

Con. 5720-08.

RC-7232

(REVISED COURSE)

(3 Hours)

[Total Marks : 100]

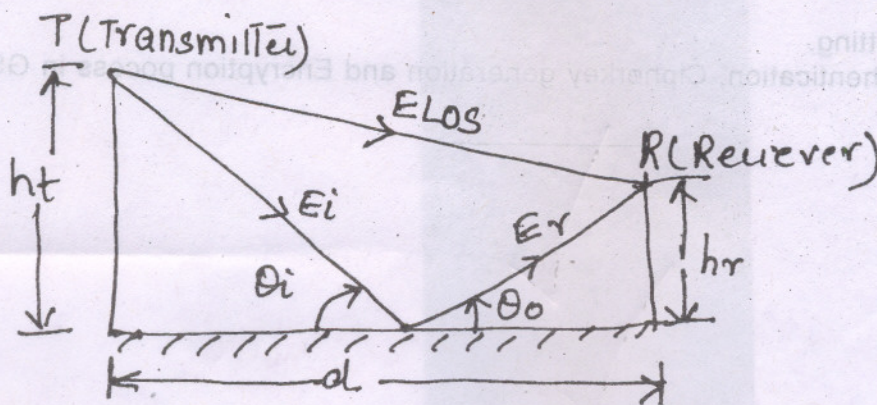
- N.B.: (1) Question No. 1 is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.

1. (a) Justify the use of hexagonal cell geometry. 20
(b) Distinguish between hard handoff and soft handoff.
(c) What is log normal shadowing ?
(d) Explain orthogonal covering in CDMA.

2. (a) Derive the following relation using Ground Reflection (Two Ray Model). 10

$$ETOT(d) \approx \frac{2E_{0d0}}{d} \left[\frac{2\pi h_t h_r}{\lambda d} \right]$$

where ETOT = Total receive 'E' Field at distance 'd'.



- (b) Prove that $\frac{C}{I}$ ratio for a cellular system. Using seven cell cluster is given by 10

$$\frac{C}{I} = \frac{R^{-4}}{2(D-R)^{-4} + 2(D+R)^{-4} + 2D^{-4}}$$

where R = Cell Radius
D = Distance between center of two co-channel cells in first tier.

3. (a) Explain the function of the following signalling techniques in AMPs. 8
(i) Supervisory Audio Tone (SAT)
(ii) Signalling Tone (ST)
(iii) Wideband Blank and Burst Signalling.
(b) With the help of Block diagram, explain the GSM architecture and explain radio interface. 12

4. (a) Define and explain types of small scale fading based on Multipath time delay and Doppler spread. 10
- (b) Differentiate between the following : 10
- (i) Flat fading and frequency selective fading.
 - (ii) Fast fading and slow fading.
5. (a) Explain Data Services in DECT and PACS. 10
- (b) Explain with Architecture : 10
- (i) High speed circuit switched Data in GSM
 - (ii) General Packet Radio Services (GPRS).
6. (a) In respect of CDMA system explain the following : 8
- (i) Power Control Subchannel
 - (ii) Orthogonal Covering.
- (b) Explain the forward CDMA channel Modulation process with the help of neat block diagram. 12
7. (a) Explain the Common Control Channels and Dedicated Control Channels used in GSM system. 8
- (b) Explain cell splitting. 6
- (c) Explain the Authentication, Cipherkey generation and Encryption process in GSM. 6