Paper Code: EEC-801	Roll No.									

B.Tech.
(SEM VIII) EVEN SEMESTER EXAMINATION, 2015-16
MOBILE & WIRELESS COMMUNICATIONS

[Time: 3 hrs.] **[Max. Marks: 100]**

Note:- Attempt all questions. All questions carry equal marks.

1. Attempt any four parts of the following:- **[5x4=20]**

(a) Describe Ground Reflection model for mobile radio wave propagation.
(b) Explain Fading effects due to Doppler Spread.
(c) If a transmitter produces 60W of power, express the transmit power units of (a) dBm and (b) dBW. If 60 W is applied to an unity gain antenna with a 1000 MHz carrier frequency, determine the received power in dBm at a free distance of 115 m from the antenna. What is P_R (12 km)? Assume unity gain for the receiver antenna?
(d) Derive the Impulse response model of multipath channel
(e) What are the three mechanism of propagation? Explain Knife-edge Diffraction Model.
(f) Explain link budget design using log normal shadowing model.

2. Attempt any four parts of the following:- **[5x4=20]**

(a) What do you mean by linear equalizers? Explain
(b) Explain
(i) Recursive Least Mean Squares Algorithm
(ii) Least Mean squared error linear equalizer technique
(c) Explain RAKE receiver circuit with its merits and demerits
(d) Explain the Maximal Ratio Combining Improvement technique
(e) Explain LPC coders.
(f) Explain TDMA, CDMA and FDMA techniques.

3. Attempt any two parts of the following:- **[10x2=20]**

(a) Explain Co- channel interference. For a seven cell reuse pattern, find the reuse factor if the minimum distance between centers of co- channel-cells is 20 km, radius of cell is 5km and a distance between adjacent cells in the seven cell pattern is 7km.
(b) Discuss the various Handoff strategies. Define the importance of frequency reuse distance, signal to interference ratio, frequency reuse factor, path loss exponent.
(c) Explain various mechanisms for improving Coverage and Capacity in cellular System.

4. Attempt any two parts of the following:- **[10x2=20]**

(a) Draw the architecture of GSM and explain each block.Discuss GSM channel types.
(b) Explain principle of working of CDMA system. What are the advantages and disadvantages of using CDMA for cellular network?Explain forward CDMA channel.
(c) Explain the three types of services provides by GSM. How does GSM convert 456 bits of the speech, data, or control signal into a normal burst of 156.25 bits? What is the importance of the framing structure in GSM?

5. Attempt any two parts of the following:- **[10x2=20]**

(a) What are the main characteristics of IMT-2000 standards? Explain 4G system and its application.
(b) What do you understand by mobile data network? Explain the protocol layers in CDPD.
(c) Discuss a complete model of Next Generation Network (NGN) system for mobile communication. Explain the different Evolution of Present Networks to NGN Related Issues.