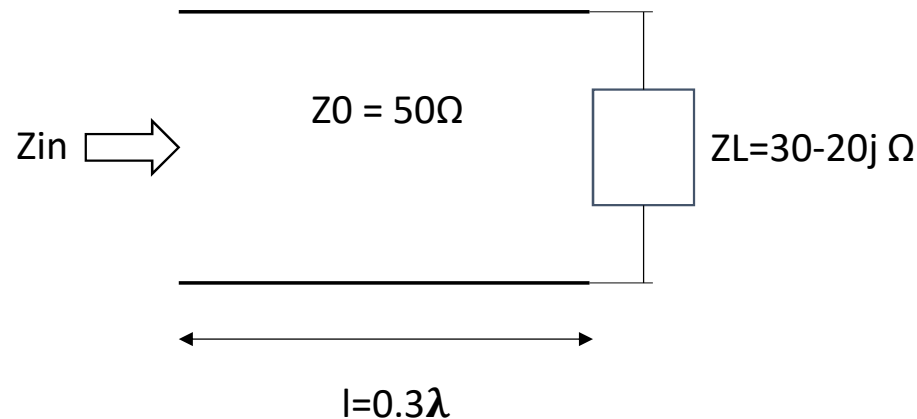


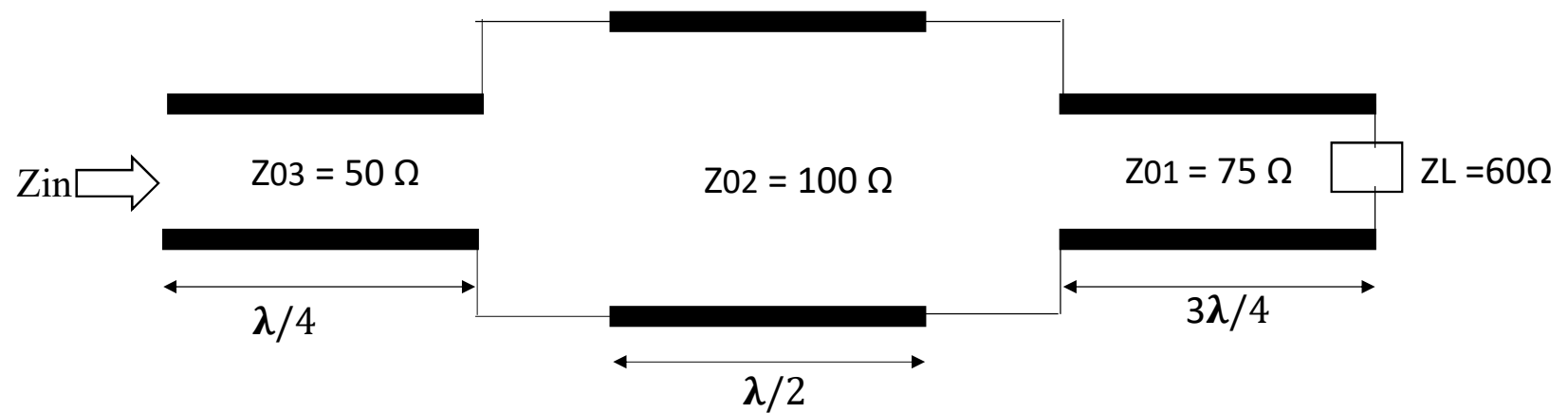
## Tutorial 6

**Q1.** A lossless transmission line of electrical length  $l=0.3\lambda$  is terminated with a complex load Impedance as shown in the figure . Find the value of **(a) reflection coefficient at the load** **(b) the SWR On the line** **(c) the reflection coefficient at the input of the line** and **(d) the input impedance of the line**.



**Q2.** Derive an expression for the characteristic impedance of a transmission line in terms of  $Z_{sc}$  and  $Z_{oc}$ . Where  $Z_{sc}$  is the input impedance of the transmission line when one end is short circuited while  $Z_{oc}$  is the input impedance of the transmission line when one end is open circuited.

**Q3.** Three lines are connected as shown in figure. Determine the input impedance.



**Q4.** A quarter wave  $100\Omega$  line is terminated by a load  $Z_L = 210\Omega$ . If the voltage at the receiving end is 80 V, What is the voltage at the sending end?