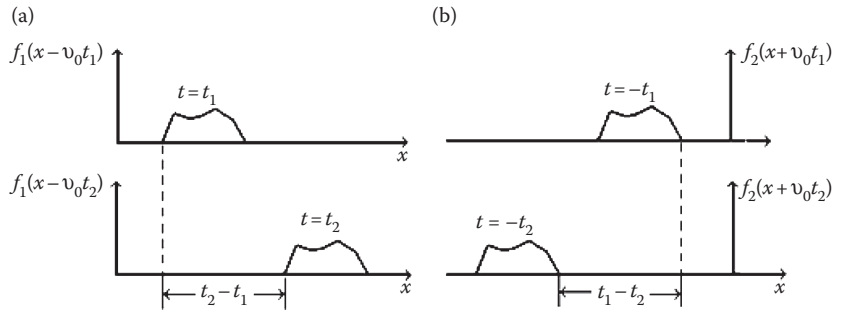

FIGURE 2.1
Two forms of wave. (a) Forward wave. (b) Backward wave.

002x001.eps

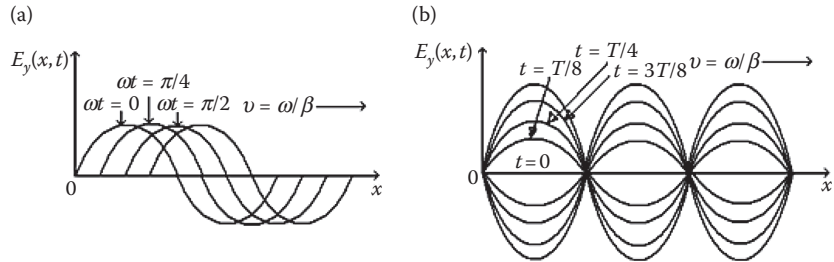

FIGURE 2.2
Wave in lossless media. (a) Travelling wave. (b) Standing wave.

002x002.eps

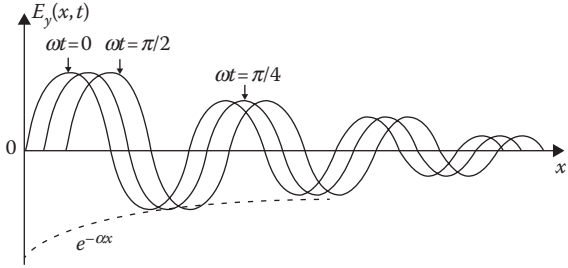

FIGURE 2.3
Travelling waves in lossy media.

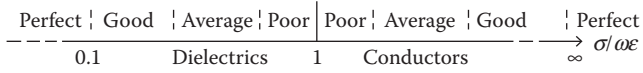

FIGURE 2.4
Dielectrics and conductors.

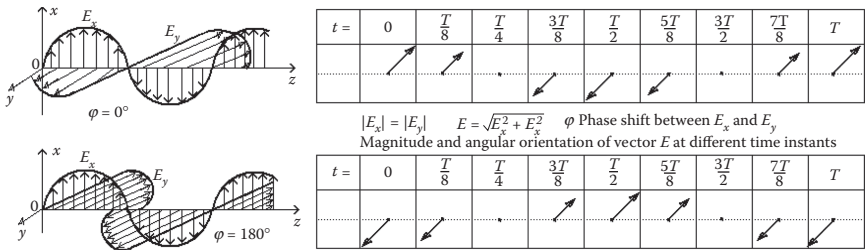

FIGURE 2.5
Linear polarisation.

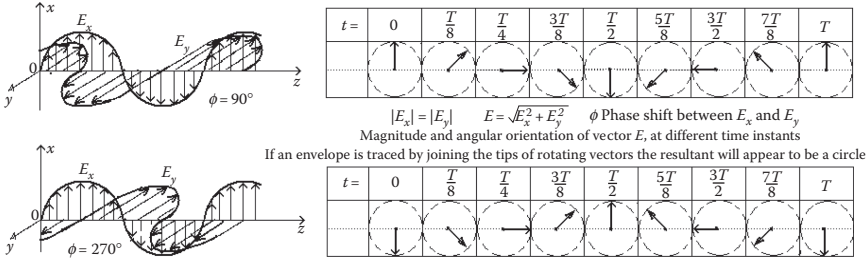

FIGURE 2.6
Circular polarisation.

