Printed Pages : 1 **Roll No.** | | | | | | | | | | | **EEC028**

B.TECH.

THEORY EXAMINATION (SEM–VI) 2016-17

WIRELESS COMMUNICATION

Time : 3 Hours ***Max. Marks : 100***

Note : *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

SECTION – A

1. Explain the following: **10 x 2 = 20**

(a) Explain the term FDMA.

(b) Define the term wireless.

(c) Explain the term Brewster Angle**.**

(d) Explain the role of Equalizer?

(e) Explain the term Coherence Bandwidth & Coherence Time.

(f) List the techniques used to improve coverage & capacity in Cellular system.

(g) Find the Fraunhofer distance for an antenna with maximum dimension of 1 m and operating frequency of 900 MHz. Assume Antenna gain as unity.

(h) Explain the term Doppler Shift.

(i) Explain the terms Reflection & Scattering.

(j) Explain the terms Fast Fading & Slow Fading

SECTION – B

2. Attempt any five of the following questions: **5 x 10 = 50**

(a) Explain practical link budget design using Free Space Propagation Model. Assuming Free Space Propagation, a receiver is located 10 km away from a 50W transmitter. The Carrier frequency is 900 MHz, antenna gain at transmitter & receiver is 1 and 2, respectively, calculate (i) Power received at receiver (ii) Power flux density.

(b) Explain the factors influencing Small Scale Fading. In the U.S. digital cellular system, if f_c = 900 MHz and the mobile velocity is 70 km/hr, calculate the received carrier frequency if the mobile (i) directly toward the transmitter (positive Doppler shift) (ii) directly away from the transmitter (negative Doppler shift).

(c) Write the types of small scale fading. Explain Flat Fading and Frequency selective fading in detail. Draw the channel characteristics for Flat Fading Channel & Frequency Selective channel.

(d) What are vocoders? List the various type of vocoders. Explain the working of linear predictive coders.

(e) Explain diversity techniques. Write a short note on Practical Space Diversity Considerations.

(f) Draw the basic block diagram of Frequency Hopping Spread Spectrum (FH-SS) system. Explain the performance analysis of FH-SS System.

(g) Write a short note on the concept of (i) Channel Planning for wireless system (ii) Adjacent Channel Interference.

SECTION – C

Attempt any two of the following questions: **2 x 15 = 30**

3. Elaborate in detail about linear and non linear Equalization Techniques.

4. What are Multiple Access Techniques, Explain Narrowband system & Wideband system? Explain Time Division multiple Access Technique with the help of frame structure. Find Efficiency and number of channels in TDMA System.

5. Explain the following terms (i) Handoff Strategies (ii) Channel Assignment Strategies (iii) Frequency Reuse.