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Question Paper Code:U2201

M.E. DEGREE EXAMINATION, APRIL 2024

Second Semester

Communication Systems

21PCM201- 5G MOBILE COMMUNICATION

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Apply the functionality of each component within the 5G Internet, emphasizing the Internet of Things (IoT) and Context-Awareness. Explore how IoT integration enhances connectivity and data exchange, alongside considering the role of Context Awareness in dynamically adapting network behavior based on situational context. CO2- App (20)

Or

- (b) Apply an examination of the research challenges involved in implementing 5G networks on a global scale. Assess how these challenges manifest across different regions, considering factors such as regulatory environments, infrastructure availability, and varying market demands. CO2- App (20)

2. (a) With the increasing utilization of millimeter wave bands for 5G, outline effective interference management strategies to address potential interference from environmental factors and adjacent networks, ensuring seamless connectivity and quality of service. CO1- U (20)

Or

- (b) In rural regions where spectrum demand fluctuates, discuss the feasibility and challenges of implementing dynamic spectrum access techniques to efficiently utilize available frequencies for both commercial and public services. CO1- U (20)

3. (a) Apply the principles of mmWave MU-MIMO technology to engineer a Fixed Wireless Access (FWA) system capable of delivering gigabit speeds, thus eliminating the need for traditional physical fiber connections? CO2- App (20)
- Or
- (b) Provide a structured code outlining the steps to generate these carrier waves and incorporate them into a 5G system simulation or analysis. CO2- App (20)
4. (a) Explain how to use Cell Dominant HetNets CO1- U (20)
- Or
- (b) Discuss the factors should be considered regarding ADC and DAC functionalities in ensuring LTE/NR coexistence within the same RF system? CO1- U (20)
5. (a) Analyze the CO4- An (20)
- a. Impact of implementing block chain technology on mobile networks, focusing on two parameters: network scalability and data security.
- b. Integration of block chain enhances mobile network functionality and facilitates decentralization, considering implications for scalability and security measures.
- Or
- (b) Analyze the high speed use cases, 6G vision & Cooperative computation offloading in FiWi CO4- An (20)