002x006.eps

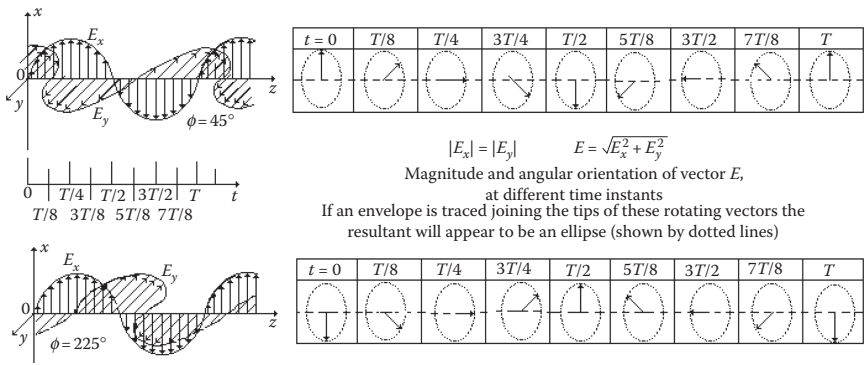

FIGURE 2.7
Elliptical polarisation.

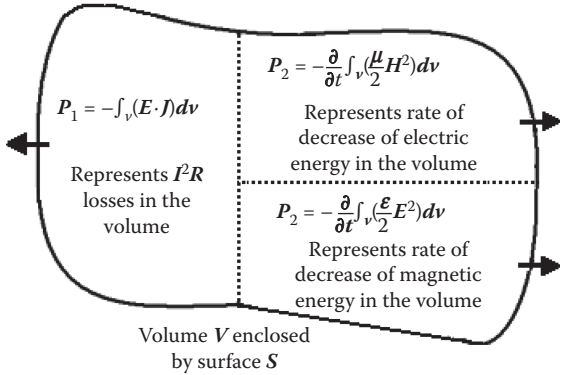

FIGURE 2.8
Components of Poynting vector.

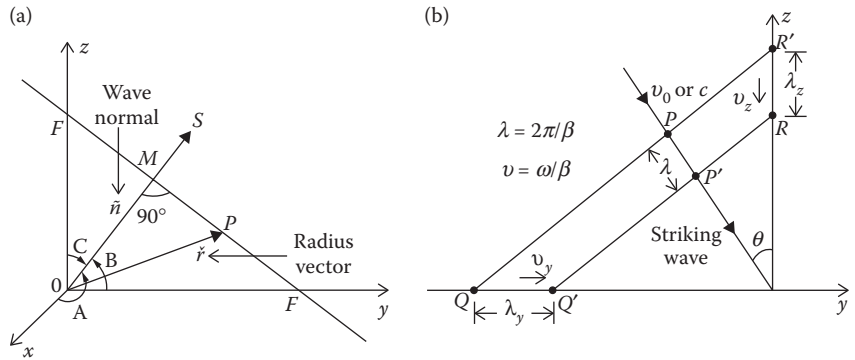

FIGURE 2.9
Direction cosines, wavelength and phase velocity. (a) Direction cosines. (b) Wavelength and velocity components.

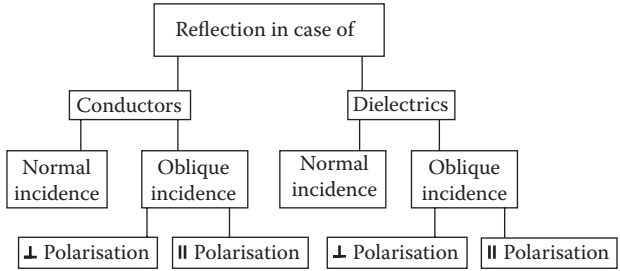

FIGURE 2.10
Classification of cases of reflection.

