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-SE (8th semester)   **Dated: 13 April 2020**

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Class :___MOBILE COMPUTING____

Section:_____(A)_____

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.**

Q1;

Wired networks have higher bandwidth in comparison to mobile networks because
- wired networks are much faster than wireless networks
- wired networks are more reliable and stable then wireless networks

Wired networks have higher bandwidth in comparison to mobile networks because of its;
- visibility
- speed
- security

Q2;

Miniaturization;

- Is the creation of new and more powerful chipset or hardware to perform the task and accurate as compare to old one.
- The use of mobile phones.
- Related to mobile.
- They are easier to move, easier to stock, and much more suitable to use.

Portability;

- Reducing the size of hardware.
- It cannot depending on the performance of a system.
- It only reduce the size by removing the irrelevant hardware or reducing the size of hardware by using new technology.
- It makes the system to move from one place to another place.
- It is related to computer.

Q3;

Convergence means coming together, while Divergence means moving a part. In world of business and trading convergence and divergence are the two terms used to describe the directional relationship of two trends, prices.

Q4;

The task of designing an app for mobile devices which has the capabilities of text chat, recorded audio message, and live video conferencing we can use ;

TCP (Transmission Control Protocol) for text chat and recorded audio message because of its;

- reliability
- Delivery Acknowledgements
- Re transmission
- Delays transmission when the network is congested
- Easy Error detection

UDP (User Datagram Protocol) for live video conferencing because of its;

- Fastest communication ability.
- Less delay.
- It sends the bulk quantity of packets.
- Possibility of the Data loss.
- Allows small transaction.

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.

5G and 4G;

For city wide networks we do not need 2G and 3G networks because they cannot provide us ultra-Hd streaming, although we can still using 3G networks for video conferencing. Wi-Fi is not available everywhere as they are only provided by ISP'S. 5G will be better option with theoretical speed of 10-30 Gbps but it's still in underdevelopment. 5G introduced in 2018 and it's MIMO, mm Waves based technology. The internet services of 5G are Wireless World Wide Web while 4G are Ultra Broadband. In this scenario satellites cannot be use on global or national aspects.

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

2G ;

There is no data transfer or any internet services so 2G is the best. It introduced in 1993 and it is GSM based technology and the internet services of 2G are Narrowband. For communication purpose satellite is also used but on a higher level.

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

3G, 4G;

They both are providing a good definition of Hd-streaming and live video conferencing. 4G is uses theoretical speed of 100-300 Mbps provides Hd-streaming. 3G introduced in 2001 and it is WCDMA based technology while 4G introduced in 1993 and it is LTE, WiMAX based technology and the internet services of 3G are Broadband while 4G are Ultra Broadband. so in this scenario 3G is the best.

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

Satellites;

For global scale transmission we cannot use any other technology except satellite. Satellites can transfer and receive data from small satellites dish on earth and communicate it with orbiting geostationary satellite at 23000 miles above earth. 3x satellites at 120^0 a part can cover whole earth.

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

Wi-Fi ;

Campus size network can easily be achieved by Wi-Fi.
For example;
If we want access to sportal of INU. So we had to connect to university Wi-Fi in order to access it. When we connect to the university Wi-Fi the information can be shared through sportal. And we get the information which we want.

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

2G, 3G;

Basic internet is both achievable through 2G and 3G networks but 3G can also be used for more advanced internet applications. 2G can provide us voice and sms both. The internet services of 2G are Narrowband while 3G are Broadband. So in this scenario 2G is the best option.