**HINTS AND SOLUTIONS**

1. (c) Since  meet when  ⇒ , which does not give any real value of *x*.

Hence, .

1. (c)  = *n*[(*A* ∪ *B*)*c*] = 

= 

= 700 – [200 + 300 – 100] = 300.

1. (a) is a multiple of 3}

*x* is a multiple of 7}

∴is a multiple of 3 and 7}

is a multiple of 3 and 7}

*x* is a multiple of 21}=21*N.*

1. (c) Then 

Now, 



∴ 

⇒ 

But 

∴

∴ 

∴  *i.e.*,  .....(i)

Again, 

∴  and 

∴ …..(ii)

Then, ⇒ .

1. (b) Obviously, the relation is not reflexive and transitive but it is symmetric, because .
2. (c) Given *A* = {1, 2, 3, 4}

*R* = {(1, 3), (4, 2), (2, 4), (2, 3), (3, 1)}

(2, 3) ∈ *R* but (3, 2) ∉ *R*. Hence *R* is not symmetric.

*R* is not reflexive as (1, 1) ∉ *R*.

*R* is not a function as (2, 4) ∈ *R* and (2, 3) ∈ *R*.

*R* is not transitive as (1, 3) ∈ *R* and (3, 1) ∈ *R* but (1, 1) ∉ *R*.

1. (a) ; 

∴ *A* × *B* contains  elements.

Hence, number of relations from *A* to *B* .

1. (d) *A* = Set of all values (*x, y*) : 



*x*2 + *y*2 = 52

*B* =  *i.e.,*  + .

Clearly, *A* ∩ *B* consists of four points.

1. (a)  

 *R*is reflexive.

Again *a R b* ⇒ 

 *R* is symmetric, Again  and  but 

 *R*is not anti-symmetric.

Further, 1 *R* 2 and 2 *R* 3 but , []

**** *R* is not transitive.

1. (c) We have, *R* = {(1, 3); (1, 5); (2, 3); (2, 5); (3, 5); (4, 5)}

 {(3, 1), (5, 1), (3, 2), (5, 2); (5, 3); (5, 4)}

Hence = {(3, 3); (3, 5); (5, 3); (5, 5)}.

1. (b) 







1. (a) We have 





.

1. (c) Given  …..(i)

Let  and 

Then  and 

Substituting the value of *x* and *y* in (i), we obtain

 ⇒ .

1. (b)  and range 

⇒ function is one-one but not onto.

1. (a) , Domain of  is

⇒  ⇒  ⇒ 

∴ .

1. (d) 

Hence domain is .

1. (b) Given 



Only  lies in the domain

.

1. (a) Given 

 .

1. (c) .
2. (b) For – 1< *x*< 1, 

Range of .

∴Co-domain of function = B .

1. (b) 



⇒  is an even function and derivative of an even function is always odd.

1. (c) ; 

But , ∴

Put , ; ∴.

1. (a) or 







.

1. (c) Let 

⇒  for real values of *x*,

we have 

.

1. (b) 

For , 

For , 

 ⇒ .

1. (b) 

∴

Squaring both the sides, 



⇒ 

Hence, .

1. (d) Given and 

∴⇒.

1. (b) Let ⇒ **.** Now,

.

⇒  ⇒ 

∴ .

1. (b) If a set contains n number of elements then number if possible Binary Operations = 

Then the given set contains 3 elements so the number of possible B.O are = 19683.

1. (c) Given B.O ‘\*’ as a\*b= L.C.M of a & b

then (3\*5)\*(4\*6)=60.