

NB: (1) Question No.1 is **compulsory**.

(2) Attempt any **three** out of remaining **five** questions

(3) Assume suitable data, if necessary.

- Q1 Attempt any four. **20**
- a Draw and detail the GSM Reference Architecture. **5**
  - b What are the various factors influencing the Handoffs? **5**
  - c List and detail the fading effects due to multipath time delay spreading of signals. **5**
  - d What are the limitations of 3G? **5**
  - e What is the use of sectoring in Cellular Systems? **5**
- Q2 a A total of 33 MHz bandwidth is allocated to a FDD cellular system with two 25 KHz simplex channels to provide full duplex voice and control channels. Compute the number of channels available per cell if the system uses (i) 4 cell (ii) 7 cell and (iii) 8 cell reuse technique. Assume 1 MHz of spectrum is allocated to control channels. Give a distribution of voice and control channels. **10**
- b Draw and detail the Free Space Propagation model. Also list and discuss the fundamental phenomena responsible for signal propagation in a mobile Communication system apart from LoS communication. **10**
- Q3 a Explain the need and the concept of Spread Spectrum modulation. **10**
- b Differentiate between CDMA, TDMA and FDMA. **10**
- Q4 a Detail the functions and types of Smart Antenna. **10**
- b Draw and detail the general Authentication and Ciphering key generation Process in GSM. **10**
- Q5 a With neat diagram explain the architecture of UMTS. **10**
- b Detail the Radio Access Methods used by LTE and the advantages associated. **10**
- Q6 a What do you mean by Indoor Propagation Model? Discuss the various losses encountered in it and along with the path loss model followed. **10**
- b Write a Short note on a) IS 95 **5** b) GPRS. **5**

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