

(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 reuse 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