

Time: 3 hours

Marks: 80

N.B.

- 1) Question number ONE is compulsory.
- 2) Attempt any THREE questions from remaining questions.
- 3) All questions carry equal marks.
- 4) Figures to the right indicate full marks.

Q1

- |   |   |
|---|---|
| a) What is meant by Umbrella Cell and Micro Cell in cellular systems? | 5 |
| b) Explain authentication and security in GSM                         | 5 |
| c) Differentiate between soft hand off and hard hand off              | 5 |
| d) Differentiate between CDMA, TDMA and FDMA                          | 5 |

Q2 a) A total of 36 MHz of bandwidth is allocated to a particular frequency division duplex cellular telephone system, which uses two 25KHz simplex channels to provide full duplex voice and control channels. Compute the number of channels available per cell, if the system uses,

- |                     |    |
|---------------------|----|
| a. 7-cell reuse and |    |
| b. 12-cell reuse    | 10 |

b) Explain dynamic channel assignment strategy in a cellular system. What are the advantages of this scheme? 10

Q3 a) Explain with block diagram the Ground Reflection (two-ray) model of radio wave propagation. 10

b) Explain the difference between DSSS and FHSS with suitable block diagram. Which of the two is more bandwidth efficient? 10

Q4 a) Draw and explain the architecture of GSM. 10

b) Explain authentication process in a GSM system. What is the significance of white, grey and black registers ? 10

Q5 a) Explain forward and reverse channels of IS 95. 10

b) Explain UMTS network architecture in detail with interfaces 10

Q6 Write short notes on **any 2** 20

- a) GPRS
- b) Hand of procedure in GSM
- c) Erlang B and Erlang C system
- d) Wireless sensor Networks

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