(3 Hours)   (Total Marks : 80)

N.B. : (1) Question No. 1 is **compulsory.**
     (2) Attempt any **three** from remaining **five** questions.
     (3) Assume suitable **data**, if **necessary**.

Q.1 a. Explain in detail hidden terminal and exposed terminal problem with respect to **[05]** WLAN.

b. What is frequency reuse principle with neat diagram? Explain it with example. **[05]**

c. Assume a cellular system of 32 cells with cell radius of 1.6km, a total spectrum **[05]** allocation that supports 336 traffic channels and a reuse pattern of 7. Calculate the total service area covered with this configuration, the number of channels per cell and total system capacity. Assume regular hexagonal topology.

d. Explain piconet and scatternet w.r.t Bluetooth. **[05]**

Q.2 a. Explain WEP protocol in detail with neat diagram. **[10]**

b. What is spread spectrum? Explain FHSS in detail. **[10]**

Q.3 a. What is WLL? Explain in detail MMDS and LMDS working in WLL based **[10]** technology

b. Explain GPRS architecture in detail with neat diagram. **[10]**

Q.4 a. What is Ad-hoc network? Discuss and compare MANET and VANET **[10]** architecture.

b. Explain wireless multiple access techniques with suitable diagrams. **[10]**

Q.5 a. Explain the evolution of cellular systems highlighting 1G/2G/3G. **[10]**

b. Define threats and challenges in wireless communication. Explain different **[10]** types of device security issues

Q.6 Write a short note on the following (solve any **four**) : **[20]**
    a. Wi-Max
    b. Zigbee architecture
    c. Mobile IP
    d. UMTS architecture
    e. Wireless sensor networks architecure

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