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SEVENTH SEMESTER

B.Tech. (EP)

SUPPLEMENTARY EXAMINATION February-2019

EP-407 MOBILE AND SATELLITE COMMUNICATION

Time: 3:00 Hours

Max. Marks: 40

Note: Answer ALL questions.

Assume suitable missing data, if any.

Q1: (i) What are the possible sources of Noises in wireless communications?

Explain the concept of wireless communication system along with the role of system capacity and interference? (2)

(ii) Explain the role of multiple access techniques in detail with core difference among CDMA, FDMA, TDMA. (3)

(iii) If 1 MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice channels in each cell for mentioned system. Assume that "If the total of 22 MHz of bandwidth is allocated to a particular Frequency Division Duplex cellular telephone system which uses two 25 kHz simplex channels to provide full duplex voice and control channels", Calculate the number of channels available per cell if a system uses 12 cell reuse. (3)

Q2: (i) An 400 KHz carrier is modulated by 15 kHz signal. What are the various frequencies contained by the modulated wave? (2)

(ii) what is the frequency reuse factor and cluster size that should be used for maximum capacity if the path loss component is $n=5$? Assume that there are 6 co-channel cells in the first tier, and all of them are at the same

distance from the mobile? Use suitable approximations and a signal to interference ratio of 15 dB is required for satisfactory forward channel performance of a cellular system. (3)

(iii) Define trunking efficiency? Illustrate the role and importance of bandwidth requirement in wireless communication along with Grade of Service (GoS)? (3)

Q3: (i) What are different medium characteristics for digital communication? Explain different modulation techniques for digital signals? (4)

(ii) Explain in brief time division multiplexing and frequency division multiplexing? Explain the difference among ASK, FSK and PSK? (4)

Q4: Discuss any FOUR from the following: (4x4=16)

- Modulator and de-modulator, Limitations of AM
- Cellular Mobile Radio Systems
- Set-up time, Holding time, Request rate
- Traffic intensity and system capacity
- Difference between DPSK and QPSK
- Modulation factor, Co-channel interference