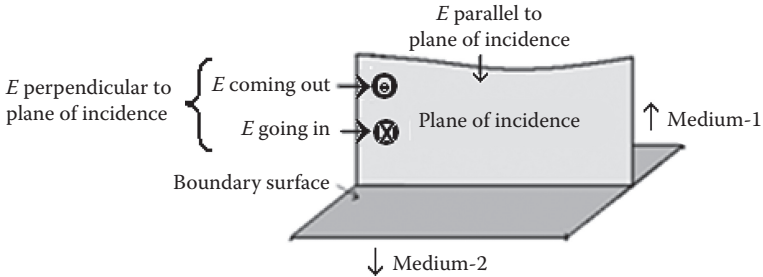

FIGURE 2.11
Illustration of *E*-field on the plane of incidence.

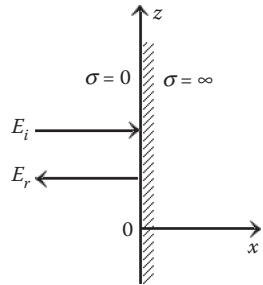

FIGURE 2.12
Normal incidence—perfect conductor.

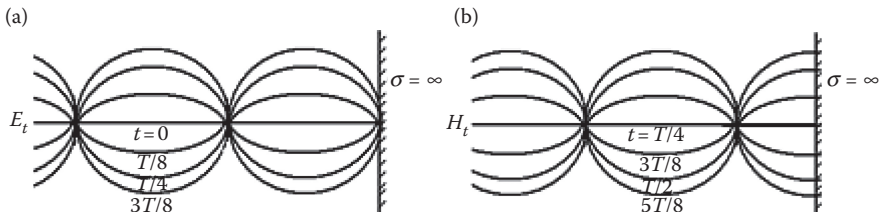

FIGURE 2.13
Standing waves for (a) *E* and (b) *H* fields.

002x013.eps

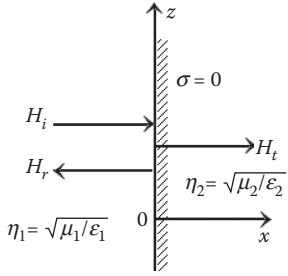

FIGURE 2.14
Normal incidence—perfect dielectric.

002x014.eps

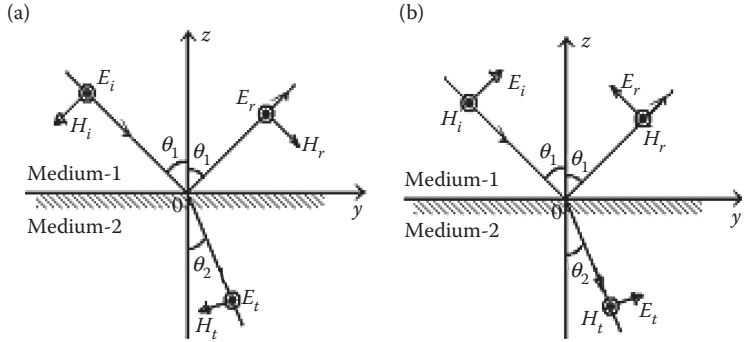

FIGURE 2.15
Illustration of two forms of polarisation. (a) Perpendicular or horizontal polarisation. (b) Parallel or vertical polarisation.

