U.S.N | | | | | | | | | | |

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

(An Autonomous Institution affiliated to VTU, Belgaum)

Seventh Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; Dec - 2016/Jan - 2017

GSM Communication and Networks

Time: 3 hrs *Max. Marks: 100*

***Note**: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*
ii) Assume suitably any missing data.

UNIT - I

1 a. Compare three multiple access methods-FDAM, TDMA and CDMA and mention the advantages of FDMA and TDMA. 8

b. In GSM digital cellular system, the one-way bandwidth is 15 MHz and channel spacing is 300 kHz. Eight users share each channel and 3 channels per cell are reserved for control channels. Calculate spectral efficiency.

Assume:

i) Omni directional antennas with each cell having an area of 8 km^2

ii) Total coverage area is 4000 km^2 12

iii) Avg. Nos. of calls during busy hour = 1.5

iv) Avg. holding time of a call = 90 sec

v) Call blocking probability = 2%

vi) Frequency Re-use factor = 4

2 a. Explain how cell sectoring (3 sectors and 6 sectors) will reduce the interference in 7-cell reuse pattern. Provide necessary mathematical equations and appropriate sketches. 10

b. Explain with mathematical equations and neat sketches, cellular concept with special reference to N, D/R Ratio [explain for N = 3, 7, 12]. 10

UNIT - II

3 a. Mention the objectives of a GSM PLMN and explain the services of the same. 8

b. Explain the functional Model of North-American PCS-1900. 8

c. List the various information carried by a SIM. 4

4. Explain the following Radio Link features of GSM, 20

i) Dynamic power control ii) DTX.

UNIT - III

5 a. With a neat diagram, describe GSM Logical channels. 12

b. Explain Mobile Identification process. 8

Contd.....2

6 a.	Describe the various supplementary services provided by GSM PLMN.	10
b.	With the help of flow diagram, explain mobile-terminated call.	10

UNIT - IV

7 a.	Explain GSM-GPRS network architecture and give its protocol stack.	10
b.	Discuss protocol stack for Fax services.	10
8 a.	Explain Token-based registration in GSM.	10
b.	Briefly explain the areas in which privacy is required for a PCS personal terminal.	10

UNIT - V

9 a.	List the four parameters that are considered while designing a wireless system and explain them briefly.	8
b.	Which are the approaches that are used to develop mobility model? Briefly explain.	6
c.	Explain the role of EML and NEL, resource management layers briefly.	6
10 a.	Explain 5-TMN Layers in M. 3010 in detail.	10
b.	With a neat diagram, explain NM architecture and interfaces.	10

* * *