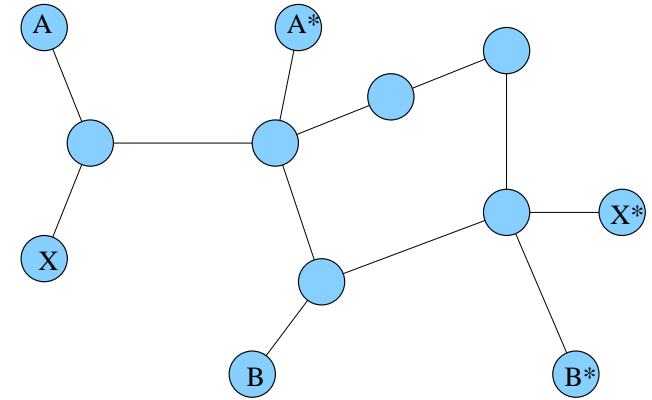




## Problems



1. ShuffleNet of fig. 3.33(a):
  - a) Prove that with fixed maximal hop  $H$  the ShuffleNet can consist of max.  $N = 2^H$  nodes.
  - b) Assuming uniform traffic, what is the average hop count? ( $N = 2^H$ )
2. Connections  $A \rightarrow A^*$  and  $B \rightarrow B^*$  use the shortest path routing and both are using wavelength  $\lambda_1$ . The nodes of the network are waveband-selective LDCs. Configure an arriving connection  $X \rightarrow X^*$  into the network. Would you configure the connection same way if the nodes were WSXC?
3. When logical topology of Shufflenet (fig. 3.33(a) is realized in a folded bus (fig. 3.33(c)<sup>a</sup>) and a bidirectional ring (fig. 3.34) networks 16 and 2 wavelengths were required. How many wavelengths is required to realize the same logical topology in case of one directional ring?

<sup>a</sup>Error: 3.34(c) in slides but should be 3.33(c) (book)