

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.**

Mid Semester Assignment, Course: - Mobile Computing

Deadline: - Mentioned on SIC

Marks: - 30

Program: - BS (CS), BS-SE

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Class and Section: BSSE (A) 8th Semester

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

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

Question3: Differentiate between convergence and divergence. (3)

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)

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.

Q#1)

Wired networks have higher bandwidth as compared to mobile networks because of:

- low bandwidth variability
- high power machines
- high resource machines
- low delay
- Need physical access(Security)

Q#2)

Miniaturization:

It means to manufacture smaller electronic products and devices. Examples are: Mobile Phone miniaturization, miniaturization of computers and vehicle engine miniaturization etc.

Portability:

Portability means that the devices or nodes connected within mobile computing system to facilitate mobility. These devices have limited device potentialities and limited power supply, but have sufficient processing potentialities which can be moved easily.

For Example: Smart phones, tablets, notebook pc Etc.

Q#3)

Convergence:

Convergence means that to integrate the emerging types of digital mobile devices. Such as personal digital assistance, PDA's mobile phone, music players, games etc.

Divergence:

It means that the approach to interact the design by promoting information appliances with specialized functionalities rather than generalized ones.

For Example: printers, tablet, pagers etc.

Q#4)

If the task is given to design an app for mobile devices which has the potentialities of text chat recorded audio message and live video conferencing. I will use UDP because:

- In UDP we can send the messages, we can record the audio message as well as we can make a video conference live.
- The transmission speed of UDP is very high.
- Connection less data is sent without setup.
- In UDP we can do small transactions.
- UDP is unreliable.

- In UDP best effort delivery is done without acknowledgements.

Q#5

Part a:

4g and 5g are suitable for city wide network because the others cannot provide ultra-HD streaming although 3g connection provides video conferencing and availability of Wi-Fi is not everywhere as they are only provided by ISP's satellite connection is generally used nationally or globally, it does not fit in the given scenario.

Part b:

2g connection is suitable for the given scenario because the internet services or data transfer is not required, though the satellite connection is used for communication purpose but it provides even more than only voice and SMS services.

Part c:

3g and 4g are suitable for the given scenario because both of the connections can provide streaming and video conferencing. But 4g is much better than 3g in terms of speed.

Part d:

Satellite is suitable because the satellite connection is used globally. From space it can transfer data and can communicate

with headquarters on earth in the distance of approximately 23000 miles.

Part e:

Wi-Fi is the best option for the given scenario, campus sized network is achievable with Wi-Fi.

For example: CMH has its own network which connects all the departments within the hospital, so that if the doctor wants to refer the patient to another doctor, he will directly refer the patient through the network which is based in Wi-Fi.

Part f:

2g and 3g networks will fit in this scenario because both of these networks provides voice SMS and basic internet facilities but 3g network overcomes the 2g network in terms of speed, functionality and internet applications.