Discrete Mathematics

Home Work 3

Dead Line : Wednesday 16 JAN 2013, 4:30 PM

Take $T(1)=1$ for all the questions below,

Q - 1 [Marks 60]

Find tight asymptotic bounds for the following:

1. $T(n)=2T(\frac{n}{2})+\frac{n}{\lg n}$
2. $T(n)=2T(\sqrt{n})+1$
3. $T(n)=\sqrt{n}T(\sqrt{n})+n$
4. $T(n)=\frac{1}{4}T(\frac{n}{4})+\frac{3}{4}T(\frac{3n}{4})+1$
5. $T(n)=2T(\frac{n}{2})+n\lg n$
6. $T(n)=T(\frac{n}{5})+T(\frac{3n}{4})+n$

Q - 2 [Marks 50]

Find exact solution to the following:

(a) $T(n)=8T(n/2)+n$

(b) $T(n)=8T(n/2)+n^3$

(c) $T(n)=3T(n/2)+n$

(d) $T(n)=T(n/4)+1$

(e) $T(n)=3T(n/3)+n^2$