

**ELECTRONICS & COMMUNICATION ENGINEERING WIRELESS  
COMMUNICATION BTEC-601-18  
Question Bank**

1. What are the basic units of a Cellular system?
2. What is base station?
3. What is MSC?
4. What do you mean by forward and reverse channel?
5. Define cell.
6. What is foot print?
7. What is channel assignment? What are the types?
8. What are the techniques used to expand the capacity of cellular system?
9. What is meant by frequency reuse?
10. What is co channel interference?
11. Define adjacent channel interference.
12. Define Grade of service.
13. Define cell splitting.
14. What is sectoring?
15. Differentiate Cellular telephony and Cordless telephony.
16. Define signal to interference ratio.
17. Define flat fading.
18. What is a multiple accessing technique?
19. What are the three most important effects of small signal fading?
20. Define the frequency reuse concept.
21. What is the cellular principle?
22. What is coherence time and coherence bandwidth?
23. Differentiate flat fading and frequency selective fading.
24. State some of the features of CDMA.

25. What is Random Access?
26. What is FDMA?
27. What is multiple access?
28. What is TDMA?
29. What is CDMA?
30. What is SDMA?
31. What are the advantages of TDMA?
32. State some of the features of CDMA.
33. Define efficiency of TDMA.
34. What are the features of TDMA?
35. What is time division multiplexing?
36. What are the features of FDMA?
37. Discuss various types of wireless services and its requirements.
38. Explain in detail the evolution of wireless communication?
39. Write short notes on different trends in cellular radio & personal communication.
40. Enumerate on spectrum limitation.
41. Explain about noise and interference limited system.
42. Briefly explain the principle of cellular networks.
43. Compare FDMA, TDMA & CDMA.
44. Discuss and explain the multipath propagation.
45. Explain in detail the different techniques used to improve coverage & capacity of cellular system.
46. Describe in detail about the Wireless Services and its types.
47. Write short notes on frequency reuse & channel assignment.
48. Explain the Multiple Access methods with neat diagrams.
49. Explain the cellular system architecture in detail.
50. Explain frequency reuse in detail.
51. Explain the various types of Handoff processes available
52. Compare and contrast Wired and Wireless communication
53. State the difference between small scale and large scale fading.
54. Define large scale propagation model.
55. What is scattering?
56. What is the function of outdoor propagation model?
57. Define coherence time and coherence bandwidth
58. What is link budget calculation?

59. Name some of the outdoor propagation models.
60. What is flat fading?
61. Define fast fading channel?
62. Define slow fading channel?
63. Define Doppler shift?
64. Write a note on Reflecting from a ground plane.
65. What is meant by slow fading channel?
66. What is meant by Doppler spread?
67. Distinguish between flat fading and frequency selective fading.
68. What is flat fading?
69. What is the relationship between Doppler spread and Coherence time?
70. What are the propagation mechanisms of EM waves?
71. Explain in detail the three significant wave propagation mechanisms that affect the propagation of EM waves.
72. Explain the propagation effects with Mobile Radio.
73. Explain in detail about Link power budget Analysis.
74. Explain in detail about Narrowband models.
75. Explain the various types of outdoor propagation model.
76. Explain in detail about frequency selective channels and Non-stationary channels.
77. Explain about the properties of Nakagami distribution.
78. Explain about the properties of Rayleigh Distribution
79. Explain Shadowing Distribution.
80. Explain the NLOS Multipath fading model.
81. Explain the three basic reflection types with neat diagram.
82. Explain the two important theories related to scattering by rough surfaces.

