		Time: 5 Hours	
N.B.	(2)	Question No.1 is compulsory Write any three questions from Q. 2 to Q.6. Draw a neat diagrams wherever necessary.	
		Assume suitable data, if required and state it clearly.	
Q1	a	Solve any five Compare GSM and GPRS	4
	b	What is Doppler frequency shift?. Derive an expression for it	4
	c	Explain why OFDMA is preferred for downlink and SC-FDMA for uplink in LTE	4
	d e	Explain soft and hard handoff with a neat diagram What is SDR? State its advantages	4
	f	List the specifications of 5G	4
Q2	a b	Explain GSM Network Architecture with neat diagram In a cellular system with frequency reuse distance of 7 and the mobile receiver located at the boundary of its operating cell, under the influence of interfering cells in the first tier. Compute the S/I ratio at mobile receiver for: i) omnidirectional antenna design ii) 3 sector 120° directional antenna design iii) 6 sector 60° directional antenna design comment on the effect of sectoring on S/I ratio. Consider path loss exponent of 3.	10
Q3	a b	Compare 1G, 2G, 3G, 4G and 5G with respect to speed, applications, bandwidth, spectral efficiency and handoff. Compare IS-95, CDMA-2000 and WCDMA	10 10
Q4	a	What is MIMO? What are its advantages. Explain MIMO with respect to 4G Technology.	10
	b	Draw LTE network architecture and Discuss in details.	10
Q5	a b	Explain multi-path signal propagation and RAKE receiver in detail Draw a neat diagram of UMTS system architecture showing all interfaces and explain in details.	10 10
Q6	a b c	Write a short note on (Solve any 2) Two Ray ground reflection Model Traffic Theory with respect to mobile cellular networks Orthogonal Frequency Division Multiple Access	20

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