**Marking Scheme: - UT1st**

**Class: XII (Maths)**

1. tan-1 [ tan() ] = tan-1(-1/) = tan-1[ tan(-/3) ] = -/3 *1M*
2. x = 1/5 *1M*
3. Correct Examples *1M*
4. |A| = *1M*
5. x = *1M*
6. 0 *1M*
7. 2tan-1x + /2 =

tan-1x = /4

x = tan(/4) = 1 *Ans.*

1. Sin-1x + Sin-12x = /2

Sin-12x = cos-1x = sin-1 *1M*

4x2 = 1-x2 x = *Ans. 1M*

1. Finding AB 1/2M

Finding (AB)T 1/2M

Finding AT and BT 1/2M

Finding ATBT and showing the equality 1/2M

Tan-1 = *1M*

= 1 *1M*

(2x2-4)/-3 = 1 *1M*

2x2 = 1 *1/2M*

x2 *Ans. 1/2M*

1. *Reflexive :-*

a-a = 0 (even) a A

(a, a) R *1M*

R is Reflexive.

*Symmetric :- 1/2M*

Let a,b A S.t. (a,b) R

(a,b) R

|a-b| is even

|-(b-a) is even||b-a| is even

(b,a) R

R is symmetric. *1/2M*

*Transitive :- 1/2M*

Let a,b and c A S.t. (a,b) R, (b,c) R

(a,b) R and (b,c) R |a-b| is even and |b-c| is even

|a-b+b-c| is even = |a-c| is even

(a,c) R R is transitive. *1M*

Showing Equivalence Relation *1/2M*

1. Let

=

Operate R1R1R3 and R2R2R3

= *1M*

=  *1M*

Operate R2R2+R3

*1M*

Expanding along R2

= 2  *1M*

1. Let *1M*

Finding *1/2M*

*1/2M*

Equating the corresponding entry and solving the equation

and getting :-

a = 1;

b = -2;

c = 2;

d = 0;

and writing *1+1M*

14.

Let y be an arbitrary element of range t. then

y = 4x2 + 12x + 15 *1+ 1/2M*

= (2x+3)2 + 6

x = *1M*

Let us define g:s → N : g(y) =

Now *gof*(x) = g [f(x)] = g { (2x+3)2 + 6 } = x *1M*

And *fog*(y) = *1M*

Hence, *gof* = IN  and *fog* = IS

f-1 = g *1/2M*

f-1 = *1/2M*

f-1 =

= = 1 *Ans. 1/2M*

1. BA =

= 6

= 6 I  *2M*

*Matrix form of the given system :-*

=

**A X P** *1M*

AX = P

X = A-1P unique solution *1/2M*

*Ans.*