Exam. Code: 0931
Sub. Code: 33693

2124

B.E. (Electronics and Communication Engineering)
Seventh Semester
EC-710: Wireless and Mobile Communication

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit. Use of scientific calculator is allowed.

x-x-x

I. Attempt the following:-

(a) Define coherence time. In what way does this parameter decide the behavior of wireless channel?

(b) State different types of space diversity techniques.

(c) Why cellular concept is used for mobile telephony.

(d) How FDMA handles near-far problem.

(e) How does spatial multiplexing work? (5x2)

UNIT - I

II. a) Explain the tradeoffs between the system capacity and co-channel interference.

b) Explain Wi-Fi and WiMax Standards. (2x5)

III. If a total of 33MHz is allocated to a particular FDD cellular system which uses two 25KHz simplex channels to provide full duplex voice and control channels. Compute number of channels available per cell if a system uses (i) 4-cell reuse (ii)7-cell reuse (iii) 12 cell reuse. If 1MHz of the allocated spectrum is dedicated to control channels. Determine equitable distribution of control and voice channels in each cell of three systems. (10)

IV. a) Explain frequency reuse concept with the help of proper cellular diagram. Also draw a cellular system with 19-cell reuse and locate the co-channel cells for this system.

b)What are the various air-interfaces of UMTS. Explain them. (2x5)

P.T.O.

UNIT - II

V. a) Explain RAKE receiver. Describe how time diversity is achieved in CDMA system using RAKE receiver.

b) Explain the role played by equalization and diversity as multipath mitigation techniques. Compare these two techniques. (2x5)

VI. a) If GSM uses frame structure, where each frame consists of 8 time slots and each time slot contains 156.25 bits and data is transmitted at 270.833Kbps. Find

i) the time duration of bit.

ii) the time duration of slot.

iii) time duration of frame.

iv) how long user wait between two consecutive transmissions.

b) Explain VOIP. Give its significance. (2x5)

VII. a) Explain LTE architecture in detail with diagram. Also give brief view of mobile satellite communication.

b) Explain p-n sequence generation process with the help of 3 bit linear feedback shift register. (2x5)

x-x-x