No. of Printed Pages : 3

**BIEL-018**

00490

# B.TECH. ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

## Term-End Examination

## June, 2013

## BIEL-018 : WIRELESS COMMUNICATION

*Time : 3 hours* *Maximum Marks : 70*

***Note :*** *Attempt **any seven** questions. Each questions carry **equal** marks.*

1. (a) Describe the evolution of mobile communication system. **2x5=10**

   (b) Explain the wireless communication system with the help of neat sketch block diagram.

2. (a) Compare and contrast the various 2.5G technology paths that each of the major 2G standards provide. **2x5=10**

   (b) How would multicarrier transmissions impact an operator's approach to allocating resources to accommodate a growing subscriber database that increasingly desires data connectivity over voice ?

3. (a) Describe the concept of frequency reuse.

(b) Show that the frequency reuse factor for a cellular system is given by K/S, where K is the average number of channels per cell and S is the total number of channels available to the cellular service provider. **2x5=10**

4. (a) Describe two advantages and disadvantages of wireless systems that use bursty data transmission rather than continuous data transmission.

(b) If 20 MHz of total spectrum is allocated for a duplex wireless cellular system and each simplex channel has 25 KHz RF bandwidth, Determine the number of duplex channels. **2x5=10**

5. (a) If a transmitter produces 50W power, express the transmitted power in the unit of dB. **3**

(b) If 50W is applied to a unity gain antenna with a 900 MHz carrier frequency, Find the power in dBM at a free space distance of 100m from the antenna. Assume unity gain for the receiver antenna. **7**

6. (a) What is 'Knife-edge diffraction model' ?

(b) Compare and contrast the power received in a reflection model and free space model. **2x5=10**

7. (a) Discuss the behaviour of envelope correlation in spatial diversity system. 2x5=10

(b) Discuss the advantages of FH-SS system over DS-SS system.

8. (a) Describe the applications of spread spectrum signal for wireless communication system. 2x5=10

(b) Explain sub-band coding with the help of suitable block diagram of coder and decoder.

9. (a) Discuss the criteria of selecting a speech coders for wireless communication. 2x5=10

(b) With the help of neat sketch diagram, explain the GSM architecture.

10. Write short notes on ***any two*** of the following : 2x5=10

(a) Hand over

(b) GPRS

(c) UMTS