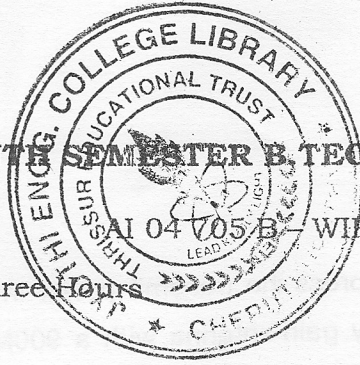


**SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2011**



**WIRELESS COMMUNICATION SYSTEMS**

Time : Three Hours

Maximum: 100 Marks

- I. (a) What constitutes a long-haul microwave system? Explain.
- (b) For a total transmit power ( $P_c$ ) of 1000 W, determine the energy per bit ( $E_b$ ) for a transmission rate of 50 Mbps.
- (c) Discuss the drawbacks of using FDM/FM modulation for satellite multiple-accessing systems.
- (d) Explain the features of second generation Wireless networks.
- (e) What is Handoff? Explain.
- (f) How to reduce Interference and Improve system capacity in cellular communication?
- (g) Write a note on FDMA.
- (h) Briefly explain Bluetooth and its features.

(8 x 5 = 40 Marks)

- II. (a) Explain the two types of FM microwave stations.  
(or)  
(b) Describe what a satellite link budget is and how it is used.
- III. (a) Describe what a reference burst is for TDMA and explain the following terms: Preamble carrier recovery sequence, bit timing recovery, unique word and correlation spike.  
(or)  
(b) (i) Briefly describe the operation of a CDMA multiple-accessing system.  
(ii) Explain personal area networks.
- IV. (a) (i) Explain in details about Frequency reuse. If a total of 33MHz of bandwidth allocated to a particular FDD cellular telephone system which uses two 25KHz simplex channels to provide full duplex voice and control channels, compute the number of channels available per cell if a system uses (i) four-cell reuse (ii) seven-cell reuse and (iii) 12-cell reuse. If 1MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of controls channels and voice channels in each cell for each of the three systems.

(or)

(b) If a transmitter produces 50W of power, express the transmit power in units of (i) DBM and (ii) DBW. If 50W is applied to a unity gain antenna with a 900MHZ carrier frequency find the received power in DBM at a free space distance of 100m from the antenna. What is  $P_r(10KM)$ ? Assume unity gain for the receiver antenna.

V. (a) Explain in detail about

- (i) Frequency Hopped Multiple Access.
- (ii) Direct sequence spread spectrum technique.

(or)

(b) (i) Write a note on Wireless LAN.

- (ii) Briefly explain Logical link control and adaptation protocol.