CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Wireless Communication

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Derive an expression for Pathloss in free space propagation. **(10 Marks)**
   b. Assume a receiver is located 10 km from a 50 W transmitter. The carrier frequency is 900 MHz, free space propagation is assumed, $G_t = 1$, and $G_r = 2$. Find:
   (i)   The power at the receiver
   (ii) The magnitude of the E-field at the receiver antenna
   (iii) The rms voltage applied to the receiver input assuming that the receiver antenna has a purely real impedance of 50 Ω and is matched to the receiver. **(10 Marks)**

OR

2 a. Explain three basic propagation mechanisms in mobile radio communication. **(06 Marks)**
   b. Discuss practical link budget design in path loss models. **(04 Marks)**
   c. Describe Okumura-Hata Model in outdoor propagation models. **(10 Marks)**

Module-2

3 a. List and explain factors that influencing Small Scale fading. **(06 Marks)**
   b. Explain types of Small Scale fading. **(04 Marks)**
   c. Describe Spread Spectrum channel impulse response measurement system with suitable block diagram. **(10 Marks)**

OR

4 a. What is channel assignment strategies? Discuss Handoff strategies in mobile communication. **(10 Marks)**
   b. Define the following:
   (i) Blocked call   (ii) Traffic Intensity   (iii) Load
   (iv) Grade of Service   (v) Request rate **(10 Marks)**

Module-3

5 a. Compare FDMA and TDMA in detail. **(12 Marks)**
   b. Discuss Packet Radio ALOHA Protocol. **(08 Marks)**

OR

6 a. Define capacity of cellular system. Derive an expression for maximum radio capacity with suitable assumptions. **(10 Marks)**
   b. Explain three popular capacity improvement techniques is cellular systems. **(10 Marks)**

Module-4

7 a. Discuss GSM system overview with a suitable block diagram. **(10 Marks)**
   b. Explain the structure of GSM frames used for traffic channels. **(05 Marks)**
   c. List and discuss available services in GSM. **(05 Marks)**

OR

8 a. With a neat step call flow, explain handover between two cells belonging to different BS Controller but the same MSC. **(10 Marks)**

   b. With a figure, discuss structure of time slots used in GSM. **(10 Marks)**

Module-5

9 a. Highlight the system overview of IS95 and discuss Air Interface activities in IS95. **(10 Marks)**

   b. Explain with suitable block diagram of an IS-95 mobile station transmitter. **(10 Marks)**

OR

10 a. Discuss IS-95 spreading and modulation in the downlink with a block diagram. **(10 Marks)**

   b. Explain all logical and physical channels in IS95. **(10 Marks)**

* * * * *