(3 Hours)   **Marks : 80**

Note: 1. Question Number 1 is compulsory.
2. Solve any **three** from remaining questions.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary

(1) a.Define frequency resuse with a neat diagram. Consider a transmitter supporting 80 voice channels over an area of 250 kms. If this area is equally divided into 8 cells, each supported by lower power transmitters so that each cell supports 50% of the channels. Determine:
(i) The coverage area of each cell (ii) Total area of voice channels available in cellular systems.   **(10 marks)**

   b. Define the threats and challenges in wireless systems. Explain the different types of device security issues   .   .   **(10 marks)**

(2) a. Why is tunneling required in VPN. What are the protocols which support VPN.   **(10   marks)**

   b. Why is the concept of Spread Spectrum important? Briefly explain FHSS and DSSS concept.   **(10 marks)**

(3) a. Detail the Bluetooth protocol stack with neat diagram.   **(10 marks)**
   b. Elaborate the main factors of change in economics of wireless technology   **(10 marks)**

(4) a. Classify 802.11 MAC management functions. Explain Power management function in detail   **(10 marks)**

   b. Explain Hidden and Exposed terminal problem with solution.   **(10 marks)**

(5)   a. Neatly explain the WLL Architecture. Explain the two local loop techniques with diagrams   **(10 marks)**
   b. Discuss the GSM System Architecture in detail   **(10 marks)**

(6)   Write short notes on (any 2):   **(20 marks)**
   a. Mobile IP
   b. Wireless Sensor Networks
   c. Handoff Strategies
   d.. Wimax Technologies

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