1. Assign standardization organizations ETSI and ITU-T for following definitions of NGN (*Next Generation Networks*).

|  |  |
| --- | --- |
| **Name of standardization organization** | **Definition of NGN based on standardization organization** |
| **ITU-T** | NGN is a network based on packet transfer, enabling to provide services including telecommunication services, and is able to use several broadband transmission technologies allowing guaranteeing QoS. |
| **ETSI** | describes NGN as a concept for the defining and establishing of the networks, allowing a formal distribution of functionalities into separate layers and planes by using open interfaces. |
| **ETSI** | NGN concept provides new conditions for creation, implementation and effective management of innovative services. |
| **ITU-T** | The functions related to services are at the same time independent of the basic transmission technologies. NGN provides unlimited user access to different service providers. |

1. Encircle protocols which can be used to implement SDN (*Software Defined Networking*) functionalities in a network.

DVB

ARPANET

OpenFlow

IP

MPLS

ITU-T

NGN

ETSI

RAN

NETCONF

ForCES

MANO

NFV

PCE-P

1. Mark correct combination of requirements which should be met by NFV (*Network Functions Virtualization*) architecture.

□ physical installation of devices, energy efficiency, continuity of services

**x** **remote deployment of devices, flexibility, continuity of services**

□ variety hardware support, remote installation of devices, energy efficiency

□ energy efficiency, variety hardware support, flexibility

1. Mark correct system included in the VNF (*Virtualized Network Feature*) component.

**x** **Element Management System**

□ Computing hardware

□ Orchestrator

□ Hardware storage

1. Mark those functions/services/systems which can be virtualized within NFV architecture.

**Security services**

**x**

**Virtual private networks**

**x**

**Virtual routing**

**x**

Digital video broadcasting systems (DVB)

□

**Radio access**

**networks (RAN)**

**x**

Positioning based  
on GPS

□

1. Mark correct characteristics of NFV MANO (*Management and Orchestration*).

**x** **NFV MANO contains 3 components and a VNF Manager is one of them**

□ NFV MANO contains 4 components and a NFV Orchestrator is one of them

**x** **NFV MANO contains 3 components and a Virtualized Infrastructure Manager  
is one of them**

□ NFV MANO contains 4 components and a VNF Manager is one of them

1. Sort devices (on the right) connected to the Internet in 2020 based on their quantity (start with the lowest quantity) following forecasts.

1. **wearables**

2. **tablets**

3. **smart home devices**

**tablets, wearables, smart home devices**