## Eighth Semester B.E. Degree Examination, Aug./Sept. 2020 GSM

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting atleast TWO questions from each part.

PART - A Draw a neat diagram of GSM reference model. Discuss the primary function carried out by 1 (08 Marks) each interface. With suitable diagram describe how GSM layers are mapped to OSI layers. (08 Marks) b. (04 Marks) List the objectives of GSM PLMN. With relevant diagram explain dynamic power control in GSM. (06 Marks) 2 What is channel borrowing? Why it is used? Explain different types of channel borrowing (06 Marks) Consider a GSM system with the following data: : 60,000 mile Coverage area Channel spacing : 200KHz One way system bendwidth : 12.5MHz Frequency reuse factor MS output power (W) : 800MW (29dBm) BS antenna gain (Gbs) : 20dB Receive cable/ connect or loss (L<sub>C</sub>) 2dB : 0dB MS antenna gain (G<sub>m</sub>) :12dB Required S/I ratio Information rate : 271 Kbps Receiver noise figure (F) :7dB Propagation path loss exponent y = 4One mile path loss intercept (I<sub>0</sub>) : 80dBm : 10dB/ Log normal fading margin (f<sub>m</sub>) KT 🧖 =-174 dBm/HzBANGALORE - 560 037 Calculate: i) Minimum received power ii) Maximum allowable path loss iii) Cell radius in miles iv) Number of cells required to cover the service area. (08 Marks)

- 3 a. Discuss the different kinds of bursts that are used in GSM to carry user and control information. (08 Marks)
  - b. Explain GSM logical channel structure discussing the functionalities of each. (06 Marks)
  - c. Discuss the GSM location area and cell area identification process in GSM mobility management. (06 Marks)
- 4 a. What are speech coding methods? Explain the speech code attributes. (09 Marks)
  - b. What are VOCODERS? Explain GSM full rate VOCODERS with a neat diagram.

(07 Marks)

c. Write short note on LPAS.

(04 Marks)

5	a. b. c.	Explain message flow diagram for call release by mobile initiated. With a neat block diagram, explain GSM – GPRS with protocol stack. Discuss the message flow between MS and BS, listing the primitives.	(08 Marks) (08 Marks) (04 Marks)
6	a. b. c.	What are the security algorithms used in GSM? Explain them briefly. With neat diagrams, explain the different types of SIM cards used in GSM. With a neat call flow diagram, explain token based unique challenge in GSM.	(08 Marks) (06 Marks) (06 Marks)
7	a. b.	Explain the spectral efficiency of wireless system with proper expressions. Derive an expression for received signal strength of a base station receiver with di What are the models used in modeling framework for a celluler/PCS network?	(08 Marks) agram. (06 Marks) (06 Marks)
8	c. a. b. c.	What are the five TMN layers in M3010? Explain the pertinent three TMN layers. With a neat diagram explain the NM architecture and interfaces.  Write short note on OSI systems management.	
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