

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

Nov – Dec 2025		Scheme IIB
(B. Tech.) Program: Electronics and Telecommunication Engineering		
Regular Examination: LY Semester: VII		
Course Code: EXC702 and Course Name: Mobile Communication Systems		
Date of Exam: 2-12-2025	Duration: 02.5 Hours	Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Explain proper and improper handoff concept with suitable diagram.		CO1	U
b)	Explain small scale multi path propagation and list the factors influencing small scale fading.		CO2	U
c)	Describe various power control mechanisms in CDMA IS 95 systems.		CO3	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Discuss CDMA 2000 cellular technology forward channels in detail.		CO4	U
b)	Explain 4G network architecture with appropriate diagram.		CO5	U
c)	Describe smart antenna systems with suitable diagram.		CO6	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Explain the effect of co channel interference on system capacity with suitable equations and show that how 120° sectoring reduces the co channel interference for $i=3$ and $j=2$ cellular system.		CO1	Ap
b)	Write about the concept Friis transmission theory with suitable equations. Assume a receiver is located 15 km from a 70 W transmitter. The carrier frequency is 900 MHz, free space propagation is assumed, $G_1 = 1$, and $G_r = 2$, find (a) the power at the receiver, (b) the magnitude of the E-field at the receiver antenna (c) the rms voltage applied to the receiver input assuming that the receiver antenna has a purely real impedance of 60Ω and is matched to the receiver.		CO2	Ap
c)	Explain GSM traffic and control channels in detail.		CO3	U
Q.4	Solve any two questions out of three. (10 marks each)	20		

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a)	Explain detailed UMTS network physical, transport and logical channels.		CO4	U
b)	Explain protocol stack of 4G network.		CO5	U
c)	Describe MIMO antenna systems with relevant diagrams.		CO6	U
