)$  then what is the value of  $fog\left(\frac{e-1}{e+1}\right)$  equal to?  
 (A) 2 (B) 1 (C) 0 (D)  $\frac{1}{2}$
18. Let  $f(x) = px + q$  and  $g(x) = mx + n$ . Then  $fog(x) = gof(x)$  is equivalent to –  
 (A)  $f(p) = g(m)$   
 (B)  $f(q) = g(n)$   
 (C)  $f(n) = g(q)$   
 (D)  $f(m) = g(p)$
19. If  $f(x) = \sqrt{|x-1|}$  and  $g(x) = \sin x$  then  $(fog)\left(\frac{\pi}{6}\right)$  is –  
 (A) 1 (B) 2  
 (C)  $\frac{1}{2}$  (D)  $\frac{1}{\sqrt{2}}$
20. Let  $f: [-6, 6] \rightarrow R$  be defined by  $f(x) = x^2 - 3$ . Consider the following:  
 •  $(f \circ f \circ f)(-1) = (f \circ f \circ f)(1)$   
 •  $(f \circ f \circ f)(-1) - 4(f \circ f \circ f)(1) = (f \circ f)(0)$   
 Which of the above is/are correct?  
 (A) I only (B) II only  
 (C) I and II both (D) Neither I nor II

**ANSWER**

1. (b)
2. (d)
3. (b)
4. (a)
5. (b)
6. (a)
7. (b)
8. (d)
9. (b)
10. (d)
11. (c)
12. (a)
13. (a)
14. (a)
15. (d)
16. (a)
17. (b)
18. (c)
19. (c)
20. (c)



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