

27/05/2023

May/June 2023

(B.Tech) Program: Electronics & Telecommunication Engineering

Examination: LY Semester: VII

Course Code: EXC702 and Course Name: Mobile Communication System

Duration: 2.5 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
<b>Q 1</b>	<b>Solve any six questions out of eight:</b>	<b>12</b>		
i)	Explain umbrella cell concept.	02	1	U
ii)	Explain fading in cellular communication.	02	2	U
iii)	What are the various services provided by GSM?	02	3	U
iv)	Explain evolution path of CDMA 2000 technology.	02	4	U
v)	List various spectrum bands used in LTE.	02	5	U
vi)	What are the features of cognitive radio networks?	02	6	U
vii)	Explain in brief small scale multipath propagation.	02	2	U
viii)	Define GSM identifiers in short.	02	3	U
<b>Q.2</b>	<b>Solve any four questions out of six.</b>	<b>16</b>		
i)	For a cellular network, if Signal/Interference = 15dB, what is frequency reuse factor and cluster size that should be used for maximum channel capacity if path loss component $n=4$ . Assume there are 6 co-channel cells and all are at equal distance from mobile.	04	1	U
ii)	Define the factors which influence small scale fading.	04	2	U
iii)	Explain GSM speech encoding procedure in detail.	04	3	U

iv)	Discuss various releases and standardizations of UMTS with their names, year of deployment and features.	04	4	U
v)	Explain Network architecture of LTE with appropriate diagram.	04	5	U
vi)	Describe Smart Antenna Systems with diagram.	04	6	U
<b>Q.3</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	Explain the System capacity and co channel interference with diagram and related equations.	08	1	U
ii)	Explain uplink and downlink channels used in CDMA 2000 Technology.	08	4	U
iii)	Explain Physical, Transport and Logical channels in 4G LTE.	08	5	U
<b>Q.4</b>	<b>Solve any two questions out of three.</b>	<b>16</b>		
i)	Explain knife edge diffraction model with required equations and diagram.	08	2	U
ii)	Explain GSM network authentication and security procedure with neat diagram.	08	3	U
iii)	Write a note on Massive MIMO antenna systems with diagram.	08	6	U

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