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GSM RF INTERVIEW QUESTIONS

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General Questions about GSM

1. **What are the three services offered by GSM? Explain each of them briefly.**
2. **Which uplink/downlink spectrum is allocated to GSM-900?**
3. **Which uplink/downlink spectrum is allocated to DCS-1800?**
4. **How many carrier frequencies are there in GSM-900/DCS-1800? How much is the separation between the carrier frequencies?**
5. **What is Ciphering? Why do we need it? Name the algorithm(s) used in it?**
6. **What is Authentication? Why do we need it? Name the algorithm(s) used in it?**
7. **What is equalisation? Why do we need it?**
8. **What is Interleaving? Why do we need it?**
9. **Why do we need digitisation?**
10. **Explain Speech Coding.**
11. **What is channel coding?**
12. **What do you mean by Frequency re-use?**
13. **What is Cell Splitting?**
14. **Name the interfaces between a) BTS and MS b) BTS and BSC c) BSS and MSC d) TRAU and BSC e)BSC and PCU**
15. **What are LAPD and $LAPD_m$?**
16. **What is WPS?**
17. **What is MA?**
18. **What is MAIO?**

19. **What is the difference between Synthesised Frequency Hopping and Base Band Frequency Hopping?**

20. **What is Cycling Frequency Hopping?**

21. **What is HSN? How do we apply it?**

22. **What is DTX? Why is it used?**

23. **What is DRX? Why do we need it?**

24. **What is the gross data rate of GSM?**

25. **What is Erlangs? What is meant by GoS?**

26. **We use two different bands for GSM/DCS communications; GSM900 and DCS-1800. Which one is the better of the two in terms of quality and coverage?**

27. **What is TA? Why do we need TA?**

28. **What is meant by Location Area?**

29. **What is location update? Why do we need location update?**

30. **What is meant by IMSI, TMSI, IMEI and MS-ISDN? Why they are needed?**

31. **What is ARFCN? Which ARFCNs are allocated to Ufone?**

32. **Explain Power Control.**

33. **What is the difference between FDD and TDD?**

34. **What is an extended cell? How does it impact the system?**

Channels and TDMA structure

35. **Why do we use Multiple Access Schemes? What is the difference between FDMA, TDMA and CDMA?**

36. **Which channel(s) is used for SMS?**

37. **Which channel is used by MS to request access to the network?**

38. **What is AGCH?**

39. **Why do we need SDCCH?**

40. **What is a physical channel? How do we differentiate between physical and logical channels?**

41. **What are TDMA frames, multiframes, superframes and hyperframes?**

42. **Why do we need FCCH, SCH and BCCH?**

43. **Why do we need SACCH?**

44. **What is the purpose of PCH and CBCH?**

45. **Do we keep BCCH on a hopping radio? Give the reason to support your answer.**

46. **How much delay is present between downlink and uplink frames? Why do we need this delay?**

47. **Explain the structure of a Traffic Multiframe. Why do we need SACCH and Idle bursts in a traffic multiframe?**

48. **How is a FACCH formed? When is a FACCH used?**

49. **What are bursts? Explain various types of bursts.**

Radio Propagation and Antennas

50. **What is VSWR? Why do we need it?**

51. **What do you mean by EIRP?**

52. **What is Polarisation? What are the types of polarisation?**

53. **What is fading? What are its different types: a) Based on Multipath time delay spread b) Based on Doppler Spread?**

54. **What is Rayleigh Fading?**

55. **What is multipath fading?**

56. **How can we minimise multipath fading?**

57. **What are the different types of diversity?**

58. **Explain various types of Antenna Diversity?**

59. **Explain Frequency Diversity.**

60. **Explain Time Diversity.**

61. **What are the basic mechanisms of propagation?**

62. **What do you mean by Diffraction?**

63. **What is knife-edge diffraction?**

64. **What is Scattering?**

65. **What is FSPL?**

66. **What is meant by Fresnel zone and Fraunhofer zone?**

67. **What is beamwidth? What is the relation of beamwidth to length of antenna?**

68. **Define: a) Bandwidth, b) 3dB Bandwidth and c) absolute Bandwidth d) Coherence Bandwidth e) Modulation Bandwidth f) Null-to-Null Bandwidth?**

69. **What do we understand from the terms a) SNR b) F/B ratio?**

Handovers

70. **What are the types of Handovers (intra-bsc, inter-msc, etc)?**

71. **What can be the reasons of Handover Failure?**

72. **What is the difference between a soft handover and a hard handover?**

73. **What are SYNC handovers? How are the different from asynchronous handovers?**

74. **What are emergency handovers?**

75. **What are the different types of Handovers? (PBGT, Quality, Level, etc)**

76. **How do we classify the handovers on the basis of decision making?**

77. **What are Vertical and Horizontal handovers?**

78. **What is "Multilayer Handoff" Strategy? What is "Ping pong effect" and "take-back"?**

79. **Who makes the handover decisions in GSM?**

80. **What is the role of the MSC in handovers?**

81. **What is the role of the MS in handovers?**

Modulation

82. **Which modulation scheme is used in GSM? Explain.**

83. **What is the difference between PSK, ASK and FSK?**

84. **What are QPSK and OQPSK?**

85. **What is MSK? What is its application in GSM?**

86. **What is QAM? What is its application in GSM?**

87. **What is meant by PAM and PCM? What is its application in GSM?**

88. **Explain FDM, TDM and OFDM.**

89. **Which modulation scheme is used in GPRS? In EDGE? Explain/Compare.**

Drive Testing

90. **What is C/I?**

91. **What is C/A?**

92. **What is RxQual? How do we relate it to BER?**

93. **What is the difference between BER-Full and BER-Sub?**

94. **What is SQI? Why do we prefer it over RxQual?**

95. **What is BSIC? Why do we need it?**

96. **What is AMR?**

97. What can be the reasons of a Call drop?

98. What are counters? Why do we need them?

99. When do we need drive test?

100. What is cell-reselection?

101. What are C1 & C2?

102. What is call re-establishment?

103. Why do we make "short calls" and "long calls" during drive test?

104. What do you mean by CEFR and CSSR?

105. What is RSSI?

106. What is the difference between RxLev and RxQual?

107. What is the difference between FER and BER?

Procedures

108. What is cell selection? How does MS select a cell?

109. Explain the call flow for MOC and MTC.

110. Handover procedures.

111. How does a MS get "registered" with the network? (Explain IMSI attach procedure)

GPRS and EDGE

112. What is GPRS?

113. What is the basic difference between GSM and GPRS architecture?

114. What makes GPRS technology different from traditional GSM?

115. What are the functions of GGSN and SGSN?

116. How many coding schemes are used in GPRS? Why are they important?

117. What is the gross data rate offered by GPRS and EDGE?

118. What is EDGE? How is it different from normal GSM/GPRS?

119. How do we classify GPRS terminals?

GSM System Architecture

120. What are the main components of BSS?

121. What are the main components of NSS?

122. Why do we need HLR and VLR?

123. Why do we need EIR and AuC?

124. What is RBS?

125. What are the paging limitations of a BSC?

126. What is a coupling system?

127. What do we mean by E1 and T1?

Case Study 1

Case Study: 1 km high tower in Karachi. Discuss.

Case Study 2

Case Study: Two cells having same BCCH. Discuss.

Case Study 3

Case Study: LAC size. The whole Karachi being given one LAC VS each cell having its own LAC.