WIRELESS COMMUNICATION – QUESTION BANK UNIT I

1. Write some examples for wireless communication system.

Cordless phones, handheld walkie-talkies, pagers, mobiles, remote controllers

For home entertainment.

2. What is base station?

A fixed station in mobile radio system used for radio communication with

mobiles. It has transmitter and receiver section. It is located at the centre of coverage area.

3. What is MSC?

Mobile switching centre coordinates the routing of calls in large service area. It connects

the base station and mobiles to PSTN. It is also called as MTSO(Mobile telephone switching office.

4. What do you mean by forward and reverse channel?

Forward channel is a radio channel used for transmission of information from base

station to mobile.

Reverse channel is a radio channel used for transmission from mobile to base station.

5. What is the function of control channel? What are the types?

Control channel is used for transmission of call setup, call request, call initiation & Control.

Types are forward control channel, reverse control channel.

6. Define cell

Each cellular base station is allocated to a group of radio channels to be used within a small geographic area called as cell.

7. What is foot print?

Actual radio coverage of a cell is called as footprint. It is determined from the field measurements or propagation prediction models.

8. What is channel assignment ? what are the types?

For efficient utilization of radio spectrum a frequency reuse scheme with increasing capacity and minimizing interference is required. For this channel assignment

is used

Types : Fixed channel assignment, dynamic channel assignment.

9. What is fixed channel assignment?

If the channels in each cell is allocated to the users within the cell, it will be

called as fixed channel assignment. If all channels are occupied, the call

Will be blocked.

10. What is dynamic channel assignment?

If the voice channels are not allocated permanently in a cell, it will be called as

dynamic channel assignment. In this assignment, channels are dynamically allocated to users by the MSC.

11. What is hand off?

When a mobile moves into a different cell while conversation in progress,

the MSC automatically transfers the call from one cell to other cell without any interference.This is called as hand off.

12. Define dwell time.

The time over which the call may be maintained within a cell without handoff is

called as dwell time. This time is governed by factors such as propagation, interference,

distance between subscribers and base station.

13. What is soft handoff?

In CDMA system, MSC selects received signals from a variety of base stations with

the help of software. This is called as soft handoff.

14. What is co channel interference?

The interference between the signals from co channel cells is called as co cannel

interference.

15. Define co-channel reuse ratio.

It is define as the ratio between the distance between the centers of nearest co channel

cells to the radius of the cell. Q = D/R

16. Define adjacent channel interference.

Interference resulting from signals which are adjacent in frequency to the desired signal

is called adjacent channel interference.

17. Define Grade of service.

It is defined as the measure of the ability of a user to access a trunked system

during the busiest hour.

18. What is blocked call clear system(BCC)?

In a system, a user is blocked without access by a system when no channels are

available in the system. The call blocked by the system is cleared and the user should try

again .This is called BCC system.

19. What is blocked call delay system?

If a channel is not available immediately, the call request may be delayed until a

channel becomes available.

20. Define cell splitting.

Cell splitting is the process of subdividing congested cells into smaller cells each

with its own base stations and a corresponding reduction in antenna height and transmitter power. It increases the capacity of cellular system.

21. What is sectoring?

Sectoring s a technique for decreasing co-channel interference and thus increasing the

system performance by using directional antennas.

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=PtGt

Where Pt-transmitted power in w

Gt-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. Ericession 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. Discuss on various types of wireless services and its requirements.

2. (a) Explain in detail the evolution of wireless communication?

(b) Write short notes on different trends in cellular radio & personal communication

3. Enumerate on spectrum limitation

4. Explain about noise and interference limited system

5. Briefly explain the principle of cellular networks.

6. Compare FDMA, TDMA & CDMA.

7. Discuss and explain the multipath propagation

8. Describe in detail about the history of development of Paging and the future Trends of paging systems.

9. Explain in detail the different techniques used to improve coverage &capacity of cellular system.

10. Describe in detail about the Wireless Services and it types

11. Write short notes on frequency reuse & channel assignment.

12. Explain the Multiple Access methods with neat diagrams.