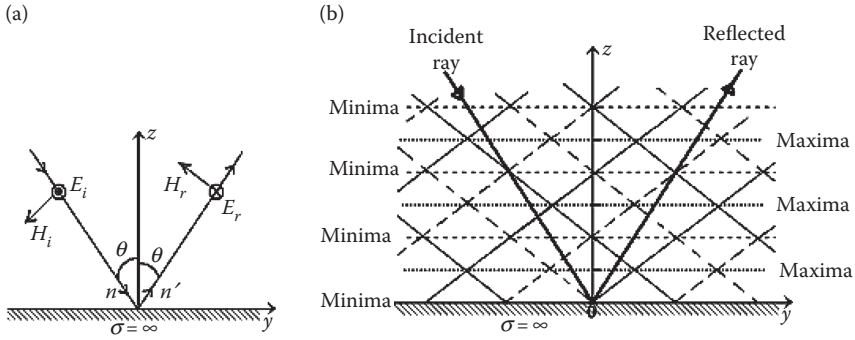

FIGURE 2.16
Perpendicular polarisation case. (a) Orientation of *E* and *H* field. (b) Resulting standing wave pattern along *z*-axis.

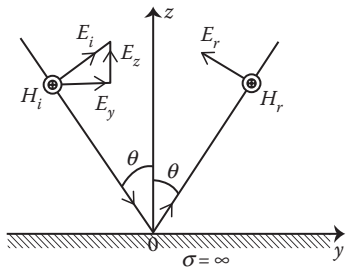

FIGURE 2.17
E in parallel polarisation.

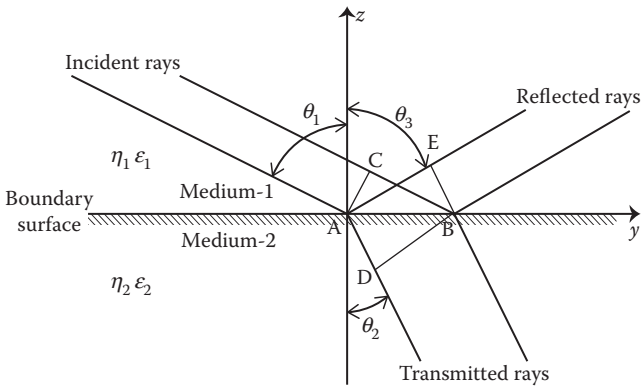

FIGURE 2.18
Incident, reflected and transmitted rays in case of oblique incident.

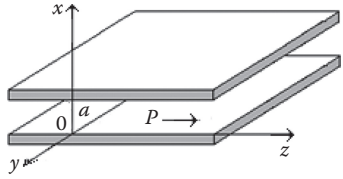

FIGURE 2.19
Configuration of two parallel planes.

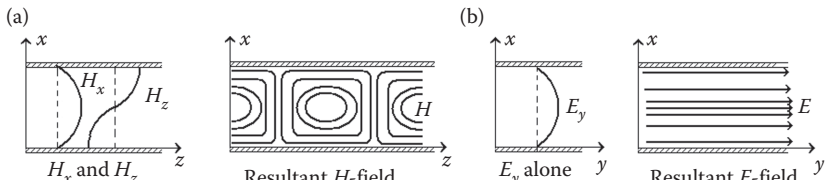

FIGURE 2.20
Field configuration for $TE_{1,0}$ mode. (a) Field distribution in x–z plane. (b) Field distribution in x–y plane.

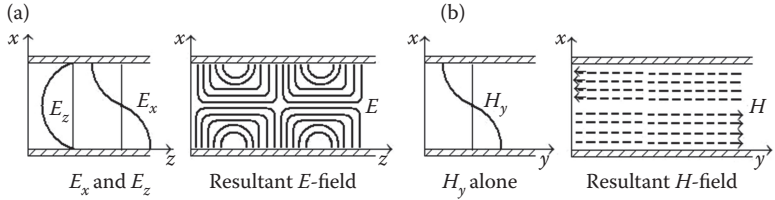

FIGURE 2.21
Field configuration for $TM_{1,0}$ mode. (a) Field distribution in x–z plane. (b) Field distribution in x–y plane.

