Printed Pages : 4

EEC801

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 131801

Roll No.

# B. Tech.

## (SEM. VIII) THEORY EXAMINATION, 2014-15

## WIRELESS & MOBILE COMMUNICATION

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions.

1 Attempt any four parts : 5×4=20

(a) Explain the term Evolution of mobile radio communication fundamentals.

(b) A transmitter has a power output of 150 watt at a carrier frequency of 32.5 MHz. It is connected to an antenna with gain of 12 dBi. The receiving antenna is 10 km away and has gain of 5 dBi. Calculate the power delivered to the receiver, assuming free space propagation. Assume also that there are no losses or mismatches in the system.

(c) Define the Brewster angle. Calculate the Brewster angle for a sine wave imping on the ground having a permittivity of $\varepsilon r = 4$.

(d) Explain the term multipath measurement using relevant diagram.

(e) Explain the outdoor models given below :
   (i) Durkin's Model
   (ii) Okumura Model.

2 Attempt any four parts : 5×4=20

(a) Draw the block diagram of survey of equalization and explain it.

(b) Derive the impulse response model of multipath channel.

(c) What is the basic mechanism of vocoder and explain any two types of vocoders.

(d) Explain the different type of equalization techniques used in wireless communication with support of mathematics and block diagram.

(e) Explain the different type of diversity techniques used in wireless communication system.

3 Attempt any two parts : 10×2=20

(a) What are the different methods used for improving coverage and capacity in cellular system ? Describe all the method in detail with support of figures.

(b) Define frequency reuse concept. And explain the different type of channel assignment strategies and hand-off strategies in communication system.

(c) Given a cellular system with a total bandwidth of 30 MHz which uses two 25 kHz simplex channels to provide full duplex voice channels and control channels. Assuming that system uses a nine cell reuse pattern and 1 MHz of the total bandwidth is allocated for control channel :

(i) Calculate the total available channel

(ii) Determine the number of control channels

(iii) Determine the number of voice channels per cells.

(iv) Discuss the strategies for distribution of control and voice channels in each cell.

4 Attempt any two parts of the following : **10×2=20**

(a) Describe the Forward CDMA channel and reverse CDMA channel using proper block diagram.

(b) Explain the GSM architecture and frame structure in mobile radio communiction using system in detail.

(c) A FDD cellular communication system uses a total of 945 radio channels available for handling traffic. The total area of entire system is 2450 sqkm with the 7 sqkm as the area of a cell :

(i) Calculate the system capacity if the cluster size is 7.

(ii) Calculate the system capacity if the cluster size is 4.

5 Attempt any two parts : **10×2=20**

(a) Why Next Generation Networks are important? Explain the Next Generation Network in detail.

(b) Explain Mobile Adhoc Network in wireless communication and discuss any two applications.

(c) Write the short note on following :

(i) Wireless standard IMT 2000

(ii) RAKE receiver.

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