

**Code No: 128FG****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year II Semester Examinations, July - 2023****WIRELESS COMMUNICATIONS AND NETWORKS****(Electronics and Communication Engineering)****Time: 3 Hours****Max. Marks: 75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART – A****(25 Marks)**

- 1.a) What are prioritizing handoffs? [2]
- b) List out the types of small-scale multipath measurements techniques. [3]
- c) Define Brewster angle. [2]
- d) Write about Site specific modeling. [3]
- e) Explain about level crossing. [2]
- f) What are the factors influencing the fading? [3]
- g) Give the fundamentals of equalization. [2]
- h) Explain about Zero forcing algorithm. [3]
- i) List the advantages of WLAN. [2]
- j) List an IEEE 802.11 services. [3]

**PART – B****(50 Marks)**

- 2.a) Explain in detail about Trunking and Grade of Service. [5+5]
- b) Write short notes on channel assignment strategies.

**OR**

3. If a signal-to-interference ratio of 15 dB is required for satisfactory forward channel performance of a cellular system, what is the frequency reuse factor and cluster size that should be used for maximum capacity if the path loss exponent is a)  $n = 4$  b)  $n = 3$ . Assume that there are six co-channel cells in the first tier, and all of them are at the same distance from the mobile. Use suitable approximations. [10]

4. Explain in detail about an Ericsson Multiple Breakpoint Model. [10]

**OR**

5. Explain in detail about Walfisch and Bertoni Model with neat diagrams. [10]

- 6.a) What is the difference between frequency selective fading and flat fading? [5+5]
- b) How is the received signal strength predicted using the free space propagation Model? Explain.

**OR**

- 7.a) Explain how the two-ray model is used when a single ground reflection dominates the multipath effect. [6+4]
- b) Write short notes on fast fading and slow fading.

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- 8.a) Explain in detail about Decision Feedback Equalization.
- b) What is the need for link calculation? Explain with suitable example. [5+5]

**OR**

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- 9.a) Explain Maximum Likelihood Sequence Estimation (MLSE) Equalizer.
- b) Explain in detail about Polarization Diversity. [5+5]

- 10.a) What do you mean by MAC layer? Explain its functionality.
- b) Explain the physical layer specifications of IEEE802.11 using infrared. [5+5]

**OR**

- 11.a) Draw and explain the various fields in a IEEE 802.11 MAC frame.
- b) Explain, when does a WLAN become a Personal Area Network (PAN)? [5+5]

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