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CBCS SCHEME

USN | | | | | | | | | | |

BEC703

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026
Wireless Communication Systems

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

			M	L	C
		Module – 1			
Q.1	**a.**	Define wireless communication systems. Explain Rayleigh fading wireless channels.	**10**	**L2**	**CO1**
	b.	Explain basic of wireless channel modelling.	**10**	**L2**	**CO1**
		OR			
Q.2	**a.**	Explain the Doppler impact and Doppler fading on wireless channel.	**10**	**L2**	**CO1**
	b.	Describe in detail the concept of coherence time.	**10**	**L2**	**CO1**
		Module – 2			
Q.3	**a.**	Explain the correlation properties of random CDMA spreading sequences.	**10**	**L2**	**CO2**
	b.	Describe CDMA mechanism with relevant mathematical expressions.	**10**	**L3**	**CO2**
		OR			
Q.4	**a.**	Describe in detail MIMO – DFDM.	**10**	**L2**	**CO2**
	b.	Explain the working of single carrier frequency division multiple access using relevant equations. List the advantages of CDMA.	**10**	**L2**	**CO2**
		Module – 3			
Q.5	**a.**	Describe the first generation cellular system in wireless communication cellular technologies. Explain key characteristics and standards.	**10**	**L2**	**CO3**
	b.	Describe the working of orthogonal frequency division multiple access.	**10**	**L2**	**CO3**
		OR			
Q.6	**a.**	With neat block diagram, explain the working of GSM system architecture.	**10**	**L3**	**CO3**
	b.	Explain 2G digital cellular systems.	**10**	**L2**	**CO3**

		Module – 4			
Q.7	**a.**	With relevant mathematical expressions, describe the MIMO system model using neat sketches wherever necessary.	**10**	**L2**	**CO4**
	b.	Write a note on MIMO Beam forming.	**10**	**L2**	**CO4**
		OR			
Q.8	**a.**	Explain singular value decomposition of MIMO channel.	**10**	**L3**	**CO4**
	b.	Describe in detail the concepts of SVD and MIMO capacity.	**10**	**L3**	**CO4**
		Module – 5			
Q.9	**a.**	With neat block diagram, describe the working principle Of Radio Interface Architecture.	**10**	**L2**	**CO4**
	b.	Explain Uplink SC-FDMA Radio Resources allocation.	**10**	**L2**	**CO4**
		OR			
Q.10	**a.**	Describe LTE design principles and network architecture along with its features and advantages.	**10**	**L2**	**CO3**
	b.	Explain Downlink OFDMA Radio resources.	**10**	**L2**	**CO3**

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