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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, May - 2021

(Eighth Semester)

BECOE8031 - MOBILE COMMUNICATION

(E.E.E)

Time: 2 hrs

Maximum: 50 Marks

Answer ALL Questions**The figures in the right hand margin indicate marks.****PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)**

- Q.1. Answer ALL questions** [CO#] [PO#]
- | | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---|
| a. Paging system uses which mode of transmission? | 1 | 1 |
| (i) Full duplex | (ii) Half Duplex | |
| (iii) Simplex | (iii) Duplex | |
| b. When a fraction of assigned channel is reserved for handoffs, it is | 1 | 1 |
| (i) Guard channel concept | (ii) Fixed channel assignment | |
| (iii) Dynamic channel assignment | (iv) None of the above | |
| c. For a cellular system, if there are N cells and each cell is allocated k channel, what is the total number of available radio channels (S)? | 2 | 1 |
| (i) $S = k \cdot N$ | (ii) $S = k/N$ | |
| (iii) $S = k^N$ | (iv) $S = N/k$ | |
| d. Trunking in a cellular network refers to | 2 | 1 |
| (i) Termination of a call | (ii) initiation of a call | |
| (iii) Spectrum unavailability | (iv) Accommodating large number of users in limited spectrum | |
| e. For channel Cluster size 7 what is Co-channel reuse ratio | 2 | 1 |
| (i) 3 | (ii) 2 | |
| (iv) 4.58 | (v) 5.1 | |
| f. Call completion rate is 80% then the value of GOS is | 3 | 1 |
| (i) 0.02 | (ii) 0.2 | |
| (iii) 0.002 | (iv) 0 | |
| g. In a cell particular channel is used for 90 minutes. The traffic intensity carried by the channel is | 3 | 1 |
| (i) 1E | (ii) 1.5E | |
| (iii) 0.05E | (iv) 2E | |
| h. The free space model of propagation refers to | 3 | 1 |
| (i) Atmospheric Layer Propagation | (ii) Unobstructed line of sight between the transmitter and receiver | |
| (iii) Propagation along the ground surface | (iv) None of the above | |
| i. The Factors affecting small scale fading are | 4 | 1 |
| (i) multipath propagation | (ii) speed of the mobile and the surrounding objects | |
| (iii) Bandwidth of transmitted signal | (iv) All of the above | |
| j. Which of the following is not true for TDMA? | 4 | 1 |
| (i) Discontinuous data transmission | (ii) No requirement of duplexers | |
| (iii) High transmission rates | (iv) Single carrier frequency for single user | |

PART – B: (Short Answer Questions)**(2 x 5 = 10 Marks)**Q.2. Answer ALL questions

	[CO#]	[PO#]
a. A spectrum of 60 MHz is allocated to a cellular system which uses two 25 KHz simplex channels to provide full duplex voice channels. What is the number of channels available per cell for 3 cell reuse factor?	2	2
b. How much capacity increase can occur if we use Microcell zoning of 3 zones/cell. Initially $N = 7$.	3	2
c. Give the conditions for a signal to undergo Flat fading.	3	1
d. Calculate S/I ratio in a cellular system for a given path loss component $n = 4$ and frequency reuse factor of $N = 7$.	2	1
e. Give reason why CDMA is a secure Communication technique.	4	1

PART – C: (Long Answer Questions)**(6 x 5 = 30 Marks)**Answer ANY FIVE questions

	Marks	[CO#]	[PO#]
3. Discuss the basic requirements and their importance for developing a cellular mobile telephone system.	(6)	1	1
4. Explain the need of Handoff? Differentiate between hard and Soft handoff.	(6)	2	1
5. Describe in detail two ray Rayleigh Fading model.	(6)	2	2
6. Compare Fixed and Dynamic assignment strategies in Cellular Mobile communication	(6)	2	1
7. Describe small scale fading. What are the factors influencing small scale fading?	(6)	3	1
8. Compare Rayleigh and Rician distribution.	(6)	3	1
9. Discuss the need of multiple access techniques. Enlist the factors on which the selection of multiple access technique depends on?	(6)	4	1
10. Discuss FDMA in detail. Explain the Nonlinear effects in FDMA.	(6)	4	1

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