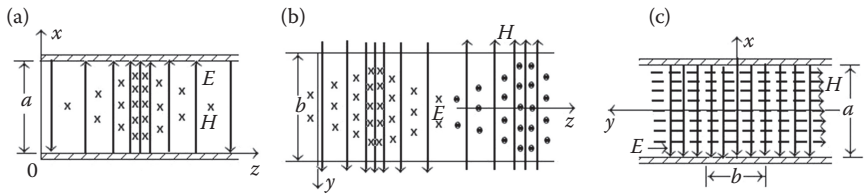

FIGURE 2.22
Field distribution for TEM wave. (a) In x–z plane. (b) In y–z plane. (c) In x–y plane.

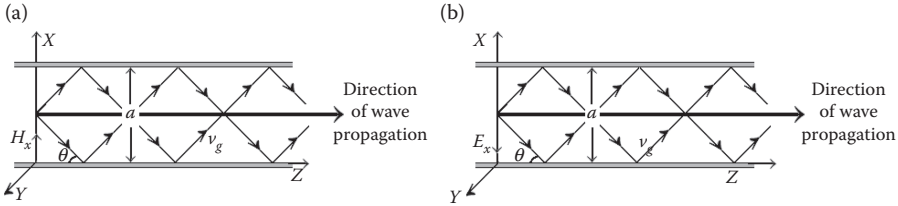

FIGURE 2.23
Zig-zag paths and field components of (a) TE and (b) TM waves.

002x023.eps

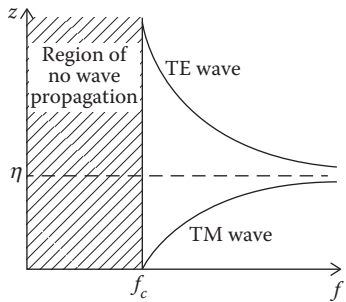

FIGURE 2.24
Variation of impedances with frequency.

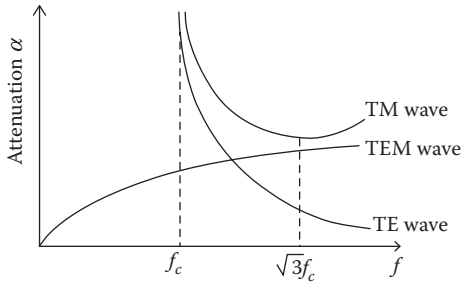

FIGURE 2.25
Variation of attenuation with frequency.

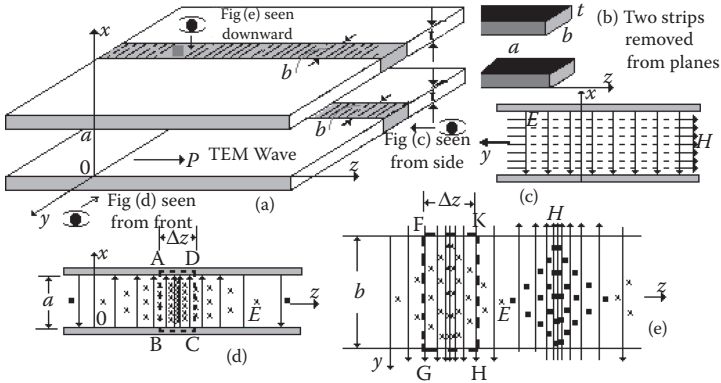

FIGURE 2.26
Configuration of transmission line and field distribution.

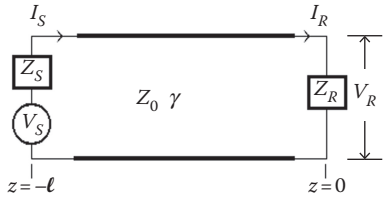

FIGURE 2.27
Circuit representation of transmission line.

