

DEFINATION BASED

1. If $x, y \in \mathbb{R}$, then which of the following rule is not a function-
- (1) $y = 4 - x^2$ (2) $y = 3x^2$
 (3) $y = \sqrt{x} - |x|$ (4) $y = 3x^2 + 5$
2. A rule $f(x) = x^x$ is defined from A to A , then this rule is a function, if-
- (1) $A = \mathbb{N}$ (2) $A = \mathbb{Q}$
 (3) $A = \mathbb{Z}$ (4) none of these
8. If $f(x) = \frac{\cos^2 x + \sin^4 x}{\sin^2 x + \cos^4 x}$, $x \in \mathbb{R}$, then $f(2002)$ is equal to-
- (1) 1 (2) 2 (3) 3 (4) 4
9. If $f(x) = \frac{4^x}{4^x + 2}$, then $f(x) + f(1 - x)$ is equal to-
- (1) 0 (2) -1 (3) 1 (4) 4

VALUE OF FUNCTION

3. If $f(x) = \frac{x+2}{x-1} = y$, then-
- (1) $x = f(y)$ (2) $f(1) = 3$
 (3) $f(y) = 2f(x)$ (4) $f(y) = 2 + f(x)$
4. If $f: \mathbb{N} \rightarrow \mathbb{R}^+$, $f(x) = \sqrt{x}$, then the value of $\frac{f(25)}{f(9)+f(16)}$ is-
- (1) 0 (2) 1 (3) $5/7$ (4) $9/7$
5. If $\phi(x) = a^x$, then $(\phi(p))^3$ equals-
- (1) $2\phi(p)$ (2) $3\phi(p)$ (3) $\phi(3p)$ (4) $6\phi(p)$
6. If $f(x) = \ln\left(\frac{1+x}{1-x}\right)$, then $f\left(\frac{2x}{1+x^2}\right)$ equals-
- (1) $[f(x)]^2$ (2) $\{f(x)\}^3$ (3) $2f(x)$ (4) $3f(x)$
7. If $f(x) = \frac{2^x + 2^{-x}}{2}$, then $f(x+y) + f(x-y)$ equals-
- (1) $f(x).f(y)$ (2) $2f(x).f(y)$
 (3) $f(x) + f(y)$ (4) $f(x) - f(y)$
10. For the function given in (Q. above), the value of $f(1/97) + f(2/97) + \dots + f(96/97)$ is-
- (1) 48 (2) -48
 (3) 1 (4) none of these

Que.	Ans.
1	3
2	1
3	1
4	3
5	3
6	3
7	2
8	1
9	3
10	1

Domain of function

1. The domain of the function $\log \sqrt{\frac{3-x}{2}}$ is-
 - (1) $(3, \infty)$
 - (2) $(-\infty, 3)$
 - (3) $(0, 3)$
 - (4) $(-3, 3)$

2. The domain of the function $f(x) = \frac{1}{\sqrt{(x-1)(x-2)}}$ is-
 - (1) $(-\infty, 2) \cup (1, \infty)$
 - (2) $\mathbb{R} - [-1, 1]$
 - (3) $(-\infty, -2) \cup (1, \infty)$
 - (4) $(-\infty, 1) \cup (2, \infty)$

3. The domain of $f(x) = \log_e |\log_e x|$ is-
 - (1) $(0, \infty)$
 - (2) $(1, \infty)$
 - (3) $(0, 1) \cup (1, \infty)$
 - (4) $(-\infty, 1)$

4. The domain of the function $f(x) = \frac{1}{\sqrt{x - [x]}}$ is-
 - (1) \mathbb{R}
 - (2) $\mathbb{R} - \mathbb{Z}$
 - (3) \mathbb{Z}
 - (4) none of these

5. The domain of the function $f(x) = \sqrt{x-1} + \sqrt{5-x}$ is-
 - (1) $[1, \infty)$
 - (2) $(-\infty, 5)$
 - (3) $(1, 5)$
 - (4) $[1, 5]$

6. The domain of the function $f(x) = \log_{10}(\sqrt{x-4} + \sqrt{6-x})$ is-
 - (1) $(4, 6)$
 - (2) $[4, 6]$
 - (3) $[4, 6)$
 - (4) none of these

EVEN ODD FUNCTION

7. The function $f(x) = x^2 - |x|$ is-
 - (1) an odd function
 - (2) a rational function
 - (3) an even function
 - (4) none of these

8. Function $f(x) = \log_e(x^3 + \sqrt{1+x^6})$ is-
 - (1) even
 - (2) odd
 - (3) neither even nor odd
 - (4) none of these

9. Which of the following is odd function ?
 - (1) $\sin x^2$
 - (2) $(a^x + 1)/(a^x - 1)$
 - (3) $x^2 - |x|$
 - (4) none of these

10. $f(x) = \sin x - \cos x$ is-
 - (1) even function
 - (2) odd function
 - (3) periodic function
 - (4) none of these

11. The function $f(x) = \frac{\sin^4 x + \cos^4 x}{x + \tan x}$ is-
 - (1) odd
 - (2) even
 - (3) neither even nor odd
 - (4) odd and periodic

12. If $A = \{1, 2, 3, 4\}$ then which of the following are functions from A to itself ?
 - (1) $f_1 = \{(x, y) : y = x + 1\}$
 - (2) $f_2 = \{(x, y) : x + y > 4\}$
 - (3) $f_3 = \{(x, y) : y < x\}$
 - (4) $f_4 = \{(x, y) : x + y = 5\}$

Que.	Ans.
1	2
2	4
3	3
4	2
5	4
6	2
7	3
8	2
9	2
10	3
11	1
12	4