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10SCN21

Second Semester M.Tech. Degree Examination, December 2011

Wireless and Mobile Networks

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. How does coverage range impact battery life in a mobile radio system? **(05 Marks)**
b. List out any five features of 3G wireless network. **(05 Marks)**
c. Show how capacity of a cellular system C = MS. Prove that for an hexagonal geometry, the co-channel reuse ratio is given by $\theta = \sqrt{3N}$, where $N = i^2 + ij + j^2$. **(10 Marks)**

2 a. Name two types of system-generated cellular interfaces. Derive the formulae for S/I in both the cases. **(10 Marks)**
b. Brief on any two techniques to improve coverage and capacity in cellular systems. **(10 Marks)**

3 a. Discuss two methods to prioritize handoff. **(06 Marks)**
b. Describe three basic propagation mechanisms in mobile communication system. **(14 Marks)**

4 a. Differentiate between FM and AM. **(06 Marks)**
b. What are the factors that influence the choice of digital modulation? **(08 Marks)**
c. What is the theoretical maximum data rate that is supported in a 200 kHz channel for SNR = 10 dB, 30 dB? Compare this to GSM standard with data rate 270.833 kbps. **(06 Marks)**

5 a. Give description on minimum shift keying. **(10 Marks)**
b. Explain the concept of Gaussian minimum shift keying. **(10 Marks)**

6 a. List out any five features of TDMA. Explain TDMA frame structure. **(10 Marks)**
b. Name and describe any two techniques of spread spectrum multiple access. **(10 Marks)**

7 a. With a block diagram, give functions of a cellular radio network. **(10 Marks)**
b. What are packet radio protocols? Explain any two. **(10 Marks)**

8 Write short notes on : **(20 Marks)**
a. CDMA
b. WLL
c. QPSK
d. Umbrella cell approach