Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

SIXTH SEMESTER B.Tech. (E & C) DEGREE END SEMESTER EXAMINATION
APRIL/MAY 2018
SUBJECT: MOBILE COMMUNICATION (ECE - 4010)

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

Instructions to candidates
- Answer **ALL** questions.
- Missing data may be suitably assumed.

1A. Explain the practical handoff considerations in detail with relevant diagrams.

1B. Explain the functioning of a Paging system with relevant diagrams.

1C. A cellular system is designed for a receiver sensitivity of -102dBm. If the total path loss permitted is 112 dB, and a fading margin is 20 dB, then determine the transmit power?

(5+3+2)

2A. A cellular system with 25 MHz is to be operated in a city of 100 km^2 with an allowed C/I of 12 dB. A MS is moving with a maximum speed of 82kmph has entered a cell region and it is forced for handoff after 3 min when it crosses the cell for maximum distance. Estimate co-channel antenna spacing, threshold power, if the handoff processing time is 3sec. Let, P_0 = 3 dBW at 1m, n = 3.

2B. Udupi has an area of 500 sq km and is covered by a cellular system having allowed C/I of 12 dB with n=3. Each cell has a radius of 1km and using total BW as 25MHz with 100kHz simplex channels. Find the number of channels per cell.

2C. A cellular phone has a 4200mAH battery. Assume that the cellular phone draws 1mA in idle mode and 100 mA during a call. What is the battery life (in hours) if the user makes a 10-minute call every 6 hours?

(5+3+2)

3A. Derive the amount of electric field and power received using 2-ray model.

3B. Explain the Knife-edge Diffraction model with relevant diagrams.

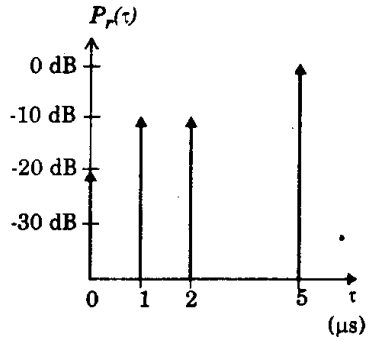
3C. Draw the PSD of GMSK and explain the values of BT which introduces ISI?

(5+3+2)

4A. Derive the relationship between bandwidth and the power received for a narrowband and wideband signals.

4B. For the following power delay profile, explain when frequency selective fading and flat-fading

occurs.



4C. How a mobile host communicate with the remote node using mobile IP? Explain the steps with neat diagram.

(5+3+2)

5A. Explain the classification of fading channels and the features of each in detail.

5B. Explain the features of GPRS architecture with the help of diagram.

5C. Mention the block diagrams that represent Forward and reverse CDMA channel modulation process.

(5+3+2)