1. A 50 ohm transmission line is terminated with a 75 ohm load. Determine the reflection coefficient.
\[ r = \frac{Z_l - Z_0}{Z_l + Z_0} = \frac{75 - 50}{75 + 50} = 0.2 \]

2. If the reflection coefficient is 0.5 what is the VSWR?
\[ VSWR = \frac{1 + |r|}{1 - |r|} = \frac{1 + 0.5}{1 - 0.5} = 3:1 \]

3. If 500W is transmitted from the source of a transmission line and the reflection coefficient is 0.5 how much power is absorbed in the load?
\[ 500 - 125 = 375 \]

4. If the voltage at the far end of transmission line is twice the voltage being transmitted what is the resistance of the load?
\[ \infty, \text{open circuit} \]

5. What is the layer of atmosphere called that reflects radio signals?
ionosphere

6. What is the wavelength of a 7.5 MHz signal?
40 meters

7. What is the name of the antenna?
Yagi

8. A long transmission line delivers power to an antenna. At the transmitter the line current is 15A and at the antenna the line current is 12A. At the transmitter 20KW is input to the line. The antenna is matched to the line. Determine the Line loss.
\[ \text{Line Loss} = 20KW - 12.8KW = 7.2KW \]

9. If the frequency of a sine wave is 830 kHz determine the Wave length.
\[ \lambda = \frac{v}{f} = \frac{3(108m/s)}{830(10^3c/s)} = 361.45m \]

10. What kind of antenna, dipole or vertical, is used for AM antennas?
Vertical

11. Determine the VSWR if Emax = 100V and Emin = 80V.
\[ VSWR = \frac{100}{80} = 1.25:1 \]
12. Determine the VSWR if $Z_0 = 50$ ohms and $RL = 75$ ohms.

\[ VSWR = \frac{75}{50} = 1.5 \]

13. Sketch the distribution of voltage along an open-ended transmission line $\frac{1}{4}$ wavelength.

Zero volts at TX end and rising in sine wave to peak at far end.

14. Sketch the radiation pattern produced by a $\frac{1}{2}$ wave dipole antenna.

![Radiation Pattern](image)

15. If the ERP is 5000 watts and the antenna gain is 4 what is the input power to the antenna.

1250 watts

16. What is the height of a vertical antenna tuned to transmit 1330 kHz?

56.39m

17. A 50-ohm coax is connected to a 75 ohm load. What is the reflection coefficient?

0.2

18. If the reflection coefficient is 0.5 what is the standing wave ratio?

3

19. What is the Zo for a line that has an inductance of 4.5 nH/m and 1.25 pF/m?

60

20. If the gain of antenna is 7.5dBi what is the gain relative to a dipole (dBd)?

5.35

21. If the reflection coefficient is zero what is the impedance of the load connected to a 50-ohm coax?

50

22. Which antenna has more gain, a Yagi or a Dipole? Yagi

23. What is the name of an Omi-directional antenna? Vertical
24. What is the length in wavelengths of a dipole antenna? \( \frac{1}{2} \)

25. What is the length in wavelengths of a vertical antenna? \( \frac{1}{4} \)