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**

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Class and Section:___A_____

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

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

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

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

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

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

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

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

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)**

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

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

Q1:

Answer:

The following is four challenges in adhoc network:

1. **Medium access scheme:**
   - MAC is answerable for shared use of the transmission medium;
   - Performance depends on MAC protocol (e.g. Token Ring vs. Ethernet).

2. **Dynamic topology :**
   - Dynamic topology are used to change the path and also helpful in packet loss.
3. **Security;**
   - What makes ad hoc more vulnerable to attacks:
   - lack of central coordination;
   - shared wireless medium.

4. **Energy limits:**
   - If the system have limits processing power so the ad hox energy limits are used to perform as a router on each and every node.

Q2:

Answer:

A wireless ad-hoc network (WANET) or Mobile ad hoc network (MANET) is a reorganized form of wireless network. The network is ad-hoc because it does not rely on a pre-existing organization, such as routers in wired links or access points in achieved (infrastructure) wireless networks In its place, each node participates in routing by progressing data for other nodes, so the willpower of which nodes accelerative data is made animatedly on the source of network connectivity and the routing algorithm in custom.

Q3:

Answer:

MRP also planned an smart flexibility organization technique to switch the multicast network. In other words, the receiver associates the tracks and controls which one is the greatest. The basis is then up-to-date of this statement for future routing. This intelligent method can maintain and enhance the multicast network by checking the Incest circulation and learning about fink situations of the network. As a result, a control note due to saturating can be condensed suggestively. By using such a process, 10D-MRP cm agreement that there is always a track between multicast senders and receivers. It is shown in [Wang2001] that 10D-MRP can often deliver healthier results than CAMP.

Q4:

Answer:

Cloud computing :

relates to the particular project of new skills and services that agree to data to be sent over dispersed links, through wireless networks, to a inaccessible safe location that is frequently maintained by a seller. Cloud service suppliers frequently serve multiple customers. They arrange access between the customer's local or secure links, and their particular data storage and data backup organizations. That means the merchant can intake data that is sent to them and stocks it strongly, while sending facilities back to a customer conclude carefully maintained contacts.

Mobile computing

communicates to the appearance of new devices and borders. Smartphones and tablets are mobile devices that can do a lot of what outdated desktop and laptop computers organize. Mobile computing roles include gain access to the Internet conclude browsers, supportive many software applications with a core operating system, and transfer and getting dissimilar kinds of data. The mobile operating system, as an

interface, supports customers by provided instinctive icons, accustomed search tools and easy touch-screen tips.

Q5:

Answer:

Mobile Backend as a Service (MBaaS):

- Cloud computing platform that attaches company's mobile application with the related database and servers through software progress kits (SDKs) and application program interfaces (APIs).
- MBaaS works as an intermediate that be able to all backend contacts of mobiles so that designers can provide the best operator experience.
- MBaaS supports mobile applications by proposing several backend services such as push statements, cloud database storing, social networking combination, and more.

Q6:

Answer:

If someone visited a new city. the modern location services deliver him the Presently, navigation technologies in customer devices such as mobile phones are allowing a huge successful in location-based services, with new profitable chances based on the capability of consumers to recognize their particular location qualified to services, services and other public.

Q7:

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.

Q8:

Answer:

Energy effectiveness is exclusively important for end sensual devices with some degree of energy causes, which are linked by means of so-called wireless sensor networks (WSN). The reason may be the manufacture of avoidable statement or interrupted communication of data from sensual IoT devices at very small intermissions.

Q9:

Answer:

RFID are work on AIDC (Automatic identification and Data Capture) methods. AIDC technique automatically detects the objects and collect data about them. So in INU university this technology is good than cards swap because this method just identify the object and mark its attendance. In university we used ACTIVE RFID tag because dynamic tag has both microchip and antenna which have more power and capabilities.

Q10:

Answer:

There is an unique chance for modern-day game designers to develop applications planned mainly for wearable devices that produce highly cultured gaming involvement for operators. It is identified that the gaming applications planned for wearable devices keep the ability to participate built-in fundamentals from the devices like gyroscopic gesture detecting and motion tracing to help an communicating game experience.

Q11:
Answer:

The following technologies must be present in a home in order to call it smart home:

1. Smart TVs attach to the internet to contact satisfied through applications, such as on-demand movie and tune. Some smart TVs also contain voice or motion acknowledgement.
2. In addition to being intelligent to be skillful slightly and modified, smart illumination systems, such as Hue from Philips Lighting Holding B.V., can notice when inhabitants are in the room and adjust illumination as wanted. Smart lightbulbs can also control themselves founded on daylight accessibility.
3. Sing smart locks and garage-door openers, operators can funding or reject entree to guests. Smart locks can also notice when citizens are near and unlock the doors for them.
4. With smart security cameras, residents can observer their homes when they are gone or on holiday. Smart motion sensors are also able to detect the alteration between citizens, friends, pets and thieves, and can notify establishments if doubtful behavior is noticed.
5. Pet care can be automatic with linked feeders. Houseplants and lawns can be wet by method of related controls.