राष्ट्रीय प्रौद्योगिकी संस्थान हमीरपुर
हमीरपुर (हि॰प्र॰) – 177 005 (भारत)
NATIONAL INSTITUTE OF TECHNOLOGY HAMIRPUR
HAMIRPUR (H.P.) - 177 005 (INDIA)
(An Institute of National Importance under Ministry of HRD)
संगणक विज्ञान एवम् अभियांत्रिकी विभाग
Department of Computer Science & Engineering

Mobile Computing (CSD-422) Assignment-3

AS03/2020

SEMESTER-VIII

CLASS-Dual Degree(CSE) VIII Sem + B.Tech. (CSE) VIII Sem

All Assignment will be checked and evaluated by plagiarism software.

LAST DATE OF ONLINE SUBMISSION: 17/04/2020

Submit your assignment in pdf format with Name and roll No

and upload to Google Classroom and E-mail only: lokeshhamirpur@gmail.com

Attempt All Questions:

1. How does mobile IP work? What are the challenges with mobile IP with respect to high speed mobility? How does cellular IP solve some of these challenges?
2. What is the difference between ubiquitous computing and virtual computing? Also explain the working of Mobile Agent.
3. A certain city has an area of 1600 square kilometers and is covered by a cellular system using a seven cell reuse pattern. Each cell has a radius of 4 km and the city has 40 MHz spectrum with a full duplex channel bandwidth of 60KHz. Find:
   (i) The number of cells in the service area.
   (ii) The number of channels per cell.
   (iii) Total number of subscribers that can be served.
4. A 7 cell cluster (with N = 7) has 30 MHz allocated to it for forward channels and each channel is 200 kHz. Assume blocked-called-delayed and a probability of delay of 1%, and each user makes one 10 minute call every 3 hours.
   (a) What is the number of users that can be supported?
   (b) What is P [delay > 10] seconds?
   (c) What if it was a blocked-calls-cleared system with QOS of 1%?
5. A receiver in an urban cellular radio system detects a 1 mW signal at d =d0 = I meter from the transmitter. In order to mitigate co-channel interference effects, it is required that the signal received at any base station receiver from another base station transmitter which operates with the same channel must be below -100 dBm. A measurement team has determined that the average path loss exponent in the system is n = 3. Determine the major radius of each cell if a 7-cell reuse pattern is used. What is the major radius if a 4-cell reuse pattern is used?
6. Show that if n = 4, a cell can be split into four smaller cells, each with half the radius and 1116 of the transmitter power of the original cell. If extensive measurements show that the path loss exponent is 3, how should the transmitter poweP be changed in order to split a cell into four smaller cells? What impact will this have on the cellular geometry? Explain your answer and provide drawings that show how the new cells would fit within the original macrocells. For simplicity use omni-directional antennas