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

1. Spiral (star) quad

2. Symmetric pair

1. Select from the following list those technologies, which are among the technologies of access networks abbreviated as FTTx:

|  |  |  |
| --- | --- | --- |
| **x** **FTTH** | **x** **FTTdb** | **x** **FTTC** |
| **x** **FTTO** | **x** **FTTEx** | □ FTTF |
| □ FTTP | **x** **FTTB** | **x** **FTTCab** |

1. Match the four different abbreviations of xDSL technologies shown on the left column to the corresponding descriptions on the right column.

|  |  |  |
| --- | --- | --- |
| ADSL |  | Very high speed Digital Subscriber Line |
|  |  |  |
| HDSL |  | Single pair High speed Digital Subscriber Line |
|  |  |  |
| SHDSL |  | High speed Digital Subscriber Line |
|  |  |  |
| VDSL |  | Asymmetric Digital Subscriber Line |

1. 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

**x** **extension of used frequency band**

□ reduction of attenuation of transmission line

1. 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

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

Exchange POTS



Telephone Set

Splitter

Splitter

VTU-R

VTU-C

Subscriber Line

Subscriber LAN

VDSL2 DSLAM

Provider Core Network

1. 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

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

Interleaving is a technique that the ability to detect and correct errors resulting from impulse interference during transmission. Corrupted data is possible in the terminal equipment repair and it possible to be re-transferred data from the source. This capability leads to the transmission efficiency.