CBCS SCHEME

USN | | | | | | | | | |

15EC651

Sixth Semester B.E. Degree Examination, Jan./Feb. 2021
Cellular Mobile Communication

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Explain capacity expansion techniques:
(i) Cell Splitting
(ii) Cell Sectoring
(iii) Micro zone concept **(08 Marks)**

b. For a mobile system of cluster size of 7, determine the frequency reuse distance if the cell radius is 5 km and also explain the concept of frequency reuse for cellular system. **(08 Marks)**

OR

2 a. With the help of equations, explain free space model. **(08 Marks)**

b. If a total of 33 MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 kHz simplex channels to provide full duplex voice and control channels, compute the number of channels available per cell if a system uses:
(i) Four-cell reuse
(ii) Seven-cell reuse
(iii) Twelve-cell reuse **(08 Marks)**

Module-2

3 a. Explain the factors that influence small scale fading. **(06 Marks)**

b. Consider a transmitter which radiates a sinusoidal carrier frequency of 1850 MHz. For a vehicle moving 96.558 km/hr, compute the received carrier frequency if the mobile is moving towards the transmitter and away from transmitter. **(05 Marks)**

c. With neat block diagram, explain Direct RF pulse measurement, in small scale measurements. **(05 Marks)**

OR

4 a. Explain different types of small scale fading based on multipath time delay and Doppler spread. **(08 Marks)**

b. With relevant expressions, explain briefly Rayleigh and Ricean Distribution. **(08 Marks)**

Module-3

5 a. With the help of diagram, explain GSM architecture. **(08 Marks)**

b. With the help of diagram, explain basic elements of GSM transmission chain on the physical layer at the air interface. **(08 Marks)**

OR

6 a. What is Authentication and Encryption? Explain security related network functions in GSM. **(08 Marks)**

b. Explain protocol architecture of GSM signaling plane in detail. **(08 Marks)**

Module-4

7 a. Explain GPRS system architecture with interfaces with the help of neat diagram. **(08 Marks)**

b. Explain state model of a MS in GPRS. **(08 Marks)**

OR

8 a. Explain the logical channels used in GPRS. **(08 Marks)**

b. Explain Multimedia Messaging Service Network Architecture (MMSNA) with the help of neat diagram. **(08 Marks)**

Module-5

9 a. Explain different call hand offs in a CDMA system. **(08 Marks)**

b. With a block diagram, explain the generation of the CDMA paging channel. **(08 Marks)**

OR

10 a. Explain the IS-95 network architecture of a CDMA with neat diagram. **(08 Marks)**

b. With a block diagram, explain the generation of the CDMA forward traffic channel for 14.4 kbps traffic. **(08 Marks)**

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