Assessment 6

Due on 2019-09-11, 23:59 IST.

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

1) Consider a T-branch power divider as shown in the figure. Let $Z_1$ be so chosen that Port 1 gets matched. Also, $\rho = \frac{Z_2}{Z_3}$. The value of $Z_1$ and $Z_2$ are respectively are

![T-branch power divider diagram]

$Z_1 = 2Z_0$, $\rho = 1/2$
$Z_2 = \frac{1}{2}Z_0$, $\alpha = 2$
$Z_3 = \frac{1}{2}Z_0$, $\alpha = 1$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$Z_1 = \frac{3}{2}Z_0$, $\alpha = \frac{3}{4}$

2) The power divider circuit shown in the figure is designed so that reflection coefficient at port 1 is zero. The reflection coefficient at port 3 is

![Power divider circuit diagram]

$\begin{align*}
\rho_1 & = 1/2 \\
\rho_2 & = -1/2 \\
\rho_3 & = 1/5
\end{align*}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\rho_3 = 1/2$

3) Suppose that the resistance connected between port 2 & 3 of a Wilkinson equal power divider gets open circuited (may be due to soldering failure). The reflection coefficient at port 2 will be

$\begin{align*}
\rho_1 & = 1/2 \\
\rho_2 & = -1/2 \\
\rho_3 & = 3/4
\end{align*}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\rho_2 = 1/2$

4) A butterworth filter is to provide an attenuation of 15 dB at 3 GHz. The cutoff frequency for the filter is 2 GHz. The required order is

$\begin{align*}
2 & \quad \text{Correct} \\
3 & \\
4 & \\
5 & \text{No, the answer is incorrect.}
\end{align*}$

Score: 0
Accepted Answers:
2

5) A bandpass filter having 0.5 dB ripples is to be designed for fc=3. The centre frequency is 1.5 GHz and bandwidth of filter is 10 %. Let the source impedance is 50 Ohm. The in the two-pole prototype design, the first element is a series inductor. After impedance scaling and frequency transformation, this element transforms to

$\begin{align*}
10 \text{ nH}, 2 \text{ pF} & \quad \text{Correct} \\
137 \text{ nH}, 0.4 \text{ pF} & \\
137 \text{ nH}, 0.2 \text{ pF} & \\
137 \text{ nH}, 0.8 \text{ pF} & \text{No, the answer is incorrect.}
\end{align*}$

Score: 0
Accepted Answers:
10 nH, 2 pF