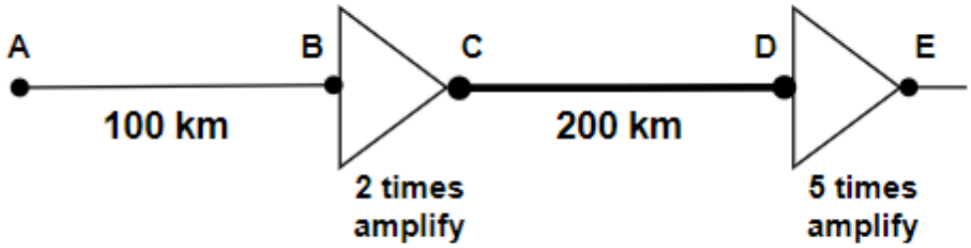
Suppose the signal power is 5 MW at point A. The power loss rate at the wire from A to B is 5 kW/km and from C to D is 0.05 dB/km. **Calculate** the total change of signal power in decibel and comment if the power is being amplified/attenuated.



Consider a communication channel that requires to send 108 GB within 6 hours. The link operates on signals with frequency range from 900 KHz to 14 MHz. If the link is perfect, i.e., no noise is introduced in the link,

- **Determine** the number of voltage levels needed to fulfill the requirement.
- In practice, there is no noise free channel. Suppose, the strength of the noise power is 20mW which is 60 times weaker than the signal power. **What** will be the channel capacity considering the noise?