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M.TECH

M.TECH 2ND SEMESTER (AR 17) SUPPLEMENTARY EXAMINATIONS, APRIL/MAY 2019

ADVANCED WIRELESS AND MOBILE TECHNOLOGY

Branch: ECE, Subject Code:MECPC2020

Time: 3 Hours

Max Marks : 70
(10 X 2=20 MARKS)**PART-A****1. Answer the following questions.**

- What is the role of GPRS in enhancing 2G GSM system?
- What is shadow effect? What type of distribution is used to represent the shadow effect?
- Define coherence time. How can be the channel characterize with respect to coherence time?
- What kinds of modulation techniques are preferred for mobile communication? Why?
- Write down the relationship between D, N and R. Where D is the distance between two nearest co-channel cells, N is the cluster Size and R is radius of a cell.
- Differentiate between frequency selective fading and fast fading.
- Write the expression for received power in two-ray model and define path loss in dB.
- Differentiate between *SOFT HANDOFF* and *HARD HANDOFF*.
- Explain System processing gain of FHSS.
- Write down the property of MSK.

PART-B**(5 X 10=50 MARKS)****Answer any five questions from the following.**

- Calculate the minimum power received by a receiver situated 3 Km from the transmitter. Given power at reference distance ($d_0 = 100\text{m}$) is -32dBm . Path loss exponent is 4 and shadowing loss is 10.5 dB. [5]
 - Explain PN Sequence generator with suitable diagram. [5]
- If a GSM system uses a frame structure where each frame consists of 8 time slots, and each time slot contains 156.25 bits, and data is transmitted at 270.833 kbps in the channel, find (a)the time duration of a bit (b)the time duration of a slot (c)the time duration of a frame (d)How long must a user occupying a single time slot wait between two successive transmissions? [5]
 - Define carrier synchronization. Explain how it is achieved in homodyne detection of QPSK signal? [5]
- A communication system transmits at 120 kbps and uses 32-FSK. A hop rate of 2000 hops per second is used over an available spectrum of 10 MHz. Calculate (a) data symbol transmitted per hop (b) number of non overlapping hop frequencies. [5]
 - Explain different channel allocation methods available in wireless network. [5]
- Explain the evolution of wireless technologies from 1G to 4G with suitable examples. [5]
 - Explain least mean square algorithm for adaptive equalization. [5]
- Explain the comparison between FDMA,TDMA and CDMA system. [5]
 - Explain GSM system architecture. [5]
- What's a Rake receiver ? Explain operation and principle of M-branch RAKE receiver. [5]
 - Derive the expression of received power using path loss over a reflecting surface. [5]
- Write short notes on
 - COST 231 model [5]
 - M-ary FSK [5]