DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth **SUBJECT : MATHS**
DATE : **DPP NO. :8**

Topic :-RELATIONS AND FUNCTIONS

1. The function $f:R\to R$ given by $f(x)=x^3-1$ is
   a) A one-one function b) An onto function
   c) A bijection d) Neither one-one nor onto

2. Let $[x]$ denote the greatest integer $\leq x$. If $f(x)=[x]$and $g(x)=|x|$, then the value of $f\left(g\left(\frac{8}{5}\right)\right)-g\left(f\left(-\frac{8}{5}\right)\right)$ is
   a) 2 b) -2 c) 1 d) -1

3. The domain of the function $f(x)=\frac{\cos^{-1}x}{[x]}$ is
   a) $[-1,0)\cup\{1\}$ b) [-1, 1] c) [-1, 1) d) None of these

4. The set of values of x for which of the function $f(x)=\frac{1}{x}+2^{\sin^{-1}x}+\frac{1}{\sqrt{x-2}}$ exists is
   a) R b) $R-\{0\}$ c) ϕ d) None of these

5. If $f(x)$ satisfies the relation $2f(x)+f(1-x)=x^2$ for all real x, then $f(x)$ is
   a) $\frac{x^2+2x-1}{6}$ b) $\frac{x^2+2x-1}{3}$ c) $\frac{x^2+4x-1}{3}$ d) $\frac{x^2-3x+1}{6}$

6. If the function $f(x)$ is defined by $f(x)=a+bx$and $f^r=fff....$ (repeated$r$ times), then $f^r(x)$ is equal to
   a) $a+b^rx$ b) $ar+b^rx$ c) $ar+bx^r$ d) $a\left(\frac{b^r-1}{b-1}\right)+b^rx$

7. If $f(x)=\frac{x-1}{x+1}$, then $f(2\,x)$ is
   a) $\frac{f(x)+1}{f(x)+3}$ b) $\frac{3\,f(x)+1}{f(x)+3}$ c) $\frac{f(x)+3}{f(x)+1}$ d) $\frac{f(x)+3}{3\,f(x)+1}$

8. If $f(x)$ is an odd periodic function with period 2, then $f(4)$ equals
   a) 0 b) 2 c) 4 d) -4

9. The domain of definition of $f(x) = \sqrt{\log_{0.4}\left(\frac{x-1}{x+5}\right)} \times \frac{1}{x^2-36}$, is

a) $(-\infty,0) - \{-6\}$ b) $(0,\infty) - \{1, 6\}$ c) $(1, \infty) - \{6\}$ d) $[1,\infty) - \{6\}$

10. The domain of the function $f(x) = \log_2(\log_3(\log_4 x))$is

a) $(-\infty, 4)$ b) $(4, \infty)$ c) $(0, 4)$ d) $(1, \infty)$

11. Let $f(x) = |x-2| + |x-3| + |x-4|$ and $g(x) = x + 1$. Then,

a) $g(x)$is an even function

b) $g(x)$is an odd function

c) $g(x)$ is neither even nor odd

d) $g(x)$ is periodic

12. If a function $f:[2, \infty) \to B$ defined by $f(x) = x^2 - 4x + 5$ is a bijection, then $B =$

a) R b) $[1, \infty)$ c) $[4, \infty)$ d) $[5, \infty)$

13. $R$is relation on N given by $R = \{(x, y): 4x + 3y = 20\}$. Which of the following belongs to R?

a) (-4, 12) b) (5, 0) c) (3, 4) d) (2, 4)

14. If $f: R \to R$ be a mapping defined by $f(x) = x^3 + 5$, then $f^{-1}(x)$ is equal to

a) $(x + 5)^{1/3}$ b) $(x - 5)^{1/3}$ c) $(5 - x)^{1/3}$ d) $5 - x$

15. Let $f(x) = x$ and $g(x) = |x|$ for all $x \in R$. Then, the function $\phi(x)$ satisfying $[\phi(x) - f(x)]^2 + [\phi(x) - g(x)]^2 = 0$

a) $\phi(x) = x, x \in [0, \infty)$

b) $\phi(x) = x, x \in R$

c) $\phi(x) = -x, x \in (-\infty, 0]$

d) $\phi(x) = x + |x|, x \in R$

16. In a function $f(x)$ is defined for $x \in [0, 1]$, then the function $f(2x + 3)$ is defined for

a) $x \in [0, 1]$ b) $x \in [-3/2, -1]$ c) $x \in R$ d) $x \in [-3/2, 1]$

17. If $f(x) = x^2 - 2|x|$ and $g(x) = \begin{cases} \text{Min}\{f(t): -2 \le t \le x\}, & -2 \le x < 0 \\ \text{Max}\{f(t): 0 \le \le x\}, & 0 \le x \le 3 \end{cases}$, then $g(x)$ equlas

a) $\begin{cases} x^2 - 2x, & -2 \le x \le -1 \\ -1, & -1 \le x < 0 \\ 0, & 0 \le x < 2 \\ x^2 + 2x, & 2 \le x \le 3 \end{cases}$

b) $\begin{cases} x^2 + 2x, & -2 \le x \le -1 \\ -1, & -1 \le x < 0 \\ 0, & 0 \le x < 1 \\ x^2 - 2x, & 1 \le x \le 3 \end{cases}$

c) $\begin{cases} x^2 + 2x, & -2 \le x \le -0 \\ x^2 - 2x, & 0 \le x \le 3 \end{cases}$

d) $\begin{cases} x^2 + 2x, & -2 \le x \le 0 \\ 0, & 0 \le x < 2 \\ x^2 - 2x, & 2 \le x \le 3 \end{cases}$

18. Let R be the set of real numbers and the mapping $f{:}R \to R$ and $g{:}R \to R$ be defined by $f(x) = 5 - x^2$ and $g(x) = 3x - 4$, then the value of $(fog)(-1)$ is

a) -44 b) -54 c) -32 d) -64

19. $f{:}R \to R$ is defined by $f(x) = \frac{e^{x^2} - e^{-x^2}}{e^{x^2} + e^{-x^2}}$, is

a) One-one but not onto
b) Many-one but onto
c) One-one and onto
d) Neither one-one nor onto

20. Let $f{:}N \to N$ defined by $f(x) = x^2 + x + 1, x \in N$, then f is

a) One-one onto b) Many-one onto c) One -one but not onto d) None of these