TKK Tietoliikennelaboratorio
HUT Communications Laboratory

S-72.423 Exercise 4.

Return your answer no later than on Tuesday 23.11.2004, 16:00 into the course's P.O. box at the third floor of the E-wing.
Please, include the following information in your answers:
- Your name (+ team member names)
- Your student number (+ team member student numbers)
Answers in English, please.

1. Solve the ADSL part from exercise 3.

2. **DECT:**
    a) How many DECT digital channels need to be combined to get the ISDN's 144 kbit/s basic rate access?
    b) Describe (using a few sentences) the meaning of the following DECT acronyms:
        - GAP
        - GIP
        - IAP and IIP
        - RAP
        - CAP
    c) Explain the differences between closed-loop power control and open-loop power control. Why open-loop power control can be used in DECT?

3. **TETRA:**
    a) What is the main difference between GSM and TETRA in terms of authentication?
    b) List TETRA Teleservices
    c) List TETRA Bearer Services for data transfer.

4. **UMTS:** Describe (using a few sentences) the meaning of the following UMTS features and acronyms:
    - FDD / TDD
    - UTRAN
    - Spreading factor
    - Processing gain
    - Soft handover
    - RRC
    - Outer loop power control
    - AMR
    - Admission control