

IV B.Tech I Semester Supplementary Examinations, April/May 2005
CELLULAR & MOBILE COMMUNICATIONS
(Electronics & Communication Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain the inefficient spectrum utilization based on the existing mobile systems MTS and IMTS
(b) Describe the special features in amps and compare these with now a days systems?
2. (a) What do you mean by desired C/I and Explain?
(b) Compare interference from first tier of Six interferes with that from twelve interferes of second tier (including first and second tiers).
3. (a) Prove that for hexagonal geometry the co channel reuse radio is given by $Q = \sqrt{3N}$
Where $N = i^2 + ij + j^2$.
(b) Explain the co channel interference are from the mobile receivers based on test?
4. (a) Consider a transmitter which radiates a sinusoidal carrier frequency of 1859 MHz. For a vehicle moving 60 miles/hr compute the received carrier frequency if the mobile is moving.
 - i. Directly towards the transmitter
 - ii. Directly away from the transmitter
 - iii. In a direction perpendicular to the direction of arrival of the transmitted signal.(b) Derive the expression for the power received in ground reflected model.
5. (a) Derive the relation between the received power and electrical field of the antenna?
(b) Assume a receiver is located 10km from a 50W transmitter. The carrier frequency is 900MHz , assume free space propagation $G_t = 1$ and $G_r = 2W$
 - i. Find the power at the receiver
 - ii. The magnitude of the electric field at the receiving antenna
 - iii. The rms voltage applied to the receiver input assuming that the receiving antenna has purely real importance of 50 ohms and is matched to the receiver.
6. (a) What do you understood by non fixed channel assignment ? Describe the corresponding algorithms?
(b) Explain in detail access channels and operational techniques?

7. (a) Explain the initiation of the handoff mechanism?
(b) What is the delayed handoff and explain the advantages of this?
8. (a) Derive the expression for transmitted power after cell splitting for improving capacity.
(b) Discuss the splitting size limitations and traffic handling.
