15

No 3.

「無線通訊網路」 期末考

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]

2. Please describe the logical channels defined in the GSM systems. Give a short description for the usage of each type of logical channels. [14 points]

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]

4. Please give four major differences between GSM and GPRS in terms of traffic, switching, charging, and bandwidth. [12 points]

5. Explain how do the CA (collision avoidance) and CW (contention window) work in the IEEE 802.11. [12 points] IFS. backoff procedure

6. 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]

7. For both the fixed channel allocation (FCA) and dynamic channel allocation (DCA) schemes, please give two algorithms from each channel allocation scheme. Please compare their advantages and dis-advantages as well. [10 points]

8. Please describe how each of the following protocol works in terms of the pseudo code: (a) Aloha, (b) CSMA/CD, (c) *p*-persistent CSMA/CD, and (d) CSMA/CA. [12 points]