Printed Pages : 1 **Roll No.** | | | | | | | | | | | **NEN022**

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) Define Far Field or Fraunhofer region?

(b) Define Handoff Process.

(c) Explain Brewster Angle.

(d) Explain the term Coherence Bandwidth.

(e) Draw the block diagram of speech generation model.

(f) Explain the term Reflection & Diversity.

(g) Explain the term GSM and time slot.

(h) Explain Channel Assignment Strategies.

(i) Write the difference between wideband system & narrowband system.

(j) Explain the term frequency diversity.

SECTION – B

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

(a) Explain the free space propagation model If a transmitter produces 50W of power, express the transmit power in units of (i) dBm and (ii) dBW. If 50W is applied to a unity gain antenna with a 900 MHz carrier frequency, find the received power in dBm at a free space distance of 100m from antenna. Assume unity gain for receiver antenna

(b) Write small scale fading types based on Doppler Spread. Derive an expression for the received power at a distance d from the transmitter for the two ray ground reflection model.

(c) Write a short note on the time diversity. Explain the structure of RAKE receiver with the help of neat block diagram.

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

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

(f) 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).

(g) Write a short note on the concept of (i) Cell Splitting (ii) Sectoring.

SECTION – C

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

3 Name the Multiple Access Techniques, which are used in mobile communication. Explain Time Division multiple Access Technique with the help of frame structure. Find Efficiency and number of channels in TDMA System.

4 (i) Explain Handoff Strategies (ii) Explain the concept of Frequency Reuse.

5 Explain practical link budget design using **(i)** Log-distance Path Loss model **(ii)** Okumura Model