Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech (ECE)/SEM-2/MCE-203/2013

2013
MOBILE COMMUNICATION

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

1. Answer any *seven* of the following. $7 \times 2 = 14$

a) What are the basic differences between CDMA and GSM systems ?

b) Why co-channel and adjacent channel interference is occurred in cellular system ?

c) What do you mean by Bluetooth ? Draw the basic architecture of Bluetooth system.

d) Why cell is hexagonal in shape in a cellular system ?

e) How can channel capacity be increased in a cellular system ?

f) What are the main advantages and drawbacks of CDMA system ?

g) What is quick solution for the mobility support to the internet network layer to support mobility ?

h) What are the different techniques taken to avoid fading in a cellular system ?

i) What are the different burst structures available in a GSM system ?

j) What do you mean by slow start in mobile network layer ?

GROUP – B

Answer any *four* from the following : $4 \times 14 = 56$

2. What are the different techniques used to reduce co-channel interference in a cellular system ? What do you mean by cell splitting technique in a cellular system ? Briefly disucss about cell splitting technique. Briefly discuss about 120° sectoring technique in cellular system. 2 + 2 + 4 + 6

3. Briefly discuss the advantages and drawbacks of frequency reuse concept in a cellular system. If a total of 33 MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 kHz simplex channels to provide full duplex voice and control channels, compute the number of channels .

   Available per cell if a system uses

   (a) four-cell reuse

   (b) seven-cell reuse

   (c) 12-cell reuse system.

   If 1 MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice channels in each cell for each of three systems. 6 + 8

4. What are the different interfaces available in a GSM system ? With a neat diagram of GSM architecture discuss about the different interfaces of a GSM system. What are the different channels available in GSM system ? Briefly discuss about the different channels of GSM system. 2 + 4 + 2 + 6

5. Briefly discuss about the GSM architecture. Briefly discuss about the location updating and call origination procedure in a typical call flow sequences in a GSM system. 6 + 8

6. What are the different diversity techniques used in cellular system to avoid fading ? Briefly discuss about these techniques. Briefly discuss how fading and scattering affect cellular system. 2 + 6 + 6

7. Briefly discuss about the functions of different entities of a mobile IP network for the IP packet delivery in a mobile network. What are the procedure for foreign agent discovery in a mobile network layer ? Briefly discuss about these techniques. 2 + 6 + 6

8. What do you mean by mobile ad-hoc network ? Briefly discuss about the routing system of a mobile ad-hoc network. What do you mean by tunneling and encapsulation in a mobile network layer ? Briefly discuss about the congestion control technique in a transport layer protocol. 2 + 6 + 2 + 4