



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech VI Semester End Examinations (Regular), November – 2020

Regulation: IARE–R16

## CELLULAR AND MOBILE COMMUNICATION

**Time: 2 Hours**

(ECE)

**Max Marks: 70**

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Answer any Four Questions from Part A

Answer any Five Questions from Part B

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### PART – A

1. Explain how basic cellular system is architected? [5M]
2. Analyze how co-channel interference is reduced with diversity. [5M]
3. Explain about channel borrowing and channel sharing in cellular communications. [5M]
4. Write a note on second and third generation wireless networks. [5M]
5. Explain ATM network concept and ATM switch. [5M]
6. Write the importance of demultiplexer at the receiver to reduce the non co-channel interference. [5M]
7. Explain the concept of cell splitting technique. [5M]
8. Differentiate between the fixed channel assignments and non fixed channel assignment. [5M]

### PART – B

9. Explain about trunking efficiency degradation with comparing the carriers per market also draw the graph related to the above (use Erlang B model). [10M]
10. List and explain the components that are to be considered for cellular systems that would affect system design if not choose properly. [10M]
11. Design an Omni-directional direction antenna system in the worst cases and obtain C/I for different K patterns (K=7,9,12). [10M]
12. What are different parameters that contribute to foliage loss and determine the equation for received power from the free space propagation model. [10M]
13. How can improve the capacity of cellular system? Explain about cell splitting, micro cells , sectorization with neat diagrams. [10M]
14. Why handoff is necessary for cellular systems? Determine the two types of handoff based on signal strength and C/I ration. [10M]
15. Explain IS-95 forward and reverse channels with block diagrams. [10M]
16. Draw the TDMA frame structure and explain the significance of each slot. [10M]
17. Discuss the role of AIN for mobile communications. Briefly explain the services offered by SS7. [10M]
18. What are the advantages and disadvantages of using a microwave system and infrared link with today's technology. [10M]