INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR
B.TECH (7th sem) Mid-Semester EXAMINATION, Sept 2022

Mobile and Pervasive Computing (CS4123)

F. M. = 30   Time – 2 hrs

Answer all questions

1. A. Which of the following is a fundamental principle of wireless communication?

(a) Electromagnetic waves (b) Microwaves (c) Both A and B (d)None of the above

B. What is transmitted with the call initiation request during a mobile call.

(a) MIN (b)ESN (c) Both a) & b) (d) None of the above

C. Which technique is used to increase cell capacity using directional antenna?

(a) Cell Splitting (b) Coverage zone approaches (c) Cell Sectoring (d) Cell Sectoring and Cell Splitting both

D. How is the capacity of the radio enhanced in cellular?

(a) By increasing the total base stations and by channel reuse (b) By increasing the spectrum of the radio (c) Both of these (d) None of these

E. In GSM, handover is taken care of by the following sub-layer of the Network layer

(a) Call Management (b) Radio Resource Management (c) Mobility Management
(d) None of these

F. Which one of the following enables us to use the entire bandwidth simultaneously?

(a) TDMA (b) CDMA (c) FDMA (d) All of the above

G. Which of the following can be considered as the advantage of using frequency reuse?

(a) The same spectrum can be allocated to the other networks
(b) Only a limited spectrum is required
(c) Increase capacity
(d) All of the above

H. How many sub-systems are there in Global Systems for Mobile (GSM)?

(a) 4 (b) 3 (c) 2 (d) None of the above   MS, BS, NSS

I. Name the sub-systems mentioned in 1.H.

J. Mobile IP is a communication protocol that allows the users to move from one network to another with

    (a) One IP address (b) Two IP address (c) No IP address (d) All the above may be possible

                                            [10x1=10]

2. a) Why cell shapes of the cellular network architecture is generally considered as hexagon?

b) Define location tracking. Write about two implementation techniques of location tracking.

                                         [5+5]

3. a) Define GOS. Mention assumptions (if any) in case of blocked calls cleared trunking system.

b) Define Erlang. How many users can be supported for 0.5% blocking probability for 20 number of trunked channels in a blocked calls cleared system. Assume each user generates 0.1 Erlang of traffic. From Erlang chart it is given that total system load for 0.5% blocking is 11.10.

                                         [5+5]