# CpET 281 Networking Technologies Spring 2225

## Quiz 1

### Question 1

With respect to individual Plain Old Telephone Service (POTS), why is it important to know the following? Note: Distance affects several parameters that need to be met and or addressed with regard to the Bell Service Practice (BSP)

* Distance from the Class 5/Central Office Switch – **Because the longer the distance, the greater signal loss could occur due to the length of the wire.**
* Which layer(s) of the TCP/IP model is addressed by the BSP? – **Transport and Network/Internet layers.**

### Question 2

* What is the function(s) of the Subscriber Line Card (SLC) in the Class 5 Telephone Switch? - **interface with the subscriber lines and provide access to the public switched telephone network (PSTN);**
* Which layer(s) of the TCP/IP model is addressed by the SLC? - **The SLC operates at the Physical and the Data Link layer of the TCP/IP model.**

### Question 3

* What is the purpose of a Subscriber Loop Carrier (SLC). This SLC is placed between the Class 5 Switch and the subscribers (those needing POTS services) - **The subscriber loop provides the means to connect a telephone set at a subscriber location to the closest telephone office, which is commonly called an end office, locale change office, or central office. Once in the central office, the subscriber loop is connected to an electronic switching system (ESS), which enables the subscriber to access the telephone network.**
* Which layer(s) of the TCP/IP model is addressed by this SLC? - - **The SLC operates at the Physical and the Data Link layer of the TCP/IP model.**

### Question 4

* What is the purpose of the Class 5 Switch? - **A class 5 switch provides telephone service to end customers locally in the exchange area, and thus it is concerned with "subscriber type" activities: generation of dial-tone and other "comfort noises"; handling of network services such as advice of duration and charge. A class-5 switch provides dial tone, local switching, and access to the rest of the network.**
* Which layer(s) of the TCP/IP model is addressed by the Class 5 Telephone Switch? - **the Class 5 Telephone Switch operates at the Application layer and the Session layer of the TCP/IP model, providing telephone services to users and managing the establishment and termination of telephone calls between users.**
* How may one describe, with respect to Layer 1, the Inter-Machine Trunks (IMT’s) that connect Class 5,4,3,2 Telephone switches to each other? **They can be either dedicated or shared lines, and they typically use either T1, E1, or ISDN technology to transmit data.**

### Question 5

* Compare data network HUBS and data network SWITCHES to a Subscriber Loop Carrier with regard to their function(s)/purpose(s) - **A data network hub is a simple networking device that broadcasts incoming data packets to all connected devices, whereas a switch is a more advanced device that directs data packets to specific devices based on the device's address.**
* Compare a data network ROUTER to a Class 5,4,3,2 Telephone Switch. - **A Class 5, 4, 3, 2 Telephone Switch is a type of telephone switch used to provide voice and data communication services to telephone customers.**

### Question 6

* With regard to how the devices that connect to a data network SWITCH or HUB and the devices that connect to a Subscriber Loop Carrier (SLC)…..compare the how the connection/access process is different. – **The connection process to an SLC is different from connecting to a switch or hub as it involves connecting to a termination point and using the existing infrastructure of a telephone company.**

### Question 7

* In a Time Division Multiplex (TDM) connection, individual channels are transmitted serially between switches. What is the data rate per channel when these types of Inter Machine Trunks (IMT’s) are connecting Class 5,4,3,2 switches? - **Class 5 switches typically have lower channel capacities than Class 4, Class 3, or Class 2 switches. TDM can have different channel capacities, ranging from a few kilobits per second to several gigabits per second.**

### Question 8

* What is the delay in a Class 5,4,3,2 switch? Delay is the time required to a channel from one side of the switch to the other – or said another way, “switch it”.
* How does this time delay differ when the “switching” point is a ROUTER and NOT a Class 5,4,3,2 telephone switch?

**I do not know.**

### Question 9

* What is the bandwidth (BW) on a POTS service line to a subscriber receiving typical telephone service? **4kHz**
* And what about how this service is provisioned/engineered in accordance with the BSP makes this BW a reality? **Usage of Narrowband voice codecs, filtering and TDM.**

### Question 10

Which part of the TCP/IP model would address the protocols/rules for the following?

* A number of laptops on a Local Area Network (LAN) trying to get access to the media in order to communicate with other devices on the LAN.
* A POTS user needs to be connected to another POTS user served out of the same Class 5 switch

**The Network Access Layer (or) the Data Link Layer of the TCP/IP model**