002x027.eps

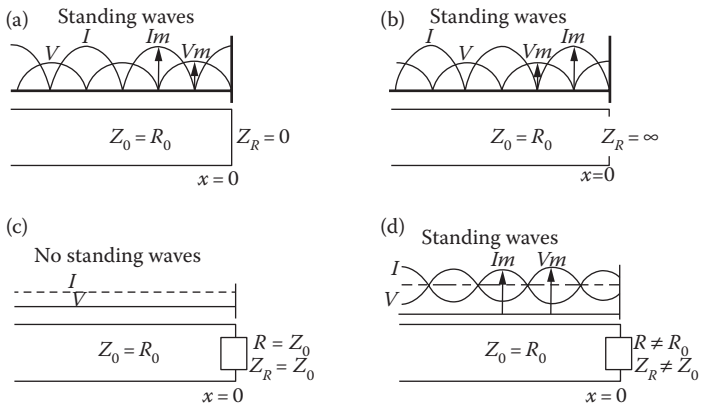

FIGURE 2.28
Voltage and current distribution for different terminations. (a) Line short circuited. (b) Line open circuited. (c) Line terminated in characteristic impedance. (d) Terminated impedance is not equal to characteristic impedance.

002x028.eps

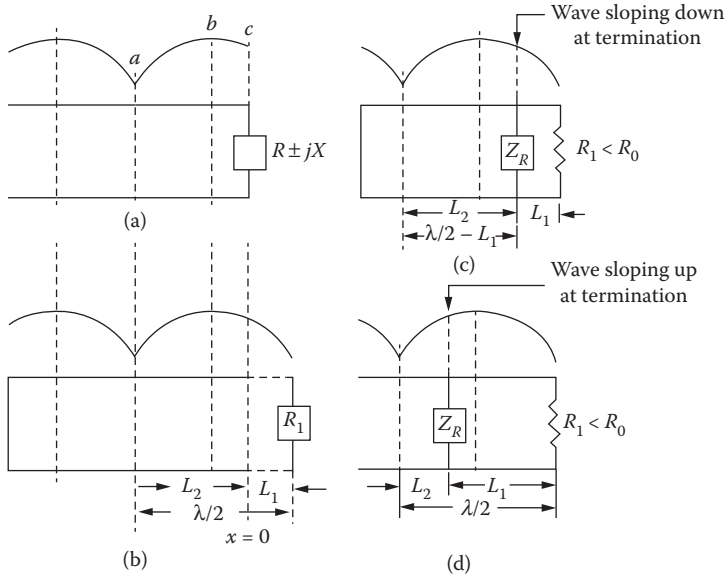

FIGURE 2.29
Voltage and current distributions for termination in complex impedance Z = $R \pm X$. (a) Z is located at $x = 0$, (b) Z is replaced by R at a distance L_1 from termination, (c) X is inductive and (d) X is capacitive.

002x029.eps

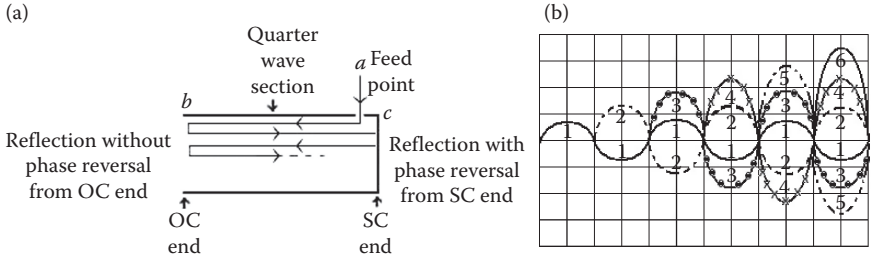

FIGURE 2.30
Resonance phenomenon. (a) Quarter-wave section and (b) voltage buildup.

002x030.eps

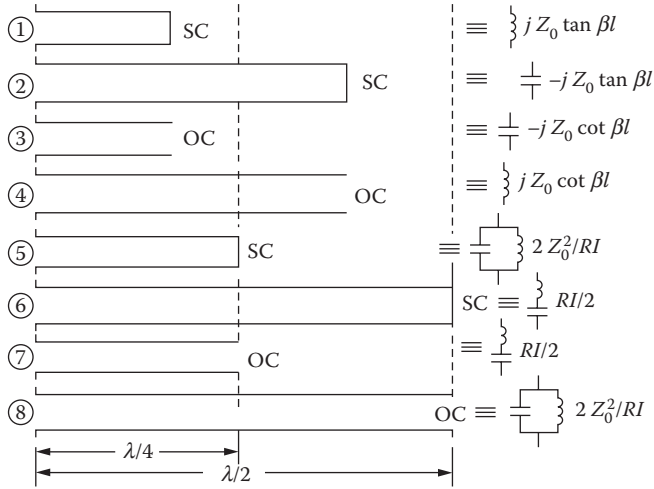

FIGURE 2.31
Line sections with equivalent elements for different lengths and terminations.

