U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester : VII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: Fundamentals of Mobile Communication **Max Marks: 100**
Course: 16EC7IE1MC

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any may suitably assumed.

UNIT - I

1	a)	Starting from 2G to 4G indicate changes in data rate, modulation Multiple access methods, services, as applicable to mobile communications.		**6**
	b)	Why is there a need to develop standards in mobile communications?		**4**
	c)	Discuss the features of WLL, LMDS		**10**

UNIT - II

2	a)	Draw the pattern if four sites are assigned with 4 X 3 frequency reuse pattern and each site is divided into 3 sector. 12 frequencies are distributed to these 4 sites		**5**
	b)	The cellular capacity is to be increased in heavily populated urban scenarios. Suggest the suitable methods to improve capacity if i) less co-channel interference is to be achieved ii) if coverage has to be provided to hard to reach through places in building with single radio equipment		**10**
	c)	Define frequency reuse in mobile communications. For a mobile system with cluster size of 7, determine frequency reuse distance if the cell radius is five kilometres.		**5**
		OR		
3	a)	Suggest how capacity of cellular system can be improved in Urban scenario with dense population by cell splitting and sectoring. What are trade offs involved in these methods.		**10**
	b)	If a total of 33 MHz of bandwidth is allocated to a particular FDD cellular system which uses 25 kHz pairs, compute the number of channels available percell, if the system uses 4 cell reuse, If 1MHz is allocated for control channels, determine distribution of control and voice channels.		**6**
	c)	Indicate two differences between fixed channel and dynamic channel allocation for macro and micro cells		**4**

UNIT - III

4	a)	Draw the GSM network architecture and indicate functionalities of all elements .	**8**
	b)	In a typical scenario MS moves from BSC A to another BSC B both belonging to two different MSC A and MSC B. indicate how handover happen in this scenario and probable reasons for handover in GSM.	**8**
	c)	If ARFCN is 100 in downlink and 100 in uplink ,what is frequency associated for this call	**4**

OR

5	a)	With architecture list the features of GPRS functional group. Indicate additional network elements up gradation required in GSM to cater to GPRS requirement	**8**
	b)	Write the call flow mechanism in cellular system for call initiation from mobile station(MS) to another MS in GSM network with required identification numbers and channels.	**8**
	c)	List the reasons for handoff in Mobile communications	**4**

UNIT - IV

6	a)	Discuss the features of UMTS Technology in terms of radio interface, channels, modulation method , multiplexing, data rate and bandwidth .	**6**
	b)	Draw the WiMAX architecture and list the advanced features of WiMAX.	**8**
	c)	Present mobile IP use case for V2I service.	**6**

UNIT - V

7	a)	What are value added attributes of m-commerce frame work.	**6**
	b)	List the possible Mobile financial services under B2B and B2C	**6**
	c)	Explain the reason how content caching can be cost effective from both subscriber and network perspective in m-commerce	**8**

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