1. Assign layer names (access, service, control, management, transport) to corresponding definitions for conceptual model of NGN (*Next Generation Networks*).

|  |  |
| --- | --- |
| **Name of layer** | **Layer characteristics for NGN network conceptual model** |
| **control** | This layer is responsible for set-up/establishing, control and canceling of the multimedia session. |
| **access** | This layer provides the infrastructure, for example an access network between the end user and the transport network. |
| **service** | It offers the basic service functions, which can be used to create more complex and sophisticated services and applications. |
| **transport** | It ensures the transport between the individual nodes of the network. |
| **management** | It manages resources (capacity, ports, and physical elements), QoS in access to the network and in the transport network, various media processing, encoding, data transfer (information flows). |

1. Fill in names of planes and empty components to the picture for SDN (*Software Defined Networking*) architecture.

**Packet**

**Forwarding**

**Packet**

**Forwarding**

**Packet**

**Forwarding**

**Packet**

**Forwarding**

**Network operating system**

**Control**

**plane**

**Data forwarding**

**plane**

**Routing**

**Mobility**

**TE**

1. Mark correct combination of network devices which are used by the NFV (*Network Functions Virtualization*) architecture.

□ PE routers, BRAS servers, storages

**x** **Ethernet switches, high volume servers and storages**

□ Ethernet switches, high volume servers, BRAS servers

□ storages, PE switches, Ethernet switches

1. Assign abbreviations/names in left column to corresponding statements.

|  |  |  |
| --- | --- | --- |
| NETCONF |  | hardware based networking research solutions for line-rate processing of the traffic. |
|  |  |  |
| Cisco ONE |  | protocol based on Forwarding Element Model that enables description of new forwarding plane functionality without changing the protocol between control and forwarding planes. |
|  |  |  |
| OpenFlow |  | developed as a successor to SNMP and some of the CLI protocols for configuration of network elements. |
|  |  |  |
| NetFPGA |  | technology similar to SDN but with no centralized control plane. |
|  |  |  |
| ForCES |  | an open standard developed by Open Network Foundation (ONF). |
|  |  |  |
| MPLS |  | provides programmatic interface to directly control Cisco equipment. |

1. Mark correct groups of components for Network Functions Virtualization Infrastructure (NFVI).

**x** **computing hardware, storage hardware, network hardware**

□ element management system, virtual storage, virtual network

**x** **computing hardware, virtual storage, network hardware**

□ orchestrator, element management system, network hardware

1. Mark correct characteristics of NFVI (*Network Functions Virtualization Infrastructure*).

□ NFVI is divided into 4 domains and a Compute domain is one of them

**x** **NFVI is divided into 3 domains and a Hypervisor domain is one of them**

□ NFVI is divided into 4 domains and an Infrastructure networking domain is one of them

**x** **NFVI is divided into 3 domains and a Compute domain 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.
2. **smart TVs**
3. **personal computers**
4. **tablets**
5. **smartphones**

**tablets, smartphones, personal computers, smart TVs**