16/12/22 (E)

Exam. Code: 0931
Sub. Code: 6618

2122

B.E. (Electronics and Communication Engineering)
Seventh Semester
EC-710: Wireless and Mobile Communication

Time allowed: 3 Hours | Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Part. Use of scientific calculator is allowed.*

x-x-x

I. **(a)** Explain the basic principle of diversity techniques. **(2)**
(b) What is near-far effect? How it can be overcome? **(2)**
(c) Define dwell time. **(1)**
(d) What is duplexing? **(1)**
(e) What is VOIP? **(1)**
(f) How full duplex operation is achieved in cellular systems? **(1)**
(g) How does channel coding help in improving the performance of mobile system? **(1)**
(h) Why cell is assumed hexagonal in shape? **(1)**

Part- A

II. **(a)** Explain various methods for reducing interference and increasing capacity of a mobile communication system. **(6)**
(b) Explain Bluetooth and personal area network technology. **(4)**

III. **(a)** Explain in detail the parameters for mobile multipath channel. **(6)**
(b) A signal-to-interference ratio of 15 dB is required for satisfactory performance of a cellular system. Assume the path loss exponent n to be 4.
(1) Find the optimal value of cluster size N for omni-directional antennas.
(2) If cell sectoring is employed to increase the capacity of cellular system, determine the value of N for 120° sectoring and 60° sectoring. Which of the two (60° or 120°) should be used and why? **(4)**

IV. **(a)** Explain handoff. Explain the factors which must be taken into account before attempting handoff. **(4)**
(b) Explain UMTS wireless standard. **(4)**
(c) Define the following terms:
(1) Forward channel
(2) Reverse channel
(3) Control channel
(4) Full duplex system **(2)**

P.T.O.

Part-B

V. (a) What is small scale fading? Why it occurs? Explain its types. **(6)**

(b) Explain important differences between wireless and wired telephone networks. Which will you prefer and why? **(4)**

VI. (a) What is MIMO system? What are its advantages? Which standard of mobile communication employs this technology? **(3)**

(b) Explain in detail RAKE receiver. **(4)**

(c) What is equalization? Why equalization techniques are employed in wireless mobile radio links? **(3)**

VII. (a) What are basic GSM radio channels? Explain its architecture. **(6)**

(b) What is spread spectrum modulation? What are its advantages in wireless scenario? **(4)**

x-x-x