002x031.eps

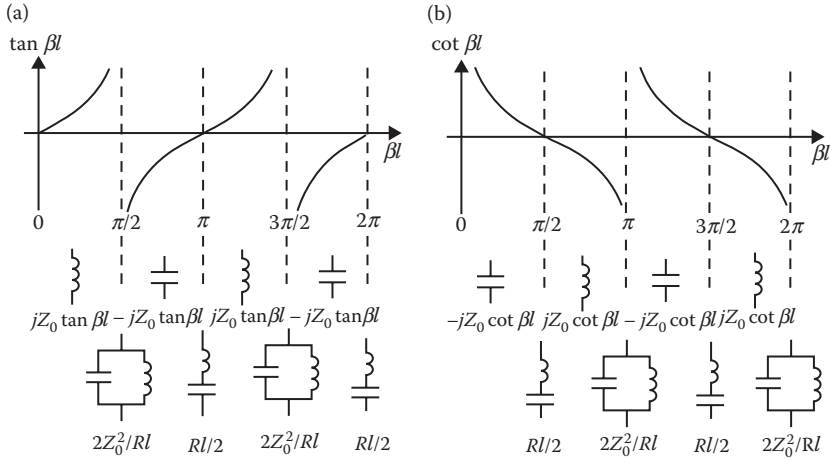

FIGURE 2.32
Circuit elements for different electrical lengths and terminations. (a) Short-circuited lines. (b) Open-circuited lines.

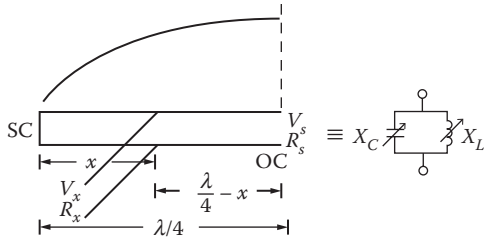

FIGURE 2.33
Transmission line as a tuned circuit.

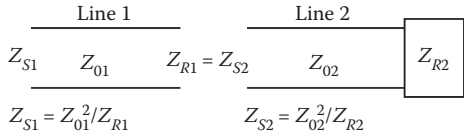

FIGURE 2.34
Impedance transformation.

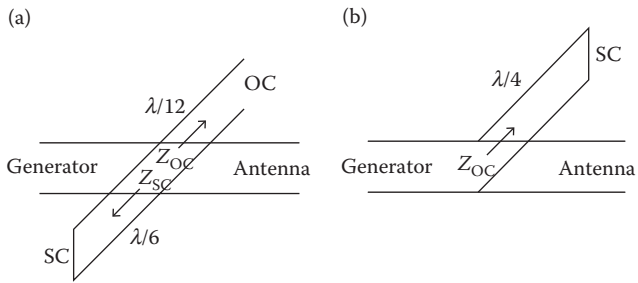

FIGURE 2.35
Suppression of (a) third harmonic and (b) even harmonics.

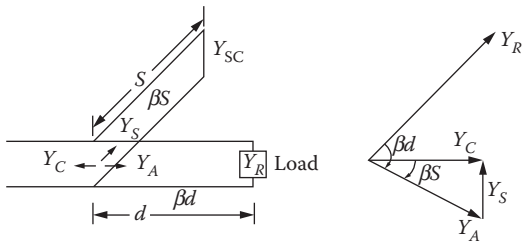

FIGURE 2.36
Single-stub matching.

