

## UNIT II

22. What is propagation model?

Propagation models that predict the mean signal strength for an arbitrary transmitter –

receiver separation distance are useful in estimating the radio coverage area of a transmitter.

23. Define large scale propagation model?

The propagation models that characterize the signal strength over large T-R separation

distances (several hundreds or thousands of meters).

24. What is small scale model?

The propagation models that characterize the rapid fluctuations of the received signal

strength over very short travel distances (a few wavelengths) or short time duration.

25. What is free space propagation model?.

The free space propagation model is used to predict received signal strength, when unobstructed line-of-sight path between transmitter & receiver.

26. Define EIRP.

EIRP of a transmitting system in a given direction as the transmitter power that would be

needed, with an isotropic radiator, to produce the same power density in the given direction  $EIRP = P_t G_t$

Where  $P_t$ -transmitted power in w

$G_t$ -transmitting antenna gain

27. Explain path loss?

The path loss is defined as the difference (in dB) between the effective transmitted power

& the received power, & may or may not include the effect of the antenna gains.

28. What is intrinsic impedance & Brewster angle?

It is defined by the ratio of electric to magnetic field for a uniform plane wave in the

particular medium. The Brewster angle is the angle at which no reflection occurs in the origin.

29. What is scattering?

When a radio wave impinges on a rough surface, the reflected energy is spread out in all

directions due to scattering.

30. Define radar cross section?

Radar Cross Section of a scattering object is defined as the ratio of the power density of

the signal scattered in the direction of the receiver to the power density of the radio wave

incident upon the scattering object & has units of squares meters

31. Name some of the outdoor propagation models?

some of the commonly used outdoor propagation models are

1. Longely-Rice model

2. Durkin's model

3. Okumura model.

32. What is the function of outdoor propagation models?

The outdoor propagation models aim to predict signal strength at a particular receiving

point or in a specific local area.

33. Define indoor propagation models?

The indoor propagation models are used to characterizing radio propagation inside the

buildings.

34. Mention some indoor propagation models?

Some indoor propagation models are

1. Long –distance path loss model
2. Ericsson multiple break point model
3. Attenuation factor model.

35. Explain small scale fading?

Small scale fading is used to describe the rapid fluctuations of the amplitudes, phases, or multipath delays of a radio signal over a short period of time or travel distance.

36. What are the factors influencing small scale fading?

Factors influencing small scale fading are

1. Speed of surrounding objects
2. Multipath propagation
3. Speed of the mobile
4. Transmission bandwidth of the signal.

37. Define Doppler shift?

The shift in received signal frequency due to motion is called the Doppler shift.

38. What flat fading?

If the mobile radio channel has a constant gain & linear phase response over a bandwidth

which is greater than the bandwidth of the transmitted signal, then the received signal will undergo flat fading.

39. What is frequency selective fading?

If the channel possesses a constant gain & linear phase response over a bandwidth that is

smaller than the bandwidth of the transmitted signal, then the channel creates frequency

selective fading on the received signal.

40. Define fast fading channel?

The channel impulse response changes rapidly within the symbol duration. This type of a

channel is called fast fading channel.

41. Define slow fading channel?

The channel impulse response changes at a rate much slower than the transmitted baseband signal. This type of a channel is called slow fading channel.

## Part-B

1. Enumerate of propagation mechanism.
2. Discuss about propagation effects with mobile radio

3. Explain Rayleigh and Ricean fading.
4. Explain about channel classification.
5. Explain Time selective and frequency selective channels.
6. Describe WSSUS channels with suitable expressions.
7. Brief notes about link calculations for various applications
8. What are Narrow band models, explain the significance of each model
9. Explain Free space link budget.
10. Discuss Terrestrial link budget with suitable example.
11. Discuss on wide band models
12. Write short notes on diffraction and scattering