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**Week 17 Homework**

**R1)** A network manager would benefit from having network management tools because it allows for the manager to prevent the network from becoming compromised by a hacker, ensure hardware components aren’t failing (i.e. bad router or Ethernet cables), ensure the network isn’t getting congested (might need to upgrade infrastructure or expand), control who can access certain information to ensure all employees don’t have access to sensitive information, and to ensure the network is configured correctly for devices such as mobile phones and tablets that connect wirelessly as well as desktop PCs connected via a cable.

**R2)** The five areas of network management defined by the ISO are: performance management, fault management, configuration management, accounting management, and security management.

**R3)** The difference between network and service management is that network management involves managing the supply and infrastructure of a network, whereas service management involves the network’s services such as bandwidth, capacity, and hardware.

**R4)** Managing Entity: Usually a person, controls the collection, processing, analysis, and display of network management information. Where actions are made to control network behavior and interactions with the network devices are made.

Managed Device: A piece of network equipment in a managed network and can contain several managed objects which are pieces of hardware.

Management Agent: A process within a managed device that communicates with the managing entity.

MIB: Management Information Database that contains the information associated with managed objects.

Network Management Protocol: The protocol running between the managing entity and the managed devices. Informs the managing entity of odd events and can report the status of managed devices. Doesn’t manage the network itself.

**R5)** SMI is used as the language for defining the management information in a managed-network entity (syntax and semantics).

**R6)** The primary difference between a SNMP request-response message and a trap message is a request-response message is sent by a SNMPv2 managing entity to an agent, whereas a trap message is sent by an agent to a managing entity.

**R7)** The seven message types used in SNMP are: GetRequest, GetNextRequest, GetBulkRequest, Response, SetRequest, InformRequest, and the trap message.

**R8)** The term “SNMP engine” refers to the assembly of a message header where the SNMP version, message ID, and size information is assembled and possibly encrypted. It is the step between assembling the PDU and sending it to the transport layer.

**R9)** The purpose of the ASN.1 object identifier tree is to provide a means for different data layouts on different architectures to be able to appear the same in a new format.

**R10)** ANS.1’s purpose in the presentation layer of the ISO/OSI model is to provide a service for transmitting and translating information from one format to another on different machines.

**R11)** The Internet doesn’t have a presentation layer and addresses the problems of different architectures through protocols such as HTTP.

**R12)** TLV (Type, Length, Value) encoding means that when data items are sent, they are sent in the order of the data type, the length of the data item, and finally the actual value of the data item.