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.

Deadline: - Mentioned on SIC   **Marks: - 50**

Program: - BS (CS), BS-SE   **Dated: 24 June 2020**

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Class and Section: BS (SE) & B

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

Ans: The names of 4 challenges that exist in Adhoc Networks are given below:
**   Dynamic topology**
**   Infrastructure-less design**
**   Scalability**
**   Energy constraints**

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

Ans: AD hoc incorporates set of mobile nodes connected wirelessly during a self-organized network while having no connection with self-infrastructure. Magnet nodes are liberated to   move because network topology changes often. Every node act a router as they forward the traffic to other specific node within the network.

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 minimizing flooding of controls packets in Adhoc networks because bandwidth can be wasted. And while the message can be sent to one destination which is not right, it has to sent to every host. In the case of ping flood attack, it can be harmful to the reliability of a network. Many messages of the same content can be send which can cause load on the network as well as requiring an increase in processing complexity. Multipoint relay minimizes the flow of flood of broadcasting packets in the network by reducing duplicate transmission in the same region.

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

Ans: Simple Mobile computing is a consumer or user facing technology while simple cloud computing is a business or company facing technology. Cloud computing is aimed at enterprise. Both cloud computing and mobile computing use wireless service to transmit data

Mobile Cloud Computing is the combination of cloud computing and mobile computing to bring rich computational resources to mobile users, network operators, as well as cloud computing providers. The ultimate goal of MCC is to enable execution of mobile application of mobile devices. MCC provides business opportunities for mobile network operators as well as cloud providers.

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

Ans: MBaaS stands for Mobile Backend as a Service. BaaS is a platform that handles service infrastructure and backend development tasks. Backend as a Service allows developers to focus on frontend development while the service provider handles server-related tasks. Besides, the backend as a service provider also adds value to developers by providing tools that expedite backend code creation.
Some of the features Backend as a service provides are data management, APIs, push notifications, social media integrations, file storage, and many others.

Q6: **Imaging you visit a completely new city. What kind of services a modern LBS can provide you at your location automatically?** **(6)**
Ans: Recommending social event in a city.
Requesting the closest business or services like ATM, eating places or sale outlets.
Turn by turn navigation to any address.
Assistive Health care system.
Receiving alerts like notification of procurement on gas or warning of a traffic congestion.
Local based mobile advertising.
Contextualizing learning and analysis.
Games where your location is an element of the game play, for instance your movements throughout your day build your avatar move within the game or your positions unlock content.
Real time Q&A revolving around restaurants, services and different venues.
Sending a mobile caller location throughout emergency call using advance mobile location.

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

(8)

Date/Time
According to the context aware systems the date and time for the user should be provided by the system on his current location and provide user a option to change date and time according to his area of living it should be displayed on the screen by design made of user centric approach

Environment

The environment is key factor in the context aware systems the system should focus on the how the system will react at the environment change for example in the noisy area or at night time or at daylight what's will be behaviors in different conditions for that there is option in phone to adjust brightness , screen density warm or cold.

Emotional state
According to context aware systems emotional state of user can effect mobile computing   environment for example A loud alert is not ideal for all situations. In the same way language change ,color should be according to the user .

Focus of attention
The system should give importance to the attentions of user. Through context aware systems the can provide some services like in the phone call Avoid unnecessary interruption or when the message arrive on the Phone flashes a notification every 30 seconds Eventually the user will ignore it.

Orientation
Orientation means the context aware system have capability to provide users device to adjust the screen in every change for example auto rotate mode in Smartphone to adjusts the screen to the orientation of the device ,Apple Watch turns on display if arm lifted/rotated.

User preferences
The context aware system maintain the user preferences by providing the user with certain options such as in the mobile phone color density control, light or dark mode in the phone wallpaper or theme change control.

Calendar (events)
The context aware system focuses on the system time zones and global date and this way the user have the personalized calendar and keep track of the events which will occur different to different user according to his area.

Browsing history

Q8: Explain why energy efficiency is important in technologies like Bluetooth and ZigBEE?   (4)

Ans: Universal radio interference for wireless connectivity energy efficiency is important because it is use for data transmission over wireless network. If that device is not efficient the result of data transmission will not be same. Bluetooth has high speed and low energy.

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: We will use RFID for tracking items at INU on daily bases when they are present in the campus because it required low signal strength and high range. I will use passive tag.

Q10: **Explain how Wearable Computing can be employed in computer gaming?   (5)**

Ans: Wearable Computing can be employed in computer gaming through augmented reality which overlying virtual information on real world. These realities enhance the senses.

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

Ans: Smart Home Technology:
- **Smart home technology generally refers to any set of devices, equipment or systems connected to a shared network that can be controlled independently and remotely.**

Facilities and Technologies:
- **Smart Lighting.**
- **Smart Window.**
- **Access Control.**
- **Smart Security.**
- **Central Condition.**
- **Energy Management.**
- **Door Lock.**