Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL 576104

(Constituent College of Manipal University)

SECOND SEMESTER M.Tech. (N/W Engg.) DEGREE, END SEMESTER EXAMINATION MAY – 2016
SUBJECT: MOBILE COMPUTING – ICT-502
(REVISED CREDIT SYSTEM)

TIME: 3 HOURS **07/05/2016** **MAX. MARKS: 50**

Instructions to candidates
Answer any **FIVE FULL** questions.
Missing data, if any, may be suitably assumed.

1A. List the main advantages and disadvantages of spread spectrum. How can spreading be achieved? Compare DSSS with FHSS.

1B. Given input bit value 101101 show
i) The inphase, quadrature phase waveforms along with the phase of output signal for QPSK
ii) MSK signal output.

1C. To achieve 50 kbps data rate on a 5 khz channel what is the Signal to Noise Ratio required in dB? [5+3+2]

2A. How can the capacity of the channel be improved by sectorization? What are the disadvantages and advantages observed using this process? Compare it with Cell splitting technique.

2B. Coverage area of a cellular system is 2000 sq. km. with each cell having a radii of 5 km. and there are a total of 1000 radio channels for handling the traffic.
i) Calculate the system capacity for 7- cell reuse
ii) If N=4 how many times should the cluster be replicated in order to approximately cover the entire cellular area? Calculate the system capacity for the given case
iii) Does decreasing the cluster size increase the system capacity?

2C. What is trunking and Grade of Service?
How many users can be supported for 0.5% blocking probability for 5 trunked channels in a blocked calls cleared system with each user generating 0.1 Erlangs of traffic with total offered traffic intensity as 1.13 ? [5+3+2]

3A. Give an overview of the GSM architecture.

3B. What are the security services offered by GSM? Give the steps involved during the authentication process.

3C. Why are so many identifiers (e.g. MSISDN, TMSI, IMSI and MSRN) needed in GSM? [5+3+2]

4A. Explain the working principle involved in EY-NPMA.

4B. How is synchronization of the clocks between various devices carried out in IEEE 802.11 infrastructure mode?

4C. How synchronization is carried out among various Bluetooth enabled devices when the packets are sent?

[5+3+2]

5A. How is tunnelling achieved in the following encapsulation methods while using mobile IP ?

i) General routing ii) IP-in-IP iii) Minimal encapsulation

State the advantages and disadvantages of each of them.

5B. Explain the packet flow mechanism between two mobile nodes, with both the nodes in the foreign networks.

5C. How and why does I-TCP isolate problems on wireless link? What are the main drawbacks of this solution? [5+3+2]

6A. What is the primary goal of WAP forum and how are they reflected in the initial WAP protocol architecture?

6B. What are the key features that distinguish third-generation cellular systems from the second generation cellular system? What are the services supported by GSM in both these generations?

6C. What are the problems that arise with the objects that gets disconnected in a network environment with respect to file system? [5+3+2]

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