# UNIVERSITY OF TEXAS AT DALLAS 

## Department of Electrical Engineering

EE/TE 4367 - Telecommunications Switching \& Transmission
Solution \#6

Date assigned: 2/28/2008
Date due: 3/06/2008

## Solution 6.1

Frame Time $=\left(N^{2}+\frac{N}{2}\right)$ bit times $\rightarrow$ Frame Time (in bit times) x bit duration $=$ Frame time
(in seconds) $=\frac{\left(N^{2}+\frac{N}{2}\right)}{2 \times 10^{6}}=10 \mathrm{msec}=N^{2}+\frac{N}{2}-20000 \rightarrow$ $N=141$ bit times (rounded to the nearest integer)

## Solution 6.2

$\mathrm{N}=1024, \mathrm{p}=0.167$ (channel utilization), $\mathrm{B}=0.005$ (maximum blocking probability)
$\mathrm{Nx}=(2)(\mathrm{N} / \mathrm{n})(\mathrm{n})(\mathrm{k})+(\mathrm{k})(\mathrm{N} / \mathrm{n}) 2$, try different k values to get below the maximum blocking probability specified.
a) $\mathrm{n}=16, \mathrm{~N} / \mathrm{n}=64, \mathrm{k}=8, \mathrm{~B}=0.009, \mathrm{k}=9, \mathrm{~B}=0.002$, $\mathrm{N} x=55,296$
b) $\mathrm{n}=32, \mathrm{~N} / \mathrm{n}=32, \mathrm{k}=14, \mathrm{~B}=0.001, \mathrm{k}=13, \mathrm{~B}=0.004, \mathrm{~N}=39,936$

