

# University of Mumbai

## Examination 2020

Examinations Commencing from 23<sup>rd</sup> December 2020 to 6<sup>th</sup> January 2021 and from 7<sup>th</sup> January 2021 to 20<sup>th</sup> January 2021

Program: Electronics and Telecommunication Engineering

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: ECC702

Course Name: Mobile Communication System

Time: 2 hour

Max. Marks: 80

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<b>Q1.</b>	<b>Choose the correct option for following questions. All the Questions are compulsory and carry equal marks</b>
1.	_____ introduced Frequency Modulation for mobile communication systems in 1935.
Option A:	Amplitude modulation
Option B:	Frequency modulation
Option C:	ASK
Option D:	FSK
2.	_____ introduced Frequency Modulation for mobile communication systems in 1935.
Option A:	Edwin Armstrong
Option B:	Albert Einstein
Option C:	Galileo Galilei
Option D:	David Bohm
3.	The early FM push-to-talk telephone systems were used in
Option A:	Simplex mode
Option B:	Half duplex mode
Option C:	Full duplex mode
Option D:	Quasi-duplex mode
4.	World's first cellular system was developed by
Option A:	Nippon Telephone and Telegraph (NTT)
Option B:	Bellcore and Motorola
Option C:	AT&T Bell Laboratories
Option D:	Qualcomm
5.	Grade of service refers to
Option A:	Accommodating large number of users in limited spectrum
Option B:	Ability of a user to access trunked system during busy hour
Option C:	Two calls in progress in nearby mobile stations
Option D:	High speed users with large coverage area
6.	Which of the following is not a characteristic of cellular telephone system?

Option A:	Accommodate a large number of users
Option B:	Large geographic area
Option C:	Limited frequency spectrum
Option D:	Large frequency spectrum
7.	Which of the following is a CDMA standard of second generation network?
Option A:	IS-95
Option B:	IS-136
Option C:	ETACS
Option D:	EDGE
8.	Popular 2G CDMA standard IS-95 is also known as _____
Option A:	CdmaOne
Option B:	CdmaTwo
Option C:	IS-136
Option D:	IS-95B
9.	How many users or voice channels are supported for each 200 KHz channel in GSM?
Option A:	Eight
Option B:	Three
Option C:	Sixty four
Option D:	Twelve
10.	How many voice channels are supported for each 30 KHz radio channel in IS-136?
Option A:	Eight
Option B:	Thirty
Option C:	Three
Option D:	Sixteen

11.	What is a cell in cellular system?
Option A:	A group of cells
Option B:	A group of subscribers
Option C:	A small geographical area
Option D:	A large group of mobile systems
12.	Which of the following is a universally adopted shape of cell?
Option A:	Square
Option B:	Circle
Option C:	Triangle
Option D:	Hexagon
13.	Actual radio coverage of a cell is called _____
Option A:	Fingerprint
Option B:	Footprint
Option C:	Imprint
Option D:	Matrix
14.	What are co-channel cells?
Option A:	Cells having different base stations
Option B:	Cells using different frequency
Option C:	Cells using adjacent frequency
Option D:	Cells using same frequency
15.	Co-channel reuse ratio is defined by _____
Option A:	$Q=D*R$
Option B:	$Q=D/R$

Option C:	$Q=D^R$
Option D:	$Q=1/R$
16.	Which of the following mechanism do not impact propagation in mobile communication system?
Option A:	Reflection
Option B:	Diffraction
Option C:	Scattering
Option D:	Refraction
17.	When does the wave propagating from one medium to another gets partially reflection and partially transmitted?
Option A:	Both mediums have same electrical properties
Option B:	Both mediums have different electrical properties
Option C:	Both mediums have same magnetic properties
Option D:	Both mediums have different magnetic properties
18.	What is the case of reflection, in course of second medium being a perfect dielectric?
Option A:	Loss of energy during absorption
Option B:	Total energy reflected back to first medium
Option C:	No loss of energy in absorption
Option D:	Total energy transmitted into second medium
19.	What happen to a call in fixed channel strategy, if all the channels in a cell are occupied?
Option A:	Queued
Option B:	Cross talk
Option C:	Blocked
Option D:	Delayed

20.	_____ uses directional antennas to control interference.
Option A:	Sectoring
Option B:	Cell splitting
Option C:	Repeaters
Option D:	Micro cell zone concept

<b>Q2</b>	<b>Solve any Four out of Six</b>	<b>5 marks each</b>
A	Define following terms. i) Control channel ii) Forward channel iii) Hand-off iv) Reverse channel v) Page	
B	What is frequency Re-use? Derive the relationship between capacity C and cluster size N.	
C	List and discuss factors influencing small scale fading	
D	Explain soft-hand-off and power control in 3G.	
E	What is timing advance in GSM?	
F	How handoffs are prioritized	

<b>Q3.</b>	<b>Solve any Two Questions out of Three</b>	<b>10 marks each</b>
A	Draw and explain Signaling architecture of GSM.	
B	Sketch UMTS Network Architecture and explain it in detail. Give in brief Features and services provided by UMTS.	
C	Explain the concept of MIMO with respect to 4G technology.	