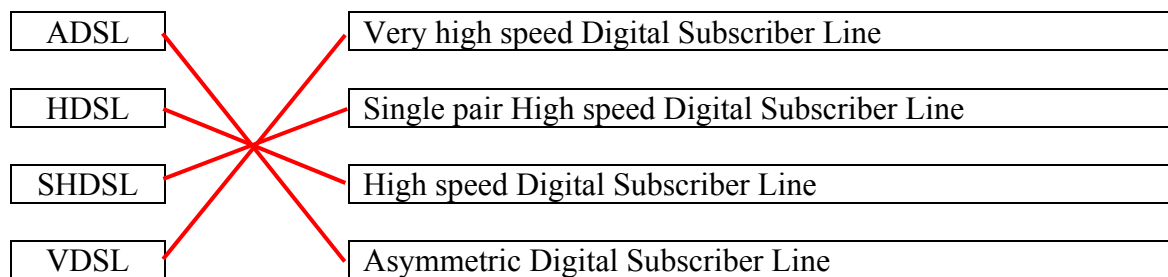


**1. Specify two basic elements that are included in a copper cable:**

1. Spiral (star) quad
2. Symmetric pair

**2. Select from the following list those technologies, which are among the technologies of access networks abbreviated as FTTx:**☒ FTTH☒ FTTdb☒ FTTC☒ FTTO☒ FTTE<sub>x</sub>☐ FTTF☐ FTTP☒ FTTB☒ FTTCab**3. Match the four different abbreviations of xDSL technologies shown on the left column to the corresponding descriptions on the right column.****4. Which technique is used at VDSL connections for increasing of transfer rate, when we compared it with ADSL connections?**

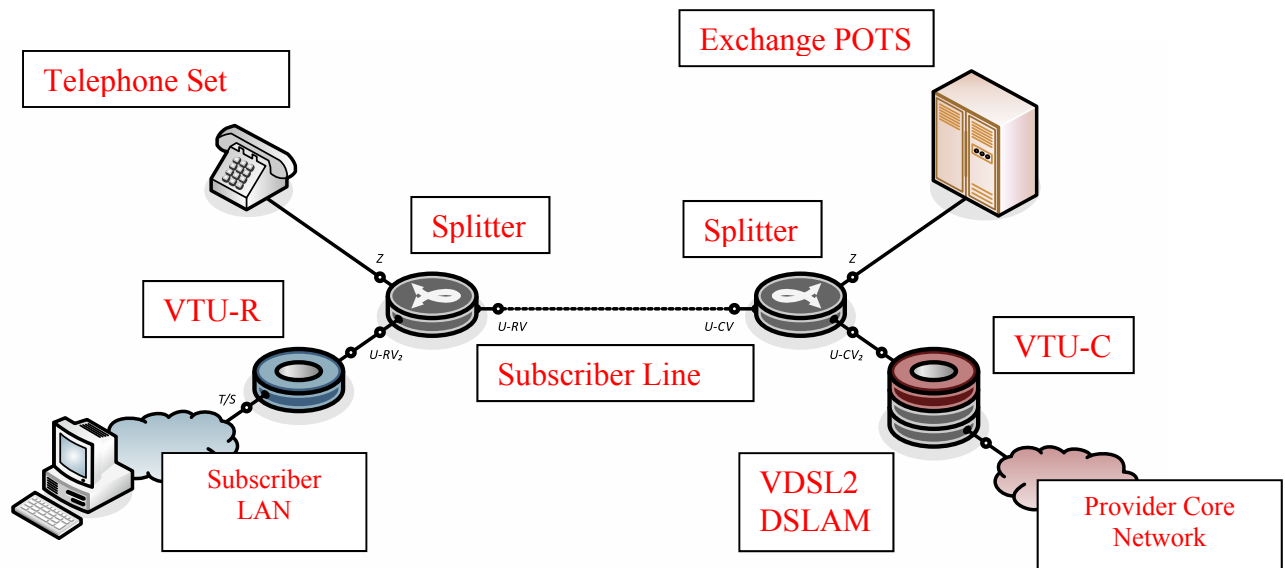
- ☐ change of modulation type
- ☐ extension of reachable range
- ☒ extension of used frequency band
- ☐ reduction of attenuation of transmission line

**5. Specify all modes of data transfer at VDSL2 connection for subscriber terminal:**

1. Synchronous Transfer Mode STM
2. Asynchronous Transfer Mode ATM
3. Packet Transfer Mode PTM



6. Fill in the following figure the correct labels for individual blocks of VDSL2 connection:



7. Quality of service is a scale how to evaluate the subscriber satisfaction with the service that he pays for, and that it provided by the operator. Evaluation of services is a relatively complicated process. Specify the criteria that are used for example for the evaluation (objective and subjective):

1. Reachable transfer rate
2. Delay of transferred data
3. Clarity bill
4. Satisfaction with customer support

8. Modify the following texts so that the statements will be true.

Interleaving is a technique that (~~reduce~~ **enhance**) the ability to detect and correct errors resulting from impulse interference during transmission. Corrupted data is possible in the terminal equipment repair and it (~~is~~ **is not**) possible to be re-transferred data from the source. This capability leads to (~~decrease~~ **increase**) the transmission efficiency.

