Assignment 1

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2019-03-13, 23:59 IST.

1) A transmission line can be represented as

- A circuit which contains R and L in series and G and C in shunt.  
- A circuit which contains R and G in series and L and C in shunt.  
- A circuit which contains R and C in series and G and L in shunt.  
- None of these

No, the answer is incorrect.

Score: 0

Accepted Answers:
- A circuit which contains R and L in series and G and C in shunt.

2) A lossless line has characteristic impedance of 100 Ω and phase constant of 5 rad/m at 200 MHz. Calculate the inductance per meter and the capacitance per meter of the line.

- 0.04 μH/m, 40 pF/m
- 0.4 μH/m, 40 pF/m
- 0.4 μH/m, 4 pF/m
- 4 μH/m, 40 pF/m

No, the answer is incorrect.

Score: 0

Accepted Answers:
- 0.4 μH/m, 40 pF/m

3) For a lossy transmission line, the characteristic impedance does not depend on

- The operating frequency of the line
- The length of the line

1 point
The length of the line

4) A telephone line operating at 10 MHz has the following parameters:

\[ R = 40 \, \text{Ohm/m}, \quad G = 400 \, \mu \text{S/m}, \quad L = 0.2 \, \mu \text{H/m}, \quad C = 0.5 \, \text{nF/m} \]

Using this information solve question 4-6.

Calculate the characteristic impedance.

- 0+j0 \, \Omega
- 416-j1268 \, \Omega
- 29.58-j21.428 \, \Omega
- 0.68+j0.92 \, \Omega

No, the answer is incorrect.
Score: 0

Accepted Answers:
29.58-j21.428 \, \Omega

5) Calculate the phase velocity.

- 6.82 \times 10^7 \, \text{m/s}
- 13.64 \times 10^7 \, \text{m/s}
- 3.41 \times 10^7 \, \text{m/s}
- 6.82 \times 10^6 \, \text{m/s}

No, the answer is incorrect.
Score: 0

Accepted Answers:
6.82 \times 10^7 \, \text{m/s}

6) After how many meters will the voltage drop by 30 dB in the line?

- 1 \, \text{m}
- 5.042 \, \text{m}
- 10.084 \, \text{m}
- 2.251 \, \text{m}

No, the answer is incorrect.
Score: 0

Accepted Answers:
5.042 \, \text{m}

7) A transmission line is terminated in a pure inductance, which presents load impedance \( jZ_0 \). The frequency is 1 GHz and the phase velocity 0.67c

Use the above information for solving questions 7 to 10.

Find the reflection coefficient of T-line

- \quad j
- \quad 1+j
- \quad j
- \quad 1

No, the answer is incorrect.
Score: 0
8) A transmission line is terminated in a pure inductance, which presents load impedance $jZ_o$. The frequency is 1 GHz and the phase velocity $0.67c$. Use the above information for solving questions 7 to 10. Find the reflection coefficient of T-line:

<table>
<thead>
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<th>Option</th>
<th>Score</th>
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<tbody>
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<td>$-j$</td>
<td></td>
</tr>
<tr>
<td>$1+j$</td>
<td></td>
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<tr>
<td>$j$</td>
<td></td>
</tr>
<tr>
<td>$1$</td>
<td></td>
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No, the answer is incorrect. Score: 0

Accepted Answers:

9) The magnitude of standing wave ratio is given by?

<table>
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<tr>
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<tr>
<td>0</td>
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</tr>
<tr>
<td>$\sqrt{2}$</td>
<td></td>
</tr>
<tr>
<td>$\infty$</td>
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No, the answer is incorrect. Score: 0

Accepted Answers:

10) Find the distance from the load to the nearest voltage maximum.

<table>
<thead>
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<tr>
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<td></td>
</tr>
<tr>
<td>-2.5 cm</td>
<td></td>
</tr>
<tr>
<td>-5 cm</td>
<td></td>
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</tbody>
</table>

No, the answer is incorrect. Score: 0

Accepted Answers:

11) Find the input impedance at a distance $\lambda/8$ from load, if the load is short circuited. Assume characteristic impedance $=50$ Ω.

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<tr>
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<tr>
<td>$j50$ Ω</td>
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<tr>
<td>$-j50$ Ω</td>
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<tr>
<td>0 Ω</td>
<td></td>
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No, the answer is incorrect. Score: 0

Accepted Answers: