Total No. of Questions :5] [Total No. of Printed Pages : 2

Roll No .....

EC-7011

B.E. VII Semester

Examination, December 2016

Wireless Communication

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except numericals, Derivation, Design and Drawing etc.
v) Assume suitable data if any missing. Answer must be to the point.

1. a) What do you mean by scattering of signals?
   b) Write short note on "diffraction of signal".
   c) Explain the advantages and disadvantages of the 2-ray ground reflection model in the analysis of path loss.
   d) Discuss the types of services, requirements, spectrum limitations and noise considerations of wireless communications.

   OR

   For a two-path propagation model with transmitter-receiver separation d=100m, height of transmitting antenna 10m, and height of receiving antenna 2m, find the delay spread between the two signals.

2. a) What are the three most important small scale multipath propagation?
   b) What do you mean by frequency selective channels?
   c) Consider a channel with Rayleigh fading and average received power 10dBm. Find the probability that the received power is below 10dBm.

   d) Explain about the factors that influence small scale fading.

   OR

   Determine the fade margin for a 30km microwave hop. The RF frequency is 10GHz, the terrain is water and the reliability objective is 99.995%.

3. a) What is delay spread?
   b) What is time selective fading?
   c) Discuss frequency selective fading.
   d) Consider a wideband channel with multipath intensity profile. $A_c(\tau) = \begin{cases} e^{-\tau/0.0001} & 0 \le \tau \le 20\mu\text{sec} \\ 0 & else \end{cases}$

   Find the mean and rms delay spreads of the channel.

   OR

   Discuss the factors on which small scale fading depends.

4. a) What is AWGN channel?
   b) What is bit error rate?
   c) Define probability of error.
   d) Discuss the probability of error in flat-fading channel.

   OR

   Draw the block diagram of wireless communication link and explain it.

5. a) Discuss Outage probability.
   b) What is RAKE receiver?
   c) Mention any four common methods of microdiversity.
   d) Explain in detail about linear equalizers.

   OR

   Draw the block diagram of a Decision-Feedback Equalizer and explain it.

******