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: <u>BSSE 8th Semester Section "A"</u>

<u>Q1</u>: Provide the names of 4 challenges that exist in Adhoc Networks.   (4)

Ans: <u>CHALLENGES IN ADHOC NETWORK:</u>

- ➤ **Security:** A similar multi-layer issue is that of security in ad hoc networks. Since nodes use the shared radio medium in a potentially insecure environment, they are susceptible to denial of service (Dos) attacks that are harder to track down than in wired networks.
- ➤ **Dynamic topology:** results in route changes and packet loss
- ➤ **Scalability:** Scalability in ad hoc networks can be broadly defined as whether the network is able to provide an acceptable level of service to packets even.in the presence of a large number of nodes in the network..
- ➤ **Energy constraintsL** limit processing power; ad-hoc networks rely on each node being a "router"

<u>Q2</u>: How the nodes in the Adhoc Network know about the changing network topology. (2)

Ans:
- New nodes announces their existence and listen to their broadcast announcement by their neighbours
- Each node learns about other people nearby and how to reach them and may announce that it can also reach them.
- Wireless ad hoc network (WANET) or ad hoc network (MANET) is a separate type of wireless network. Network is pointless because it does not rely on existing infrastructure, such as routers on wireless networks or access points (infrastructure) Wireless networks Instead, each node contributes to data transmission in other areas, so the determination of forwarding node data is made more robust on the basis of connectivity of the network and the routing algorithm used

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

Ans: If we reduce the duplicate transmission so the number of control packets are also reduced. If we want to reduce flooding we use a few node rely points to send information.
Reduce Control Packet Size:
It gives information about only those links which are neighbours with it and also select multipoint relay selector set.
Multipoint Relay Minimizes:
MRP are used to minimize flooding of broadcast packet in the network by minimizing the number of duplicate retransmission of data in the same location.

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

Ans: Cloud computing relates to the specific design of new technologies and services that allow data to be sent over distributed networks , through wireless connections to a remote secure location that is usually maintained by a vendor. While Mobile Computing relates to the emergence of new devices and interfaces. Smartphones and tablets are mobile devices that can do a lot of what traditional desktop and laptop computers do. Mobile cloud computing is a new platform combining the mobile devices and cloud computing to create a new infrastructure whereby cloud performs the heavy lifting of computing-intense tasks and storing massive amount of data. In this new architecture data processing and data storage happens outside of mobile devices.

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

Ans: Mobile Backend as a Service (MBaas) is a model which is used for providing web applications and mobile application developers with a way to link their applications to backend cloud storage and APIs exposed by backend 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:
LBS are provide services offered through a mobile phone and take into account devices geographical location. LBS provides information and entertainment. It mainly depend on thr user of mobile phone and also its location. The techniques which we are provide to user which identify the location automatically.
Now to locate our location automatically so we used Global Postioning system GPS because it is a satellite with 120 And communicate with each. So if we visit a completely new city we used GPS LBS system for location automation. Which navigate the location to the user and user can feel relax and have ni problem to find thr location by asking or use any other source.

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
    Environment
    Emotional state
    Focus of attention
    Orientation
    User preferences
    Calendar (events)
    Browsing history

Answer: Context-Aware Application: Context-aware computing is a mobile computing paradigm in which applications can discover and take advantage of contextual information such as user location, time of day, neighboring users and devices, and user activity.
- ❖ **Date/Time:** by pushing notification/reminder of a daily used application.
- ❖ **Environment:** by showing notification or news related weather.
- ❖ **Emotional state:** by showing help and support.
- ❖ **Focus of attention:** featuring thing by mostly used(contacts, apps etc)
- ❖ **Orientation:** by guiding and helping the user to use.
- ❖ **User preferences:** by keeping tracks of user's preferences.
- ❖ **Calendar (events):** by showing reminders of an upcoming event.
- ❖ **Browsing history:** by showing news and ads related to search history

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

Ans: Energy efficiency is important for sensory devices with limited energy sources, which are connected by means of wireless sensor networks (WSN). The reason can be the production of unnecessary communication or periodic transmission of data from sensory IoT devices at very short intervals

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: While using RFID technology, my card works as an passive tag as the card itself does not beholds an power supply and it has to reply on the readers power supply to activate the tag present on the card to read the information.

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

Ans: Wearing computing can be employed in computer gaming by using VR headsets, Knuckle Strap, VR Remote controller, Tactical Gaming Vests and many others. All of these helps you to feel the gaming environment on a much better level, some of them even allows you 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:
- **Smart Kitchen:**

  Although technology has yet to provide us with a robotic chef, these smart kitchen machines make cooking and cleaning much easier. You can connect many of them with your smart speakers!

- **Light Automation**:

  When it comes to simple automation there are two ways. The first is to install bright light bulbs. Smart not only light switches can be controlled by the application, but many give you many light options, such as blur. The second option for smart lighting is smart bulbs. Just like smart plugs, smart bulbs amplify standard lights into smart ones. Change your old bulbs to good ones, you'll be able to use your light.

- **Smart Plugs:**

  Smart plugs can convert an object into a smarter version of itself. Just plug them into your normal outlets, and then whatever is being powered by them can easily be turned on and off from your smart device.

- **Robot Vaccums**
- **Smart Laundry**
- **Smart Bathrooms**
- **Smart Security system**
- **Central control system**
- **Smart thermostats**