(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 131801 Roll No. | | | | | | | | | | |

B.TECH.

Theory Examination (Semester-VIII) 2015-16

WIRELESS & MOBILE COMMUNICATION

Time : 3 Hours ***Max. Marks : 100***

Section-A

Q1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2×10=20)

(a) Find the number of duplex channels, if 20MHz of total spectrum is allocated for a duplex wireless cellular system and each simplex channel has 25 KHz RF bandwidth.

(b) What is fading?

(c) Compare the different second generation mobile communication systems, particularly in terms of multiple access technology, modulation technique and channel Bandwidth.

frequency selective channel?

(h) How IMT-2000 is useful for node to node communication?

(i) Consider a GSM system, which is a TDMA/FDD system that uses 20 MHz for forward link which is broken into radio channels of 200kHz and if no guard band is assumed, find the number of simultaneous users that can be accommodated in GSM.

(j) Write range of frequency for forward and reverse link operation for IS-95.

uses two 30 KHz simplex channel to provide full duplex voice and control channels. Assume that the system uses nine cell reuse pattern and 1MHz of the total bandwidth is allocated for control channels. Also calculate the number of control channels and voice channels per cell.

(b) (i) Show that an equalizer is an inverse filter of the channel.

(ii) Draw the Block diagram of LPC system and explain it.

(c) Derive an expression for selection diversity improvement in terms of probability of receiving signal using single branch or using M branches.

the factors influencing small scale fading.

(ii) Prove that in the two ray ground reflection model, $\Delta = d'' - d' = 2\ ht*hr / d$. Show when this holds as a good approximation.

(f) (i) What is basic concept of Add-hoc network? Why and how proper route is required to discuss in addhoc network?

(ii) Explain in brief 4G technologies and also compare with 1G, 2G and 3G technology.

(g) (i) Explain various important parameters of power delay profile of multipath channel.

(ii) Assume a receiver is located 10 km from a 50 W transmitter. The carrier frequency is 900 MHz, free

R is the cell radius, having same units as i, j are non-negative integers which describe the geometry relation between adjacent cells.

Section-C

Attempt any two questions from this section. **(15×2=30)**

Q3. (a) How priortizing Handoffs technique is used to decrease the probability of forced termination of a call due to lack of available channels?

(b) Discuss Umbrella cell approach with diagram to enhance the connectivity in mobile communication.

Q4. (a) Explain signal processing and GSM operations from speech input to speech output with diagram.

(b) Consider a GSM system, which is a TDMA/FDD system that uses 20 MHz for forward link which is broken into radio channels and if no guard band is assumed, find the number of simultaneous users that can be accommodated in GSM.

Q5. (a) Explain various applications and service of Next Generation Network (NGN).

(b) Draw and explain the component of mobile network structure of IMT-2000.