

## **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 (no MS Word) and upload it to SIC unzipped, before the deadline mentioned on SIC.**
- 11) Do not make any changes to the format provided.**
- 12) Failure in following the above instructions might result in deduction of marks.**

---

**Final Exam, Course: - Mobile Computing**

**Deadline: - Mentioned on SIC**

**Marks: - 50**

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

**Dated: 24 June 2020**

---

**Student Name: Mobeen Liaqat**

**Student ID#: 13278**

**Class and Section: BSSE 8(A)**

---

**Q1: Provide the names of 4 challenges that exist in Adhoc Networks.**

**(4)**

**Ans:** There are the following four challenges that may exist in Adhoc Networks.

1. Security
2. Scalability
3. Fast recovery
4. Efficient group management

**Q2: How the nodes in the Adhoc Network know about the changing network topology. (2)**

**Ans:** The nodes in the Adhoc Network know about the changing network topology because the new nodes announce their existence and listen to the broadcast announcements from their neighbor. The each node in the Adhoc network learns about the other nodes nearby and learns how to reach them.

**Q3: Why is it important to minimize flooding of control packets in Adhoc Networks and how MPR achieves it? (4)**

**Ans:** It is important to minimize flooding of control packets in Adhoc Network because the MPR has an intelligent mobility management procedure to handle the multicast mesh. The receiver compare all the paths and then determine which path is the best. The source is then informed for the routing. This intelligent procedure also maintains and monitors the traffic and learns about the state of the mesh.

**Q4: Explain briefly how Mobile Cloud Computing is different than simple mobile computing and simple cloud computing? (4)**

**Ans:** Mobile Cloud Computing is different from Simple Mobile Computing and Simple Cloud Computing because the Mobile Computing is a user facing technology where as Simple Mobile Computing and Simple Cloud Computing is a business facing technology. The Simple Mobile Computing and Simple Cloud Computing is aimed at enterprise bot of the cloud computing and the Mobile Cloud Computing uses wireless services to transmit the data. The Mobile Cloud Computing is simple a Cloud Computing in which some of the devices involved are mobiles. The Mobile Cloud Computing is the combination of Simple Mobile Computing and Simple Cloud Computing.

**Q5: Explain the term MBaaS in your own words? (4)**

**Ans:** Mobile backend as a Service (MAaaS) is a model which is used for providing web application and mobile application developers with a way to link their applications to backend cloud storage and APIs exposed by back end applications. The MBaaS also provides the features of user management and integration with social networking services.

**Q6: Imaging you visit a completely new city. What kind of services a modern LBS can provide you at your location automatically? (6)**

**Ans:** If I visit a new city the modern LBS should provide the services at my location automatically would be

- Maps and Navigation
  - Maps
  - Routing
  - Assisted Navigation
- Tracking Services
  - Friends and Family Finder
  - Traffic
  - Vehicle Tracking
  - Nearby Markets
  - Restaurants
  - Fuel Stations
- Information Services
  - City Guides

**Q7: Use your imagination as to how the following context can be used by a context aware application in mobile computing environment?**

**Ans:**

(8)

**Date/Time:** Reminder of a daily used application.

**Environment:** Showing notification/ Weather Report.

**Emotional state:** Help/ Support.

**Focus of attention:** Mostly used contents/applications.

**Orientation:** Guiding the user.

**User preferences:** Keeping track of user's preferences.

**Calendar (events):** Reminder of Events.

**Browsing history:** News adds related to history.

**Q8: Explain why energy efficiency is important in technologies like Bluetooth and ZigBEE?**

(4)

**Ans:** The energy efficiency is important in technologies like Bluetooth and ZigBEE because the ability of the devices to connect quickly to each other the energy of the devices is higher in the initial stage because of the full battery charge and later it goes low. The ZigBEE channel was not interrupted by other communications and the Bluetooth with the frequency hopping approach might face a stuck condition in it. The ZigBEE technology is used to provide valuable support for large scale energy saving sensor networks so the energy efficiency is more important in this technology to perform efficiently and quickly.

**Q9: Explain briefly how you use RFID technology at INU on a daily basis when present on the campus? Do you use an active or passive tag?**

(4)

**Ans:** The RFID works on Automatic Identification and Data Capture (AIDC) technology. The AIDC method automatically identifies the object and collect the data about it. So in INU the RFID technology can be implemented in the entrance gate so it can detect everyone who enters the university and collect the data about him. If any outsider enters the university so the guards would know. The record about books in library can also be implemented on RFID technology.

**Q10: Explain how Wearable Computing can be employed in computer gaming?**

(5)

**Ans:** Wearable Computing can be employed in computer gaming by using VR Remote controller, Tactical Gaming Vests, VR Headsets and many others. All of these helps us to use the gaming environment on a much better level. Some of them even allows us to enter the virtual reality of the gaming world.

**Q11: What kind of facilities and technologies must be present in order to call you own home a Smart Home? (5)**

**Ans:** The following are the facilities and technologies which must be used in order to call our own home a smart home.

- Smart Doorbells
- Smart Locks
- Smart Outlets
- Smart Thermostats
- Smart Smoke detectors
- Smart Lightening System
- Robot Vacuums