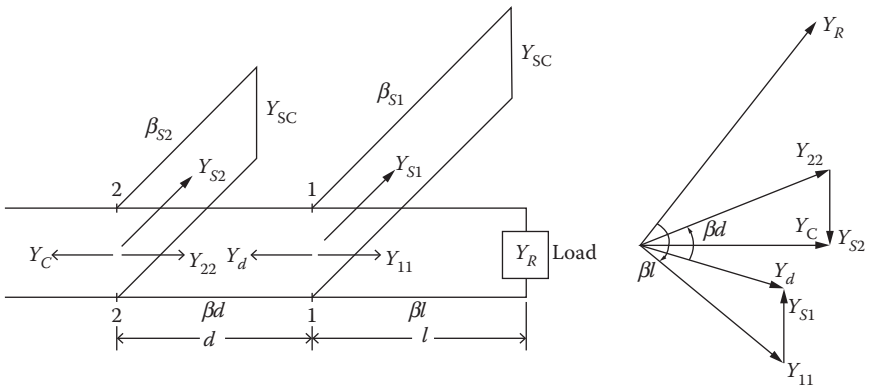

FIGURE 2.37
Double stub matching.

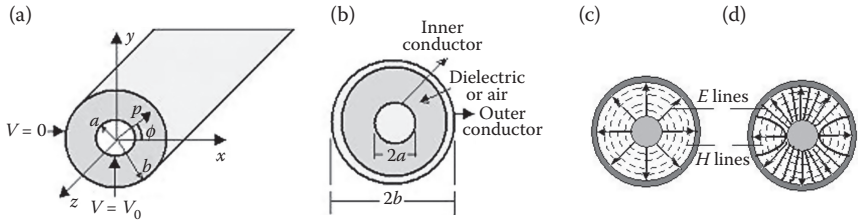

FIGURE 2.38
Coaxial cable. (a) Geometry, (b) cross section, (c) TEM mode and (d) TE_{11} mode.

002x038.eps

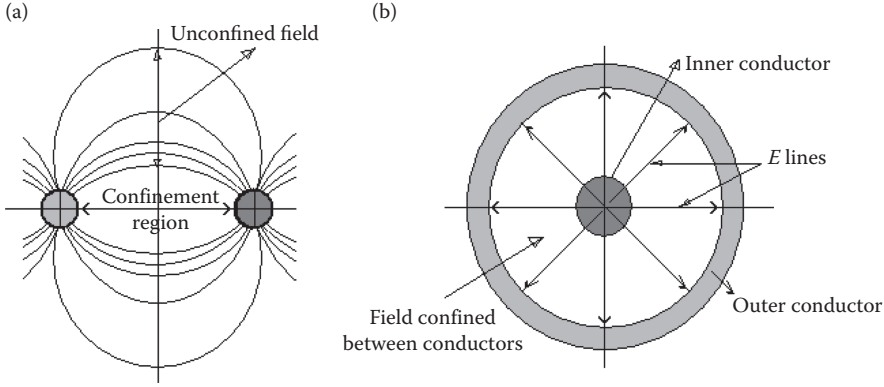

FIGURE 2.39
End views and field distributions. (a) Two-wire Tx line. (b) Coaxial cable.

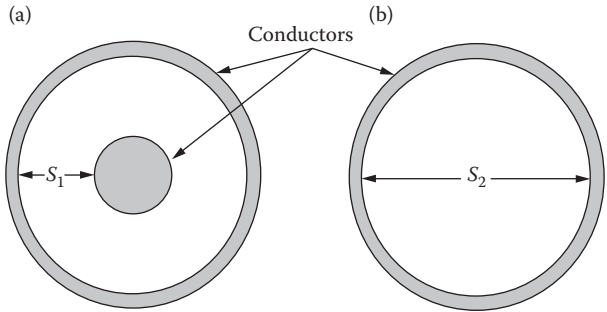

FIGURE 2.40
Relative spacing in coaxial cable and circular waveguide. (a) Coaxial cable. (b) Circular waveguide.