



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

(An Autonomous Institution affiliated to VTU, Belagavi)

**Seventh Semester, B.E. - Computer Science and Engineering**

**Semester End Examination; Dec - 2017/Jan - 2018**

**Wireless Technology**

*Time: 3 hrs*

*Max. Marks: 100*

*Note: Answer FIVE full questions, selecting ONE full question from each unit.*

### UNIT - I

- |      |  |    |
|------|--|----|
| 1 a. | Compare 1G, 2G, 3G and 4G networks and bring out their salient features.   | 10 |
|      | b. List the components of a wireless cellular network along with a neat block diagram. Explain the functionalities of the HLR and VLR. | 10 |
| 2 a. | List the steps in a mobile originated call.  | 6  |
|      | b. What are the functions of the AU and the EIR?   | 4  |
|      | c. Explain the formation structure of IMSI, IMEI, MSISDN and LAI with diagram.   | 10 |

### UNIT - II

- |      |  |    |
|------|--|----|
| 3 a. | What are common control channels and dedicated control channels in GSM? List all of them and explain briefly.                          | 12 |
|      | b. List the steps involved in GSM-Intra BSC handover along with a diagram.   | 8  |
| 4 a. | Explain the relative coverage areas of all cell sizes.   | 10 |
|      | b. For a mobile system cluster size of $N = 7$ , $N = 5$ , $N = 4$ . Calculate the frequency reuse distance if call distance is 5 kms. | 6  |
|      | c. Explain Lee's microcell concept for capacity expansion.   | 4  |

### UNIT - III

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|------|---|----|
| 5 a. | Explain the components of a CDMA one network with a diagram.  | 8  |
|      | b. Explain the types of handoff in CDMA networks. Which among hard and soft HO provides better efficiency? Why? | 8  |
|      | c. Compare FDMA, TDMA and CDMA air interfaces.  | 4  |
| 6 a. | Explain the GPRS network components with a diagram.   | 10 |
|      | b. Explain the operations involved in mobile originated and mobile terminated SMS transfer with diagrams.       | 8  |
|      | c. What is pilot channel in CDMA?   | 2  |

### UNIT - IV

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|------|--|----|
| 7 a. | What is block coding? Explain with an example.   | 5  |
|      | b. Discuss the propagation conditions peculiar to air-interface for wireless mobile systems and wireless LANs. | 12 |

- c. Discuss the basic principles behind the usage of UWB. 3
- 8 a. Explain and compare the different spread spectrum modulation techniques. 10
- b. Compare Convolutional and Turbo encoders. 5
- c. Explain Block interleaving scheme with an example. 5

**UNIT - V**

- 9 a. Explain briefly the four categories of satellite systems. 10
- b. Explain any four technical challenges for Broadband Satellite systems. 10
- 10 a. Explain MIMO technology with a neat diagram. 10
- b. List the characteristics of 4G network. 7
- c. What are location based services? 3

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