Unit 1 - How to access the portal

Assignment 0

The due date for submitting this assignment has passed. Due on 2018-08-07, 23:59 IST.
As per our records you have not submitted this assignment.

1) Two Points in cylindrical coordinate system are $P_1[2, 60^\circ, 5]$ and $P_2[1, 30^\circ, 3]$. Determine the distance between these two points.

- a. 30.083
- b. 2.353
- c. 2.296
- d. 2.733

No, the answer is incorrect.
Score: 0

Accepted Answers:
- b. 2.353

2) A 10 m Section of lossless transmission line having characteristic impedance $R$, 50 $\Omega$ and propagation constant $\beta = 0.8168$ rad/m is driven by a source. The is terminated by a load impedance of $Z_L = 100 + j50$ $\Omega$ as shown in figure bell. Determine the input impedance of the line.

- a. 1.4472/26.82$^\circ$
- b. 0.6852/26.57$^\circ$
- c. 0.2951/–250.2$^\circ$
- d. 0.4472/–189.4$^\circ$

No, the answer is incorrect.
Score: 0

Accepted Answers:
- d. 0.4472/–189.4$^\circ$
4) What is the skin depth of Copper ($\sigma = 5.8 \times 10^7 S/m$, $\epsilon_r \approx 1$, and $\mu_r \approx 1$) at 10 GHz?

- a. 8.53 mm
- b. 0.0066 mm
- c. $6.61 \times 10^{-7}$ m
- d. $6.61 \times 10^{-7}$ mm

No, the answer is incorrect. Score: 0
Accepted Answers:
- c. $6.61 \times 10^{-7}$ m

5) Consider a rectangular air-filled waveguide with dimensions $a = 2.286 \, cm$ and $l = 1.016 \, cm$. What will be the cut off frequency of the lowest order mode?

- a. $6.56 \, GHz$
- b. $16.16 \, GHz$
- c. $19.75 \, GHz$
- d. $30.3 \, GHz$

No, the answer is incorrect. Score: 0
Accepted Answers:
- a. $6.56 \, GHz$

6) A signal generator has an internal impedance of 50\,\Omega, and it is connected to a lossless 50\,\Omega line which feeds equal power to two separate resistive loads of 64\,\Omega and 25\,\Omega at a frequency of 10 MHz. Two quarter wave transformers are used to match the load to the 50\,\Omega line. Then, Find the VSWR in the respective matching transformers.

- a. 2 in 80\,\Omega, 1.25 in 50\,\Omega
- b. 1.25 in 80\,\Omega, 2 in 50\,\Omega
- c. 2.5 in 80\,\Omega, 2 in 50\,\Omega
- d. 1.25 in 80\,\Omega, 1 in 50\,\Omega

No, the answer is incorrect. Score: 0
A X-band rectangular waveguide (WR-90), filled with air is operate at 9 GHz. Wave impedance and phase velocity of the wave in the wave guide are

1. **2. 1.25 in 80 Ω, 2 in 50Ω**

No, the answer is incorrect.

Score: 0

Accepted Answers:
- c. \( Z = 550.66\Omega \) and \( v_p = 4.38 \times 10^8 \text{ m/s} \)

Find out the appropriate choice for this question. In TEM mode of propagation through a coaxial cable:

1. **2. only the longitudinal component of electric field exists.**

No, the answer is incorrect.

Score: 0

Accepted Answers:
- d. the longitudinal component of both electric field and magnetic field do not exist

A coaxial cable is filled with a dielectric material having \( \epsilon_r = 2.25 \) and \( \tan\delta = 0.0 \) has dimensions \( a = 1.03 \text{ mm} \) and \( b = 3.60 \text{ mm} \). If the inner conductor has infinite conductivity and the outer conductor has finite conductivity of \( 5.8 \times 10^7 \text{ S/m} \), determine the total loss associated with the cable at 2.5 GHz.

1. **2. 33.23 mNp/m**

No, the answer is incorrect.

Score: 0

Accepted Answers:
- a. 33.23 mNp/m

A microstrip line with \( \frac{W}{d} = 1.012 \) is fabricated on a substrate having relative capacitance of 1.36. The group velocity of the guided wave will be

1. **2. 2.0 \times 10^8 \text{ m/s}**
No, the answer is incorrect.
Score: 0
Accepted Answers:
c. $3.33 \times 10^8$ m/s