Code No : 20EC7P04

R20

IV B. TECH I SEMESTER REGULAR EXAMINATIONS, NOVEMBER - 2023
MOBILE CELLULAR COMMUNICATION
(ELECTRONICS AND COMMUNICATIONS ENGINEERING)

Time: 3 hours Max. Marks: 70

Note : Answer **ONE** question from each unit **(5 × 14 = 70 Marks)**

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UNIT-I

1. a) Enumerate the various methods employed to enhance coverage and capacity in cellular systems. [7M]

   b) Define the term "co-channel cells," explain what "co-channel interference" means, and evaluate the relevance of this interference in terms of the Signal-to-Noise Ratio (SNR). [7M]

(OR)

2. a) Explain the reasoning behind using hexagonal cell structure in cellular communication and provide a brief summary of hexagonal cells. [7M]

   b) Describe the fundamental components of a cellular system and illustrate the concept of cellular communication through the explanation of frequency reuse. [7M]

UNIT-II

3. a) Compute the variation in received signal power under mobile radio propagation conditions for two distinct distance points. [7M]

   b) Explain the different types of non-cochannel interference. [7M]

(OR)

4. a) Describe the impact of signal reflections in flat and hilly terrain on mobile communication. [7M]

   b) Analyse the fundamental theoretical basis of antenna height gain and its significance in the reduction of path loss. [7M]

UNIT-III

5. a) Discuss the concept of frequency management concern to the numbering the channels and grouping into subsets. [7M]

   b) Assess the reliability and feasibility of fixed channel and non-fixed channel assignment methods in different mobile communication scenarios. [7M]

(OR)

6. a) Identify and discuss the factors that initiate a handoff process. [7M]

   b) Devise a strategy for dropped call rates. [7M]
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UNIT-IV

7. a) Analyse and highlight the differences between GSM and CDMA mobile phone technologies. [7M]

   b) Explain the different elements used in GSM? [7M]

(OR)

8. a) Investigate the advantages and disadvantages of CDMA compared to TDMA and FDMA. [7M]

   b) Compare the advantages and disadvantages of OFDMA and TDMA in high-capacity mobile networks. [7M]

UNIT-V

9. a) How do the different elements of the 3G architecture interact to ensure uninterrupted connectivity? [7M]

   b) List and elaborate use case of 5G adoption in the smart city? [7M]

(OR)

10. a) If internet speed is important, how can users be affected by the variations between 3G and 4G? [7M]

    b) Assess the efficacy and viability of 5G in autonomous vehicle control, taking into account requirements and potential problems. [7M]

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