

A 'skip zone' is:

- a. the distance between the antenna and where the refracted wave first returns to earth
 - b. the distance between the far end of the ground wave and where the refracted wave first returns to earth
 - c. the distance between any two refracted waves
 - d. a zone caused by lost sky waves
2. The medium which reflects high frequency radio waves back to the earth's surface is called the:
- a. biosphere
 - b. stratosphere
 - c. ionosphere
 - d. troposphere
3. The highest frequency that will be reflected back to the earth at any given time is known as the:
- a. UHF
 - b. MUF
 - c. OWF
 - d. LUF
4. All communications frequencies throughout the spectrum are affected in varying degrees by the:
- a. atmospheric conditions
 - b. ionosphere
 - c. aurora borealis
 - d. sun
5. Solar cycles have an average length of:
- a. 1 year
 - b. 3 years
 - c. 6 years
 - d. 11 years
6. The 'skywave' is another name for the:
- a. ionospheric wave
 - b. tropospheric wave
 - c. ground wave
 - d. inverted wave
7. The polarisation of an electromagnetic wave is defined by the direction of:
- a. the H field
 - b. propagation
 - c. the E field
 - d. the receiving antenna
8. That portion of HF radiation which is directly affected by the surface of the earth is called:
- a. ionospheric wave
 - b. local field wave
 - c. ground wave
 - d. inverted wave
9. Radio wave energy on frequencies below 4 MHz during daylight hours is almost completely absorbed by this ionospheric layer:
- a. C
 - b. D
 - c. E
 - d. F
10. Because of high absorption levels at frequencies below 4 MHz during daylight hours, only high angle signals are normally reflected back by this layer:

- a. C
 - b. D
 - c. E
 - d. F
11. Scattered patches of high ionisation developed seasonally at the height of one of the layers is called:
- a. sporadic-E
 - b. patchy
 - c. random reflectors
 - d. trans-equatorial ionisation
12. For long distance propagation, the radiation angle of energy from the antenna should be:
- a. less than 30 degrees
 - b. more than 30 degrees but less than forty-five
 - c. more than 45 degrees but less than ninety
 - d. 90 degrees
13. The path radio waves normally follow from a transmitting antenna to a receiving antenna at VHF and higher frequencies is a:
- a. circular path going north or south from the transmitter
 - b. great circle path
 - c. straight line
 - d. bent path via the ionosphere
14. A radio wave may follow two or more different paths during propagation and produce slowly-changing phase differences between signals at the receiver resulting in a phenomenon called:
- a. absorption
 - b. baffling
 - c. fading
 - d. skip
15. The distance from the far end of the ground wave to the nearest point where the sky wave returns to the earth is called the:
- a. skip distance
 - b. radiation distance
 - c. skip angle
 - d. skip zone
16. High Frequency long-distance propagation is most dependent on:
- a. ionospheric reflection
 - b. tropospheric reflection
 - c. ground reflection
 - d. inverted reflection
17. The layer of the ionosphere mainly responsible for long distance communication is:
- a. C
 - b. D
 - c. E
 - d. F
18. The ionisation level of the ionosphere reaches its minimum:
- a. just after sunset
 - b. just before sunrise
 - c. at noon
 - d. at midnight
19. One of the ionospheric layers splits into two parts during the day called:
- a. A & B
 - b. D1 & D2

- c. E1 & E2
 - d. F1 & F2
20. Signal fadeouts resulting from an 'ionospheric storm' or 'sudden ionospheric disturbance' are usually attributed to:
- a. heating of the ionised layers
 - b. over-use of the signal path
 - c. insufficient transmitted power
 - d. solar flare activity
21. The 80 metre band is useful for working:
- a. in the summer at midday during high sunspot activity
 - b. long distance during daylight hours when absorption is not significant
 - c. all points on the earth's surface
 - d. up to several thousand kilometres in darkness but atmospheric and man-made noises tend to be high
22. The skip distance of radio signals is determined by the:
- a. type of transmitting antenna used
 - b. power fed to the final amplifier of the transmitter
 - c. only the angle of radiation from the antenna
 - d. both the height of the ionosphere and the angle of radiation from the antenna
23. Three recognised layers of the ionosphere that affect radio propagation are:
- a. A, E, F
 - b. B, D, E
 - c. C, E, F
 - d. D, E, F
24. Propagation on 80 metres during the summer daylight hours is limited to relatively short distances because of
- a. high absorption in the D layer
 - b. the disappearance of the E layer
 - c. poor refraction by the F layer
 - d. pollution in the T layer
25. The distance from the transmitter to the nearest point where the sky wave returns to the earth is called the:
- a. angle of radiation
 - b. maximum usable frequency
 - c. skip distance
 - d. skip zone
26. A variation in received signal strength caused by slowly changing differences in path lengths is called:
- a. absorption
 - b. fading
 - c. fluctuation
 - d. path loss
27. VHF and UHF bands are frequently used for satellite communication because:
- a. waves at these frequencies travel to and from the satellite relatively unaffected by the ionosphere
 - b. the Doppler frequency change caused by satellite motion is much less than at HF
 - c. satellites move too fast for HF waves to follow
 - d. the Doppler effect would cause HF waves to be shifted into the VHF and UHF bands.
28. The 'critical frequency' is defined as the:
- a. highest frequency to which your transmitter can be tuned
 - b. lowest frequency which is reflected back to earth at vertical incidence
 - c. minimum usable frequency

