

## **Important Instructions:**

- 1) Open this MS-Word document and start writing answers below each respective question given on page 2.**
- 2) Answers the question in the same sequence in which they appear.**
- 3) Provide to the point and concrete answers.**
- 4) First read the questions and understand what is required of you before writing the answer.**
- 5) Attempt the paper yourself and do not copy from your friends or the Internet. Students with exactly similar answers or copy paste from the Internet will not get any marks for their assignment.**
- 6) You can contact me for help if you have any doubt in the above instructions or the assignment questions.**
- 7) All questions must be attempted.**
- 8) Do not forget to write your name, university ID, class and section information.**
- 9) Rename you answer file with your university ID# before uploading to SIC.**
- 10) When you are finished with writing your answers and are ready to submit your answer, convert it to PDF and upload it to SIC unzipped, before the deadline mentioned on SIC.**

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

**Deadline: - Mentioned on SIC**

**Marks: - 30**

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

**Dated: 13 April 2020**

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**Class and Section: Software Engineering (Section-A) 8<sup>th</sup> Semester**

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**Question1: Explain why wired networks have higher bandwidth in comparison to mobile networks. (2)**

**Answer:** Wired networks have higher bandwidth in comparison to mobile networks because wired network is directly connected to the system through guided media.

For Example, RJ-45 male and female connectors for the computer networks. Guided media has less or almost no chance of signals breaking and highly reliable networks.

Whereas the mobile networks are connected to each other with the help of unguided media i.e. Radio waves or radio frequency. And unguided media works on signals communication which has many barriers for example: walls of rooms and buildings which stop signal from spreading and even weaken the signals strength.

For example: WIFI routers, Bluetooth, infrared communication.

**Question2: Explain the relation between miniaturization and portability. (3)**

**Answer:** The term Miniaturization means shrinking and minimizing the size of an equipment in such a way that the performance is not affected. Miniaturization is directly proportional to the term portability because as the equipment shrinks in size it will be more portable and will have less space to consume. And also produces less heat and have less cost of electricity.

For example: Mobile and Computer devices are getting smaller and smaller with the passage of time. Therefore, it is very easy to carry around electronic equipment that is smaller in size.

**Question3: Differentiate between convergence and divergence. (3)**

**Answer:** Convergence means to merging and to make union of many tasks performed by a single device such as a mobile device. Make a phone call, you can text with it also performs as a camera device audio and video recording device and many more functionalities are converged into a single device.

Whereas the Divergence means to take a single device for a single task specifically let's explain it with the help of an example: DSLR camera and Kindle devices which are normally made for a single specific task such as a DSLR (Digital Super Large Resolution) camera is only limited for photography and videography. Another example is an Amazon Kindle device which is only limited for reading books makes it a divergent application or device.

**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:** For the given task of designing a mobile application that has the capabilities of text chat, recorded audio message and live video conferencing. I will use the UDP Protocol the UDP is a fast and lightweight protocol as compare to the TCP. Here in this scenario we have large number of audience and the response time is very critical therefore I will use the UDP technology for the said purpose. The detailed explanation is given as under

	TCP	UDP
Text Chat		Uses UDP because the intended audience is very high in mobile applications and the message length is short. Therefore, we use UDP for text messaging.
Recorded Audio Message		As the Speed Matters in the mobile applications therefore we use the UDP protocol for recoded audio messages and all the best Mobile applications such as WhatsApp, Facebook messenger etc., also uses the UDP protocol for the same purpose with the extension of SSL protocol.
Live Video Conferencing		The VoIP means the UDP is also used for the same purpose because it is best suitable for DNS services and online gaming and live video conferencing. Because the UDP protocol is lightweight and the intended audience is very high therefore the speed matters the most here in this scenario. For this reason, we use the UDP protocol. WhatsApp, Facebook messenger etc, also uses the UDP protocol.

**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.

**Answer:** 5G is the best suitable technology for the Ultra High Definition streaming and video conferencing in this case. Because the ultra-High definition video conferencing is only possible with the help of 5th Generation technology and without any delay and latency.

**b) A city-wide network with only voice and SMS services.**

**Answer:** The desired goal is fulfilled by choosing the 2G network because it supports both the Voice and SMS services therefore, we will use the 2G network which is cost effective and efficient method.

**c) A city-wide network with voice, SMS services and Internet services good enough for normal definition streaming and video conferencing.**

**Answer:** Here in this case we will use the 4G network technology which is the best fit for the demanded requirements and effective in the said case. 4G can full fill all the Voice, SMS, Internet Services and good enough for normal streaming and video conferencing.

**d) A global scale network with voice, SMS and Internet services.**

**Answer:** Here we will use the Satellite Communication because to access all the globe it is the best technology to be used.

**e) A campus size network for information and resource sharing between 200 end devices.**

**Answer:** The best-case fit is the use of WIFI technology. Therefore, here we will use WIFI Technology which is efficient and cost effective.

**f) A city-wide network with voice, SMS and basic Internet services.**

**Answer:** Here in this scenario the best fit is the 3G technology which will fulfill all the needs as mentioned in this point therefore we will use the 3G technology.