**Question 1>** T (n) = 3T (n/2) + n

Here a=3, b=2 and d=1 since n^1=n

b^d=1. So a>b.

Then **T(n)=** **Θ(nlog2[base3]);**

**Question 2>** T (n) = 64T (n/8) − n^2(log n)

Here a=64, b=8,

For Θ=n^klogp[base n]

K=2 & p=0

8^2=64

Then **T(n)=** **Θ(nlog64[base 8]logn)**

**T(n)=Θ(nlog2logn);**

**Question 3>** T (n) = 2nT (n/2) + n^n

A=2n, b=2 and d=n. Now b^d>a

Consider d=3, then 8>6.

Consider d=2, then 4=4.

But we are considering cases for larger values so case 1 will satisfy that is b^d>a

Then **T(n)=Θ(n^n)**

**Qustion 4>** T (n) = 3T (n/3) + n/2

Here a=3, b=3 and d=1.

So a=b^d;

Then **T(n)= Θ(nlogn)**

**Qustion 5>** T (n) = 7T (n/3) + n^2

Here a=7, b=3 and d=2;

Then b^d=9 which is greater than a.

So here a<b^d;

Then **T(n)= Θ(n^2)**