- d. highest frequency which will be reflected back to earth at vertical incidence
29. The speed of a radio wave:
- a. varies indirectly to the frequency
 - b. is the same as the speed of light
 - c. is infinite in space
 - d. is always less than half the speed of light
30. The MUF for a given radio path is the:
- a. mean of the maximum and minimum usable frequencies
 - b. maximum usable frequency
 - c. minimum usable frequency
 - d. mandatory usable frequency
31. The position of the E layer in the ionosphere is:
- a. above the F layer
 - b. below the F layer
 - c. below the D layer
 - d. sporadic
32. A distant amplitude-modulated station is heard quite loudly but the modulation is at times severely distorted. A similar local station is not affected. The probable cause of this is:
- a. transmitter malfunction
 - b. selective fading
 - c. a sudden ionospheric disturbance
 - d. front end overload
33. Skip distance is a term associated with signals through the ionosphere. Skip effects are due to:
- a. reflection and refraction from the ionosphere
 - b. selective fading of local signals
 - c. high gain antennas being used
 - d. local cloud cover
34. The type of atmospheric layers which will best return signals to earth are:
- a. oxidised layers
 - b. heavy cloud layers
 - c. ionised layers
 - d. sun spot layers
35. The ionosphere:
- a. is a magnetised belt around the earth
 - b. consists of magnetised particles around the earth
 - c. is formed from layers of ionised gases around the earth
 - d. is a spherical belt of solar radiation around the earth
36. The skip distance of a sky wave will be greatest when the:
- a. ionosphere is most densely ionised
 - b. signal given out is strongest
 - c. angle of radiation is smallest
 - d. polarisation is vertical
37. If the height of the reflecting layer of the ionosphere increases, the skip distance of a high frequency transmission:
- a. stays the same
 - b. decreases
 - c. varies regularly
 - d. becomes greater
38. If the frequency of a transmitted signal is so high that we no longer receive a reflection from the ionosphere, the signal frequency is above the:
- a. speed of light

- b. sun spot frequency
 - c. skip distance
 - d. maximum usable frequency
39. A 'line of sight' transmission between two stations uses mainly the:
- a. ionosphere
 - b. troposphere
 - c. sky wave
 - d. ground wave
40. The distance travelled by ground waves in air:
- a. is the same for all frequencies
 - b. is less at higher frequencies
 - c. is more at higher frequencies
 - d. depends on the maximum usable frequency
41. The radio wave from the transmitter to the ionosphere and back to earth is correctly known as the:
- a. sky wave
 - b. skip wave
 - c. surface wave
 - d. F layer
42. Reception of high frequency radio waves beyond 4000 km normally occurs by the:
- a. ground wave
 - b. skip wave
 - c. surface wave
 - d. sky wave
43. A 28 MHz radio signal is more likely to be heard over great distances:
- a. if the transmitter power is reduced
 - b. during daylight hours
 - c. only during the night
 - d. at full moon
44. The number of high frequency bands open to long distance communication at any time depends on:
- a. the highest frequency at which ionospheric reflection can occur
 - b. the number of frequencies the receiver can tune
 - c. the power being radiated by the transmitting station
 - d. the height of the transmitting antenna
45. Regular changes in the ionosphere occur approximately every 11:
- a. days
 - b. months
 - c. years
 - d. centuries
46. When a HF transmitted radio signal reaches a receiver, small changes in the ionosphere can cause:
- a. consistently stronger signals
 - b. a change in the ground wave signal
 - c. variations in signal strength
 - d. consistently weaker signals
47. The usual effect of ionospheric storms is to:
- a. increase the maximum usable frequency
 - b. cause a fade-out of sky-wave signals
 - c. produce extreme weather changes
 - d. prevent communications by ground wave
48. Changes in received signal strength when sky wave propagation is used are called:

- a. ground wave losses
- b. modulation losses
- c. fading
- d. sunspots

49. Although high frequency signals may be received from a distant station by a sky wave at a certain time, it may not be possible to hear them an hour later. This may be due to:

- a. changes in the ionosphere
- b. shading of the earth by clouds
- c. changes in atmospheric temperature
- d. absorption of the ground wave signal

50. VHF or UHF signals transmitted towards a tall building are often received at a more distant point in another direction because:

- a. these waves are easily bent by the ionosphere
- b. these waves are easily reflected by objects in their path
- c. you can never tell in which direction a wave is travelling
- d. tall buildings have elevators

Answer

1	2	3	4	5	6	7	8	9	10
b	c	b	d	d	a	c	c	b	c
11	12	13	14	15	16	17	18	19	20
a	a	c	c	d	a	d	b	d	d
21	22	23	24	25	26	27	28	29	30
d	d	d	a	c	b	a	d	b	b
31	32	33	34	35	36	37	38	39	40
b	b	a	c	c	c	d	d	d	b
41	42	43	44	45	46	47	48	49	50
a	d	b	a	c	c	b	c	a	b