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   **Dated: 13 April 2020**

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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.

Question # 1:
The wired network has higher bandwidth than mobile network because the wired network has:
1. High resource access.
2. Low delay in operations.
3. Electricity travels faster than radio waves.
4. Signal degradation.

Question # 2:

Miniaturization:

Miniaturization is defined as, to reduce the size of the technology with high performance and consumes less power.

Portability:

Portability is defined as a device or program which can be executed on any type of environment and is easy to shift from one place to another.

Relation between miniaturization and portability:

- compact in size
- high performance
- light in weight
- easy to carry
- for example: mobile phones, laptops, tablets, embedded computers, software's which can run of different OS's etc.

Question # 3:

Convergence:

Combination of many devices which can perform many functions into one, that one single device which can perform different tasks of many devices, is said to be a convergent device.
For example:
Mobile phones can perform tasks of many devices such as calculator, camera, messaging etc.

Divergence:

Divergence is for the devices which perform single task for which they are meant to do, no other task can be performed in it.
For example:
Walkie talkies, they can only perform voice messaging which is one to one-way communication.
And pagers, they are inly used for messages.

Question # 4:

For the given scenario, I will approach UDP because:
- UDP is faster than TCP.
- Small transaction can be held on UDP (DNS lookup).
- Broadcasting and multicast transmission can be done in UDP.
- UDP is connectionless protocol.
- Connection-based communication model is never restricted, that is why startup latency is low in distributed application

Question # 5:

Part (a)

5g would be the best option which can provide speed up to 10-30 GB but as it is not implemented in our country yet, 4g network can also fulfill the given scenario.

Part (b)

2g network is ideal for the given scenario, there is no requirement of data transfer and internet service. 2g can provide SMS and voice conferencing.

Part (c)

3g connection is ideal for the given scenario because 3g connection can provide both streaming and video conferencing.

Part (d)

For the given scenario, satellite communication perfectly fits in because can transfer data from one satellite to another and can communicate the headquarters which are on earth.

Part (e)

Wi-Fi is ideal for a campus size network. For example, INU provides their student the facility to connect with the university portal through which students can perform actions which they are limited to.

Part (f)

3g connection is ideal for the given scenario because 3g network can provide us the SMS and voice conferencing. Furthermore, basic internet is also achievable with 3g connection.