

Total number of printed pages—4

53 (CS 712) MOCO

2014

## MOBILE COMPUTING

Paper : CS 712

Full Marks : 100

Time : Three hours

*The figures in the margin indicate full marks  
for the questions.*

*Answer any five questions.*

1. (a) Draw the GSM architecture and explain the entities of network and switching subsystem. 6+8=14
- (b) If a normal GSM time slot consists of 6 trailing bits, 8.25 guard bits, 26 training bits and 2 traffic bursts of 58 bits of data, find the frame efficiency. 3
- (c) Calculate the frequency reuse distance for a 7-cell group with cell radius of 3 miles. 3

Contd.

2. (a) Explain the steps involved in the call delivery procedure in GSM network in the following cases :
- (i) Mobile terminated call
  - (ii) Mobile originated call 8+4=12
- (b) How Security is provided in GSM for the subscribers ? 8
3. (a) When do hidden and exposed terminal problem arise ? Explain your answer using a suitable example. 7
- (b) Why the hand off procedure in a TDMA system is simpler than FDMA ? 2
- (c) Explain the basic scheme of CDMA system. What is the role of a pseudorandom sequence generator in the working of the CDMA system ? 8+3=11
4. (a) What are the desirable features of mobile IP ? Explain the discovery of care-of-address in the context of movement of a mobile to a foreign network. 6+5=11

- (b) Define the terms in the context of mobile IP : mobility binding, tunneling and encapsulation.  $2+4=6$
- (c) What are the main functions of DHCP ?  $3$
5. (a) Explain I-TCP with the help of a suitable schematic diagram. What are its advantages ? Why are the I-TCP acknowledgements and semantics not end-to-end ?  $6+4+2=12$
- (b) Explain the WAP architecture with a neat diagram.  $8$
6. (a) Can cellular networks and wireless LANs be considered as ad hoc networks ? Explain your answer.  $3$
- (b) Discuss why routing is a more challenging problem in MANET when compared to wired networks. Explain Location Aided Routing (LAR) protocol. Mention its advantages and disadvantages.  $4+6+3=13$
- (c) Write the difference between co-channel interference and adjacent channel interference.  $4$

7. Write short notes on the following : *(any four)*  
5×4=20

(i) Database hoarding

(ii) Hand over

(iii) Query processing in mobile database system.

(iv) J2ME

(v) GSM TDMA frame structure

(vi) Piconets and scatternets