

SAINIK SCHOOL GOPALGANJ
SUB: MATHEMATICS
CLASS - XI

ASSIGNMENT- 2

Chapter 2: Relations and Functions

(Q1 to 10) There are four Options against each question. Choose the option which you consider the most appropriate as your answer. (a) (b) (c) (d)

1. What is the domain of $f(x) = \frac{1}{x+2}$
(a) \mathbb{R} (b) $\mathbb{R} - (-2, 2)$ (c) $\mathbb{R} - \{2\}$ (d) none
2. Domain of the relation "x is relatively prime to y" from $\{2,3,4,5\}$ to $\{3,6,7,10\}$ is
(a) $\{2,3,5\}$ (b) $\{2,3,4,5\}$ (c) $\{2,3\}$ (d) $\{3,6,7\}$
3. What is the range of $f(x) = x^2 - 2$
(a) \mathbb{R} (b) $\mathbb{R} - (1,2)$ (c) $(-2, \infty)$ (d) none
4. What is the range of $g(x) = \frac{5}{x-5}$
(a) \mathbb{R} (b) $\mathbb{R} - (-2, 2)$ (c) $\mathbb{R} - \{0\}$ (d) none
5. Number of elements in $P(A \times B)$ if $n(A) = 2$ and $n(B) = 3$
(a) 32 (b) 16 (c) 64 (d) none
6. If $(x, 8) = (-3, Y-2)$ the (x, y) is
(a) $(1, 3)$ (b) $(-3, 10)$ (c) $(11, 3)$ (d) none
7. The range of Singnum function is
(a) \mathbb{R} (b) $\mathbb{R} - (-2, 2)$ (c) $\{1, 0, -1\}$ (d) none
8. Domain of $f(x) = \frac{1}{x}$ is
(a) \mathbb{R} (b) $\mathbb{R} - (-1, 1)$ (c) $\mathbb{R} - \{0\}$ (d) none
9. If $2.f(x) - 3.f\left(\frac{1}{x}\right) = x^2$ then $f(2)$ is
(a) 10 (b) $\frac{-7}{4}$ (c) $\frac{-7}{3}$ (d) $\frac{-17}{4}$
10. The range of the function $f(x) = \frac{x+2}{|x+2|}$, $x \neq -2$ is

(a) $(-1, 1)$ (b) $(-1, 0, 1)$ (c) $(11, 3)$ (d) none

11. Write 10 elements of relation R defined as $R = \{(x, y) : \text{HCF}(x, y) = 1\}$
12. Find the domain of the function $f(x) = \sqrt{x - 2}$
13. Find the range of the function $f(x) = \frac{1}{1 - 2\cos x}$
14. Write the relation R defined as $R = \{(x, x^3) : x \text{ is a prime number less than } 20\}$ in roster form.
15. If $f(x) = x + \frac{1}{x}$ then find the value of $f(x) + f\left(\frac{1}{x}\right)$
16. Find the domain and range of the function $f(x) = \sqrt{x^2 - 9}$
17. Find the domain and range of the function $f(x) = \frac{\sqrt{x^2 - 4}}{2x}$
18. If $f(x) = 4x - x^2$, $x \in \mathbb{R}$ then write the value of $f(a+1) - f(a-1)$
19. If $f(x) = \frac{x+1}{x-1}$ is a real function then find $f(f(f(2)))$
20. Find the set of values for which $f(x) = 3x^2 - 1$ and $g(x) = 3 + x$ are equal.