



**Note :** 1. Question number 1 is **compulsory**.

2. Solve any **three** questions out of the remaining **five** questions

- (1) a. Explain the concept of frequency reuse. Assume a cellular system of 32 cells with a cell radius of 1.6 km, a total spectrum 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 a total system capacity. Assume regular hexagonal topology. (10 marks)
- b. Detail the main factors of change in economics of wireless technology. (10 marks)
- (2) a. Define Piconet and Scatternet. Explain Bluetooth protocol stack structure. (10 marks)
- b. Why is the concept of Spread Spectrum important? Briefly explain FHSS and DSSS concept. (10 marks)
- (3) a. Explain GSM architecture and explain how authentication and encryption is provided in GSM (10 marks)
- b. Describe the System that uses 802.16 standard and also compare the different 802.16 standards. (10 marks)
- (4) a. Write short note on Zigbee Architecture (05 marks)
- b. Explain Hidden and Exposed terminal problem with solution. (05 marks)
- c. List the 802.11 MAC management functions. Explain in detail Power Management function with a neat diagram (10 marks)
- (5) a. Define the threats and challenges in wireless systems. Explain the different types of device security issues (10 marks)
- b. Neatly explain the WLL Architecture. Explain the two local loop techniques with diagram. (10 marks)
- (6) Write short notes on (any 2): (20 marks)
- Mobile IP
  - Wireless Sensor Networks
  - Handoff Strategies
  - VPN

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