Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
Manipal University

VI SEMESTER B.Tech. (E & C) DEGREE END SEMESTER EXAMINATION - April/May 2017

SUBJECT: MOBILE COMMUNICATION (ECE - 4010)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A.	Draw the timing diagram illustrating how a call to a mobile user initiated by a landline subscriber is established.
1B.	A cellular system of 32 Cells with a cell radius of 1.6 km, a total of 32 cells, a total frequency BW that supports 336 traffic channels, and a reuse factor of N = 7. If there are 32 total cells, what geographic area is covered, how many channels are there per cell, and what is the number of concurrent calls that can be handled? Repeat the situation for a cell radius of 0.8 km and 128 cells.
1C.	In a cellular system S/I is 18dB. Find the appropriate cluster size assuming 'n' as 4 and p=6.
	(5+3+2)
2A.	How Handoff procedure is performed? Explain various Handoff strategies and its practical considerations.
2B.	Explain the Okamura Model along with its loss equation and heights of the antennas.
2C.	Define the following terms: i) Mean Excess Delay ii) RMS Delay Spread iii) Coherence Bandwidth iv) Doppler Spread
	(5+3+2)
3A.	What is Huygen's principle? Quantify (Derive the expressions for) the Fresnel zones for various knife-edge diffraction scenarios.
3B.	In free space wave propagation, a Tx transmits a signal with a power of 50 Watts and unity gain and carrier frequency of 900MHz. If there is Rx at a distance of 10km with antenna gain is equal to 2, calculate i) the power at the Rx ii) the magnitude of the E-field at the Rx antenna, iii) the rms voltage applied to the Rx input. Assume that the Rx antenna has an impedance of 50ohms and is matched to the Rx.
3C.	Draw the PSD of GMSK and explain for which values of BT introduces ISI?
	(5+3+2)
4A.	Draw the GSM architecture and explain in detail.
4B.	Explain the Performance of Digital Modulation in Slow Flat-Fading Channels, and Frequency selective channels.
4C.	How a mobile host communicate with the remote node using mobile IP? Explain the steps with neat diagram.

		(5+3+2)
5A.	Explain forward CDMA channel modulation process.	
5B.	Explain the signal processing in GSM with the help of diagram.	
5C.	The channel data rate is 270.833kbps in GSM standard that is 40% of the theoretical maximum data rate that can be achieved in a 200kHz channel bandwidth. Calculate the corresponding theoretical SNR required.	
		(5+3+2)