# RELATIONS AND FUNCTIONS

## CLASSIFICATION OF FUNCTION

## EXERCISE

**Q.1** Which of the following is a function?

(A) $\{(2,1), (2,2), (2,3), (2,4)\}$

(B) $\{(1,4), (2,5), (1,6) , (3,9)\}$

(C) $\{(1,2), (3,3), (2,3), (1,4)\}$

(D) $\{ (1,2), (2,2), (3,2), (4,2)\}$

**Q.2** If $f(x) = \dfrac{x}{x-1} = \dfrac{1}{y}$, then $f(y)$ equals

(A) $x$                                          (B) $x - 1$

(C) $x + 1$                                    (D) $1 - x$

**Q.3** The domain of $f(x) = \dfrac{1}{x^3 - x}$ is -

**Q.4** The range of $f(x) = \cos \dfrac{\pi[x]}{2}$ is -

**Q.5** If $f : R^+ \to R^+$, $f(x) = x^2 + 2$ and $g : R^+ \to R^+$, $g(x) = \sqrt{x+1}$ then $(f + g)(x)$ equals -

**Q.6** Function $f(x) = x^{-2} + x^{-3}$ is -

(A) a rational function

(B) an irrational function

(C) an inverse function

(D) None of these

**Q.7** The period of $|\sin 2x|$ is-

(A) $\dfrac{\pi}{4}$                                    (B) $\dfrac{\pi}{2}$

(C) $\pi$                        (D) $2\pi$

**Q.8** If $f(x) = \dfrac{x-3}{x+1}$, then $f[f\{f(x)\}]$ equals -

(A) x                       (B) $\dfrac{1}{X}$

(C) –x                     (D) $\dfrac{-1}{X}$

**Q.9** If $f(x) = 2|x-2| - 3|x-3|$, then the value of $f(x)$ when $2 < x < 3$ is -

(A) $5 - x$                (B) $x - 5$

(C) $5x - 13$             (D) None of these

**Q.10** Which of the following functions defined from R to R are one-one -

(A) $f(x) = |x|$           (B) $f(x) = \cos x$

(C) $f(x) = e^x$            (D) $f(x) = x^2$

## ANSWER KEY

1.      (D)      { (1,2), (2,2), (3,2), (4,2)}

2.      (D)      $1 - x$

3.      (A)      $R - \{-1,0,1\}$

4.      (C)      $\{-1,0,1\}$

5.      (D)      $x^2 + 2 + \sqrt{(x+1)}$

6.      (A)      a rational function

7.      (B)      $\dfrac{\pi}{2}$

8.      (A)      x

9.    (C)    5x – 13

10    (C)    $f(x) = e^x$