**ASSIGNMENT NO.-1(RELATIONS AND FUNCTIONS)**

**(MATHEMATICS)**

1. If $A=\left\{1,2\right\},$form the set $A×A×A.$

2. Let $R $be the relation on the set $N$ of natural numbers defined by

 $R=\{\left(a,b\right):a+3b=12,a\in N,b\in N\}$

 Find : (i) $R$ (ii) Domain of $R$ (iii) Range of $R$

3. If $A×B=\left\{\left(a,1\right),\left(a,5\right),\left(a,2\right),\left(b,2\right),\left(b,5\right),\left(b,1\right)\right\},$ find $B×A.$

4. Let $R$ be the relation on the set $Z$ of all integers defined by $\left(x,y\right)\in R⇒x-y$ is divisible by $n.$

 Prove that

 (i) $(x,x)\in R$ for all $x\in Z$

 (ii) $(x,y)\in R⇒(y,x)\in R$ for all $x,y\in Z$

 (iii) $\left(x,y\right)\in R and (y,z)\in R⇒(x,z)\in R$ for all $x,y,z\in R.$

5. Let $A=\left\{1,2\right\}$ and $B=\left\{3,4\right\}.$Find the total number of relations from A into B.

6. Let $A=\left\{x,y,z\right\}$ and $B=\left\{a,b\right\}.$ Find the total number of relations from A into B.

7. Find the domain for which the functions $f\left(x\right)=2x^{2}-1$ and $g\left(x\right)=1-3x$ are equal.

8. Is $g=\{\left(1,1\right),\left(2,3\right),\left(3,5\right),\left(4,7\right)\}$ a function ?If this is described by the formula $g\left(x\right)=αx+β$,

 then what values should be assigned to $α $and $β$?

9. Let $f$ be defined by $f\left(x\right)=x-4$ and $g$ be defined by $g\left(x\right)=\left\{\begin{array}{c}\frac{x^{2}-16}{x+4} , x\ne -4\\λ , x=-4\end{array}\right.$ .Find λ such

 that $f\left(x\right)-g(x)$ for all $x.$

10. Find the domain of the real valued function $f\left(x\right)=\frac{2x-3}{x^{2}-3x+2}$.

11. Find the domain and range of the function $f\left(x\right)=\sqrt{4-x^{2}}$.

12. Find the domain and range of the function $f=\left\{\left(x,\frac{1}{1-x^{2}}\right):x\in R,x\ne \pm 1\right\}.$