RIAJUDDIN _ Master Theoroem Solution

1. T (n) = 3T (n/2) + n----------> $\phi(n^{\log_3 2}) = \phi(n)$
2. T (n) = 64T (n/8) – n^2(log n) ----------> Not Applicable
3. T (n) = 2nT (n/2) + n^n ----------> Not Applicable
4. T (n) = 3T (n/3) + n/2 ----------> $\phi(n^{\log_3 3} \log^{1/2+1} n) = \phi(n \log n)$.
5. T(n)=7T(n/3)+n^2 ----------> $\phi(n^d) = \phi(n^2)$.

Solution…

1) T(n) = 3T(n/2) +n.

   Here a=3,b=2 as per master theorem case -3 $\phi(n^{\log_b a})$ if a>(b^d) the time complexity for is $\phi(n^{\log_3 2}) = \phi(n)$.

2) T(n) = 64T(n/8)-n^2(logn).

   In this case master theorem will not apply.

3) T(n) = 2nT(n/2)+n^n.

   In this case a is not constant so master theorem will not apply.

4) T(n) = 3T+(n/3)+n/2.

   Here a=3,b=3,d=2 as per master theorem case -2 $\phi(n \log_b{}^a \log^{k+1} n)$ the time complexity for is $\phi(n^{\log_3 3} \log^{1/2+1} n) = \phi(n \log n)$.

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

   Here a=7,b=2 as per master theorem case -1 $\phi(n^d)$ if a<(b^d) the time complexity for is $\phi(n^d) = \phi(n^2)$.