83. What is meant by Time Invariant and Time Variant Channels? Explain.
84. Enumerate of propagation mechanism.
85. Discuss about propagation effects with mobile radio
86. Explain Rayleigh and Ricean fading.
87. Explain about channel classification.
88. Explain Time selective and frequency selective channels.
89. Brief notes about link calculations for various applications
90. What are Narrow band models, explain the significance of each model
91. Explain free space link budget.
92. Discuss Terrestrial link budget with suitable example.
93. Discuss on wide band models.
94. Write short notes on diffraction and scattering.
95. What are Smart Antennas?
96. State the principle of diversity.
97. Define channel Inversion.
98. Define space diversity.
99. Give the advantage of receiver diversity.
100. What is frequency diversity?
101. What is time diversity?
102. What is polarization diversity?
103. What are the techniques used to improve the received signal quality?
104. What is the need for diversity reception?
105. List the different methods of space diversity.
106. What is the concept of maximal ratio combining?
107. What is meant by outage probability?
108. How does the diversity technique combat ISI in the mobile radio propagation?
109. In what ways macroscopic diversity different from microscopic diversity technique to present deep fades.
110. What is the need of equalization?
111. What is diversity?
112. What is Macro and Micro Diversity?
113. Define adaptive equalization?
114. Explain Maximum Ratio Combining and Equal Gain Combining Technique.
115. Explain the different ways of achieving independent fading paths in a wireless System.
116. Explain the Receiver Diversity Techniques: a) Selection Combining b) Threshold Combining
117. What do you understand by equal gain combining? Explain.
118. Write short notes on Selection Diversity, Feedback Diversity, Threshold Diversity, Maximal Ratio Combining and Equal Gain Diversity.

119. In diversity scheme why do you prefer RAKE receiver? Explain.
120. Draw the block diagram of a LPC coding system & explain the different types of LPC used for wireless systems.
121. What are the services offered by GSM?
122. What is the function of NSS in GSM?
123. What is the function of VLR?
124. What is IS – 95?
125. Why we go for 3G?
126. Define Power control in CDMA.
127. List the types of Frequency Hopping.
128. What is the purpose of SIM?
129. What are the benefits of WLL?
130. What is frequency specification of Bluetooth?
131. Enumerate the different types of common control channels.
132. Give three important functional block of GSM system
133. Explain in detail about a broadcast channel and a multiple access channel.
134. The original GSM design uses 25 MHz of bandwidth for the uplink and for the downlink. This bandwidth is divided into 125 TDMA channels of 200 KHz each. Each TDMA channel consists of 8 user timeslots: the 8 timeslots along with a preamble and trailing bits form a frame, which is cyclically repeated in time. Find the total number of users that can be supported in the GSM system and the channel bandwidth of each user.
135. Explain with necessary diagrams the multiuser channels.
136. Explain in detail about CDMA with neat diagrams
137. Explain in detail about SDMA with neat diagrams
138. Write short notes on: i) Multiuser Diversity and ii) MIMO multiuser systems.
139. Explain the DSSS system model and synchronization loop for DSSS.
140. What is a RAKE receiver? Explain in detail.
141. Discuss the concept of FHSS system model.
142. Explain the operation of multiuser FHSS Technique with relevant block diagram.
143. Discuss the 3G overview and UMTS Basics
144. With a neat diagram explain the 3GPP Network Architecture.
145. Draw the OSI model for IEEE 802.11 and explain DSSS Physical Layer.
146. Explain FHSS PHY transmitter and receiver with a neat block diagram.
147. Draw the 4G visions and give the comparison of key parameters of 4G with 3G.
148. Explain 4G Key challenges and their proposed solutions.
149. Explain IEEE 802.11 MAC frame format.
150. Explain BSS and ESS configuration of IEEE 802.11 WLAN.
151. Explain the Smart Antenna Techniques with a neat diagram.
152. With a neat diagram explain IEEE 802.11 Architecture
153. Discuss the role of three channel types that are used in UMTS.

154. Discuss the role of 3G systems
155. Explain forward & reverse channel parameters of IS-95 CDMA
156. Explain in detail the 1G, 2G, 3G generation systems & their standards
157. List out the benefits of cyclic prefix in OFDM
158. Explain about CDMA principle, power control
159. Explain with necessary diagram, the operation of OFDM transceiver