

Code No: **R17A0422****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech I Semester Supplementary Examinations, April 2023**Cellular & Mobile Communications****(ECE)**

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Time: 3 hours**Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 A Explain the principle of operation of a cellular mobile system and its components with a neat diagram. [7M]
 B What is co-channel interference in cellular systems? Explain the different methods of reducing the co-channel interference. [7M]
 OR
 2 A What is the Grade of Service? Explain Trunking theory and grade of service. [7M]
 B What is the co-channel reuse ratio? Prove that for a hexagonal geometry, the co-channel reuse ratio is $\sqrt{3N}$ where $N = i^2 + ij + j^2$ [7M]

SECTION-II

- 3 A What is non-cochannel interference? Explain the various types of non-cochannel interference. [7M]
 B Describe the effects of cell site antenna heights on signal coverage. [7M]
 OR
 4 A Classify the diversity techniques and explain the space diversity with a neat block diagram. [7M]
 B Explain the near-field and far-field interference and how to avoid it. [7M]

SECTION-III

- 5 A Derive the expression for the phase difference between direct and reflected paths of a signal. [7M]
 B Explain the effect of the propagation of mobile signals over a flat open area with a neat sketch. [7M]

OR

- 6 A Determine the general formula for mobile propagation over water and flat open area. [7M]
 B Define standard deviation and explain constant standard deviation along path loss slope. [7M]

SECTION-IV

- 7 A Explain umbrella antenna patterns in detail. [7M]
 B What is meant by frequency management? Explain frequency management and channel assignment. [7M]

OR

- 8 A . Explain sectorization and mention the advantages. [7M]

- B* What are the various channel assignment strategies with respect to cell sites? [7M]
Explain in detail.

SECTION-V

- 9 *A* Write short notes on
 i) Mobile assisted handoff [4M]
 ii) soft handoff. [4M]
- B* What is intersystem handoff? Explain with necessary diagram. [6M]
- OR
- 10 *A* What are different handoff strategies based on algorithms of handoff? [7M]
 Explain.
- B* Differentiate between the soft and hard handoff. Mention the advantages of [7M]
 delaying handoff.
