Unit 5 - Week 2 Lectures

Assignment-2

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

Due on 2019-08-21, 23:59 IST.

1) A uniform plane wave in air (refractive index = 1) is incident at an angle of 60° with respect to normal on a lossless dielectric material with dielectric constant ϵ_r. The transmitted wave propagates at an angle 45° with respect to normal. The value of ϵ_r is **1 point**

- 1.5
- $\sqrt{1.5}$
- 3
- $\sqrt{3}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
1.5

2) If the two media in Question 1 are interchanged, the critical angle (in degrees) is **1 point**

- 41.81
- 35.27
- 54.73
- 60

No, the answer is incorrect.
Score: 0
Accepted Answers:
54.73

3) For a uniform plane wave incident normally on an air (refractive index = 1) to glass (refractive index = 2) interface, the ratio of power reflected to the power incident on the interface is **1 point**

- 0.33
- 0.22
- 0.11
- 0.5

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.11

4) If a plane wave travelling in air with $E = \hat{y}5cos(2 \times 10^8 t - \beta z)$ V/m is normally incident on a lossless medium with $\mu_r = 1, \epsilon_r = 4$. The transmitted electric field equation is **1 point**

- $\hat{y}5cos(2 \times 10^8 t - \frac{4}{3}z)$ V/m
- $\hat{x}3.33cos(2 \times 10^8 t - \frac{3}{2}z)$ V/m
- $\hat{y}6.67cos(2 \times 10^8 t - \frac{2}{3}z)$ V/m
- $\hat{y}3.33cos(2 \times 10^8 t - \frac{4}{3}z)$ V/m

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\hat{y}3.33cos(2 \times 10^8 t - \frac{4}{3}z)$ *V/m*

5) For Question 4, a standing wave is formed in medium 1 (air) **1 point**

- True
- False

No, the answer is incorrect.
Score: 0
Accepted Answers:
True

6) For an electromagnetic wave incident from one medium to a second medium, total reflection takes place when **1 point**

- The angle of incidence is equal to the Brewster angle with E field perpendicular to the plane of incidence.
- The angle of incidence is equal to the critical angle with the wave moving from the denser medium to a rarer medium.
- The angle of incidence is equal to the Brewster angle with E field parallel to the plane of incidence.
- The angle of incidence is equal to the critical angle with the wave moving from a rarer medium to a denser medium.

No, the answer is incorrect.
Score: 0
Accepted Answers:
The angle of incidence is equal to the critical angle with the wave moving from the denser medium to a rarer medium.

7) The Brewster angle (in degrees) between air (refractive index = 1) to glass (refractive index = 2) interface is **1 point**

- 63.43
- 30
- 26.56
- 60

No, the answer is incorrect.
Score: 0
Accepted Answers:
63.43

8) A uniform plane wave in air with $E_i = \hat{y}2cos(\omega t - 2x - 4z)$ V/m is incident on a dielectric slab ($z \geq 0$) with. The angle of incidence with respect to normal is (in degrees) **1 point**

- 30
- 26.56
- 63.43
- 60

No, the answer is incorrect.
Score: 0
Accepted Answers:
26.56

9) The k-vector of the reflected wave corresponding to the Question 8 is **1 point**

- $2x + 4z$
- $-2x - 4z$
- $2x - 4z$
- $-2x + 4z$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$2x - 4z$

10) Total internal reflection (TIR) is associated with **1 point**

- Brewster angle
- Critical angle
- Normal incidence

No, the answer is incorrect.
Score: 0
Accepted Answers:
Critical angle