

**ALCCS – NEW SCHEME**

Time: 3 Hours

**FEBRUARY 2012**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**NOTE:**

- Question 1 is compulsory and carries 28 marks. Answer any FOUR questions from the rest. Marks are indicated against each question.
- Parts of a question should be answered at the same place.

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- Q.1**
- Define routing and localization in wireless systems.
  - Distinguish between SDMA and FDMA.
  - Draw the architecture of Wireless LAN and mention any two advantages of WLAN.
  - Mention applications of Bluetooth.
  - Explain authentication in mobile applications.
  - Define Sectoring and explain how it helps in decreasing the co-channel Interference.
  - Compare Active RFID and Passive RFID. (7×4)
- Q.2**
- Compare characteristic features of CDMA and GSM. (6)
  - Define frequency reuse. If a total of 50 MHz bandwidth is allocated to a particular cellular system which uses two 40 KHz simplex channels to provide full duplex voice and control channels. Compute the number of channels available per cell if a system uses:
    - Four-cell reuse
    - Seven-cell reuse (6)
  - Explain co-channel interference. Give equations for co-channel reuse ratio, signal-to-interference ratio for mobile receiver and average received power at distance  $d$ . (6)
- Q.3**
- Explain features of various components in Bluetooth Protocol stack. (6)
  - Give the working of Mobile IP. Explain features of discovery, registration and tunneling features of Mobile IP. (6)

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- c. Explain address space and packet payload for IPv6. (6)
- Q.4** a. Draw the architecture of cellular mobile communication and explain its working mechanism. (6)
- b. Explain the functionality of AUC, HLR, VLR and EIR. (6)
- c. Explain various types of handoff and channel allocation techniques. (6)
- Q.5** a. Explain the multi-path signal propagation and effecting factors. (6)
- b. Assume a receiver is located 10KM from a 50 W transmitter. The carrier frequency is 6 GHz and free space propagation is assumed  $G_t = 1$  and  $G_r = 1$ .  
(i) Find the power at the receiver.  
(ii) Find the magnitude of the E-Field at the receiver antenna. (6)
- c. Explain the following with reference to Medium Access Control:  
(i) Hidden and exposed terminals  
(ii) Near and far terminals (6)
- Q.6** a. Explain Mobile TCP. Give its advantages and disadvantages. (6)
- b. Explain broadcast models in wireless information networks. (6)
- c. Explain how transactions in mobile computing environment differ from centralized or distributed data bases. (6)
- Q.7** a. Compare the characteristic features of wearable computing and pervasive computing. (6)
- b. Mention attacks that are vulnerable in a non-secure mobile environment. (6)
- c. Write a short note on any **TWO** of the following:  
(i) Mobile Agents Security  
(ii) Power management in mobile computing  
(iii) Location aware services (2×3)