

N.B. : (1) Question No. 1 is **compulsory**.

(2) Attempt any **four** questions out of remaining **six** questions.

(3) Assume **suitable** data if **required**.

1. (a) A Computer Engineering Department plans to design and set up a Mobile Communication Laboratory. Identify the software, hardware and networking requirements for such Laboratory. Explain various components involved. Show the set up diagrammatically. (Assume suitable specifications of the components). **10**
- (b) "In wireless communication, multiplexing can be carried out in four dimensions i.e. space, time, frequency and code". Explain. **10**
2. (a) What is the principle of frequency reuse in the context of a cellular network ? **8**
- (b) What are the reasons for delay in GSM system for packet data traffic ? Draw and explain the protocol architecture of GSM. **12**
3. (a) What are the advantages and disadvantages of using CDMA for a cellular network ? **10**
- (b) Explain the various wideband modulation techniques employed in cellular/mobile technologies. **10**
4. (a) Explain the difference between a single-cell and a multiple-cell wireless LAN. **10**
- (b) Explain 'Bluetooth protocol stack' with neat diagram. **10**
5. (a) Explain and draw IEEE 802.11 protocol architecture. **10**
- (b) Explain the errors in a wireless network, which degrade TCP performance. Briefly explain how TCP snooping can improve this situation. **10**
6. (a) Explain the difference between TDMA, FDMA and CDMA with suitable example. **10**
- (b) Explain and draw the architecture of GPRS system. **10**
7. Write short notes on (any **four**) :- **20**
 - (a) DECT
 - (b) PACS Personal Access Communication (System)
 - (c) Mobile IP
 - (d) WML and its Applications
 - (e) Wired Vs Wireless Local Loop
 - (f) Mobile Agents.