(3 Hours) [Total Marks: 80]

N.B. : 1) Question no. 1 is compulsory.

2) Answer any 3 questions from remaining five questions.

3) Assume suitable data if required and justify the same.

4) Figures to the right indicate full marks.

1	(a)	What are multiple access techniques in UWB and describe in short.	5
	(b)	Discuss methods of interference mitigation of UWB with WLAN 802.11.a	5
	(c)	What are the applications of the UWB communication system?	5
	(d)	Generation, transmission and reception of UWB waveforms is less natural than sinusoids. Justify.	5
2.	(a)	Discuss time hopping PPM based UWB systems.	10
	(b)	Explain self interference in UWB with special reference to IFI and IPI.	10
3.	(a)	Discuss frequency domain autoregressive model.	10
	(b)	Explain how code sense technique replaces ARQ techniques in MAC layer of IEEE802.15.3a.	10
4.	(a)	Explain any two network based positioning techniques	10
	(b)	Compare and contrast UWB communication system performance with direct sequence spread spectrum and frequency hopped spread spectrum on basis of SNR and BER for single and multiple users	10
5.	(a)	Explain the different data modulation schemes in IR-UWB communication systems and compare data modulation schemes.	10
	(b)	Discuss short range analysis of UWB antennas.	10
6.	(a)	What are prolate spheroidal functions? Why are they attractive for UWB communications?	10
	(b)	Explain multiband OFDM UWB proposal for standardization	10