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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Eighth Semester, B.E. – Electronics and Communication Engineering

Semester End Examination; June/July - 2015

GSM Technology and Applications

Time: 3 hrs *Max. Marks: 100*

***Note**: i) Answer any **FIVE** full questions selecting at least **TWO** full questions from each **part**.*
ii) Any missing data may be suitably assumed.

PART - A

1 a. Sketch a typical GSM PLMN diagram and mention the general objectives of the network with respect to the sources provided to a subscriber. 10

b. Explain the functional elements in a GSM reference model with a neat diagram. 10

2 a. How is power control achieved in GSM using dynamic measurement with the necessary diagram? Explain. 10

b. In GSM, how is frequency hopping used to improve the performance in the multipath fading environment? Describe. 10

3 a. Mention the full names of all the logical channels of GSM communication and specify their combinations for use in traffic time slots and control time slots. 8

b. With the help of frame structure, diagrams, describe the normal burst, synchronization burst, frequency connection burst and access burst. 12

4 a. Mention any four important attributes of speech codecs and describe them. 8

b. Draw the block diagram of a GSM full–rate LPC–RPE vocoder and explain its operation. 12

PART - B

5.a. Explain the sequential steps of procedure that follow in call–release which is initiated by a mobile user. 10

b. Describe the inter_MSC hand over operation with a diagram and assumptions. 10

6 a. Discuss the information contents stored on the SIM card. 10

b. Explain with a figure, the steps of call flows for token based registration in authentication procedure. 10

7 a. Mention the important issues that must be considered to determine the size of GSM – network, cell size, frequency plan and traffic plan, while planning a wireless network and discuss them. 6

b. Highlight the significance of spectral efficiency of a wireless network for voice and non voice transmissions. 7

c. Derive the expression for maximum allowable path loss between a mobile station and a base station. 7

8 a. Mention the five layers of telecommunication Management Network architecture as per CCITT – M.3010 standard and explain any three of them. 10

b. Sketch the diagram of NM architecture and interfaces and describe the NMS functionality. 10

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