



S-72.423 Exercise 3.

Return your answer no later than on Tuesday 09.11.2004, 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)*

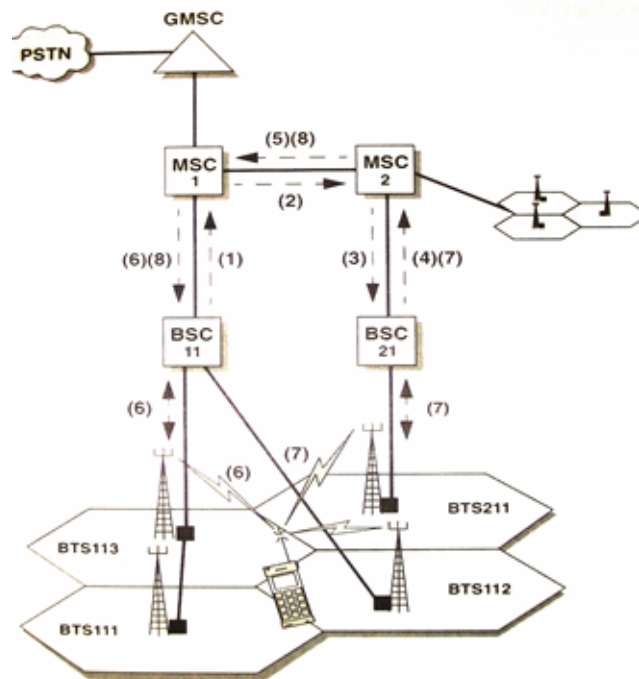
Answers in English, please.

Asymmetrical Digital Subscriber Line ADSL

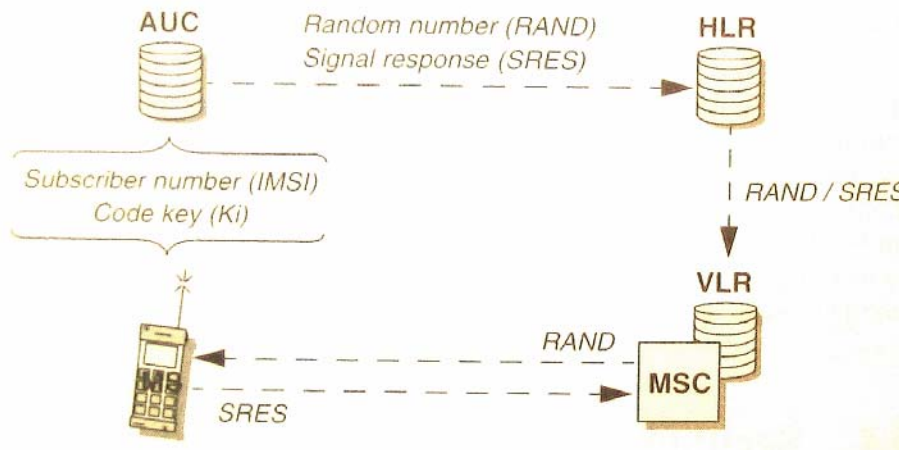
1. Why loaded loops are not suitable for DSL system?
2. In rate adaptive DSL, the different sub-channels are allocated for their optimum rates during the channel activation phase, how?
3. What is the type of data paths in DMT and what are their characteristics and applications?
4. What is the function of the following in an ADSL system based on OFDM/DMT:
 - i. Pilot signal.
 - ii. Interleaving.
 - iii. Guard interval between OFDM symbols.
 - iv. FFT and IFFT.
 - v. Channel estimation.
5. List the initialization phases and the operations performed during each phase in ADSL T1.413 standards.
6. True or False,
 - a. Loading Coils enhance the performance of ADSL.
 - b. ATM and STM can not be supported by ADSL.
 - c. Downloading a file from the internet using ADSL is faster than using CDSL.
 - d. NEXT is the crosstalk effect between a receiving path and a transmitting path of DSL transceivers at opposite ends of two different subscriber loops within the same twisted pair cable.

GSM

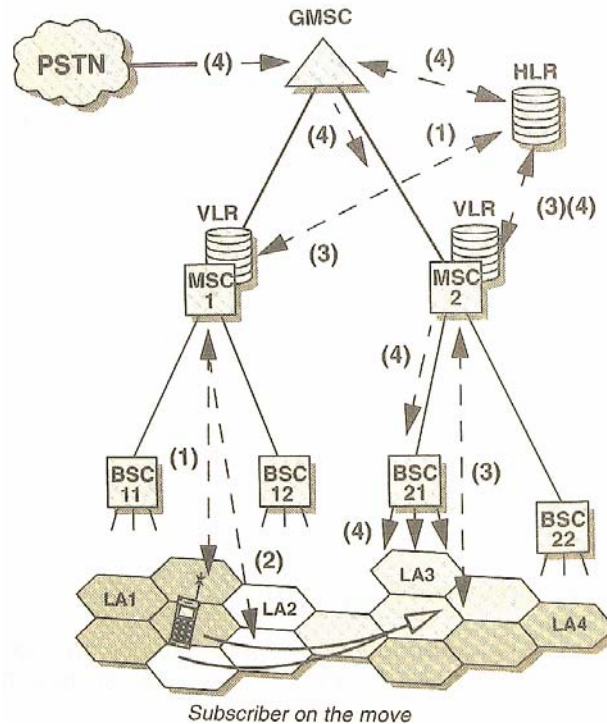
7. What is the operation performed in the following:
- In the figure below, the mobile is in cell BTS112 and moving towards cell BTS211. The locating function in BSC11 has identified the mobile's signal quality is deteriorating while moving.



- Set-up or registration will not be accepted until the operation shown below has been performed.



- c. The mobile is switched on (not calling) and moving in the network which is logically divided into four location areas, LA1-LA4, each corresponding to a BSC service area.



8. Compare TDD and FDD duplexing techniques.
9. Select the correct answer
- Diversity is used to counteract: (i) Path loss, (ii) handover, (iii) Rayleigh fading.
 - When a new channel is selected in a cell that is managed by the same BSC and reswitching in GSM one BSC it is called: (i) Intra-MSC handover, (ii) Intra-cell handover, (iii) Intra-BSC handover.
 - Reception of multipath signals reflected from objects in the vicinity causes: (i) Rayleigh fading, (ii) Shadow fading, (iii) Path loss.
 - When the signals use the same frequency band at different times, the access technique is: (i) TDMA, (ii) CDMA, (iii) FDMA.
10. Describe (using a few sentences) the meaning of the all acronyms under the 9 control channel branch shown below.

