

「Wireless Communications and Mobile Networks」 Final Exam

1. Please draw the hardware architecture of the GSM system. Also give a short description for each hardware component that is included in the GSM architecture. [15 points]
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2. Please give the names of the logical channels defined in the GSM systems. Among them, what channels are uplink channels? What channels are downlink channels? [20 points]
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3. Please draw the hardware architecture of the GPRS system. Compared that to the GSM system, what hardware components are absent from the GSM? Also give a short description for each hardware component that is included in the GPRS architecture but not in the GSM architecture. [15 points]
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4. Please give four major differences between GSM and GPRS in terms of traffic, switching, charging, and bandwidth. [16 points]
5. Please use the pseudo code to describe 1-persistent CSMA and non-persistent CSMA in details. [12 points]
CSMA/CA
6. Explain how do the CA (collision avoidance) and CW (contention window, i.e. the backoff procedure) work in the IEEE 802.11. [12 points]
7. What is a piconet? What is a scatternet in Bluetooth? Draw pictures and give description to each of the question. (Your answer must include the state transition of the baseband status in a Bluetooth device. Explain the meaning and the process of each state as well. Also Show how the ID/Clock/ and status of a device is maintained and changed in the forming of a piconet.) [10 points]
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