

Ex-22-

- B. (1) Question No. 1 is compulsory.
 (2) Attempt any four out of remaining six questions.
 (3) Illustrate answers with sketches wherever required.
- (a) What is Microcell zone concept ? 20
 (b) Explain Impulse Response model of a multipath channel.
 (c) Distinguish between Coherence Band Width and Coherence Time.
 (d) What is log-normal shadowing ?
 (e) Explain synchronization channel of GSM.
2. (a) If a signal to Interference ratio of 16 dB is required for satisfactory performance of a cellular system, what is the frequency reuse factor and cluster size that should be used for maximum capacity if path loss component is (i) $n = 4$ (ii) $n = 3$. 4
 (b) Explain knife edge diffraction model. 4
 (c) Explain with block diagram speech processing in GSM. 4
 (d) List and explain air interface specifications of GSM. 8
3. (a) Explain fading effects due to— 8
 (i) Multipath Time Delay Spread and (ii) Doppler Spread.
 (b) Define the following parameters for CDMA based mobile system— 12
 (i) Power control subchannel
 (ii) Orthogonal covering
 (iii) Direct sequence spreading in reverse traffic channel.
4. (a) Explain DECT standard covering radio and signaling aspects. 10
 (b) Explain how RAKE receiver improves signal to noise ratio in CDMA system. 10
5. (a) Draw and explain block diagram of GSM speech encoder and decoder. 10
 (b) Sketch block diagram of Forward CDMA channel modulation process and explain functions of each block. 10
6. (a) For 2-Ray ground reflection model, derive the expression for received power at a distance 'd' from the transmitter. 10
 (b) Explain data security and data privacy in GSM. 5
 (c) Distinguish between soft and softer hand off in a CDMA based system. 5
7. (a) Explain Iridium system and its architecture. 10
 (b) What is soft capacity of a cellular system ? Derive relation to find it in a CDMA based system. 10
 List factors which influence soft capacity.