Reg. No.									

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH. (INFORMATION TECHNOLOGY/COMPUTER AND COMMUNICATION ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: PROGRAM ELECTIVE I- MOBILE COMPUTING (ICT 4001)

(REVISED CREDIT SYSTEM)

(05/12/2016)

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

- Answer **ALL** the questions.
- Missing data may be suitably assumed.

1A	When a mobile node moves to new location how does it discovers a new foreign agent and associates with it? What is the process required, so that home agent correctly forwards the packets which belongs to mobile node, to new foreign agent. Explain.	5
1B	Explain elimination yeild non preemptive priority multiple access(EY-NPMA).	3
1C	Draw the MSK signal for the data 1011010.	2
2A	Compare any five different approaches for a mobile TCP.	5
2B	A cellular system with omni-directional antennas employs a cluster of size 7. The cell at the center of the cluster has a lot more traffic than others and needs to borrow some channels from adjacent cells. Explain the strategy to be used to determine the donor cell within the cluster and outside the cluster. 3	
2C	Explain different types of portability with example.	2
3A	Explain GSM system architecture with neat diagram.	5
3B	What would happen if [1,1,1,1] and [1, 1, 1, -1] are used as code for different users to access the medium in UMTS? If spreading factor is 4, what are the different codes that can be used to differentiate the users?	3
3C	Why does many MAC schemes of wired system fails in wireless networks? What is done in wired networks to avoid this effect?	2
4A	Explain with a neat diagram different types of handover possible in UMTS.	5
4B	Draw sequence diagram for DFWMAC-DCF using RTS/CTS extension. How hidden and exposed terminal problem is addressed in this methos?	3
4C	Explain any explicit reservation medium access.	2

5A A city with coverage area of 1000 sq km is covered with 3 cell system each with a radius of 1.387km. If the total spectrum allocated is 30 MHz with a full duplex channel bandwidth of 10 kHz. Assume a GOS of 0.01 for an Erlang B system is specified and offered traffic per user is 0.03 Erlangs, compute the following. Traffic intensity can be referred from Table Q.5A. 5

i. the number of cells in the service area

ii. the number of channels per cell

iii. traffic intensity of each cell

iv. the maximum carried traffic

v. the total number of users that can be served for 1% GOS

vi. the number of mobiles per unique channel

vii. the theoretical maximum number of users that could be served at one time by the system.

Table Q.5A: Erlang B system

Number of channels C	Capacity for GOS	
	0.01	0.001
70	56.1	49.2
100	84.1	75.2

5B What is triangular routing problem? How you can optimize packet forwarding when mobile node changes its foreign agent? Explain with state transition diagram. 3

5C Given a channel with an intended capacity of 20Mbps, the bandwidth of the channel is 3 MHz. What signal to noise ratio is required to achieve this capacity? 2

****