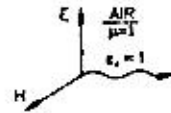
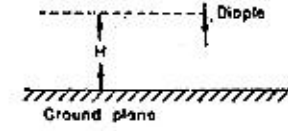


- (c) The input in the figure is corrupted by an undesired 750 MHz signal which has the same amplitude as that of the desired signal at 700 MHz. Let the BPF be of second order. At the BPF output, the undesired signal should be 20 dB below the desired signal. Calculate the Q required for the BPF.
29. A uniform plane wave is normally incident from air on an infinitely thick magnetic material with relative permeability 100 and relative permittivity 4 see the figure is. The wave has an electric field of 1V, meter (rms). Find the average pointing vector inside the material.



Magnetic material
 $\mu_r = 100 \quad \epsilon_r = 4$

30. A dipole antenna has a $\sin \theta$ radiation pattern where the angle θ is measured from the axis of the dipole. The dipole is vertically located above an ideal ground plane the figure is. What should be the height of the dipole H in terms of wavelength so as to get a null in the radiation pattern at an angle of 45° from the ground plane? Find the direction of maximum radiation also.



■ ■

ANSWERS

- | | | | | | | | |
|----------------------|----------|----------|---------|----------------------|---------|----------|----------|
| 1.1 (b) | 1.2 (a) | 1.3 (d) | 1.4 (c) | 1.5 (a) | 1.6 (a) | 1.7 (a) | 1.8 (c) |
| 1.9 (a) | 1.10 (c) | 1.11 (a) | 2.1 (b) | 2.2 (a) | 2.3 (d) | 2.4 (c) | 2.5 (a) |
| 2.6 (b) | 2.7 (c) | 2.8 (b) | 2.9 (c) | 2.10 (c) | 3.1 (d) | 3.2 (b) | 3.3 (c) |
| 3.4 (c) | 3.5 (c) | 3.6 (b) | 3.7 (d) | 3.8 (a) | 3.9 (b) | 3.10 (a) | 3.11 (a) |
| 4.1 (d) | 4.2 (a) | 4.3 (b) | 4.4 (c) | 4.5 (b) | 4.6 (c) | 4.7 (c) | 4.8 (d) |
| 4.9 (c) | 4.10 (b) | | | | | | |
| 5.1 (1) - d, (2) - b | | | | 5.2 (1) - a, (2) - c | | | |
| 5.3 (1) - b, (2) - d | | | | 5.4 (1) - b, (2) - c | | | |
| 5.5 (1) - c, (2) - d | | | | 5.6 (1) - a, (2) - b | | | |

