

## ALCCS

Time: 3 Hours

**FEBRUARY 2014**

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**
- a. Explain the role of network, gateway and middleware in mobile computing architecture. Draw the respective block diagram.
  - b. Explain co-channel interference. Mention methods to minimize co-channel interference.
  - c. Explain the working mechanism of Mobile IP. Give an example for illustration.
  - d. Define the following:
    - (i) Mobile assisted handoff
    - (ii) Network controlled handoff
  - e. Explain the advantages of WLAN.
  - f. Mention any four advantages of indirect TCP in wireless protocols.
  - g. Explain the role of security frameworks in mobile environment. (7×4)
- Q.2**
- a. Explain Paging Caches (PC) and Routing Caches (RC) in cellular IP. Explain how Cellular IP addresses the feature of high speed mobility. (6)
  - b. A city has an area of 2,600 square miles and is covered by a cellular system using a 7-cell reuse pattern. Each cell has a radius of 6 miles and the city is allocated 40 MHz of spectrum with a full duplex channel bandwidth of 60 kHz. The Grade Of Service (GOS) is assumed to be 2% for an Erlang B system is specified. If the offered traffic per user is 0.03 Erlangs, compute
    - (i) the number of cells in the service area
    - (ii) the number of channels per cell and
    - (iii) the traffic intensity of each cell. (6)
  - c. Explain the functioning of piconets and scatternets in Bluetooth technology. (6)

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- Q.3** a. Describe the working mechanism and communication metrics of base station controller and base transceiver system in mobile communication system. (6)
- b. Explain the features of location management. (6)
- c. Give the advantages of borrowing channel allocation and dynamic channel allocation in the assignment of frequencies to cell clusters. (6)
- Q.4** a. Write notes on the following: (4.5 × 2)
- (i) Hidden and Exposed terminals
- (ii) Near and Far terminals
- b. Explain features of Mobile Transaction Processing. (5)
- c. Explain the concept of session mobility in mobile computing environment. (4)
- Q.5** a. “The M-TCP (mobile TCP) approach has the same goals as I-TCP and snooping TCP”. Justify the statement. (5)
- b. Explain the authentication process in mobile applications. (6)
- c. Explain location dependent and location independent computing models. (7)
- Q.6** a. Explain the functioning of Home Location Register (HLR), Visiting Location Register (VLR) and Mobile Switching Center (MSC). (6)
- b. Compare fixed channel allocation and dynamic channel allocation schemes. (6)
- c. Explain data dissemination process and broadcasting process in information management of mobile computing devices. (6)
- Q.7** Write short notes from any **THREE** of the following:
- (i) Wearable Computing
- (ii) Pervasive Computing
- (iii) Reduced User Interfaces
- (iv) Power Management in wireless systems (3x6)