R07

Set No. 2

II B.Tech II Semester Examinations, APRIL 2011 EM WAVES AND TRANSMISSION LINES Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours

Code No: 07A4EC10

Max Marks: 80

[8+8]

Answer any FIVE Questions All Questions carry equal marks ****

- 1. Explain about characteristic parameters of the coaxial line at high frequencies.[16]
- 2. Explain the reflection of uniform plane waves with normal incidence at a plane of dielectric boundary. [16]
- 3. (a) Determine **D**, if $H = 8.5 e^{j(\omega t + \beta_2)} a_x$ in free space.
 - (b) Find \mathbf{E} and \mathbf{B} of (a).
- 4. What are the field components for TE waves? Derive them and draw the sketches for TE_{10} mode. [16]
- 5. (a) List out the applications of transmission lines.
 - (b) Find the characteristic impedance of a line at 1600Hz if the following measurements have been made on the line at 1600Hz, $Z_{OC} = 750\Omega$ and $Z_{SC} = 500\Omega$. [8+8]
- 6. (a) Define electric dipole moment, **p** and mention its units.
 - (b) What are the magnitudes of P and D for a dielectric material in which E = 1.0 V/m and $\chi_e = 5.0$. Assume any required data. [6+10]
- 7. (a) Derive an expression for reflection of a wave when incident on dielectric with oblique incidence with perpendicular polarization.
 - (b) Explain the concept of total internal reflection. [8+8]
- 8. (a) Prove $H = \frac{I}{2\pi R} \left[\cos \alpha_2 cod\alpha_1 \right] a_{\phi}$ due to a finite current element.
 - (b) Find **H** on the axis of a circular loop of radius 1.2 cm. Also find H at the centre of the loop. [8+8]

R07

Set No. 4

II B.Tech II Semester Examinations, APRIL 2011 EM WAVES AND TRANSMISSION LINES Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours

Code No: 07A4EC10

Max Marks: 80

Answer any FIVE Questions All Questions carry equal marks ****

- 1. Explain about characteristic parameters of the coaxial line at high frequencies.[16]
- 2. (a) Derive an expression for reflection of a wave when incident on dielectric with oblique incidence with perpendicular polarization.
 - (b) Explain the concept of total internal reflection.
- 3. (a) Determine **D**, if $H = 8.5 e^{j(\omega t + \beta_2)} a_x$ in free space
 - (b) Find \mathbf{E} and \mathbf{B} of (a).

[8+8]

[8+8]

- 4. (a) List out the applications of transmission lines.
 - (b) Find the characteristic impedance of a line at 1600Hz if the following measurements have been made on the line at 1600Hz, $Z_{OC} = 750\Omega$ and $Z_{SC} = 500\Omega$. [8+8]
- 5. What are the field components for TE waves? Derive them and draw the sketches for TE_{10} mode. [16]
- 6. Explain the reflection of uniform plane waves with normal incidence at a plane of dielectric boundary. [16]
- 7. (a) Prove $H = \frac{I}{2\pi R} \left[\cos \alpha_2 cod\alpha_1 \right] a_{\phi}$ due to a finite current element.
 - (b) Find **H** on the axis of a circular loop of radius 1.2 cm. Also find H at the centre of the loop. [8+8]
- 8. (a) Define electric dipole moment, **p** and mention its units.
 - (b) What are the magnitudes of P and D for a dielectric material in which E = 1.0 V/m and $\chi_e = 5.0$. Assume any required data. [6+10]

R07

Set No. 1

II B.Tech II Semester Examinations, APRIL 2011 EM WAVES AND TRANSMISSION LINES Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours

Code No: 07A4EC10

Max Marks: 80

|8+8|

Answer any FIVE Questions All Questions carry equal marks ****

- 1. (a) Define electric dipole moment, **p** and mention its units.
 - (b) What are the magnitudes of P and D for a dielectric material in which E = 1.0 V/m and $\chi_e = 5.0$. Assume any required data. [6+10]
- 2. (a) Determine **D**, if $H = 8.5 e^{j(\omega t + \beta_2)} a_x$ in free space.
 - (b) Find \mathbf{E} and \mathbf{B} of (a).
- 3. (a) List out the applications of transmission lines
 - (b) Find the characteristic impedance of a line at 1600Hz if the following measurements have been made on the line at 1600Hz, $Z_{OC} = 750\Omega$ and $Z_{SC} = 500\Omega$. [8+8]
- 4. What are the field components for TE-waves? Derive them and draw the sketches for TE_{10} mode. [16]
- 5. (a) Prove $H = \frac{1}{2\pi B} \left[\cos \alpha_2 cod\alpha_1 \right] a_{\phi}$ due to a finite current element.
 - (b) Find **H** on the axis of a circular loop of radius 1.2 cm. Also find H at the centre of the loop. [8+8]
- 6. (a) Derive an expression for reflection of a wave when incident on dielectric with oblique incidence with perpendicular polarization.
 - (b) Explain the concept of total internal reflection. [8+8]
- 7. Explain about characteristic parameters of the coaxial line at high frequencies.[16]
- 8. Explain the reflection of uniform plane waves with normal incidence at a plane of dielectric boundary. [16]

R07

Set No. 3

II B.Tech II Semester Examinations, APRIL 2011 EM WAVES AND TRANSMISSION LINES Common to Electronics And Telematics, Electronics And Communication

Engineering

Time: 3 hours

Code No: 07A4EC10

Max Marks: 80

8 + 8

[8+8]

Answer any FIVE Questions All Questions carry equal marks *****

- 1. (a) Derive an expression for reflection of a wave when incident on dielectric with oblique incidence with perpendicular polarization.
 - (b) Explain the concept of total internal reflection.
- 2. (a) Prove $H = \frac{I}{2\pi R} \left[\cos \alpha_2 cod\alpha_1 \right] a_{\phi}$ due to a finite current element.
 - (b) Find **H** on the axis of a circular loop of radius 1.2 cm. Also find H at the centre of the loop. [8+8]
- 3. (a) Determine **D**, if $H = 8.5 e^{j(\omega t + \beta_2)} a_x$ in free space.
 - (b) Find **E** and **B** of (a).
- 4. What are the field components for TE waves? Derive them and draw the sketches for TE_{10} mode. [16]
- 5. (a) Define electric dipole moment, **p** and mention its units.
 - (b) What are the magnitudes of P and D for a dielectric material in which E = 1.0 V/m and $\chi_e = 5.0$. Assume any required data. [6+10]
- 6. (a) List out the applications of transmission lines.
 - (b) Find the characteristic impedance of a line at 1600Hz if the following measurements have been made on the line at 1600Hz, $Z_{OC} = 750\Omega$ and $Z_{SC} = 500\Omega$. [8+8]
- 7. Explain the reflection of uniform plane waves with normal incidence at a plane of dielectric boundary. [16]
- 8. Explain about characteristic parameters of the coaxial line at high frequencies.[16]
