53 (EC 605) MBCM

2017

MOBILE COMMUNICATION

Paper : EC 605

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* What is the physical interpretation of the term "cellular" in cellular communication ? 3

   (b) What is the advantage of taking hexagonal shape of a cell in cellular communication ? 3

   (c) Show that in a hexagonal cellular system of cluster size N, the ratio of the distance between co-channel-cells (D) and cell radius (R) is

   $$D/R = \sqrt{3N}.$$

   Why this parameter is known as Frequency re-use ratio ? 10

(d) State the advantages and disadvantages of cellular communication. 4

2. Derive the relation between transmitted power and received power in case of free space when the antenna are isotropic radiating antenna. State briefly how does it differ when in between medium is flat and open area ? 8+12

3. (a) What are the advantages of diversity receiver ? Name the different types of diversity mechanism and compare them. 4+10

(b) Derive the expression of probability that the resultant SNR (γ) in selection diversity system is greater than a threshold (γ_T). Assume number of uncorrelated channels is M. 6

4. What is fading in a multipath environment ? Explain different types of fading and their relation with channel parameters. 20

5. State the benefits of sectorization of a cell. Discuss how channel allocation is done in AMPS cellular system. Also state the difference between a set up channel and a control channel. 20

6. *(a)* Why CDMA is more efficient in reduction of interference and jamming signal? 5

(b) Draw block diagram of a CDMA system and derive expression of MAI and probability of error with a BPSK modulation scheme. 15

7. Write short notes on : ***(any two)*** 10×2

(i) Cell splitting

(ii) Hand-off

(iii) GPRS

(iv) Linear Equalizer.