**HOMEWORK 3**

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**Question 1:**

**(a)** T(n) = 4T(n/3) + O(n).

Here, a=4, b=3, c=1,

= >1

c = 1

According to Master’s theorem, if > c, then the asymptotic upper bound is

O ()

**T(n) = O ()**

**(b)** T(n) = 3T(n/3) + O (n2).

Here, a=3, b=3, c=2

= =1

c = 2

According to Master’s theorem, if < c, then the asymptotic upper bound is

O ()

**T(n) = O ()**

**(c) T(n) = 4T(n/2) + O (n2√ n).**

n2√n=n2 x n1/2 = n5/2

Here, a=4, b=2, c=5/2=2.5

= =2

c = 2.5

According to Master’s theorem, if < c, then the asymptotic upper bound is

O ()

**T(n) = O ()**

**(d) T(n) = 8T(n/2) + O (n 3).**

Here, a=8, b=2, c=3

= =3

c = 3

According to Master’s theorem, if = c, then the asymptotic upper bound is

O ( )

**T(n) = O ()**