UNIVERSITY OF TEXAS AT DALLAS Department of Electrical Engineering

EE/TE 4367 - Telecommunications Switching & Transmission Solution #7

Date assigned:	3/27/2008
Date due:	4/03/2008

Solution 7.1

 $\alpha L = 30 \ (\alpha \ in \ dB/km \)$ BDP=80 Gbps-km=80,000 Mbps-km L=80,000/500=160 km. $\alpha = \frac{30}{160} = 0.188 \ dB/km$

Solution 7.2

-16 dBm output power with FWHM=50 nm. -48 dBm receive power required for 50 Mbps = 32 dBm loss budget. The maximum distance imposed by the BDP is 500/50=10 km. With 2 dB of loss per km, 32-20=12 dB is available for tap loss. Thus, 12/0.4/10=3 taps/km.

Solution 7.3

mB1P minimum density =1/(m+1). Maximum density is 1 for m even and m/(m+1) for m odd.

mB1C minimum density =1/(m+1). Maximum density is m/(m+1).