

## **Mid Semester Assignment, Course: - Mobile Computing**

**Deadline: - Mentioned on SIC**

**Marks: - 30**

**Program: - BS (CS), BS-SE  
2020**

**Dated: 13 April**

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**Class and Section: BS(SE) B**

**Question1: Explain why wired networks have higher bandwidth in comparison to mobile networks.**

**(2)**

- **ANSWER**

Generally wired networks are much faster than wireless networks. Data speeds have continually improved with the inception of Gigabit routers and other new technologies. This is mainly because a separate cable is used to connect each device to the network with each cable transmitting data at the same speed. Wired networks also have an advantage over mobile networks in that they're usually subject to much more generous bandwidth caps.

### **Wired Networks**

High bandwidth,  
Low bandwidth variability,  
Can listen on wire,  
High resource machines,  
Need physical access,  
Low delay,  
Connected operation.

### **Mobile Networks**

Low bandwidth,  
High bandwidth variability,  
Hidden terminal problem,  
Low power machines,  
Low resource machines,  
Need proximity,  
Higher delay,  
Disconnected operation.

**Question2: Explain the relation between miniaturization and portability.**

**(3)**

- **ANSWER**

The relation between miniaturization and portability are as follows,

**PORTABILITY** is minimizing and reducing the size of hardware to enable the creation of computers that could be physically moved around relatively easily like cell phones, tablets, laptops etc which is convenient and easy to use, **WHILE**, **Miniaturization** is the creating of new and significantly smaller mobile form factors that allowed the use of personal mobile devices while on the move.

**Question3: Differentiate between convergence and divergence.**

**(3)**

- **ANSWER**

The difference between convergence and divergence is that **CONVERGENCE** is integrating the emerging types of digital mobile devices, such as Personal Digital Assistants (PDAs), mobile phones, music players, cameras, games, etc., into hybrid devices, while **Divergence** having the opposite approach to interaction design by promoting information appliances with specialized functionality rather than generalized ones

**Question4: Suppose you are given the task of designing an app for mobile devices which has the capabilities of text chat, recorded audio message, and live video conferencing. Explain which protocol out of UDP and TCP would you use for each type of service and why?**

**(4)**

- **ANSWER**

Given the scenario in the above question we will use **Session Initiation Protocol (SIP)** because this protocol will let us add internet telephony features to the application we are developing and this protocol integrated call management services that will set up incoming, outgoing, video conferencing and instant messaging is the example of an application which uses (SIP) protocols. We also use this protocol because it also transmits real time session like text chat, audio message and video call between two end points

**Question5: Suppose you have the choice of using 2G, 3G, 4G, 5G, Wi-Fi and Satellite networks. Which of these technologies will you use in the following scenarios and why.**

(18)

- a) A city wide network with voice, SMS services and Internet services good enough for ultra-high definition streaming and video conferencing.
- b) A city wide network with only voice and SMS services.
- c) A city wide network with voice, SMS services and Internet services good enough for normal definition streaming and video conferencing.
- d) A global scale network with voice, SMS and Internet services.
- e) A campus size network for information and resource sharing between 200 end devices.
- f) A city wide network with voice, SMS and basic Internet services.

- **ANSWER**

1. We will use 5G in this case because frequency of this network is 24 to 86GHz and data rate is 1gbps to unlimited which will be best for the aboved mentioned services
2. We will use 2G in this case because the frequency of this network 2 to 8GHz which is enough for voice and SMS services
3. We will use 4G in this case because the frequency of this network is 2 to 8GHz and data rate is 100mbps to 1gbps which is enough for the above mentioned services
4. We wil use satellite network in this case through which we can access remotly and maybe global users
5. We will wifi in this case to which every device is connected through wire
6. We will use 3G in this case because the frequency of this network is 1.6 to 2.0GHz and data rate is 144kps to 2mbps which is able for SMS,voice and internet services