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10TE82

Eighth Semester B.E. Degree Examination, June/July 2018

GSM

Time: 3 hrs.

Max. Marks:100

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

PART - A

- 1
 - a. With a neat block diagram, explain the mapping of GSM onto OSI layers. (10 Marks)
 - b. What are the GSM PLMN services and objectives? Explain in detail. (07 Marks)
 - c. Write a short note on MS subsystem. (03 Marks)
- 2
 - a. Explain how smart antenna is used to reduce the interference in GSM. Mention their advantages. (08 Marks)
 - b. Explain the following radio link features of GSM :
 - i) Discontinuous Transmission (DTx)
 - ii) Slow Frequency Hopping (SFH). (12 Marks)
- 3
 - a. Explain the logical channel structure of GSM system. (08 Marks)
 - b. Name the various bursts used in GSM. Explain with the help of a neat diagram. (08 Marks)
 - c. With the flow diagram, describe the mobile identification. (04 Marks)
- 4
 - a. List the speech coding methods and explain the attributes of Speech codec. (08 Marks)
 - b. Briefly explain the LPAS. (06 Marks)
 - c. With a neat diagram, explain GSM full rate LPC - RPE vocoders. (06 Marks)

PART - B

- 5
 - a. Explain message flow diagram for call setup by mobile station. (10 Marks)
 - b. Describe Intra - MSC handover in GSM. (10 Marks)
- 6
 - a. Briefly explain the wireless security requirements in GSM. (08 Marks)
 - b. Explain the security algorithms for GSM. (06 Marks)
 - c. With a neat call flow diagram, explain token based registration in GSM. (06 Marks)
- 7
 - a. Write short notes on Teletraffic models. (06 Marks)
 - b. Describe the factors to be considered while designing a wireless system. (06 Marks)
 - c. Design a TDMA frame for a cellular system to support various bit rates from 8 kbps to 128 kbps. A user can be assigned multiple carriers (not more than 2). Assume GMSK modulation, a coding rate of $R_c = \text{one-half}$, frame efficiency of 75% and the symbol rate of the SACCH - $a_1 = 0.1 R_s$. The cell radius is limited to 5 km and maximum processing delay to 90 ms. The velocity of light is $C = 3 \times 10^8$ mps. (08 Marks)
- 8
 - a. Explain the management requirements for wireless network. (10 Marks)
 - b. Explain SNMP and OSI system management. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.