**Task 1:**

Using master theorem we get running time of Algorith A & C.

Running time of A:

In that case,

b=2 ; a=5 and O(n^d) = O(n^1) ………so , d=1;

logba = 2.236 > d;

so, TA(n) = O(n ^ 2.236) =~ O(n^2);

Running time of C:

In that case,

b=3 ; a=9 and O(n^d) = O(n^2) ………so , d=2;

logba = 2 = d;

so, TC(n) = O(n ^ 2 \* logn) ;

Using the recursion tree we get running time of algorithm B.

Running time of B:

Let’s say T(1) = c (constant);

c c

/ \ +

c c 2\*c

/ \ / \ +

c c c c 4\*c

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T(1) T(1) T(1) T(1) = 2^(n-1) \* c

so, TC(n) = c + 2\*c + 4\*c + ……+ 2^(n-1)\*c = c\*(2^n - 1) =~ O(2^n) ;

OA < OB

And,

OA < OC

So, we choose algorithm A